

The new BMW K 1600 GT. The new BMW K 1600 GTL. Table of contents.



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1. Overall concept.



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

Ever since BMW Motorrad presented the concept study Concept 6 in autumn 2009, the new 6-cylinder in-line engine installed in it has caught the imagination of many motorcycle fans. For over seven decades now, 6-cylinder in-line engines have stood for fascinating engine technology in automobiles at BMW more than with any other brand. With the new K 1600 GT and K 1600 GTL, BMW motorcycles are now available for the first time with a 6-cylinder in-line power unit developed in-house. The two touring motorcycles have a supreme, impressive and equally distinctive appearance, creating a desire to travel at first sight.

Riding dynamics, long-distance suitability and comfort.

For decades, 6-cylinder in-line engines have exercised a special fascination. In addition to their perfect running smoothness they also offer supreme output and torque, giving the rider powerful emotional impressions.

In addition to safety, equipment and comfort, prestige and dynamic performance are the key criteria for a supreme touring bike. With the most compact in-line 6-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 175 Newton metres, their 6-cylinder engine provides superb propulsion in all conditions.

Lightest and most compact serial production 6-cylinder in-line engine in a motorcycle > 1000 cc.

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

Weighing 102.6 kilograms, the engine is by far the lightest serially produced 6-cylinder in-line engine for motorcycles in the class > 1000 cc. What is more, the engine is significantly narrower in construction width than all other 6-cylinder in-line motorcycles in serial production to date. This extremely compact construction and reduced width was achieved in particular by means of a cylinder bore of 72 millimetres in conjunction with a spacing of just 5 millimetres between the cylinder the cylinder sleeves.

Both the low engine weight and the consistent lightweight construction of the vehicle as a whole contribute to the low weight of the vehicle. At 319 kg (K 1600 GT without panniers) and 348 kg (K 1600 GTL with panniers and topcase) the new touring bikes are in the lower range of the segment.

Three modes to choose from and DTC (Dynamic Traction Control) for maximum safety when accelerating.

The rider of the K 1600 models has three different engine characteristics directly available at the press of a button at the right-hand end of the handlebars so as to be able to adapt to different uses such as touring on the road, riding on wet surfaces and sporty, dynamic motorcycling - the modes "Rain", "Road" and "Dynamic". Available as an option ex works, the traction control function DTC is combined individually with the different modes, fully harmonised with them so as to provide maximum riding safety.

E-gas.

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. The rider's wishes are registered by means of a sensor in the accelerator twist grip. The engine control then adjusts the position of the throttle valve accordingly.

Chassis with ideal mass concentration for dynamic riding properties.

The essential chassis elements of the BMW K 1600 GT and K 1600 GTL are the light alloy bridge-type frame, and the Duolever and Paralever for wheel control at front and rear. Because of the special requirements of a touring bike with a 6-cylinder engine, particular attention was paid to balancing the masses.

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 wheel load distribution for excellent riding properties. The combination of ride stability, riding dynamics and lightness of handling in all riding and load conditions sets a new benchmark in the touring bike segment.

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

The new 6-cylinder touring bikes also benefit from the innovative Electronic Suspension Adjustment II (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. This makes for outstanding stability and impressive responsiveness in all load states.

The additional adaptation of the spring rate allows the damping settings "Sport, Normal, Comfort" to be spread widely in ESA II, giving them clearly perceptible characteristics during riding. So in "Sport" mode, the K 1600 GT and K 1600 GTL are even more dynamic and precise and in "Comfort" mode they are more comfortable - while still retaining excellent stability.

Adaptive headlight - a world first for increased safety at night.

With the new BMW Motorrad touring bikes, the first ever "Adaptive Headlight" option is available ex works in the motorcycle sector as a supplement to the standard xenon headlamp. In addition to standard pitch compensation, the light of the main headlamp is also balanced in relation to banking angle. This produces significantly improved illumination of the road when cornering and therefore an enormous increase in active riding safety.

Integrated operating concept with Multi-Controller, TFT colour screen and menu guidance.

The instrument panel of the K 1600 models comprises two classic circular instruments for the speedometer and tachometer and a 5.7-inch TFT colour

display. The design of the information display is also completely new in the motorcycle field. Among other things, it enables the attractive presentation of text and graphics over several lines.

Another world first is the Multi-Controller as part of an integrated operating concept, first introduced in the BMW R 1200 RT at the end of 2009. In addition to audio system control, the K 1600 models also have a menu for operating the comfort functions and on-board computer.

Innovative design with outstanding wind and weather protection.

Particular attention was paid during development to the combination of innovative design, optimum wind and weather protection and the very highest level of functionality. A very good example of this is the electrically adjustable windshield with memory function.

The bike's aerodynamic qualities in terms of reduced air swirl - especially in the pillion passenger area - were developed in sophisticated wind tunnel tests. But the windshield not only protects the rider and pillion passenger: it automatically returns to the starting position when the ignition is switched off, acting as an anti-theft system for the optionally available navigation system.

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

The design of the ergonomic triangle from the position of the footrests, seat top and handlebars makes for a highly proactive seating position in the K 1600 GT, while still 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 dynamic riding style. The seat is height-adjustable in the rider area so that it can be adapted to individual needs.

The K 1600 GT has a very extensive range of standard features ex works consisting of xenon headlamps, heated grips and seat, cruise control and on-board computer. In conjunction with the supreme riding qualities of the new BMW Motorrad 6-cylinder engine, this motorcycle leaves nothing to be desired as far as the proactive touring rider is concerned.

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 very highest demands. Rider and pillion passenger benefit from the very relaxed, upright seating position as is especially appreciated over long distances. The ergonomic design is geared towards maximum comfort and derives from a single-section, dual level seat in conjunction with rider footrests which are further forward and lower, as well as handlebars which reach further backwards. 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 headlamps, heated grips and seat, cruise control and on-board computer. The overall impression of the fascinating 6-cylinder motorcycle in combination with a carefully conceived storage concept, a standard audio system and numerous design elements make the BMW K 1600 GTL the flagship model among the BMW Motorrad touring bikes.

Individual paint finish concepts adapted to the character of each bike.

As touring bikes, the new BMW K 1600 GT and K 1600 GTL stand for a perfect synthesis of supremacy, dynamic performance and comfort. This is also reflected in the colouring of the two models.

In the K 1600 GT, the body colours of Light Grey metallic and Vermilion Red metallic create a fascinating contrast with the frame and wheels in Ostra Grey and the engine in Platinum metallic matt. The colouring especially highlights the bike's technical components. The lines are concentrated and give the motorcycle a marked sense of agility.

With its emphasis on comfort and equipment, the K 1600 GTL has a powerful presence and elegance with elongated lines. This was achieved by means of a harmonious interaction between body colours and the colouring of the engine and chassis components. Here, Mineral Silver metallic or Royal Blue metallic 2 provide a perfect match for the Magnesium metallic matt of the painted frame and wheels. The engine in Platinum metallic matt ensures an appealing overall impression.

An overview of highlights of the BMW K 1600 GT/ K 1600 GTL:

- Supreme in-line 6-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 7 750 rpm and maximum torque 175 Nm at 5 250 rpm.
- Over 70 per cent of the maximum torque is already available from 1 500 rpm.
- The lightest and most compact 6-cylinder in-line engine in serial motorcycle production > 1000 cc weighing just 102.6 kg and measuring 555 mm in width.
- Consistent lightweight construction throughout the entire vehicle (magnesium front panel carrier, aluminium rear frame, crankshaft etc.).
- E-Gas.
- Three modes to choose from ("Rain", "Road", "Dynamic")
- High active safety due to standard BMW Motorrad Integral ABS (part integral).
- Dynamic traction control DTC (Dynamic Traction Control) for maximum safety when accelerating (optional extra).
- Chassis with Duolever and Paralever and ideal mass concentration 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 a motorcycle: Adaptive Headlight (optional extra) for increased safety at night in conjunction with standard xenon headlamp and fibre optic rings.

- Integrated operating concept with Multi-Controller, TFT colour display and menu guidance for the first time.
- Audio system with preparation for navigation device and controllable interface for iPod, MP3, USB, Bluetooth and satellite radio (USA and Canada only) (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 a very comfortable, relaxed ergonomics set-up for long trips with pillion passenger as well as luxurious touring equipment.
- Central locking for storage compartments, panniers and topcase (optional extra).
- Extensive fittings and individually tailored accessories at the familiar high level of BMW Motorrad.

2. Powertrain.



Lightest and most compact serial production 6-cylinder in-line engine in a motorcycle > 1000 cc.

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

The engine is significantly narrower in construction width than all other 6-cylinder in-line motorcycles in serial production to date. 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.

What is more, weighing 102.6 kilograms (basic engine including clutch, gearbox and alternator) the engine is by far the lightest serially produced 6-cylinder in-line engine for motorcycles in the class > 1000 cc.

Supremacy and ride comfort.

The transversely mounted 6-cylinder inline engine of the BMW K 1600 models has a capacity of 1649 cc. Its rated output is 118 kW (160 bhp) at 7750 rpm. The maximum torque of 175 Nm is reached at 5250 rpm. Over 70 per cent of the maximum torque is available from 1500 rpm. The development goals here were highly superior touring characteristics and rideability combined with maximum running smoothness.

Compact overall design and space-saving construction.

In order to achieve this narrow construction, the electrical ancillary units and their drive mechanisms were moved behind the crankshaft into the free space above the gearbox.

This also made it possible create a powertrain with ideal mass concentration at the centre of the vehicle. The total width of the engine is 555 millimetres. This makes the engine only slightly wider than a current large-volume 4-cylinder engine.

Due to the perfect mass balance created by the construction, the 6-cylinder engine does not require a compensation shaft and the associated drive elements, which results both in weight benefits and increased running smoothness.

In its layout, the 6-cylinder in-line engine is based on the familiar 4-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. The tilt of the engine likewise creates space for an aerodynamically optimised intake system directly above the engine, as well as allowing freedom for frame profile design geared towards optimum stability and rigidity.

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

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 6-cylinder offset of 120 degrees for even firing intervals. Particular attention was also paid here to the issue of lightweight construction. For example the weight of the crankshaft is only very slightly in excess of a comparable 4-cylinder engine at just 12.9 kilograms. The crankshaft is friction-bearing. The main bearing journals are 42 millimetres in diameter, while the connecting rod pin journals have a diameter of 40 millimetres. 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 other counterweights are aerodynamically optimised.

The drive of the camshafts in the cylinder head is effected by means of a tooth-type chain which runs via 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 securing a low level of inner friction in this area. Horizontal partitioning is achieved by means of the well-established crack technology: the large connecting-rod eye is "cracked" in the centre plane by the specific hydraulic application of a powerful traction force. This rupture point enables extremely precise-fitting assembly without further centering.

Lightweight slipper pistons are used with a short piston skirt, two narrow piston rings optimised for frictional loss and a narrow oil scraper ring. The flat design of the combustion chamber means that in spite of the high compression ratio of 12.2:1 it has been 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 construction.

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

The cylinder block is designed in an open-deck construction, i.e. the water jacket is open to the cylinder head. The barrels have a wear-proof, low-friction nickel-silicon dispersion coating. The die-cast lower section forms the counterpiece to the main bearing of the crankshaft and supports the 6-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 4-valve cylinder head in the K 1600 models is geared towards 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 have opted for a valve operating system using bucket tappets. This combines the qualities of rigidity, compact construction and reliability.

The valve angle of the engine in the K 1600 GT and K 1600 GTL is 12 degrees on the intake side and 13 degrees on the exhaust side. The valve sizes are 29 millimetres on the intake side and 24.8 millimetres on the exhaust side, with a shaft diameter of 5 millimetres.

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

The construction and manufacture of the camshafts represent an innovation in motorcycle engine construction. These are composite camshafts in which the individual cams are compression-moulded for positive coupling with the shaft, which is designed as a tube. The advantages as compared to conventional clear-chill cast camshafts derive mainly from the reduced weight, with around 1 kg being 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 order 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 even 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 6-cylinder in-line engine of the K 1600 GT and K 1600 GTL uses an integrated dry sump lubrication system. In addition to a high level of operating reliability, it allows a 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 construction. The oil reservoir forms an integrated oil tank in the rear section of the engine casing. A separate tank is therefore not required, which consequently has a positive effect in terms of the compact construction of the motorcycle and overall weight.

The dual oil pump is housed in the rear section of the engine casing and driven by cogs from the clutch shaft, circulating 4.5 litres of lubricant (engine oil capacity including filter change). It draws the lubrication oil from the oil reservoir and initially feeds it into the oil filter (full-flow filter) as pressure oil. The latter is located on the left lower crankcase side where it is easily accessible. From here the pressure oil reaches the main oil ducts in the crankcase and is distributed to the lubrication points via internal bores. The returning lubricant collects at the lowest point of the crankcase in the sump pan. The second pump supplies the returning oil to the oil cooler initially, and from here it flows back into the oil tank. The oil cooler is located below the headlamp in the front trim panel for optimum air flow. No monitoring of lubricant supply is necessary: if the oil level drops excessively, this is displayed in the instrument panel by means of an electronic oil sensor.

Carefully conceived cooling concept for maximum thermal stability.

A sophisticated cooling concept ensures perfect thermal balance in the 6-cylinder engine. Coolant flows transversely through the cylinder head. The intake of the cooling fluid is effected via the cylinder bank on the "hot" outlet

side. Precisely where the greatest thermal stress occurs, the intensive cooling at the cylinder head ensures rapid heat dissipation and therefore an excellent temperature balance. The diminished water flow at the cylinders reduces the warm-up phase and restricts cold-running wear-and-tear and friction, which also benefits fuel consumption. The coolant volume (50 % water, 50 % nitrite-free antifreeze) is 3.5 litres including 0.5 litres of levelling volume.

The water pump and the oil pump are powered 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. Due to the minimised frictional loss of the engine, the high degree of efficiency and the sophisticated aerodynamic design of trim and air flow, a comparatively small area of just 920 cc is sufficient for reliable heat dissipation in all conditions. The integrated thermostat keeps warm-up times as short as possible.

Ancillary units - alternator and starter.

In order to save construction space the electrical ancillary units and their drive mechanisms were moved behind the crankshaft into the free space above the gearbox. The three-phase generator is driven by the primary toothing of the clutch. The rated output of the generator is 580 watts, with a peak current of 57.5 ampere. With a view to optimising power consumption, the gear ratio of the crankshaft to the generate was fixed at 1:2.0. The reduction-gear starter is linked via a one-way clutch which acts on the generator drive gear.

Power transmission: narrow three-shaft transmission and self-energising clutch.

Torque is transmitted from the crankshaft to a 10-disc wet clutch via a straight-toothed primary drive.

Here the developers paid particular attention to a low level of control force at the hand lever. This is achieved by means of a self-energising mechanism in the clutch cage. When this is active, it may cause slight movements in the clutch 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, it is designed as three-shaft transmission with three gearbox shafts arranged one on top of the other. The cogwheels are helical-cut, providing an excellent basis for low running noise.

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 rolling-bearing shift drum is hollow and made of a highly rigid aluminium alloy. The shift forks are made of steel and are lubricated with pressure oil.

Maintenance-free Cardan shaft drive at the rear wheel.

As in all large-volume BMW touring bikes, a drive shaft powers the rear wheel. The bevel gear at the gearbox outlet is housed in the gearbox cover. The entire rear-wheel drive is described in detail in section 3 "Chassis".

New engine control BMS-X.

The new BMW 6-cylinders feature the most state-of-the-art engine control to date. BMS-X is being used for the first time in the K 1600 GT and K 1600 GTL. Fully sequential, cylinder-selective injection for six cylinders, rapid processing of extensive sensor signals by means of state-of-the-art microelectronics, a compact layout, low weight and self-diagnosis are its most important features. Here BMW Motorrad extends its longstanding pioneering role in the area of electronic engine management.

The torque-based engine control with Alpha-n draws on a wide range of parameters. In this way it enables select torque delivery and a finely tuned adaptation of the engine to the most diverse conditions.

The control system is based on the volume of intake air which is determined indirectly via the throttle valve angle and the engine speed. From additional engine and environmental parameters (including engine temperature, air temperature and environmental air pressure), the engine control determines individually-adapted levels for injection volume and ignition timing together with stored mapping characteristics and pre-set correction functions. The fuel type is premium unleaded, i.e. at least 95 octane.

Ideal fuel dosage by means of variable pressure control.

The supply of fuel is effected on a needs-oriented basis via the control of the electrically regulated petrol pump with a pressure of 3.5 bar. The mixture composition is regulated by means of two oxygen sensors. These are positioned at the junction points of three exhaust manifolds and ensure precise registration of exhaust gas composition.

In the K 1600 GT and K 1600 GTL, the BMS-X integrates the functions of automatic idling-speed control and cold-start enrichment via the electronically regulated throttle valve. Idling speed increase during warm-up is carried out automatically by means of an increase in desired engine speed.

E-gas 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. The rider's wishes are registered by means of a sensor in the accelerator twist grip. The fully electronic engine control converts this command into a torque requirement within a fraction of a second and electronically regulates the throttle valve accordingly.

This makes it possible to achieve optimum rideability in the most diverse situations, as well as providing electronic cruise control and traction control. What is more, 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 intake silencer in perfect shape and position can be installed directly above the engine. With a volume of 8.5 litres, this intake silencer with upright panel air filter contributes to superior power delivery and high torque development. Air intake is via two air inlets which are fitted in the side trim section for optimum aerodynamic response.

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 BMW K 1600 GT and BMW K 1600 GTL result in a high degree of efficiency and therefore a low level of fuel consumption. In view of its power potential, the engine achieves top figures in this area, equivalent to the level of a comparable 4-cylinder motorcycle when a touring-oriented riding style is maintained. For example at a constant speed of 90 km/h, a fuel consumption level is achieved of just 4.5 l/100 km (K 1600 GT). This is largely due to the high geometrical compactness and the specific orientation of the in-line 6-cylinder engine towards maximum efficiency.

Exhaust system with 3-way catalytic converter and characteristic 6-cylinder sound.

Six individual manifolds of equal length come together under the gearbox, initially in two pipes which then lead into a large-volume rear silencer (6-in-2 system). The two silencers with oval section have a volume of 7.5 litres each and work according to the combined principle of reflection and absorption damping. The outer layer is thermally protected by the inner absorption layer.

At the points where the manifolds feed into the silencers there are metal-carrier catalytic converters with a cell width of 200 cpi (cells/inch²). By doing without a linking pipe it was possible to create a typical 6-cylinder sound, while of course still adhering to statutory requirements. In keeping with its

dynamic concept, the K 1600 GT sounds a shade more aggressive than the K 1600 GTL. While the two rear silencers in the K 1600 GT are made of brushed stainless steel, two chrome specimens reflect the luxurious style of the K 1600 GTL.

Three modes "Rain", "Road" and "Dynamic" to choose from for optimum adaptation to surface conditions and riding style.

The rider has three different engine characteristics 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. To make the required setting, the "Mode" switch on the right of the handlebar fitting is activated until the display in the instrument panel shows the desired mode. It is also possible to implement the rider's wish during travel and change modes by pulling the clutch lever and setting the throttle twist grip position to idle. When the motorcycle is restarted, the last selected setting is always maintained.

Both the K 1600 GT and K 1600 GTL can be fitted with DTC (Dynamic Traction Control) as a special equipment feature ex works. Traction control DTC is combined individually with the different modes and fully harmonised with it so as to provide maximum riding safety.

For riding on wet surfaces with the resulting lack of grip, "Rain" mode offers a flatter, especially homogeneous output and torque curve (see section 8 "Engine output and torque"). The response and power delivery of the engine are particularly soft due to the altered electromotive throttle actuator parameters. In this mode, traction control DTC intervenes very early on before the frictional coefficient limit is reached, ensuring maximum safety for the rider even in difficult road surface conditions.

The rear wheel has sufficient lateral force to prevent break-away of the motorcycle rear section on wet, slippery surfaces. The ABS system remains unchanged in its settings.

For use on dry roads, "Road" mode provides full torque combined with a gentler, more touring-oriented accelerator response. This mode was developed for touring use on country roads and when travelling with a pillion

passenger. In this mode, DTC allows the vehicle greater controlled agility. The ABS system remains unchanged in its settings.

The "Dynamic" model was developed for sporty, dynamic use of the K 1600 GT and K 1600 GTL. Here again, the full torque is available, though the response to the throttle grip is entirely direct and perceptibly dynamic. Regulatory intervention of DTC is only effected when maximum power has been transferred to the rear tyre. The ABS system remains unchanged in its settings.



3. Chassis.

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

The chassis of the BMW 6-cylinder motorcycles is based on the innovative BMW Motorrad concept as already used in the current 4-cylinder models of the K series. The essential elements are the light alloy bridge-type frame, Duolever and lightweight construction Paralever for wheel control at the front and rear.

Because of the special requirements of a touring bike with a 6-cylinder engine, particular attention was paid to balancing the masses. 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 a ideally balanced static wheel load distribution of 52 per cent at the front to 48 per cent at the rear (K 1600 GT unloaded). Even with a pillion passenger and a heavy load, this guarantees outstanding riding properties.

Main frame made of light alloy in a bridge-type construction combined with a light alloy rear frame.

The central bearing component is the main frame in a bridge-type construction. The entirely newly-developed aluminium lightweight construction frame consists of a welded unit with four highly rigid, heat-treated chill-cast parts with thin walls. Both the complex geometry and the large number of attachment points make very high demands in terms of manufacturing technology.

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 of 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 6-cylinder engine is firmly bolted to the frame at eight points and thus acts as a rigidifying element.

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 developers have nonetheless succeeded in creating a rear frame in light aluminium construction. It consists of highly rigid, welded aluminium extruded sections and is bolted to the main frame at four points. The robust construction is supplemented with deformation elements in the area of the pannier support. The rear frame weighs just 4 kilograms.

BMW Duolever front wheel control for excellent ride precision, cornering predictability and comfort.

In the BMW Motorrad K series, the Duolever stands for maximum ride precision and cornering predictability. It combines the greatest possible ride comfort with a sensitive response. The spring travel is 115 millimetres (60 mm compression, 55 mm rebound).

The kinematics of the Duolever provides automatic anti-dive control in the K 1600 models, so the longitudinal forces acting on the front wheel during braking cause virtually no compression. Only the dynamic wheel load distribution generates a slight dip which gives the rider feedback on braking power as is familiar from conventional telescopic forks. In this way the Duolever combines the desired amount of front wheel feedback with the comfort and safety benefits of anti-dive control.

Adapted BMW Paralever rear wheel swinging 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. Based on the familiar Paralever swing arm, the rear wheel control and the Cardan shaft drive have been adapted to the new 6-cylinder engine in terms of construction requirements. In accordance with the increased performance and torque demands, the propeller shaft and rear axle final drive have been newly designed.

As always, the Paralever swinging arm is made of a highly rigid aluminium cast alloy. It is mounted directly on the rigid main frame which at this point is formed by a highly stable structure made of cast light alloy.

The torque support for the housing of the rear-wheel drive is still located above the swinging arm, while the brake caliper is now mounted at the rear in the extension of the vehicle's longitudinal axis.

The central suspension strut, adjustable via a needle valve in the damping, is controlled by means of a lever construction and is supported by a stabiliser arm on the main frame. The progression combines sensitive response of the suspension with excellent traction response while still providing sufficient reserves for riding with a full load.

The spring travel is 135 millimetres (100 mm compression, 35 mm rebound). In the standard version, the rear spring strut offers continuously variable adjustment for rebound damping and continuously variable adjustment of the spring rest by 10 millimetres by means of an adjuster knob so as to be able to adapt the rear to different load states.

The new K 1600 GT and K 1600 GTL roll on lightweight, elegantly designed light alloy cast wheels in ten-spoke design which combine an attractive shape with high rigidity and low weight. The front wheel measures 3.5 x 17 inches, the rear wheel 6.0 x 17 inches. The corresponding tyre sizes are 120/70 ZR17 at the front and 190/55 ZR17 at the rear. The rear tyre has been especially developed to meet the demands of a touring motorcycle in terms of load and speeds.

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 II (ESA II) which is offered as a special equipment feature ex works.

With this system, which is 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. This is carried out conveniently using the Multi-Controller in conjunction with the menu in the TFT colour display panel.

This second-generation "Electronic Suspension Adjustment" - or ESA II for short - enables the suspension settings to be adapted highly conveniently and more precisely than ever before to riding style and load, thereby achieving a whole new dimension of ride stability and comfort while offering excellent responsiveness.

In order to make operation as simple as possible and prevent unwanted, erroneous settings the rider first simply enters the load state ("solo", "solo with luggage" or "with passenger and luggage"). The relevant spring rest and spring rate are then set automatically as the system harmonises these two values.

The rider also chooses the chassis character of the machine with either "Comfort", "Normal" or "Sport", depending on the planned riding style. From these entries, the electronic control system calculates the appropriate damping rates based on optimum parameters and sets them accordingly. This means that the new 6-cylinder touring bikes offer a total of nine different setting variations.

The additional adaptation of the spring rate allows optimum adaptation of ride height to varying load states, thereby guaranteeing an even higher level of ride stability, agility and comfort. Even under maximum load with pillion passenger and luggage, this means that full banking freedom is maintained, enabling a sporty riding style. What is more, the adaptation of the spring rate drastically reduces the risk of bumping with an extreme load. Damper settings can be changed simply at the press of a switch ("Normal", "Sport", "Comfort") even while riding. For functional and safety-related reasons, the spring rest can only be changed when stationary. An electric motor with a gear unit is used to vary the spring rate. The damping rate is altered by means of small stepper motors at the dampers.

The alteration of the spring rate is effected by two springs connected in series. Here the compression forces are absorbed by an elastomer element (Cellasto) combined with a conventional coil spring underneath. The radial expansion of the Cellasto element is permanently limited by a steel sleeve. An aluminium sleeve is moved on the inside by means of an electrohydraulic mechanism. The position of this inner sleeve influences the inward expansion response of the Cellasto element and therefore its spring rate. The effect is

equivalent to that of two springs of differing strength. When the inner sleeve rests on the steel spring, the Cellasto element is out of function and only the steel spring takes effect. If the inner sleeve is then moved further, the spring rest of the steel spring can be varied, i.e. the "spring preload".

In this way, static normal position and ride geometry are optimally preserved in all load states. Thanks to this "ride-height levelling", the BMW K 1600 GT and BMW K 1600 GTL are just as stable when fully loaded as when only carrying a rider.

The additional adaptation of the spring rate across the range of 110 to 160 N/mm allows the settings "Sport", "Normal" and "Comfort" to be spread widely in ESA II, giving them clearly perceptible characteristics during riding. So in "Sport" mode the K 1600 GT and GTL are even more dynamic and precise and in "Comfort" mode they are more comfortable - while still retaining excellent stability.

All in all the benefits of ESA II can be summarised as follows:

- Excellent adjustment range in the settings "Sport"/"Normal"/"Comfort".
- Static normal position and ride geometry are optimally preserved in all settings.
- Optimum adaptation of damping and spring rate/spring rest in all settings.
- Significant change of vehicle character through damping adjustment.
- Excellent adaptation to all load states through spring rate/spring rest adjustment.
- Clear increase in safety in terms of braking and ride stability, cornering freedom and bump response.

Brake system with BMW Motorrad Integral ABS (part integral) for optimum deceleration.

The very highest safety standards are met by the brake system with BMW Motorrad Integral ABS in the part integral version, which is fitted as standard.

For even better controllability an additional pressure sensor was integrated in the ABS hydraulic system. In this way, maximum yet controllable deceleration at low levels of control force give the rider additional safety.

Generously sized brake disc diameters of 320 millimetres at the front and rear ensure maximum deceleration capacity even at very high speeds and under heavy loads. In many tests the system has demonstrated its further advantages such as unsurpassed speed of brake pressure build-up and very low control force even on full braking. The current system is among the safest and most effective brake systems on the market.

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. It contributes significantly to a high level of riding dynamics and exemplary riding safety.

Traction control DTC was used in the supersports bike BMW S 1000 RR for the first time: 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 the data collected by the sensor box (banking detection), the BMS-X system detects spin in the rear wheel. In this event the system cuts back drive torque accordingly by reducing the ignition angle, adapting injection and influencing the position of the throttle valve.

Unlike previous BMW Motorrad ASC systems, the traction control system DTC also detects 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 fully harmonised with it so as to provide maximum riding safety (see section 2 "Powertrain").

Although DTC provides valuable support for the rider and therefore an enormous safety bonus when accelerating, just like ABS it cannot redefine the boundaries of physics. It is still possible to exceed these limits by misjudgement or riding error, which in extreme cases can lead to a fall. However, DTC (Dynamic Traction Control) does help the rider make much more effective use of the dynamic potential of the K 1600 touring bike - in particular ensuring greater safety. Nonetheless, DTC (Dynamic Traction Control) can be separately deactivated for special purposes.



4. Electrical system and electronics.

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

With the new K 1600 models, the first ever "Adaptive Headlight" option is available ex works in the motorcycle area as a supplement to the standard xenon headlamp.

The low beam unit fitted as standard in the main headlamp consists of a centrally positioned, movable xenon project module with reflector mirror. Ride height sensors at the front and rear axle provide data for permanent headlamp levelling. Due to the pitch compensation function, the headlamp also sheds light in the optimum set area when the motorcycle is travelling straight ahead, regardless of riding and load conditions.

The optional extra "Adaptive Headlight" also features a servomotor which turns the standard static reflector mirror into a swivel mirror. In relation to the banking angle the mirror is then turned on an axis and compensates for the roll angle of the vehicle. In addition to pitch compensation, the low beam light of the main headlamp is also balanced in relation to the banking angle. The two movements are superimposed, resulting in light being directed into the bend. This produces 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 via CAN bus and used by the traction control system DTC as well as ABS. The complex algorithms used here were developed entirely by BMW Motorrad.

The high beam circular headlamps positioned to the right and left of the xenon module with fibre optic rings give the K 1600 GT an K 1600 GTL a striking "face". And for the first time, BMW Motorrad uses the side lights so characteristic of BMW automobiles.

LED additional headlamp and ground lighting as a special equipment feature ex works.

For even further increased light efficiency, BMW Motorrad offers additional LED headlamps for the K 1600 GT and K 1600 GTL which are mounted at the side below the fairing (K 1600 GTL special equipment feature ex works; available for both models as a special accessory). In addition to improved illumination of the road, the combination of xenon headlamp and LED additional headlamps also gives the K 1600 models a distinctive, unmistakable front view at night. Another highlight is the ground lighting, available as a special accessory. When the remote control is activated for central locking (option) and the ignition key is removed, the lights remain on for a certain period of time.

New vehicle electrical system with partitioning of functions for even greater flexibility.

The BMW K 1600 GT and K 1600 GTL are the first BMW motorcycles to be fitted with the new 2010 vehicle electrical system. It is based on the previous system but features a modified partitioning of functions.

As before, it offers significantly reduced wiring as compared to a conventional system by means of CAN bus technology (Controller Area Network). Within this network, information is only relayed via a single signal path. This also reduces the potential error sources that may occur in conventional vehicle electrical systems due to the quantity of wiring and the numerous plug connectors - a key factor in ensuring all-round reliability.

As part of the further development process in creating the 2010 vehicle electrical system, the existing central frame and suspension electronics were divided into three separate control units. One control unit performs all the basic functions to be found in every BMW motorcycle.

Over and above this there are so-called functional satellites which take care of the specialised functions. For example there is a second control unit for all functions specific to touring bikes such as windshield adjustment, seat heating and the additional headlamp, while a third control unit comprises all ESA II functions. This partitioning of functions provides a high degree of flexibility and allows the simple extension and adaptation of functions in the future.

Communication network and central diagnosis.

Including the alarm system, ABS and DTC there are a total of 16 control units which form a communication network in which data can be exchanged. This means a simple, comprehensive diagnosis of the entire system can be carried out centrally. The electronic system filters out unimportant data and interference signals within a defined tolerance and makes the system largely impervious to disruption such as electromagnetic interference. The digital engine electronics control unit (BMS-X) is not only responsible for engine control as described in the "Powertrain" section but also relays all data to the workshop diagnosis device.

Electrically adjustable windshield with electronically controlled anti-trap mechanism.

The electrical windshield adjustment with memory function is controlled from the functional satellite and for the first time has an electronically controlled anti-trap mechanism. The system monitors the current intensity of the servomotor. If the current intensity increases before the windshield has reached its final position, the windshield automatically retracts. This prevents trapping between the windshield and upper fairing section. At the same time, when it is lowered the windshield acts as an anti-theft guard for the optionally available navigation system BMW Motorrad Navigator IV.

Extended tyre pressure control (RDC) with gradient monitoring.

For use in the K 1600 GT and K 1600 GTL, RDC (tyre pressure control) - optionally available ex works - has now been fitted with a new, lighter and more compact receiver control unit and new wheel sensors. In addition to the existing warning threshold for tyre air pressure, the new control unit also enables gradient monitoring.

For example a marked pressure loss occurring even before the critical threshold point is reached results in a warning being activated, thus offering even greater safety in this area.

Electronic immobiliser (EWS) for top-level anti-theft protection.

The K 1600 models are fitted as standard with an electronic immobiliser (EWS). Controlled by a transponder integrated into the key, thiefproofing is activated at the same level as that of BMW automobiles. When the ignition

key is inserted in the ignition lock and the ignition is switched on, a ring aerial integrated in the ignition lock allows a chip in the key to communicate with the digital engine control where the EWS algorithms are stored.

By means of a so-called "Challenge Response Procedure" (the engine control unit issues a randomly generated figure - the "challenge" - and the ring aerial and key answer with the required match - the "response" - so as to authenticate identity), there is an exchange between the coded chip data and the EWS data which is subject to continuous change. If the responses of the ring aerial corresponds to the "questions" asked, the engine control unit releases the ignition and fuel injection and the vehicle can be started.

Central locking in conjunction with alarm system (DWA) for maximum comfort and thiefproofing.

Additional safety over and above the standard immobiliser is provided by the central locking system available as an option ex works in conjunction with the alarm system (DWA - also optional ex works). Here the locks of the storage compartments, panniers and topcase are electrically opened and locked. The central locking is activated via a switch on the handlebars or by means of a newly designed remote control.

Extended electrical switch units.

The new generation of switch units familiar from the K and S series is used in the K 1600 models. These switch units are very small and compact and feature a high degree of functionality, a clearly structured design and optimum reachability.

The function for the left and right direction indicators are clustered on the left-hand side of the handlebars. The hazard warning flashers are activated via a separate, clearly visible switch at the top of the left-hand handlebar fitting. The functions for low beam, high beam and headlamp flasher are combined in a switch which is located near the left index finger for convenient access.

The functions for starter and kill switch are conveniently combined in a rocker switch. If the kill switch is activated by mistake, this prevents the starter from being triggered when the ignition is not switched on, thereby discharging the battery.

There are five settings for grip heating and rider seat heating which are selected using the Multi-Controller. The seat heating for the pillion passenger is activated by means of a switch placed to the left of the seat for convenient access. This enables individual activation of the heating by the passenger independently of the rider. The status display for the heating elements is shown by means of symbols in the TFT colour display in the instrument panel.

LED rear light in clear glass look.

The BMW K 1600 GT and BMW K 1600 GTL are fitted with an LED rear light in the clear glass look. The use of LED technology instead of conventional filament bulbs guarantees error-free and maintenance-free operation and significantly extends lifetime.

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

The instrument panel of the K 1600 models comprises two classic circular instruments for speedometer and tachometer and a 5.7-inch TFT colour display. The design of the information display is also completely new in the motorcycle field. Among other things it enables the attractive presentation of text and graphics over several lines and offers a high level of light density. The entire instrument unit is controlled by a photovoltaic cell and automatically adapts to environmental brightness, ensuring excellent readability.

Another world first in the motorcycle field is the Multi-Controller as part of an integrated operating concept, first introduced in the BMW R 1200 RT at the end of 2009. 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. Operation is carried out by turning up and down as well as toggling to the left/right. Unlike a key pad, this means that it is possible to activate the controls 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 display. This means that the on-board computer, ESA II, the navigation system and the 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 adaptation of the xenon headlamp to riding on the right-hand or left-hand side of the road.

The menu structure has been specially developed for the particular demands of motorcycling and optimised based on user tests. For reasons of safety, flat hierarchies are used to do away with the need for complex clicking through sub-menus during travel. During travel the number of functions which can be controlled are reduced even further. The rider has the option to program his or her most important function onto a bookmark button, providing direct access to this menu (e.g. navigation system) at all times. This made it possible to reduce the large numbers of buttons as compared to competitor solutions to a reasonable level while at the same time improving operating convenience.

Audio system with extended range of functions.

The audio system itself has also been newly conceived. It provides interfaces for MP3 players, iPod and USB stick as well as for conventional audio devices via an AUX input. These are housed to the right in the fairing and are available for the K 1600 GT as a special equipment feature ex works, while the K 1600 GTL has them fitted as standard. With USB/MP3 and iPod it is possible to manage a number of playlists by artist, genre etc. Alternatively, all titles can be played randomly. The selected volume level and current title are shown on the TFT colour display. The external devices can be housed in a lockable, waterproof 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 radio control panel with just four buttons.

The radio function features a double tuner which permits continuous station updates. An auto store function allows twelve stations to be saved automatically. Another twelve stations can be stored manually by the rider. If desired, traffic news can be relayed even when listening to non-TMC stations. The version for the USA and Canada also includes the satellite radio Sirius XM. The current channel is shown on the TFT colour screen. 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).

The Bluetooth function of the audio system allows audio, telephone and navigation signals to be transmitted to rider and passenger helmet speakers. A special comfort feature is also offered by the Multi-Controller: the volume of the helmet speakers can be controlled without taking one's hands away from the handlebars.

Navigation system integrated into 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 and preparation for navigation unit", "Preparation for audio system and navigation unit" or "Preparation for navigation unit", available ex works for the K 1600 GT (the K 1600 GT is fitted as standard with the audio system and navigation unit preparation). This means that the most important functions such as zoom or voice instruction can be operated using the Multi-Controller, so the rider's hands can stay on the handlebars.

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 individually adjustable residual range has been reached. The TMC data of the audio platform also enables dynamic routing so as to avoid congested traffic. Voice instructions from the BMW Motorrad Navigator IV can be played through the audio platform if desired.

The navigation unit can be left in the vehicle when it is parked: the windshield provides reliable thiefproofing when lowered. Alternatively the BMW Motorrad Navigator IV can be removed and used for route planning or as a city guide.



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, creating a desire to travel at first sight. Striking lines and surfaces and the visibility of the 6-cylinder engine radiate a powerful sense of dynamic performance, with a perfect finish vouching for premium value and quality.

The front view includes elements of the overarching 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 6-cylinder engine, thus conveying an agility and dynamism which is very much in keeping with their proactive riding character.

The trim has been deliberately broken down into individual sections so as to create an impression of lightness. This effect is also enhanced by the various colour concepts as described in section 7 "Paint finishes".

The rear view is dominated by the two rear silencers. Their signature feature is the group of three vertically arranged openings which provide a reference to the 6-cylinder engine.

The dynamic design of the K 1600 GT and K 1600 GTL includes numerous technical innovations for even greater functionality, comfort and riding fun:

Powerful visual presence with perfect wind and weather protection.

Particular attention was paid during development to the combination of innovative design, excellent wind and weather protection and the very highest level of functionality. A good example of this is the electrically adjustable windshield with memory function.

The aerodynamic qualities in terms of reduced air swirl - especially in the pillion passenger area - were developed by means of sophisticated wind tunnel tests.

The windshield performs an additional function as an anti-theft system for the optional accessory navigation system BMW Motorrad Navigator IV (described in detail in section 4 "Electrical system and electronics"). For reasons of safety it is also fitted with an anti-trap mechanism.

The K 1600 GTL has the slightly higher comfort windshield as standard (available for the K 1600 GT as a special accessory). This provides both rider and passenger with maximum wind protection combined with excellent aero-acoustic properties.

The characteristic BMW Motorrad "split face" divides the fairing top section into two halves when viewed from the front and, in conjunction with the striking headlamp unit, makes for a high level of recognisability. This "split face" motif is also reflected in the "twin tip" engine spoiler and gives the machine a light, dynamic touch in this area.

The K 1600 GTL emphasises the theme of luxury in its visual details, too. For example the type badge is designed as a chrome fin on the fairing side panels, an effect which is continued in a chrome strip on the panniers. Discreet chrome features at the appropriate points perfectly round off the image of modern luxury conveyed by the K 1600 GTL. These range from the windshield mount covers and slipstream deflectors to the handlebar weights, decorative elements on the panniers, the topcase fairing panel and the rear silencers.

Lightweight construction: magnesium front panel carrier.

The upper trim section, headlamp, cockpit and rear mirror are all supported by a highly rigid front panel carrier. With the aim of achieving optimum concentration of masses near the machine's centre of gravity, this dual section front panel carrier, weighing less than 2 kilograms, is made of a very light but highly rigid magnesium alloy.

Optimum storage concept and central locking.

In keeping with their dynamic aspirations in terms of touring capabilities, both K 1600 models have standard panniers which are designed to be removable but still fit in the vehicle line seamlessly as design elements. With the aim of achieving maximum lightness, both panniers are single-shell but without any compromise in terms of rigidity, endurance strength or waterproofness.

The aerodynamic fine-tuning of the K 1600 GT and K 1600 GTL is also reflected in the fin integrated in the outer pannier shell which creates a backflow air stream and improves the aerodynamic quality of the vehicle as a whole. It also ensures reduced soiling of the vehicle rear when riding in the rain.

Additional storage space is provided by two waterproof compartments integrated in the side of the interior trim. The panniers, the 49-litre topcase and the storage compartments can all be opened and closed not only by using the mechanical locking system but also via the central locking system (optional ex works). This system is activated either by remote control or by pressing a button on the vehicle itself.

The K 1600 GTL is fitted as standard with a topcase featuring two gas-filled dampers which support opening, as well as interior lighting. The backrest of the topcase is very generous with a markedly comfortable design while the upholstery on the K 1600 GT is sportier in style. Due to the more sumptuous upholstery, the topcase of the K 1600 GTL is positioned 30 millimetres further back and requires a different luggage carrier centre section for attachment. For both types, mounting is reliable, simple and convenient by means of a turning mechanism. As a special accessory the topcase can be fitted with an integrated second brake light.

Aerodynamically optimised, down the last detail.

The two rear mirrors also contribute to the vehicle's visual lightness and dynamism. They are not integrated in the fairing but linked to the magnesium front panel carrier via an aerodynamically designed arm. Here again, importance was attached in formal design to optimum function in conjunction with visual lightness and dynamism.

Thanks to the long stabiliser arm they offer an excellent view to the rear and for reasons of space - for example when parking in a garage - they have been designed to be foldable.

Another overarching design feature of many BMW motorcycles which is also to be found in the new 6-cylinder touring bikes are the "floating panels" - fairing side sections finished in body colour. The visual separation of these "floating panels" is combined with a dynamic line which continues on upwards to the rear section. This also supports a much lighter and more dynamic style than is commonly found in touring motorcycles. The aerodynamic qualities and the aspiration to dynamic design are also enhanced by the front direction indicators in LED technology, which are fitted smoothly into the fairing side sections.

Other aerodynamic developments are to be seen in the two slipstream deflectors integrated on the left and right of the fairing top section. If necessary they can be folded outwards, thereby generating a clearly perceptible air stream in hot temperatures, even at low speeds. In the K 1600 GT these are finished in contrasting colours whereas in the K 1600 GTL they are finished as chrome parts.

Innovative cockpit in refined style providing clear readability.

Dynamic performance, functionality and innovative design are also the defining characteristics of the instrument panel in the K 1600 models. The speedometer and tachometer each feature a scale which is designed as a so-called arena and not in the usual flat format. The lighting also creates a solid impression, especially when riding at night, which provides excellent readability since each scale marking is illuminated separately .

The speakers of the audio system and the TFT colour display have been integrated in the design of the cockpit. Accentuations in white aluminium metallic matt around the two tweeters and under the two woofers provide further variation of the surface.

High-quality elements such as the display surround in stainless steel and the contrasting paint finish in Magnesium metallic matt round off the picture.

The high-quality impression is underscored by the handlebars in forged aluminium.

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

The new K 1600 GT and K 1600 GTL benefit from a very slim-line 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 narrow 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 ergonomic triangle from the position of the footrests, seat top and handlebars makes for a proactive seating position in the K 1600 GT while still 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 1600 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, dual-level seat. 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 also benefits from a slightly longer and wider seat top on the K 1600 GTL, as well as a more 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.

Both for 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. An exact listing of the various possible seat heights is to be found in section 6 "Equipment program".



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 the standard trim. In addition, BMW Motorrad offers its usual extensive range of special equipment features and special accessories for further individualisation.

Special equipment features are supplied directly ex works and are integrated in the production process. Special accessories are installed by the BMW Motorrad dealer.

These are features which can also be retrofitted.

Special equipment features.

- ESA II (Electronic Suspension Adjustment II).
- Dynamic traction control DTC.
- Adaptive Headlight.
- Tyre pressure control RDC.
- Central locking (only in conjunction with alarm system DWA).
- Alarm system DWA (only in conjunction with central locking).
- LED additional headlights (K 1600 GTL).
- Seat, high, single-section 780mm (K 1600 GTL).
- Rider seat, low, 780/800 mm incl. pillion passenger seat (K 1600 GT).
- Audio system and navigation unit preparation (K 1600 GT)

- Preparation for audio system and navigation unit (K 1600 GT)
- Preparation for navigation unit (K 1600 GT)

Special accessories.

Storage program.

- Topcase in body colour, 49 l (K 1600 GT).
- Impact guard for panniers, 4-section.
- Liners for pannier and topcase.
- Storage compartment for topcase.
- Tank bag, waterproof (K 1600 GT).

Ergonomics and comfort.

- Comfort footrests. (K 1600 GT).
- Comfort windshield, large (K 1600 GT).
- Windshield high, narrow (K 1600 GTL).
- Pillion passenger armrests, foldable (K 1600 GTL).
- Seat, single-section, 750 mm (K 1600 GT only).
- Seat, single-section, 780 mm (K 1600 GT only).
- Rider seat, 810/830 mm incl. pillion passenger seat (K 1600 GTL).
- Rider seat, 780/800 mm incl. pillion passenger seat (K 1600 GTL).

Design

- Slipstream deflectors, chrome (K 1600 GT only).
- Windshield mechanism trim panel, chrome (K 1600 GT only).

- Coolant hose trim panel, chrome (K 1600 GT only).
- Topcase lid trim panel, chrome (K 1600 GT only).
- Chrome strips for pannier (K 1600 GT only).

Safety.

- Second brake light (LED) for topcase.
- LED additional headlamp.
- Ground lighting (only in conjunction with central locking)
- Engine protection bars.

Technology.

- Sports silencer Akrapović.
- BMW Motorrad Navigator IV.
- iPod adaptor cable.
- 3rd on-board charging socket.

7. Paint finishes.

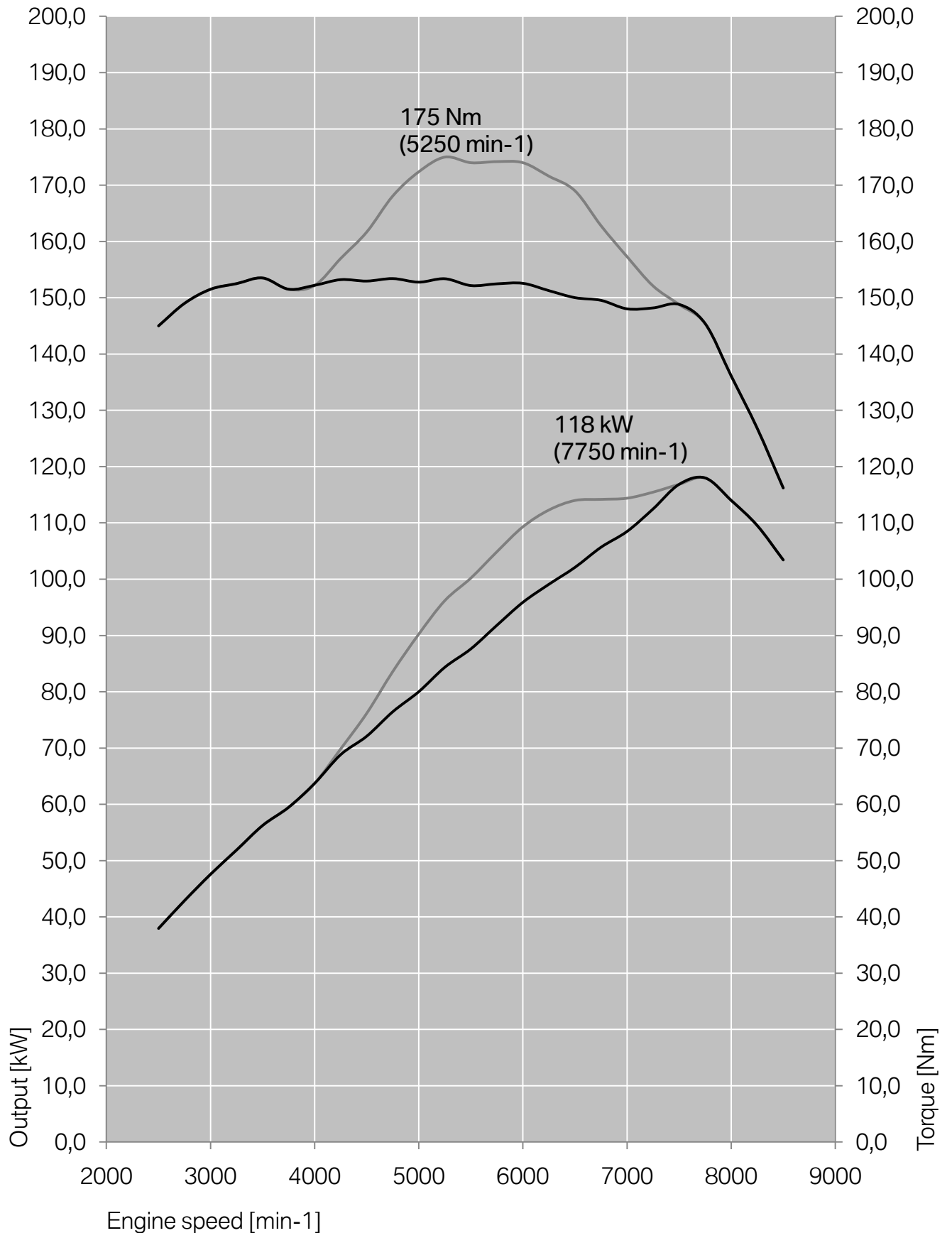


As touring bikes, the new BMW K 1600 GT and K 1600 GTL represent the perfect synthesis of supremacy, dynamic performance and comfort. This is also reflected in the colouring of the two models.

Conceived as a supreme, proactive touring bike, the K 1600 GT deliberately makes use of contrasts and a dynamic impression in its colouring. The two main colours available for the body, Vermilion Red metallic and Light Grey metallic, provide an exciting and vivid contrast to the engine in Platinum metallic matt. Another striking contrast with the body colours is to be seen in the Ostra Grey metallic of the frame and wheels as well as other fairing parts.

The aspiration of the K 1600 GTL in terms of comfort, equipment and prestige is also reflected in its colour concept, which offers a powerful presence and an elegant sense of overall unity. Mineral Silver metallic or Royal Blue metallic 2 provide a perfect match for the Platinum metallic matt of the engine and for the frame and trim parts and wheels in Magnesium metallic matt. The premium positioning of the K 1600 GTL is highlighted by its colouring as well as surface details such as refined chrome parts.

8. Engine output and torque.



9. Technical specifications.



		BMW K 1600 GT	BMW K 1600 GTL
Engine			
Capacity	cc	1649	
Bore/stroke	mm	72/67.5	
Output	kW/bhp	118/160.5	
at engine speed	rpm	7 750	
Torque	Nm	175	
at engine speed	rpm	5 250	
Type		in-line	
no. of cylinders		6	
Compression/fuel		12.2:1 / premium unleaded (95 RON)	
Valve/accelerator control		bucket tappets	
Valves per cylinder		4	
Ø intake/outlet	mm	29/24.8	
Throttle valve diameter	mm	52	
Carburetion		BMS-X	
Electrical system			
Alternator	W	580	
Battery	V/Ah	12/19	
Headlamp		xenon low beam	
		halogen high beam	
Starter	kW	0.7	
Power transmission - gearbox			
Clutch		multiplate wet clutch, hydraulically activated	
Gearbox		constant-mesh 6-speed gearbox, helical-toothed	
Primary ratio		1.617	
Gear transmission ratio	I	2.23	
	II	1.641	
	III	1.319	
	IV	1.101	
	V	0.926	
	VI	0.788	
Rear wheel drive		bevel gear	
Transmission ratio		2.75	
Chassis			
Frame construction type		main frame: chill-cast rear frame: aluminium, extruded sections	
Wheel control, front wheel		dual longitudinal control arm	
Wheel control, rear wheel		Paralever (single-sided swing arm), central spring strut, rebound/continuously variable	
Spring travel, front/rear	mm	115/135	
Wheel castor	mm	106.4	
Wheelbase	mm	1618	
Steering head angle	°	62.2	

		BMW K 1600 GT	BMW K 1600 GTL
Brakes	front	two-rotor disc brake, Ø 320 mm, radial 4-piston fixed caliper	
	rear	single-disc brake Ø 320 mm, 2-piston fixed caliper	
ABS		BMW Motorrad ABS (partial integral)	
Wheels		aluminium cast wheels	
	front	3.50 x 17"	
	rear	6.00 x 17"	
Tyres	front	120/70 ZR 17	
	rear	190/55 ZR 17	
Dimensions and weights			
Total length	mm	2324	2489
Total width with/without mirrors	mm	1000/980	
Seat height (without rider)	mm	810-830 (standard)	750 (standard)
		780-800 (option rider seat incl. pillion passenger seat)	780 (option seat, single- section)
		750 (special accessory seat, single-section)	780/800 (special accessory rider seat)
		780 (special accessory seat, single-section)	incl. pillion passenger seat)
Unladen weight, incl. 90% fuel	kg	319 (without pannier)	810/830 (special accessory rider seat incl. pillion passenger seat)
			348 (incl. pannier, topcase)
Permitted total weight	kg	540	560
Fuel tank capacity (l)	l	24	26.5
Performance figures			
Fuel consumption			
90 km/h	l/100 km	4.5	4.6
120 km/h	l/100 km	5.7	5.9
Acceleration			
0 – 100 km/h	s	3.2	3.4
0 – 1000 m	s	21.4	21.8
Max. speed	km/h	> 200	> 200