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**2004 5 Series:
New generation of BMW's legendary midsize sport sedans**

Woodcliff Lake, New Jersey, September 2, 2003...For seven model years, the 4th-generation BMW 5 Series – BMW internal code E39 – has won virtually universal praise from critics and customers alike. Remarkably, even during its final calendar year, BMW's "middle Series" defied convention by achieving higher U.S. sales than in the previous year; perhaps even more remarkably, as recently as June '03 it was still going strong, with sales running fully 25.8% higher than in June '02. This doesn't "just happen" with a car line approaching the end of its production life; instead, it reflects the soundness of this Series' concept and execution.

The E39 5 Series has been a truly remarkable automobile. Its awards never stopped coming: "Best Luxury Sedan under \$40,000" (525i, *Automobile Magazine All-Stars*, February '02)...10Best (*Car and Driver*, January '02)... "Still the textbook definition of 'midsize sport sedan'" (*Motor Trend*, February '02...honored in Strategic Vision's new Total Delight awards for 2003, just to name of few of its more recent garlands.

Thus the 5 Series as we've known it recently was truly a tough act to follow. But BMW knows how to follow tough acts; the new 5 Series – internal code E60 – proves this once again. Beginning with July '03 production, three new 5 Series models will be phased in to form the new-generation 2004 5 Series.

Excitingly new, yet true to the 5 Series tradition

Following the '02 debut of the new 7 Series and '03 launch of the Z4 Roadster, the new 5 takes BMW's "new look" to another vehicle category; yet upon the very first glance one knows that this is a BMW 5 Series.

Also in the BMW tradition, this is not merely a new look. For one thing, the new 5 is a roomier car: Riding on a wheelbase 2.3 inches longer than before, these new Sedans are 2.6 in. longer and 1.8 in. wider than their predecessors, as well as 1.3 in. taller. These dimensional gains result in greater rear seating space and comfort; entry into the rear seating compartment is easier, and there's fully 26% more trunk space.

And yet the new 5 preserves the trim look and driving feel, the maneuverability and agility that have always been a core value of the 5 Series. Contributing to this achievement is an all-aluminum front-end structure that allows the size increase, comfort and safety advances, and enhanced feature content with actual model-for-model decreases¹ in overall vehicle weight..

The new Series consists of three models, each powered by its specific engine. The **525i Sedan** (\$39,995 including destination charge) continues with the engine of its predecessor, the responsive and fuel-efficient 2.5-liter, 184-horsepower inline 6-cylinder unit that belies any thought of "entry-level" status; its production begins in September '03. The **530i Sedan** (\$44,995), whose production begins in July, again offers a step up in 6-cylinder power (3.0 liters, 225 hp) and additional standard equipment over the 525i. And the **545i Sedan** production begins September) derives its new model designation from the remarkable Valvetronic engine first introduced in the 7 Series: a 4.4-liter V-8 delivering 325 hp. That's up 35 hp from the previous 540i, which was still being acclaimed for its performance and sound toward the end of its tenure.

Each model is available with a choice of three transmissions, all 6-speeds: manual, STEPTRONIC automatic and a Sequential Manual Gearbox (SMG)². Each is available with a wide range of optional Packages and stand-alone options, many of them new and innovative. The 545i is actually offered in two versions: **545i** with the 6-speed

¹ – For most models.

² – Delayed availability; requires Sport Package.

automatic transmission and luxury-oriented equipment (\$54,995) and **545i 6-Speed** with the 6-speed manual transmission and Sport equipment (\$57,600). It is on this latter version of the 545i that the SMG is available.

And every new 5 Series offers, as either standard or optional equipment, innovative new technology – including the unique and patented Valvetronic engine concept, Active Roll Stabilization, Xenon Adaptive headlights, Adaptive brakelights, run-flat tires, an evolved iDrive driver/vehicle interface, a Head-Up Display, Active Cruise Control and BMW's unique Active Steering.

Under the aluminum hood: a choice of velvety 6-cylinder or V-8 power

Up front in each new 5 Series model is a powertrain that brings together exciting and effective new combinations and significantly advances BMW's state of the art.

Going into their new generation with unchanged model designations, the **525i** and **530i** are powered by the familiar 2.5- and 3.0-liter versions of the M54 inline 6-cylinder engine, a BMW hallmark as well as a never-ending source of critical praise and owner satisfaction. In its January '02 bestowal of the annual 10Best awards, *Car and Driver* described these units as BMW's "magical six-cylinder powertrains that spin with velvety smoothness while delivering thrust completely out of proportion to their size."

Though their official power and torque ratings are unchanged, both "sixes" incorporate new intake and exhaust system fine-tuning to enhance response at low to medium speeds. The 525i engine delivers 184 hp, 175 lb-ft. of torque and a 0-60-mph time of 7.8 seconds with the newly standard 6-speed manual transmission, and 8.2 sec. with the also new 6-speed automatic; with its 225 hp and 214 lb-ft. of torque, the 530i achieves a 0-60-mph time of just 6.6 sec. with manual transmission, 6.9 with automatic.

Both these engines include many notable engineering features:

- **Inline 6-cylinder configuration**, for outstanding smoothness and sound
- **Aluminum construction**, contributing to both overall vehicle weight efficiency and BMW's typical optimum front/rear weight distribution
- **Dual overhead camshafts and four valves per cylinder**
- **Chain camshaft drive**, requiring no periodic replacement

- **Double VANOS**³ steplessly variable valve timing
- **Hydraulic valve adjustment** for consistently quiet operation and low maintenance
- **Electronic throttle system** for smooth, precisely calibrated throttle action
- **Electronically controlled engine cooling**, for precise and purposeful control of engine temperatures; contributes to fuel efficiency and heater effectiveness
- **ULEV II status** – meeting Ultra Low Emissions Vehicle standards, an advance over the previous versions of these engines.

545i is a new model designation; its “uprating” comes from the new engine, the N62 unit that made its debut in the 7 Series V-8 models.

Though the V-8’s 4.4-liter displacement is unchanged from the previous M62 engine, virtually everything else about it is new. It develops a greater “punch of power”: At 325 hp, a full 35 hp more than its predecessor. With the 6-speed manual transmission, official BMW data indicate a 0-60-mph time of just 5.7 sec.; with the automatic, the 545i comes within just a fraction of a stopwatch tick at 5.8 sec.

Equally remarkably, the 545i models can be expected to achieve higher fuel efficiency as well. Official EPA ratings aren’t available yet, but this new engine lifted the V-8 7 series from 17/23 mpg (’01 740i) to 18/26 (’02 745i) despite greater vehicle weight in ’02. How BMW achieved these remarkable results is unique and fascinating:

Valvetronic: revolutionary new “breathing” concept. Many engines now have variable valve timing, including all of BMW’s. Some also vary valve lift. Valvetronic varies lift – but to a far greater, more fundamental degree than any other system. Indeed, engine breathing is controlled entirely by the valves, and the traditional throttle simply goes away.

The Valvetronic mechanism sits atop the intake valves on both of the V-8’s cylinder banks. Each of the engine’s 32 valves is actuated as the camshaft lobe deflects a finger-type rocker arm. On the intake side, there is an added element between the cam lobe and rocker arm, an intermediate follower.

³ – **VANOS = V**ariable **N**ockenwellen **S**teuerung = variable camshaft control, or variable valve timing.

Upon contact by the camshaft lobe, this follower actuates the rocker arm and, in turn, the valve. The follower is held in place by an eccentric shaft that can be rotated by a small servo motor. This shaft, which rotates in response to the driver's accelerator-pedal movements, determines the intermediate follower's pivot point and thus varies the valve lift. The system's highlights:

- **Intake valves assume function of throttle.** The driver's foot gives the commands; valve lift varies accordingly. At minimum lift, the engine is idling or decelerating; at maximum lift, it produces full power.
- **Greater efficiency.** As a throttle closes, it imposes a restriction that incoming air must snake around. This causes so-called "pumping losses," which take an increasing portion of engine power in lower-speed driving. By eliminating the throttle(s)⁴ and letting the valves control the breathing, Valvetronic essentially eliminates pumping losses.
- **More spontaneous engine response.** Drivers are impressed by how spontaneously and quickly the engine responds to the accelerator pedal.
- **More power.** Valve lift is tailored precisely to operating conditions, and is extra-high at the top end. This helps the N62 engine achieve high power.
- **Refined engine operation.** In light-load driving, operation is especially smooth because of the relatively small valve lift of 0.5 to 2 millimeters.
- **Excellent cold starting.** The small valve opening promotes effective vaporization of fuel, even when the engine is being started from cold.
- **No mechanical throttle linkage.** With Valvetronic, "drive-by-wire" is even more natural than with a conventional throttle: Via the accelerator pedal, the driver's call for power is transmitted electronically to the eccentric shaft's electric servo motor.
- **Stepless variation of valve lift.** Valve lift is varied continuously and smoothly all the way from minimum to maximum lift.
- **Lightning-fast system response.** The system can vary lift all the way from minimum to maximum in just 300 milliseconds, or 0.3 sec. To achieve this, BMW developed a dedicated Valvetronic microprocessor, which networks with the 40-megahertz/32-bit primary engine computer.
- **Low friction, precision components.** There are no "rubbing points" in the Valvetronic mechanism. Instead, low-friction rollers transmit the motion: from cam

⁴ – **Actually there is an auxiliary throttle, for certain specific functions only: as a fail-safe measure for the unlikely event of Valvetronic malfunction; for diagnostic purposes; to control fuel-tank ventilation; and to improve cold starting. Under virtually all normal operating conditions, this throttle is open.**

lobe to intermediate follower, from intermediate follower to rocker arm, from eccentric shaft to intermediate follower. The follower itself is a precision casting, machined to virtual perfection. To ensure quiet operation, zero valve clearance is maintained hydraulically.

Double VANOS. Responding to operating conditions and the driver's demands for power, Double VANOS rotates the intake and exhaust camshafts steplessly between "earliest" and "latest" valve timing. In combination with Valvetronic, this variable valve timing helps achieve new levels of performance, efficiency and general operational excellence.

Fully variable intake manifold: another major new technology. The 525i and 530i engines employ 2-stage intake manifolds, with a flap mechanism that switches between two paths for air entering the engine: one tuned for low- to medium-speed operation (improving torque and response), the other for high-speed operation (improving top-end power).

For the N62 engine, BMW engineers conceived an system with two intertwined helical elements which, rotated by an electric servo motor, vary the effective intake length steplessly. Like Valvetronic and stepless Double VANOS, this manifold concept eliminates traditional compromises to achieve truly optimum performance.

The proof is in the driving: media praise. All this ground-breaking technology pays off in real-world performance, as media critics have found in their tests of 745 models with this engine:

- *Road & Track*, June '02: "With all this neat technology you'd expect this N62 engine to be excellent, and it is. The new 7's V-8 responds instantaneously to the driver's right foot as it delivers dose after dose of pure unadulterated acceleration."
- *Car and Driver*, January 2002: "This 325-hp Valvetronic V-8 is nothing short of magnificent. Smooth and silent at idle and cruising speeds, it sings a lovely muted tenor note on the boil. And it flat gets up and flies, the transmission handing off from one cog to the next as seamlessly as an Olympic relay runner."

Transmissions: three choices for each model, all 6-speeds

All transmissions for the new 5 Series are brand-new; every one is a 6-speed.

6-speed manual, 525i and 530i. This new 6-speed enhances the performance and driving pleasure of the new 6-cylinder models. Weighing no more than the previous 5-speed, the ZF Type H transmission offers –

- New, even more effective synchronization of shifting
- Lighter and more pleasing feel as the shift lever is moved from gear to gear
- Sportier shift action, via 10-mm (0.4-in.) shorter shift “throws” from neutral to each gear.

Compared to the previous 5-speed, the 6-speed’s internal ratios for 1st through 5th gears are approximately the same; the major gearing difference is 6th gear, which provides an 0.85:1 ratio for a relaxed cruising feel and satisfying fuel efficiency.

6-speed, 545i. The new 5 Series V-8 model is again among the few 8-cylinder automobiles available with a 6-speed manual transmission. A new 6-speed makes its first appearance here. It shares all the operational advances of the Type H, and is lighter than the previous 6-speed.

6-speed automatic, all models. The 545i’s 6-speed automatic is essentially the same 6 HP 26 unit first seen in the new 7 Series. Like all other current BMW models, it incorporates STEPTRONIC, with Manual and Sport modes; this is a departure from the previous 540i unit, which had the STEPTRONIC feature only in combination with the optional Sport Package. The 5 Series has a traditional mechanical shift lever on the console, with the familiar P-R-N -D ranges on the right, an M/S gate on the left, and up-and downshifting by tipping the lever rearward and forward.

The six speeds complement the Valvetronic engine’s wide rpm range, facilitating a virtually seamless flow of power, and providing a highly relaxed 6th gear for cruising at Interstate and freeway speeds.

Brand-new is a 6-speed automatic for the 6-cylinder models too: the **ZF 6 HP 19**. Derived from the 6 HP 26 and providing the same gear ratios, this unit is sized for smaller engines; compared to the 5-speed unit it replaces, it’s fully 10% lighter, has a more efficient torque converter, operates with fewer internal clutches than the 5-speed, and can reduce overall fuel consumption.

6-speed Sequential Manual Gearbox (SMG), all models. Yet another new 5 Series feature. To be offered at a later date (only in combination with Sport Package), the E60's SMG is similar to that offered in the Z4 Series, rather than the BMW M version with the more elaborate Drivelogic shift-control system.

Like all BMW SMG units, this is an electrohydraulically shifted, electronically controlled rendition of a 6-speed manual transmission, including an automatic clutch; as such it is an utterly different type of transmission from a conventional automatic such as the STEPTRONIC unit. There is no clutch pedal; the driver selects the desired mode (N, R, D) with a console-mounted selector lever, and can execute manual shifts via that lever or two "paddles" on the steering wheel. The fundamental advantages of SMG are that it fully preserves the performance of a manual transmission, entails little penalty in fuel economy, and facilitates both automated and very sporty driving.

Features and characteristics of the SMG driver interface include the following:

- A **Drive** mode (D) in which shifting is automated
- A **Manual** mode (M) in which shifting is mostly driver-controlled
- A **Sport button** on the console, which selects a Sport program
- An **instrument-panel display** of the gear currently engaged and the operational range currently selected.

In D, shifts are automatic, and programmed according to how the driver is currently driving: More aggressive driving results in shift points at higher speeds. D is not to be interpreted as a substitute for the Drive range of a fully automatic transmission, but rather a convenient operational mode for those times when the driver wants ease of driving and is not primarily concerned with extracting maximum performance.

In the Manual mode, operation is driver-initiated –

- Tip lever rearward or actuate right-hand paddle = upshift
- Tip lever forward or actuate left-hand paddle = downshift

– with the following exceptions:

- If the driver takes the engine up to its rpm limit, SMG will automatically shift to the next higher gear.
- Upon deceleration, as the engine comes down to approximately 1100 rpm, SMG selects the next lower gear. When the vehicle comes to a stop, SMG selects 1st gear automatically; upon moving off, however, the driver again controls the shifting.

Engaging the Sport program via the Sport button on the console influences shifting as follows:

- In M, shifts occur more quickly (sharply).
- In D, shifts occur not only more quickly, but at higher road speeds. This is parallel to the Sport mode of BMW automatic transmissions.

In the Sport program, throttle action is also “quicker”; that is, a given amount of movement at the accelerator pedal produces more engine response.

An instrument-cluster display tells the driver which of the six speeds is currently engaged. In D, it also shows a “D.”

In the 545i 6-Speed, SMG makes its first BMW appearance in combination with a V-8 engine.

Aluminum driveshaft. In a new BMW innovation, the driveshaft is aluminum. Saving more than 13 pounds over a conventional all-steel shaft, this does retain steel for essential strength in the bolted connections; BMW has developed a special friction welding technique to bond the steel and aluminum components.

Handling and riding comfort: once again advancing the state of the art

Over its seven-year production cycle, the previous 5 Series was considered by most of the motoring media as one of the wonders of the automotive world. With its rigid body structure, advanced aluminum suspension system and the fine-tuning at which BMW is famously capable, it delivered a combination of handling prowess and supple riding comfort that was the envy of the world’s motor-vehicle industry.

The new 5 Series further evolves this illustrious standing. As always with new BMW vehicle generations, the chassis/body unit’s structural rigidity has been further improved. The aluminum suspension has been further evolved, and a revolutionary new steering system is offered as an option.

Front suspension and steering system: full aluminum suspension, rack-and- pinion steering now on all models

The front suspension system is evolved from that of the previous 6-cylinder models as a virtually full aluminum system teamed with rack-and-pinion steering. (Previous V-8 models had a steel front subframe and recirculating-ball steering.) The system's geometry continues to be of the double-pivot type, a unique BMW system that has proven benefits to handling stability and response. All models benefit from the reduced unsprung weight of aluminum, which optimizes the suspension's response to irregular road surfaces; this allows the suspension engineers to achieve a supple ride in combination with precise, responsive and enjoyable handling.

Aluminum components include the following (those with an asterisk are newly of aluminum in the V-8 models):

Unsprung –

- Both lower arms (two per side)
- Steering knuckles
- Strut tubes

Sprung –

- Spring pads
- Subframe*
- Thrust plate (a new component, similar to that found in M3s and Z4s)
- Steering rack*.

Other aluminum components in this area, though not part of the suspension system, further contribute to overall weight savings: engine mounting brackets, transmission crossmember and mounting brackets, power-steering pump housing.

The adoption of rack-and-pinion steering for all 5 Series models, not just the 6-cylinder models, follows its appearance on the 7 Series in '02 and marks a transition that BMW has carefully phased in. Previously, the more luxurious BMWs used recirculating-ball steering, which transmitted less road shock to the steering wheel but was heavier and somewhat less precise near the straight-ahead position. As of the 5 Series debut, all BMW models now have rack-and-pinion steering.

In this transition, BMW developed rack-and-pinion steering to preserve traditional r&p advantages (light weight, greater precision) while also minimizing the transmission of

road shocks to the steering wheel. The 5 Series' rack-and-pinion system also has the special feature of variable ratio: The rack's teeth are profiled to make the steering ratio become quicker as the wheel is turned outward from its center position. This fine-tunes the steering response according to the situation one is in, be it on a fast straightaway or maneuvering into a parking space.

Active Steering is a revolutionary new development that's included in the Sport Package for each model; it is described in the **options & accessories** section of this release.

**Rear suspension system:
careful evolution of a BMW aluminum multi-link concept**

As at the front, the new 5 Series shares its rear suspension concept with the 7 Series; this is BMW's highly sophisticated multi-link Integral system.

Here, in a continuation of existing 5 Series practice and sharing componentry with the current 7 Series, aluminum is again extensively employed. Because supple reaction of the suspension to bumps is especially critical for good road adhesion of the powered rear wheels, the benefits here are if anything more important than at the front. Aluminum components include:

Sprung –

- Subframe
- Spring pads

Unsprung –

- All links of the 4-link Integral system
- Shock-absorber tubes

The aluminum subframe, which carries the entire rear suspension system and final drive (differential), is mounted to the main structure with four large rubber bushings that help absorb road shocks. The final drive unit is mounted to the subframe through its own rubber bushings. With these two stages of vibration and noise absorption between it and the body, the differential is **acoustically decoupled** from the body, minimizing any gear noise heard inside the vehicle.

Conventional anti-roll bars standard, Active Roll Stabilization optional

In standard form, all models have conventional anti-roll (stabilizer) bars, as always carefully calibrated for an optimum combination of response and stability. BMW's

innovative Active Roll Stabilization (ARS), first introduced on the 7 Series, comes to the 5 Series as part of the Sport Package and makes for amazingly “flat” cornering; it is described in the **options & accessories** section of this release.

**Ventilated disc brakes:
more stopping power and new weight-saving technology**

Compared to the already powerful and fade-resistant brakes of the predecessor Series, the brakes of each new 5 Series model are upsized for even greater braking performance:

- **525i** – 310-mm diameter x 24-mm thickness at the front, vs. previous 1296 x 22 (12.2 x 0.94 in. vs. previous 11.7 x 0.87); 320-mm x 20-mm rear brakes, vs. previous 298 x 20 (12.6 x 0.79 in. vs. previous 11.7 x 0.79).
- **530i** – 324 x 30-mm front brakes (12.8 x 1.18-in.) are unchanged; 320 x 20 rear brakes, vs. previous 298 x 20 (12.6 x 0.79 in. vs. previous 11.7 x 0.79).
- **545i** – 348 x 30-mm front brakes vs. previous 540i’s 324 x 30 (13.7 x 1.18 in. vs. previous 12.8 x 1.18 in.); 345 x 24-mm rear brakes vs. previous 540i’s 298 x 20 (13.6 x 0.94 in. vs. previous 11.7 x 0.79 in.).

All discs are ventilated. On the 6-cylinder (525i/530i) models, their cast-iron rotor construction has been optimized for a modest weight reduction. On the 545i, an innovative weight-saving construction is introduced for the first time on a regular-production BMW. (European M3 and M5 models use similarly constructed brakes.)

In this construction, called **compound brakes** and patented by BMW, the brake rotor consists of two components: the high-carbon cast-iron outer portion, which functions conventionally as the surface onto which the brake pads grip; and an aluminum “hat” in the center, which mounts the rotor to the vehicle. Advantages include:

- **Reduced unsprung weight**, complementing the aluminum suspension system. Actual reductions are approximately 1 kg (2.2 lb.) at the front, 0.7 kg (1.5 lb.) at the rear – very significant in the scheme of things.
- **Reduced rotor deformation** under hard braking, meaning less tendency of the brakes to vibrate when very hot, as when negotiating a steep mountain pass at speed.

All brake calipers are of aluminum, which also reduce unsprung weight; previous V-8 models had cast-iron front calipers. Thus in this respect too, BMW has maintained or

extended its lead in reducing unsprung weight – a lead opened by the predecessor 5 Series that helped set new standards in combining top handling with amazing riding comfort.

Self-adjusting handbrake mechanism

Two refinements to the handbrake mechanism nicely illustrate BMW's attention to details that affect usability and maintenance requirements. One is that the handbrake actuating cable is now self-adjusting, so that adjustment is required less frequently. The other is that the cable mechanism is newly designed to ensure that braking force – which can become unequal between the two rear wheels as wear occurs – is always equal.

Wheels and tires: upgraded all around, two choices for each model

Each model offers a choice of wheel-and-tire equipment: standard and Sport Package. All wheel designs are new, and run-flat tires make their first 5 Series appearance as part of the Sport Packages. Every wheel/tire combination represents an upgrade over previous 5 Series equipment; all combinations are shown in the table on the next page.

Model	Equipment	Wheel size & style # ⁵	Tires
525i	Standard	16 x 7.0 Trapezoid #134 (lightweight forged alloy)	225/55R-16 V-rated all-season
	Sport Package	17 x 8.0 Star Spoke #122	245/45R-17 W-rated run-flat performance
530i	Standard	17 x 7.5 Star Spoke #138	225/50R-17 V-rated all-season
	Sport Package	18 x 8.0 Star Spoke #123	245/40R-18 W-rated run-flat performance
545i	Standard	17 x 7.5 Double Spoke #116	225/50R-17 V-rated all-season
	Sport Package	18 x 8.0 front/ & 6-Speed	245/40R-18 front/ 275/35R-18 rear
	model	18 x 9.0 rear Star Spoke #124	W-rated run-flat

⁵ – Each BMW wheel has a Style Number that helps identify it among BMW's large selection of factory-equipped and aftermarket wheels.

performance

Run-flat tires with all Sport Packages

In their design and configuration, the self-supporting tires are distinguished primarily by their special sidewalls, which include specific inserts and highly heat-resistant rubber compounds. These features allow a deflated tire to maintain its essential shape and guidance characteristics for a considerable distance, so that when confronted with a flat the driver can continue on until reaching a convenient and safe place to have the tire repaired or replaced.

Flat Tire Monitor standard on all models

All models are equipped with a Flat Tire Monitor. Whenever tire pressure drops by 30% or more, the tire's rolling radius changes significantly; this means the wheel will rotate at a different speed from the other tires on the vehicle. FTM measures wheel rotation via the Dynamic Stability Control system's wheel-speed sensors, recognizing any major deviation in wheel speed (and therefore tire pressure). Within a short time, the system triggers a pressure-loss signal via an indicator in the instrument cluster and an audible warning.

All models also come standard with a space-saver spare wheel/tire unit, which contributes to increased trunk space, even models equipped with run-flat tires.

Dynamic Stability Control in its latest form

DSC appears in its latest form (version 8.0) in the new 5 Series, incorporating programming refinements as well as the Dynamic Traction Control function that first appeared in the 7 Series and is now included in the 3 and Z4 Series.

Activated by pressing the DSC console switch briefly, DTC improves utilization of available road traction under specific conditions –

- on sand, gravel, deep snow or packed snow
- climbing hills with deep or packed snow
- when there is deep snow on only one side of the road
- when driving with tire chains.

With DTC selected, engine intervention is de-activated at low speeds, leaving only the individual wheel brakes to control wheelspin. When the vehicle reaches a speed of approximately 43 mph, normal DSC operation is re-instated until speed once again drops below this threshold. A longer push of the DSC button de-activates all DSC functions except antilock braking.

The new look: esthetics and function in harmony

The new 5 Series body is tightly dimensioned, with short overhangs, lean-forward dynamics and compact overall size. This is 5 Series tradition – the unique combination of sedan practicality and BMW sportiness that has characterized the Series through its previous four generations.

If the concept is traditional, the “design language” is totally new; though by no means a resized version of either, the new 5 is clearly consistent with BMW’s other recent new designs, moving decisively into the future.

Starting at the front: The “kidney” grilles, a strong link to BMW tradition, are up-front and prominent, surrounded by painted surfaces and flanked by “quad” headlights (with BMW’s popular luminous rings) under break-resistant clear covers. The body sides are ultra-clean, deriving esthetic interest not from lots of lines and trim but from a complex interplay of concave and convex surfaces.

Deeply wrapped-around lighting units at the front and rear not only add visual interest, but perform their functional duties admirably. The turn signals have clear lenses front and rear; the front parking lights are a thin, wedge-shaped “eyebrow” of amber LEDs. Window areas are generous and incorporate the traditional BMW “reverse kink” in the rear door window, while allowing for beefy roof pillars that contribute to meeting customers’ expectations of excellent accident protection.

At the rear, the new 5 expresses BMW’s contemporary trunklid concept – featuring a high lid for increased cargo capacity – with a flowing integration into the silhouette and attractive, highly functional taillight wraparounds.

Functional innovation: Adaptive brakelights

Adaptive brakelights made their world debut on the 7 Series; in the meantime they’ve appeared on the Z4, 3 Series Coupes and Convertibles, and X5. They are standard on the new 5 as well, employing light clusters whose active area increases under hard braking.

There are two taillight segments per side. In normal braking, these same two segments illuminate more brightly. Under heavy braking or anytime the ABS goes into action,

round segments at the inboard side of each taillight unit illuminate to enlarge the total brakelight area. Following drivers are thus alerted to sharp braking by the BMW driver.

Technology of the new look: aluminum/steel construction

By employing aluminum for the entire front end – structure as well as skin – BMW's body engineers have pared approximately 44 lb. off the body/chassis shell's weight while simultaneously improving its strength and occupant protection. This is the most extensive use ever of structure-and-skin aluminum in a regular-production BMW: The 7 Series employs aluminum for its hood and front fenders, and the Z8 is all-aluminum but built in very small quantities.

Building the Z8 and aluminum body components for other current models ⁶ has given BMW considerable experience with this weight-saving, effectively energy-absorbing material. Bringing structural steel and aluminum components together posed new challenges, especially with regard to maintaining BMW's excellent corrosion resistance: if steel and aluminum are directly joined, galvanic action can cause corrosion at the junctions.

According to the materials being joined, three types of joints appear in the 5 Series main structure:

- Aluminum-aluminum: high-tech adhesives, rivets, laser welding
- Aluminum-steel: high-tech adhesives, rivets
- Spot welding, gas welding.

As is customary at BMW, nearly all steel panels are galvanized. Aluminum components receive a titanium/zircon coating that hinders oxidation and ensures clean, smooth surfaces for bonding with adhesives.

Once fully constructed, the body structure is dipped in a phosphate bath and then in a cathodic primer. Even in such immersion this primer may not reach every last nook and cranny, so all contact points between aluminum and steel are bonded together with the adhesive fully covering the joint – indeed, protruding at least 1 mm outside the joint. Thus direct contact between the aluminum and steel is completely avoided.

⁶ – **Other current aluminum applications in BMW bodies include the M3 hood and 3 Series removable hardtop.**

Other weight-reducing techniques flowed into the new 5's body engineering. All four wheelwells incorporate textile inserts that eliminate the need for separate sound insulation, saving about 35% on weight in this area. The underbody is not only smoother than before (for aerodynamics) but some 40% lighter, thanks to a new protective cladding material called Superlite. All models have an aerodynamic drag coefficient of 0.29, as compared to 0.29-0.31 for the various predecessor models.

Altogether, aluminum accounts for approximately 15% of the body/chassis structure. In some cases the actual model-for-model vehicle-weight savings over '03 models come out modest; in others they are significant:

- 525i manual transmission: -22 lb.
- 525i automatic transmission: -55 lb.
- 530i manual transmission: -22 lb.
- 530i automatic transmission: -45 lb.
- 545i manual transmission: +55 lb.⁷
- 545i automatic transmission: +11 lb.⁷

BMW of North America is schooling personnel at the body shops of its BMW Centers so that accident damage to the aluminum structure and skin can be repaired competently throughout the U.S.

The cabin: more space, evolved technology and appealing new materials

More space, particularly for rear-seat passengers, is an important facet of the new 5 Series interior:

- Front-seat occupants enjoy 0.5 in. more shoulder room and 0.3 in. more head room.
- Rear-seat passengers have 1.3 in. more shoulder room, 0.7 in. more head room and 1.8 in. more leg room at their disposal.
- Trunk volume is up fully 26% according to EPA measurements.

Yet greater space for people and cargo is only one aspect of the new cabin. Its design is just as fresh as that of the exterior, and as always with BMW there is a wealth of new, thoughtful ideas to make the going even more comfortable, more pleasant and more esthetically satisfying than in the new 5's estimable predecessor.

⁷ – **The new U-8 engine, with its Valvetronic system and steplessly variable intake system, adds weight to the 545i models.**

Cockpit design: flowing lines, tasteful color schemes

In the design of the instrument panel and front seating, a kinship to both the previous 5 Series and the current 7 Series is unmistakable; yet this is a wholly new environment.

The dash design is dominated by a “double wave” theme in two portions: one over the instrument cluster, defining the driver’s area; and another that begins over the dash center and sweeps toward the right side. Maintaining an important BMW tradition, the instrument cluster is dominated by two main dials for the speedometer and tachometer; analog fuel and fuel-economy gauges appear at the bottom of these dials. As in BMW M models and the 7 Series, the tachometer now includes a variable warning segment: It extends downward to 4200 rpm when the engine is cold, then gradually increases the rpm limit to normal as the engine warms up.

At dash center is the display for the evolved iDrive control system, with ventilation outlets and “hard” climate controls below it, and basic audio controls farther down. Both front cupholders are positioned to the right of the center console, with the driver’s holder swinging out to the left when opened.

A three-spoke steering wheel is standard in all models. Multi-function controls – including a switch that can be programmed by the driver to perform different functions – are conveniently arrayed on the wide horizontal spokes; the wheel’s tilt/telescopic power adjustment is quicker-moving than before, and there is automatic tilt-up for ease of exit and entry.

The evolved iDrive system

Base equipment in all U.S. models is a simplified version of the iDrive system first seen in the 7 Series, with a 6.5-in. color monitor displaying 256 colors at 400 x 240-pixel resolution. Its controller provides four menu directions: Communication, Navigation, Entertainment and Climate, where “Navigation” doesn’t necessarily mean the (optional) GPS Navigation system.

iDrive Displays and control functions have been refined and optimized. As in the 7 Series, there is an aluminum controller knob on the console, accessed equally conveniently by the driver and front passenger; new here is a Menu button, which when pressed recalls the main menu. A fifth menu is reached by pressing the controller

while in the main menu; this allows users to choose settings and even turn off the monitor.

An optional ⁸ GPS Navigation System, described under **options and accessories**, substitutes a larger monitor and includes additional iDrive functions.

Refined automatic climate control, standard rain-sensing windshield wipers

All U.S. models come standard with the more elaborate of two automatic climate-control systems available in Europe; this unit achieves even stronger heating and air-conditioning performance than its already capable predecessor. The system includes the following features; new features are indicated by an asterisk:

- Separate left/right temperature controls
- Separate left/right air-distribution controls* (in overriding automatic control, the driver and passenger can select their individual preferences).
- Inclusion of front footwells in left/right separation*
- Variable rear-compartment ventilation and heating
- Heat at Rest (allows heating interior for a limited time with the engine off)
- Automatic ventilation (allows programming of interior ventilation during periods when the vehicle is standing)
- Active-charcoal microfilter ventilation
- Bi-directional* solar sensor for front compartment; takes into account the direction of solar heat in determining interior cooling
- Storage of individual users' climate settings in Vehicle and Key Memory System
- Maximum-a/c setting for rapid cool-down at a single touch of a button
- Automatic recirculation control, with specific sensing capability for diesel exhaust
- Rotary temperature and blower-speed controls*
- Humidity control* – avoids over-dehumidification in a/c operation
- Climate-controlled console storage compartment*
- Multiple defroster outlets* to accommodate optional Head-up Display ⁸.

Formerly optional on 525i and 530i models and standard on 540i models, rain-sensing windshield wipers are now standard on all models. Automatic headlight control, which switches on the headlights and related lighting when ambient light drops below a certain level, is also now standard.

⁸ – **Delayed availability.**

New, enhanced audio systems

As before, two audio systems are offered: standard and optional premium via the Premium Sound Package.

The standard AM/FM/CD system includes 10 speakers, now including two subwoofers optimally positioned at the bases of the B-pillars; this placement utilizes cavities in the body structure, a principle patented by BMW. Continuing in enhanced form is a reception-enhancing diversity antenna system; its amplifier has been moved to a more ideal position, closer to the antenna circuits. A fin-type roof-antenna housing serves the BMW Assist system and optional CPT9000 phone system, Navigation System and Sirius Satellite Radio.

A 6-disc CD changer, available separately or as part of the Premium Sound Package, is newly positioned at the forward end of the glove compartment; The Package is essentially identical to its 7 Series counterpart, including the amazing Logic 7 audio system; for details see **options and accessories**.

BMW Assist now standard

Formerly included with the optional Navigation system and integrated telephone, these services are now standard in all 5 Series models at no cost for the first year. The SOS (Emergency) button is in the roof console; when it is activated, the hardware transmits the vehicle's location (determined via GPS technology), as well as other information, then connects the occupants to the BMW Assist Response Center for help. If an airbag deploys, the vehicle's current location and other information is transmitted automatically to the BMW Assist Response Center. If it's a flat tire, or out of gas, selecting "Roadside Assistance" on the iDrive Display will transmit vehicle location and the BMW Assist Response Center links the caller and the vehicle information to BMW Roadside Assistance for an accurate dispatch. A concierge service is also available 24/7 by dialing a toll-free number from any phone, any time. If the car needs servicing, selecting "BMW Services" in the Control Display will transmit the current vehicle data to the BMW center, who will then contact the customer. When the car's Condition Based Service (CBS) sensors detect the car will soon need service, it will automatically transmit this data enabling the service advisor to call the customer. BMW calls this innovative new feature, "TeleService." The BMW Assist system is easily upgraded to

accept the optional CPT9000 handset, based upon the popular Motorola V60 cellular phone. This system provides for hands-free operation, with steering wheel controls and calling phone number display, while recharging the phone's battery.

Upholstery, trim and seating: appealing choices

The 6-cylinder models 525i and 530i come standard with leatherette upholstery and Titanium-finish trim; a contrasting trim finish called Ruthenium appears on interior door handles and door pulls. Standard in the V-8 545i models are leather upholstery (in a new, more luxurious Dakota grade) and Dark Poplar wood trim; these are optional in the 525i and 530i. An alternative wood finish, the distinctive gray Maple Anthracite, is available at no extra cost in Premium Package-equipped 525i/530i models and any 545i.

As before, 10-way power front seats are standard in all models, as is a memory system for the driver's seat, steering wheel and exterior mirrors. Seating options include 4-way power lumbar support, sport front seats and new 20-way Comfort seats as well as heated front and (a new option) rear seats. For details on availability, see **options and accessories**.

Extensive storage space is provided throughout the interior. Between the front seats is a new two-part center console compartment; its upper portion can accommodate the optional CPT9000 handset, and the lower part is climate-controlled. A padded lid on the left side is adjustable fore-aft to give the driver two armrest positions.

The rear seat is again offered in standard and split-folding forms, the latter released from inside the trunk for effective security. The trunk can accommodate four golfbags laterally, and employs single-link tubular hinges (as in the 7 Series) that eliminate any intrusion into the trunk space.

Safety and security: meaningful evolution of an award-winning concept

The 1997-2003 5 Series was widely recognized for its excellent occupant protection; it pioneered BMW's highly effective Head Protection System for front-seat occupants. For the new 5 Series, BMW's Research and Engineering Center in Munich, Germany has carefully evolved the line's established safety concept.

Both front-impact airbags, for example, have been further developed to optimize their 2-stage, accident-severity-dependent deployment characteristics, their inflated shape,

and their interaction with surrounding surfaces and components. Separately, the passenger's-side airbag is evolved in that its cover atop the dash's right side is now 2-piece, the forward portion opening toward the windshield and the rearward toward the interior: This further refines the airbag's unfolding sequence and protective action.

Front and rear Head Protection System newly engineered

In the predecessor Series' sedans, separate Head Protection Systems afforded excellent protection for front and outboard rear occupants. The new Series adopts the integrated front-rear Advanced Head Protection System (AHPS II) first introduced in the current 7 Series.

AHPS II extends all the way from the A-pillar to the C-pillar, with a "sail" connecting the inflatable tube to the roof structure between these two end points. The sail is of airbag-type material; between it and the long inflatable tube itself, essentially all body-side and side-window areas likely to be impacted by an occupant's head are covered by the system. According to BMW safety engineers, the front/rear AHPS II –

- Combines the best protective attributes of BMW's familiar HPS and competitive "curtain"-type systems.
- Offers the same advantage as the front-only HPS in extended crash sequences (such as a rollover) in that after deployment, it remains inflated for approximately 7 seconds.
- Because of its relative rigidity once inflated, provides protection against shattered glass and intrusions from the outside.
- Offers protection to persons of small or large stature.

Active Head Restraints available for front-seat occupants

Included with the optional 20-way Comfort front seats, this feature enhances protection from neck injuries in rear-end impacts. Via two additional sensors, the front head restraints pivot forward into close proximity with the driver's and front passenger's heads; thus they are able, if they prefer, to adjust the head restraints away from direct contact with their heads during normal vehicle use, yet in the case of a rear-end impact gain optimum protection.

Other notable safety features and systems include:

Ultra-sensitive “satellite” side-impact sensors. By sensing pressure change within the door structure, they signal for deployment very early in a side impact, yet still minimize the chance of an unwanted development.

Interlocking door anchoring system. This familiar BMW feature employs the aluminum reinforcing bars in each door to strengthen the body side. At the aft end of each diagonally positioned aluminum bar is a hook-like member that, in the event of a serious side impact, hooks into the body as the door deforms. The system is designed so that after most impacts, elastic snap-back releases the hook and the doors can be opened.

Intelligent Safety and Information System (ISIS), an overall system for controlling the vehicle’s safety systems and devices. ISIS is a decentralized system, with an overall Safety Gateway Module (SGM) and seven subordinate control units, each with a microprocessor of its own. This multiplicity of units provides a redundancy that helps preserve system reliability even when portions of the system might be damaged by accident forces. In interaction with the main and subordinate units, ISIS employs fully 10 sensors, which together achieve remarkable “tailoring” of the deployment of airbags, Battery Safety Terminal and safety-belt tensioners to actual accident circumstances.

Supporting the ultra-sophisticated electronic control scheme itself, fiber-optic cables are not susceptible to extraneous electromagnetic disturbances. System software can be updated over the life of the vehicle.

Options and accessories: an appealing array of familiar and new features

The range of factory options and BMW center-installed accessories is multi-faceted. Some options, like the Premium and Cold Weather Packages and stand-alone leather option for the 6-cylinder models, are continuations of familiar 5 Series offerings. Others, such as a choice of two different wood interior trims, Active Steering and Active Cruise Control, are new.

Premium Package (525i and 530i). Adds familiar and new features, most of which are standard on the V-8 545i models, to the 6-cylinder models. New features or details are denoted with an asterisk:

- **Dakota* leather upholstery,** even more luxurious than the previous Montana grade

- **Dark Poplar*** wood trim
- **Design Light Package***, consisting of LED ground lighting in the exterior mirror housings; illumination at interior door handles and door storage bins; front footwell lighting; exit/entry lighting in rear door panels (front standard); additional trunk lighting.
- **4-way power lumbar support** for the front seats
- **Auto-dimming exterior* and interior mirrors with power folding feature.**
- **BMW Universal Transceiver**, with three functions for operating garage doors and other external devices.

Sport Package. Essentially the same for all models but with different wheel-and-tire equipment for each models. The **545i** (with automatic transmission) offers this Package as optional equipment; on the **545i 6-Speed** (with manual transmission) it is standard. Includes some of the Series' most exciting new technology. Again, new features or details are noted with an asterisk.

- **Active Steering***. Exclusive to BMW in the U.S. market, this brand-new feature electromechanically varies the steering ratio on the basis of vehicle speed and other driving conditions. The variation in steering ratio is much greater than is achievable by purely mechanical means like that which is standard on this Series – so great, in fact, that steering-wheel movements required in parking maneuvers, U-turns and sharp low-speed corners are very significantly reduced. This results in greater convenience, comfort and agility; controls located on the steering wheel can be operated more easily and naturally while the driver is steering. Other benefits include –

Further optimized driving dynamics. Measures many factors of operating conditions and varies the steering ratio to optimize dynamics.

Vehicle stabilization. Can intervene in situations that would normally reduce the vehicle's stability. Example: braking when the vehicle is moving on a surface with uneven traction, such as pavement on one side and packed snow on the other.

Active Steering operates through an auxiliary planetary gearbox, positioned at the bottom of the steering column, to increase or decrease the amount of rotation there relative to the driver's turning of the steering wheel. The planetary gearbox is electrically driven and can vary the overall steering ratio between 10:1 and 20:1.

- **Servotronic power assist***. Vehicle-speed-sensitive instead of the 5 Series' standard engine-speed-sensitive assist – an essential feature because of the very “quick” steering at lower speeds.
- **Active Roll Stabilization***. Replaces conventional anti-roll (stabilizer) bars with active bars, which are twisted by hydraulic actuators to achieve amazingly “flat” cornering.
- **Sport suspension calibration**. This more traditional BMW Sport Package feature means firmer springs and shock absorbers, plus 15-mm (0.6-in.) lower ride height.
- **Sporty wheels and run-flat* performance tires**. Described in detail elsewhere in this text; unique wheel design for each model and W-rated tires in 17-in. sizes for the 525i, 18-in. for the 530i and 18-in. with front/rear differentiated sizes for 545i models.
- **Satin Chrome Shadowline exterior trim**. All-black trim around the side windows replaces the standard black-plus-chrome treatment.
- **12-way power front sport seats**, adding power-adjustable thigh support and specially contoured seat cushions and backrests. Can now be combined with the available 4-way power lumbar support.

The **Cold Weather Package** (all models) includes:

- **High-intensity headlight cleaning system** with new retracting jets
- **Heated front seats** with new variable heating balance between the seat cushions and backrests, controlled via the iDrive monitor.
- **Heated steering wheel**.

Premium Sound Package (all models). A significant step up from the premium audio equipment offered previously, including –

- **Logic 7 audio system**. Includes increased audio power, 13 speakers vs. the standard 10, even higher-caliber speakers throughout, Digital Sound Processing and Surround Sound simulation.
- **6-disc CD changer**, newly positioned in the glove compartment (formerly in trunk).

Rear-seat Entertainment Package (all models; delayed availability). This Package, which provides for multimedia viewing and listening in the rear seat, will include –

- A video monitor positioned at the rear of the center console
- A trunk-installed 6-disc multimedia changer (DVD/CD)
- Two wireless headphones

- A wireless remote control
- An input jack for external sources.

The 6.5-in. color monitor offers all menus available on the front monitor; it is controlled from the wireless remote, which is subordinate to the front controller. The input jack allows for external sources such as Gameboy, MP3 player or a VCR.

6-speed STEPTRONIC automatic transmission. Described earlier; offered as an option on the 525i and 530i, standard equipment on the 545i.

6-speed Sequential Manual Gearbox (SMG) (all models; delayed availability). Described earlier in this text.

Active Cruise Control (all models). Recently introduced on the 7 Series, ACC is offered as a stand-alone option.

Employing a radar sensor at the front of the vehicle, ACC senses the speed of vehicles traveling ahead, and adjusts the BMW's speed to maintain a safe following distance. Operation is as follows:

When the road is clear, operation is essentially as with the standard cruise control, though with certain specific nuances:

- The current speed is captured by tipping the cruise-control stalk forward or rearward. Thereafter, each time the stalk is tipped forward or rearward, the set speed is increased or decreased by 5 mph.
- The driver can also adjust the set speed (upward only) in increments of 1 mph by pressing inward on the slider button at the left end of the stalk. When cruise control has been cancelled (by braking, for example), this button is used to resume.
- The set speed is indicated by an arrow at the speedometer scale and a digital display in the instrument's center field.

When traffic is encountered ahead, ACC's special capabilities come into play:

- The driver can choose from four following distances by adjusting the rotary dial on the control stalk. Via four bars below the vehicle icon in the speedometer dial, the

chosen following distance is displayed briefly after selection (more bars = greater distance).

- When the radar sensor detects a vehicle ahead, the “vehicle” icon in the speedometer dial illuminates. ACC adjusts the BMW driver’s speed to maintain the selected following distance.
- In adjusting vehicle speed, ACC may apply the brakes. It may also apply the brakes when the driver changes the set speed abruptly. If the brake application causes DSC or ABS to activate, a specific warning indicator in the dial face illuminates.
- When a vehicle pulls into the BMW driver’s lane, ACC recognizes that vehicle only after it has fully moved into the lane. If the vehicle cuts suddenly into the lane, ACC may not be able to adjust speed quickly enough, in which case the vehicle icon is surrounded by a blinking triangular warning signal. ACC does not react to stationary vehicles or other objects ahead.
- When traffic ahead clears, ACC automatically resumes the previously set cruising speed.

ACC can also reduce vehicle speed when a curve is entered at too high a speed. However, the system does not “look ahead” to curves, so any such adjustment occurs only after the curve is entered. In sharp curves, ACC may react briefly to oncoming vehicles; the driver can cancel this action by stepping on the accelerator.

Park Distance Control (all models), employing four ultrasonic sensors each in the front and rear bumpers to warn the driver when the vehicle is approaching obstacles that may not be visible to the driver.

Xenon Adaptive headlights with dynamic auto-leveling (optional 525i and 530i, standard 545i). Advances from the previous 5 Series Xenon headlights in two ways:

- Xenon illumination on low and high beams; previously low beams only
- The Adaptive feature, making its second appearance after a debut on ’04 3 Series Coupes and Convertibles. For ’04, it is also newly available on the 7 Series, on which Xenon headlights are standard.

Adaptive Light Control (ALC) literally “aims” at making night driving safer. With the headlight switch in its Automatic position, as soon as the vehicle is moving forward, the outboard lights steer with the front wheels, guided by an electronic control system and swiveled by small servo motors. The system responds not simplistically to the steering angle, but also to vehicle speed and the “yaw rate,” or the rate at which the vehicle’s direction is changing. The driver benefits from enhanced night vision around corners and curves. If the vehicle is stationary or backing up, the feature is inactive.

A continuing feature is dynamic auto-leveling of the headlights, which corrects the lights’ aim not only for loads carried in the vehicle, but also for transitory acceleration and braking.

Head-up Display (all models; requires Navigation System; delayed availability). Displays important information in color on a 6- x 3-in. field in the windshield. A virtual image is projected from the top of the instrument panel, appearing approximately in line with the end of the hood in the driver’s line of sight so that the driver can observe the information with essentially no diversion of attention from the road ahead. Via the iDrive monitor and controller, the driver decides which information is to be displayed here and the brightness of the display; the display can be switched on and off via an additional switch in the lighting control panel to the left of the steering column.

Information of the following categories can be displayed:

- Check Control and On-board Computer warnings, prioritized according to their urgency
- Navigation instructions
- Active Cruise Control programmed speed.

In addition to the basic brightness selection, the display’s brightness is also automatically regulated according to ambient light and moisture conditions via the sensors that govern the automatic headlight control and rain-sensing wipers. Settings chosen by the driver are captured by the Key Memory System, and are re-captured when the individual user unlocks the car.

Dakota leather upholstery is also available as a stand-alone option for 525i and 530i models not equipped with the Premium Package.

20-way front Comfort seats (all models). Described earlier, these seats incorporate 20-way power adjustment and memory for both driver and passenger. In the 525i and 530i, they require leather upholstery.

4-way power lumbar support (all models) is part of the 525i/530i Premium Package and is available in 545i models as a stand-alone option.

Split folding rear seats and ski bag (all models). The seats are split 60% left/40% right, and are released from inside the trunk; the center-positioned ski pass-through and bag are part of the 60% segment.

Heated rear seats (all models; require Cold Weather Package and leather upholstery). Available in this Series for the first time; 3-stage/2-zone heating.

BMW On-board Navigation System (all models; delayed availability). Vehicles equipped with this option get an iDrive version with a larger (8.8-in.) monitor, a controller incorporating Force Feedback for enhanced tactile feel; and other distinctive features.

Though the Navigation System is the same in principle as the previous Series' system, it offers a number of updates and enhancements. Newly included is BMW's **Voice Command System**, which can be used to control the –

- Optional CPT9000 phone system, including phone book
- Address book
- Navigation System
- Short Message System (SMS)
- BMW Assist
- Audio system
- Climate control.

The system can recognize 3000 words, and incorporates a new **text-to-speech engine**, which facilitates translating text message into voice form. Graphics and speech interact: For example, the user might select a radio station via Voice Command; the monitor would then display this choice.

Sirius® Satellite Radio. Includes 60 original channels of commercial-free music of virtually every genre, and 40 sports, news and entertainment channels. Sirius-equipped vehicles receive programming beamed from three satellites orbiting the earth . Except where reception is physically blocked, users can enjoy the same programs anywhere in the continental U.S. Customer activation is necessary and a monthly fee applies. Dealer installed accessory as of 4th quarter, 2003. Optional as of 03/2004. May be retrofitted to earlier production models

Power rear sunshade and manual rear side-window sunshades (all models). This elegant and useful option continues in evolved form. As before, the rear-window shade is controlled from a console switch; new are dual-segment side-window shades: one segment covering the lowerable door windows, the other for the fixed quarter panes.

Maple Anthracite wood trim (all models). Dark Poplar wood interior trim is standard in 545i models, and included in the 525i/530i Premium Package. As a no-extra-cost option for any 545i and 525i/530i models with the Premium Package, this gray-tone wood is distinctive and contemporary.

Rear-seat side-impact airbags (all models) are offered as an option so that customers may make the choice. For the first time in the 5 Series, this option also includes automatic tensioners on the rear outboard safety belts.

BMW Cellular Phone System (all models). A significant evolution of BMW's phone offerings occurs as the new 5 Series enters production. It will be possible to equip vehicles with a cradle that accommodates the CPT9000 handset, a BMW-specific version of the popular Motorola V60. Vehicles are appropriately equipped so that actual phone-system installation is simpler than before.

A Bluetooth interface that accommodates any bluetooth compatible hand-held cellular phone is planned for March '04 production.

Like all current models, each 5 Series vehicle is covered by BMW's 4-year/50,000-mile limited warranty and comes with a 4-year/50,000-mile Full Maintenance Program for customer convenience, peace of mind and economic benefit.

Performance with a Conscience

BMW strives to produce its motor vehicles and other products with the utmost attention to environmental compatibility and protection. Integrated into the design and development of BMW automobiles are such criteria as resource efficiency and emission control in production; environmentally responsible selection of materials; recyclability during production and within the vehicle; elimination of CFCs and hazardous materials in production; and continuing research into environmentally friendly automotive power sources. Tangible results of these efforts include the recycling of bumper cladding into other vehicle components; water-based paint color coats and powder clear coats; near-future availability of hydrogen-powered models; and various design and engineering elements that help make BMWs easier to dismantle at the end of their service life.

BMW Group In America

BMW of North America has been present in the United States since 1975. Since then, the BMW Group in the United States has grown to include marketing, sales and financial service organizations for the BMW and MINI brands and Rolls-Royce Motor Cars; DesignworksUSA, an industrial design firm in California; a technology office in Silicon Valley and various other operations throughout the country. BMW Manufacturing Corp. in South Carolina is part of BMW Group's global manufacturing network and is the exclusive manufacturing plant for all Z4 roadster and X5 Sports Activity Vehicles. The BMW Group sales organization is represented in the U.S. through networks of 340 BMW car, 327 BMW Sports Activity Vehicle, 148 BMW Motorcycle retailers, and 70 MINI dealers. BMW (US) Holding Corp., the BMW Group's sales headquarters for North, Central and South America, is located in Woodcliff Lake, New Jersey.

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