

320i

Bavarian Motor Works, Munich, Germany

2/1977



BMW 320i. The successor to the car that started a cult.

In 1966, the engineers of the Bavarian Motor Works in Munich, Germany — race car designers by profession and by nature — introduced an extraordinary new kind of car.

A small, sober-looking sedan — with the performance characteristics of a true European sports car.

A car, practical and economical, yet so exceptional that for the next decade it fairly dominated its class on the great race

courses of the world.

It was called the BMW 1600. And in an era when wider, longer and chromier were the criteria by which expensive cars were judged, some considered the 2002 heretical.

But to many serious drivers in all parts of the world, the BMW 2002 came to represent an ethic.

To people who preferred performance, efficiency and engineering intelligence to superficial

opulence, it symbolized a new mentality of building cars.

This year, the engineers of the Bavarian Motor Works — after nine painstaking years of development — are pleased to introduce the successor to the venerable 2002.

A technological, evolutionary improvement on a car many experts said could not be improved upon.

The new BMW 320i. The BMW ethic is still intact.



Optional: steel sunroof,
light alloy wheels



Why people who own a BMW enjoy driving more than you do.

The BMW owner comes in a far wider variety than the BMW.

Presidents, diplomats, princes, dukes, senators, astronauts, doctors, lawyers, judges, captains of industry, motion picture stars, directors, merchants, accountants and business executives of all types and varieties.

Diverse as BMW owners may be, however, virtually all have one thing in common: a glassy-eyed, unabashed affection for their car. An affection that paradoxically seems to increase as the years and miles go by.

What makes the BMW 320i so different from other cars?

There is an obsolescence built into most cars — and most particularly small, practical family sedans — that has nothing to do with the way they're built.

It's called boredom and it has to do with the way they drive.

Most cars simply are not built to perform in such a way that driving becomes an end — not merely an uninspired means of transportation. The BMW 320i, on the other hand, is.

In a time when the concept of the automobile has taken many irrelevant side roads, the engineers at the Bavarian Motor

Works concentrate on building the best driving machine it is physically and technically possible to build.

Unwavering in their adherence to the basic BMW philosophy that extraordinary performance is the only thing that makes an expensive car worth the money.

And the result? "The reaction to a BMW is always the same," say the editors of Motor Trend magazine. "The first time driver takes the wheel and after a few miles no other automobile like this will ever be quite as good again."

A car first engineered, then styled.

At the Bavarian Motor Works the hand of the stylist is guided by the dictates of the engineer.

Hence, on the BMW 320i, you will find no artfully sculptured sheet metal, no opera windows — a car first engineered, then styled.

There is nothing on or in the BMW 320i that does not contribute meaningfully to performance, safety or comfort.

Its shape is classic, uncomplicated and aerodynamically sound. Its belt line low, to bring down the center of gravity and provide an astonishing amount

of visibility in all directions.

Perhaps the engineers of the Bavarian Motor Works did not invent the phrase, "form follows function".

But, say the editors of Motor Trend magazine, "Among all the world's automakers, BMW is perhaps the foremost practitioner of the philosophy."

Construction: Germanic thoroughness to the nth degree.

The BMW 320i was not produced on a typical assembly line.



In fact, construction of a single car can take as long as 5 days.

Each car goes through an exacting process of cavity sealing, electrophoretic priming, painting, hand examination, sanding and repainting. Not just once, but as many times as our rather obstinate quality control inspectors deem necessary to achieve a perfect quality of fit and finish.



The technology of control.

The cockpit of the BMW 320i is carefully engineered for total, effortless control. The end result of extensive biomechanical testing and research.

Thorough study has been made of driver physiology, of the critical interrelation between seat location, visual position, steering wheel angle, controls and instruments.



All switches and instruments are arranged conveniently within the driver's field of vision. All are marked clearly and, at night, illuminated by an optically beneficial orange light.

The instrument panel is constructed in a concave manner, curving around the driver. So, regardless of the position of the driver or the driver's arm length, all controls are reachable comfortably, quickly and safely.

Consequently, when you drive the BMW 320i for the first time you will experience a unique sensation of being part of the car itself.

A unique feeling of total and complete control, which, if you're

accustomed to domestic luxury sedans, will be completely and pleasantly new to you.

Heating and ventilation. A plan not an afterthought.

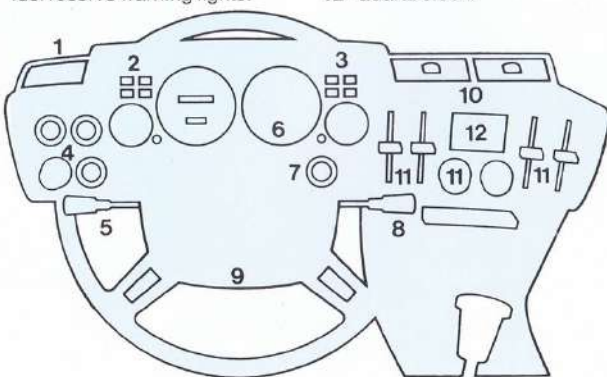
Perhaps a car's heating and ventilation system cannot be ranked as one of its vital systems of control.

But an insufficient heating and ventilation system can most certainly be ranked as one of a car's most distracting shortcomings.

In the 320i, thorough consideration has been given to interior air current and the strategic placement of heating and ventilation outlets.

Fresh-air ventilation is achieved without drafts; heat is produced quickly (a 42% greater output than the 2002) and temperature is infinitely variable.

- 1 Air outlets for side window defrosting and fresh air ventilation.
- 2 Directional indicator, hand-brake and brake fluid level and fuel reserve warning lights.



- 3 High beam light, oil pressure and battery charge warning lights.

- 4 Illuminated push-button for rear window defroster, pull switch for parking and low beam headlights, adjustment for panel illumination.

- 5 Combined switch for directional signals, high beam flasher and main beam.

- 6 Tachometer.

- 7 Illuminated push-button for hazard lights.

- 8 Combined switch for two-speed windshield wipers and washers, delay mechanism.

- 9 Four-spoke, padded safety steering wheel with four horn buttons.

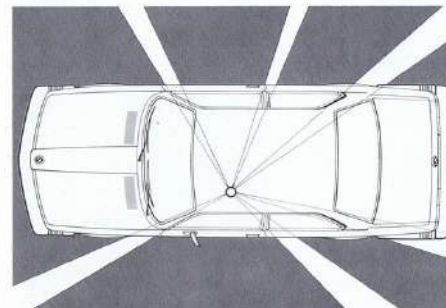
- 10 Fresh-air outlet at the side and individually adjustable in the center with separate adjustments for driver and passenger side.

- 11 Infinitely adjustable heating and ventilating system and three-speed blower.

- 12 Quartz clock.

Optional:
light alloy wheels.





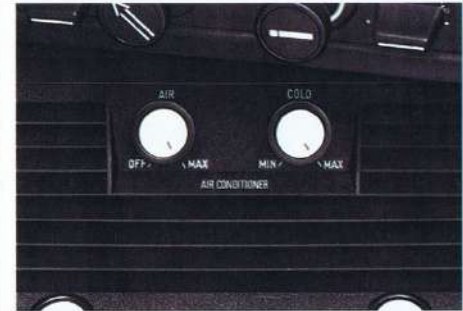
Exceptional visibility through large window areas with a minimum of "blind spots".



Position of seat, pedals and steering wheel enables effortless parking.



Adjustable fresh-air-outlet, separate adjustments for driver and passenger side.



Optional: air-conditioning.



Vent windows rear.



Seat belt can be easily fastened or unfastened with one hand.



Large outside rear vision mirror for the driver.



Generous, illuminated glove compartment.





Superb engineering shouldn't be confined to a car's mechanical parts.

The interior of the conventional sedan is designed to serve as a sort of isolation chamber.

A way of separating the driver from all awareness of the world outside, all feel of the road beneath and, most particularly, from the mechanical workings of the car itself.

A state of being many automotive experts consider unwise if not downright unsafe.

Perhaps because of our long involvement in international road racing — where the integration of man and machine is not an alien concept — we at the Bavarian Motor Works have a wholly different approach to interior design.

An approach that includes the driver as an integral part of the car itself — the human part that completes and complements the mechanical circuit.

So, while the interior of the conventional sedan remains the domain of the stylist, every aspect of the BMW 320i has been purposefully engineered to facilitate total, precise control and help prevent driver fatigue. Tastefully appointed, yet emi-

nently functional.

All seats have a molded shape to provide firm lateral support in high-speed turns.

Individual seats are mounted on roller bearings for ease of adjustment, forward and back, with variable-angle seat back supports.

All instruments and controls are strategically positioned, clearly visible, readily accessible.

Compact needn't mean cramped.

Engineering that fails to take into consideration that a car — compact or not — must provide ample space for people fails utterly.

While on the outside the BMW 320i has the sensible dimensions of the ideal city car; on the inside it can only be described as generous.

Slightly longer than the 2002, the 320i provides an amazing amount of room for passengers.

Even in the rear, where most compact cars are at their most compact, there's no cramping of knees, no squashing of heads.

And in the trunk, the 320i surpasses even the roomy 2002 in storage space.

Sufficient for more than a modest amount of luggage, golf clubs, ski equipment and what have you.



The following extras (available at additional charge) will enable you to equip your BMW 320i according to your individual preferences without altering the basic character or functionality of the automobile. Recaro sport seats in front, sport steering wheel, light-alloy wheels, limited slip differential, air-conditioning, radios of different types, metallic paint, manual sunroof and automatic transmission.



Reclining molded seats provide firm lateral support in high speed curves.



Door storage space.



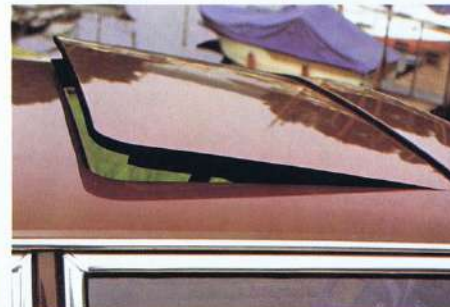
Co-drivers seat unlockable from driver's position.



Seats anatomically designed with three point safety belts.



Optional: mechanically-operated steel sunroof in normal position,



or in vent position.



Leatherette upholstery on demand.



Optional: Recaro-seats and sport steering wheel.

You drive a BMW, it does not drive you.

If you've ever had the suspicion, say, while rounding a particularly tight curve, that you were not the master of your machine, you will thoroughly appreciate the uncanny road-holding capabilities of the BMW 320i.

Since road-holding — driver control — is largely a function of a car's suspension system, it only follows that a superior suspension system will give you better control.

And, to be a bit blunt, the BMW 320i gives you a superior suspension system. Superior because it is more finely tuned than ever. An evolutionary improvement — even over the 2002 suspension system which literally served as a model for all modern design.

Instead of the "solid-rear-axle" systems found in all domestic — and many foreign — sedans, BMW suspension is fully independent on all four wheels.

McPherson struts and eccentrically mounted coil springs in front, semi-trailing arms and coil springs in back.

And this, combined with a multi-jointed rear axle, puts a minimum amount of "unsprung" weight on the wheels, and allows each wheel to adapt itself independently to every driving and road condition. With a smoothness and a precision that will spoil you for any other car.

For the enthusiast, a technical summary of significant refinements:

While the basic principles of the BMW suspension system remain the same, significant evolutionary improvements have been incorporated into the design of the BMW 320i.

Riding comfort has been improved by increasing coil action both front and rear (1.02" in front; 1.37" in the rear).

A refined front axle geometry, new spring struts, a wider track (1.73" in front; 2.24" in the rear), and front and rear stabilizer bars provide increased

lateral "g" forces and faster cornering and reduced steering effort.

An additional link support on the differential gear optimizes rear axle guidance in corners.

New rack-and-pinion steering insures precise steering — even at critical speeds.

The 320i has a servo-assisted, twin-circuit braking system. (Larger vented disc-brakes in front, larger drum brakes in the rear. A pressure regulated rear circuit and plastic-coated brake lines to minimize corrosion.) The twin system is designed to provide adequate braking power — actually above the legally prescribed limit — even if one of its two circuits should fail.

Testing the chassis on the hydro-pulse test stand, simulating different road surfaces, and on the "torture section" of the BMW test circuit (2,5).

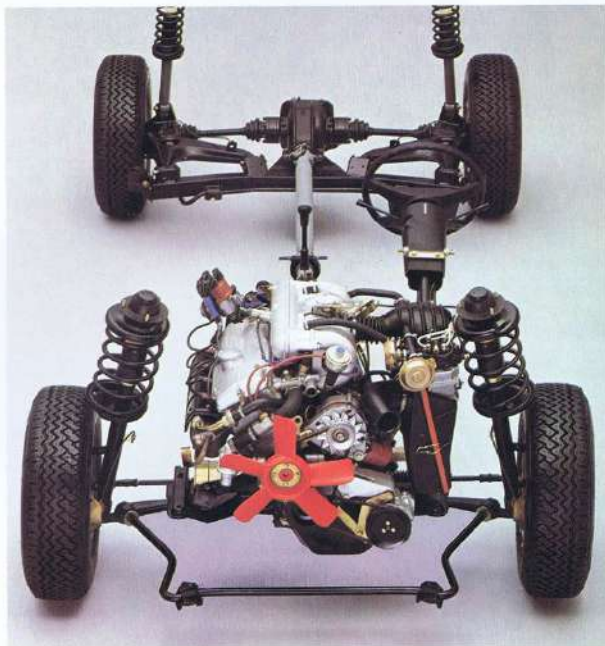
Front wheel suspension: individual suspension on offset (staggered trailing effect) spring struts with helical springs and additional rubber shock absorbers, torsion bar stabilizers.

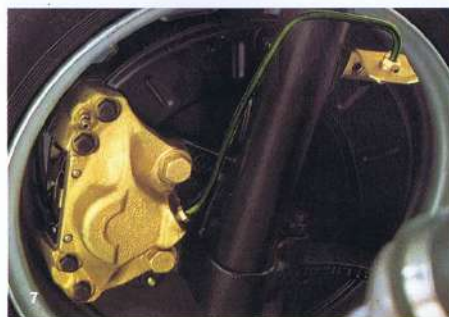
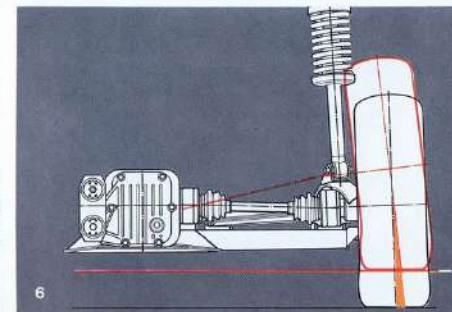
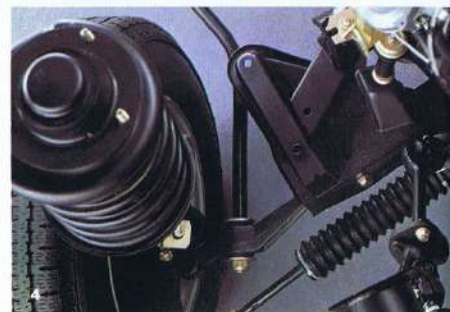
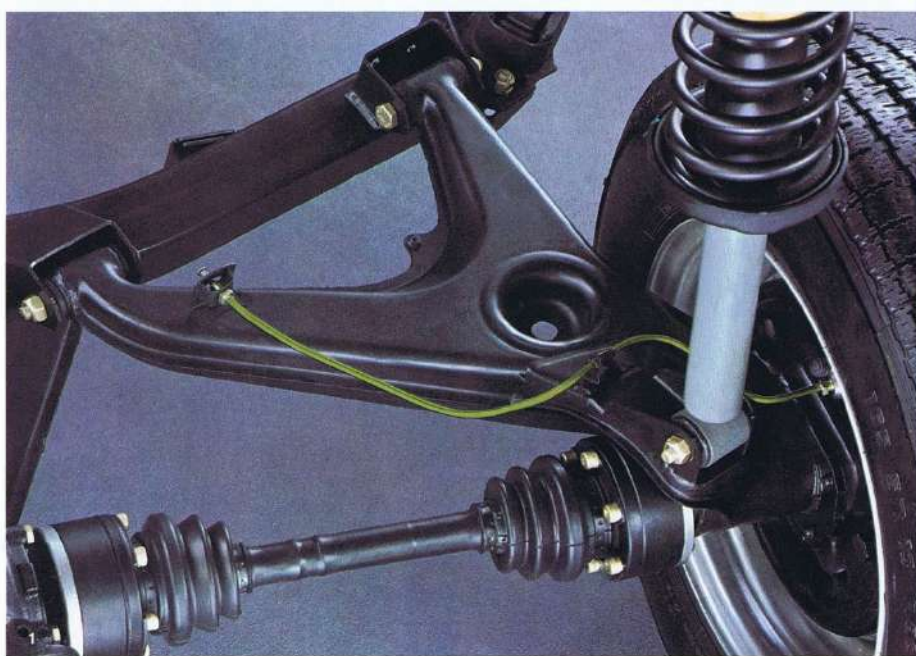
Hinged steering wheel with 2 universal joints, rack-and-pinion steering, and steering wheel damper (4).

Differential drive with universal joint shafts with maintenance-free, homokinetic joints. Rear wheel suspension: individual suspension with rubber-mounted trailing arms, spring struts with helical springs and additional rubber springing torsion bar stabilizer, link supports (1, 6, 9).

Disc-brakes tested and improved in a wide range of tests for improved heat absorption and higher resistance (3, 7, 8, 10).

The brake lines are protected against corrosion by a plastic coating (1, 7).





A racing engine in a sensible sedan.

The performance capabilities of the BMW engine are legendary.

Under the hood of the BMW 320i is the same basic engine that powers the BMW Formula II race cars that have totally dominated their class for more than a decade.

A 2-liter, fuel-injected masterpiece of engineering that somehow manages to combine the seemingly incompatible: efficiency, economy, unfailing reliability and extraordinary performance over a wide range of speeds and driving conditions.

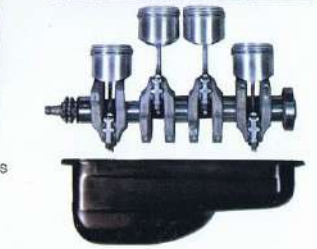
The technical explanation? Bosch K-Jetronic fuel-injection determines the precise amount of fuel to be injected (a significant improvement not available on the 2002).

Then, hemispheric, swirl-action combustion chambers — enlarged for softer still more efficient combustion — fan the fuel-air mixture so completely and efficiently that this combustion process of the 320i requires no catalytic converter to meet government emission standards.

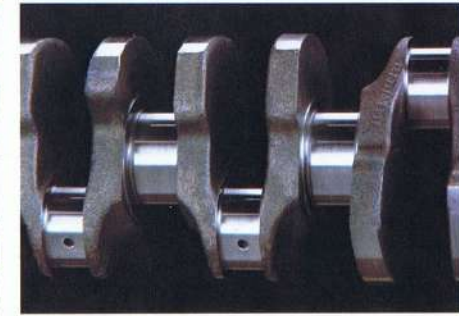
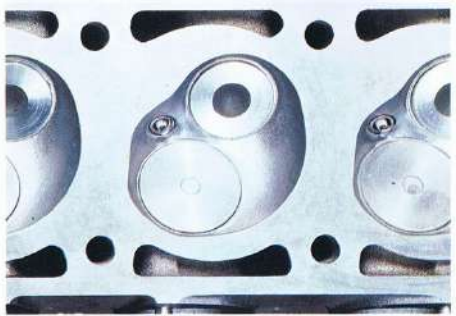
A thermostatically controlled ignition system, improved cylinder heads and pistons further improve combustion and thermal efficiency.

And five main bearings and eight crankshaft counterbalance weights — unusual refinements — give the whole operation a turbine-like smoothness, a characteristic sound, that never ceases to impress experts and innocents alike.

The BMW 2002 engine set the standard by which 2-liter power plants are measured; the BMW 320i engine exceeds it.



The power plant of the 320i is not only the end result of voluminous amounts of technical and physical research, but of the countless hours on the great racing circuits of the world.



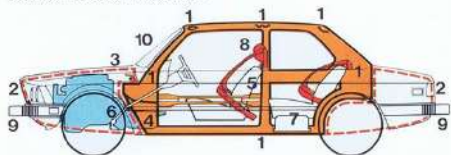
Safety. A judicious combination of brute strength and agility.

The automotive community seems to be divided into two separate camps concerning automotive safety.

There are those who say tank-like strength is the answer. Others who say catlike agility.

At the Bavarian Motor Works, it is our contention that the most intelligent answer is a combination of both.

So, while no car is made stronger than the BMW 320i, its extraordinary handling and performance characteristics help provide the driver with the means and the split-second control necessary to avoid an accident as well as survive one.



However, should an accident prove unavoidable the engineers at BMW have developed yet another — and perhaps even more innovative solution: a determined deformation system to absorb the brunt of the impact and help minimize injury.

This remarkable system is aptly called the BMW Life Saving System.

1. A steel passenger safety cell with specially constructed roof pillars, reinforced front and rear window frames with integrated roll-bar, cross-struts in the instrument panel area and behind the rear seat, as well as rigid longitudinal struts.

7. The fuel tank is in a protected position in front of the rear axle.

5. Outer door handles are recessed — and all doors are equipped with safety locks.

10. Tinted windshield for antiglare.

8. The interior is equipped with non-flammable upholstery, automatic seat belts and height-adjustable headrests on front seats.

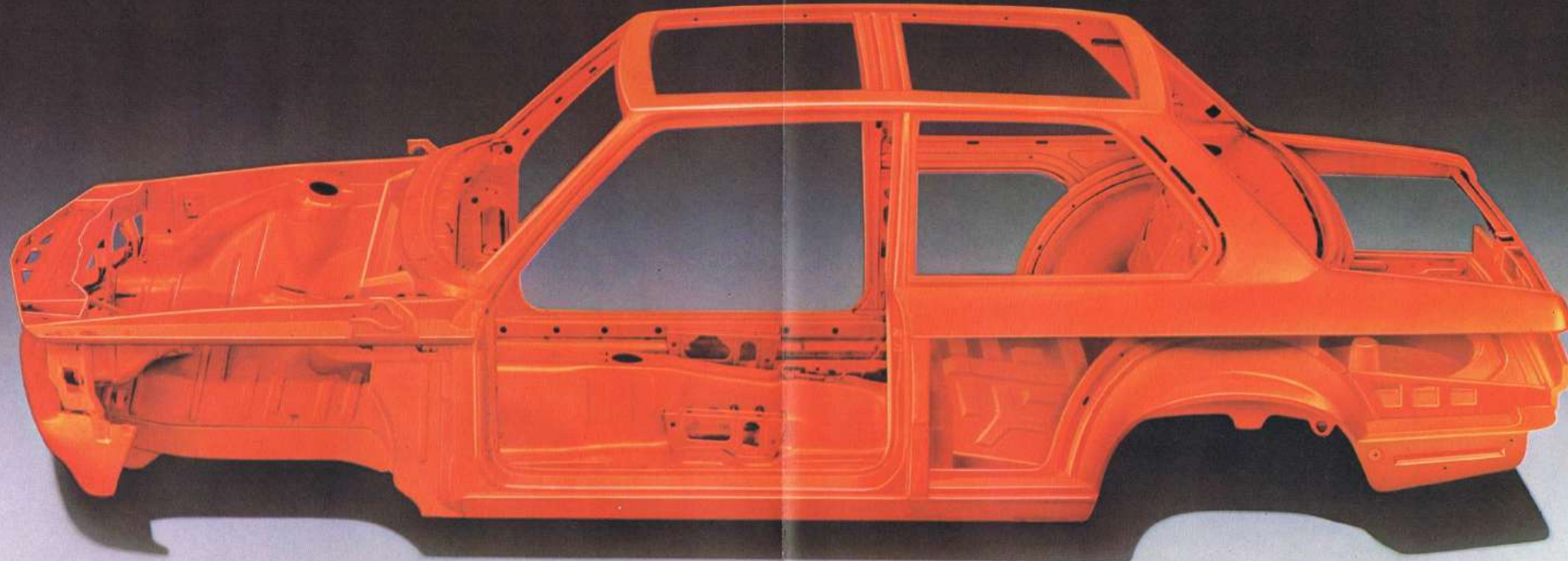
6. The telescoping steering wheel column is situated well outside the "crush zone", behind the front axle.

4. Rigid drive shaft tunnel and instrument panel prevent the engine and the gearbox from penetrating the interior in the event of a frontal collision.

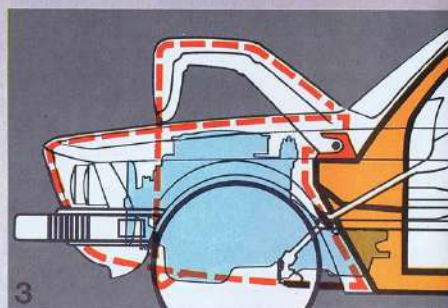
3. The hood is constructed to fold on impact, leaving the windshield intact and incorporates a special safety locking system.

2. Controlled, determined, energy-absorbing "crush zone", inter-related with the time lapse of the front automatic seat belt action.

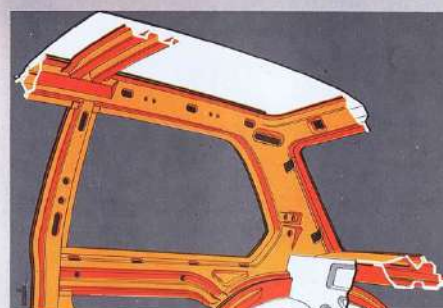
9. Energy absorbing bumpers.



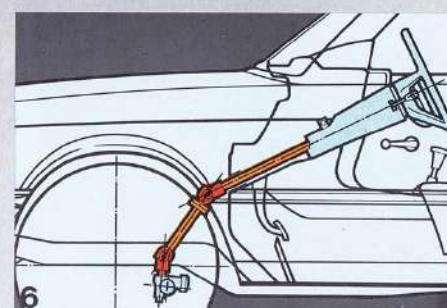
Crash tests to optimize the deformation of the front/rear "crush zones".



The hood is designed to buckle out and not back into the windshield.



Integral roll-over bar with longitudinal and transverse reinforcement.



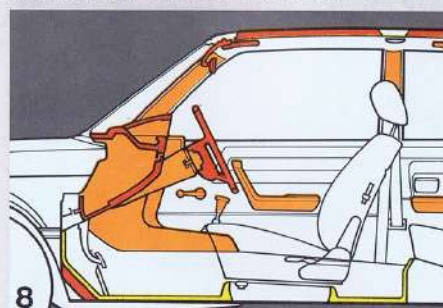
Collapsible steering column and steering system placed outside the "crush zone".



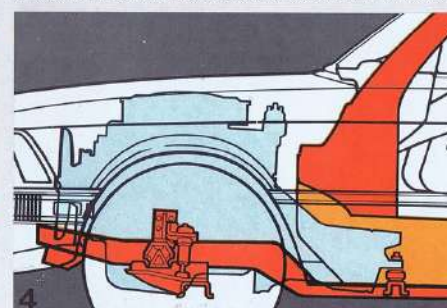
Height-adjustable headrests.



Special hood safety lock.



Instrument panel and controls are elastic and deformable.



Occupant protection by stiff front bulkhead and propeller-shaft tunnel.



Testing the stability of the passenger safety cell during a lateral roll-over.



Strength tests of the front panel, seat belt and seat belt anchoring points.



Collision simulation at slow speeds on the "Pendulum".



"Load-testing" the seat and headrest.



In a simulated overturn, roof strut and roll bar strength is tested.



Testing the strength of a side door.

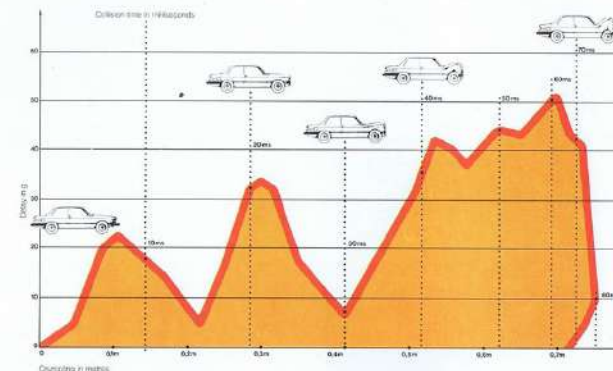


"Sled" used to test cockpit safety equipment.



Repetition impact test of the energy-absorbing instrument panel.

The BMW life saving system.



Curve of the pre-programmed front deformation of the 320i. Collision speed 50 kmh (31 mph). Deformation approx. 0.7 m (2.2 ft). Delay up to 50 g. The system-controlled, deformable, energy-consuming front part of the BMW does not just "brake" continuously. It interrupts, through pre-determined detail zones, the braking process with the aim of

providing a perfect balance with the hold-back system. At the point when the bodywork deformation of the front part is at its greatest, and therefore when the delaying forces are at their lowest (bottom of the curve), the occupants of the car are held by their seat belts, producing a delay that is acceptable for both the vehicle and its occupants.

The BMW 320i was not designed merely to meet the legal requirements, but to exceed them.

Surely few automobile manufacturers have spent more time, or exerted more effort in the field of automotive safety than the Bavarian Motor Works of Munich, Germany.

At BMW, the subject of automotive safety was a matter of serious concern many years before it became fashionable.

Systematic collision research

enables our engineers to determine the exact chronological connection between all possible types of automobile deformation and their relationship to various safety devices.

(In this way, to cite one technical example, the crush behavior of the BMW 320i was optimally synchronized with the response time lag of the front automatic seat belts. By means of the structurally programmed valley in the retardation curve for the front part, the motion se-

quence of the passengers during an accident has been exactly adapted to the retardation action and the effectiveness of the belts.)

The BMW body testing facility is one of the most modern and innovative in Europe.

In highly specialized test stations — with the help of extremely sophisticated testing equipment — the entire structure — as well as all structural details — are examined during rollovers, front/rear, front/side, front/front and transverse collisions for their stress resistance and reactions.



Service, as efficient and reliable as the car itself.

BMW owners can get rapid routine servicing, perfect engine tuning, and pinpoint accuracy in the diagnosis and solving of possible problems.

BMW service and original spare parts are available coast to coast in the United States — and in over 100 countries around the world.



Optional: steel sunroof

Technical Data BMW 320i

Dimensions and Weights

Two-door sedan, with rigid safety cell passenger compartment with crush zones in the front and rear, integrated center roll bar. Length: 177.6". Width: 68.4". Height (unloaded): 54.3". Wheelbase: 100.9". Track front: 54.5", rear: 55.1". Turning circle dia.: 34.1 ft. Door cutouts: 40.6" wide. Two front bucket seats: 21.0" wide each. Rear bench seat: 32.0". Width at shoulder height: front 51.6", rear 51.2". Trunk capacity: approx. 16.2 cu. ft.,

Fuel tank capacity: approx. 15.3 U.S. gal., including 1.6 U.S. gal. reserve.

GVWR 3550 lbs.
GAWR front 1720 lbs.
rear 1840 lbs.
Service load 880 lbs.

Engine, Power, Transmission, Performance

Four cylinder four-stroke in-line watercooled engine, longitudinally mounted, light alloy cylinder head, transverse flow principle, hemispherical swirl-action combustion chambers, overhead camshaft with three main bearings, inclined overhead valves in V-arrangement, crankshaft with five main bearings and eight counterbalances, pressure oil circulation, full flow oil filter with regulation valve. Additional engine damper. Bosch K-Jetronic fuel injection, manifold system with air injection (Thermal-Reactor on California version only).

Capacity 1990 c.c./121.3 cu.in.
Stroke 3.150"
Bore 3.504"
Power 110 hp (SAE net) at 5800 rpm
105 hp (SAE net) at 5800 rpm, California version only
Torque 112 ft. lb. (SAE) at 3750 rpm
106.5 ft. lb. (SAE) at 3750 rpm, California version only
Compression ratio 8.1:1

Ignition distributor with centrifugal advance and vacuum retard system.
Three-phase current alternator 55 amp, 770 watt, battery 12 volts 55 amp hrs.

Hydraulically actuated single-plate dry clutch with plate spring, torsional damper and automatic adjustment. Optional automatic transmission: fluid clutch with torque converter.

Gearbox:

a. 4-speed manual transmission with synchromesh
13.764 II 2.022 III 1.320 IV 1.000 V 0.806
b. Automatic transmission 3-speed is optional equipment:
12.478 II 1.475 III 1.000 R 2.080
Final drive ratio 3.64:1 (hypoid gears)

Split universal joint shaft with flexibly mounted central bearing and 2 universal joints; rear wheel drive through double universal joint shaft with maintenance-free homokinetic joints. Maximum speed: 106 mph (Automatic 104 mph)
Regular gasoline: 91 RON

Chassis and Brakes

Front wheel suspension: individual wheel suspension on telescoping staggered legs (staggered trailing effect) with helical springs plus additional rubber springing, torsion bar stabilizer.

Rear wheel suspension: individual wheel suspension with rubber-mounted wishbones, telescoping pre-loaded legs with helical springs plus additional rubber springing, torsion bar stabilizer, link support.

Collapsible safety steering column with 2 universal joints, rack-and-pinion steering, overall steering ratio 21.1:1, steering damper.

Steel sport wheels: 5 1/2" x 13 H 2
Steel banded radial tires: 185/70 SR 13

Twin-circuit power assisted braking system with servo unit and rear axle brake pressure regulating device.

Front: ventilated fixed-caliper disc brakes with automatic adjustment, diameter 10.64".

Rear: simplex leading and trailing shoe drums, drum diameter 9.84", mechanically operated handbrake.

Equipment

Exterior: Energy-absorbing bumpers with rubber moldings, braced against hydraulic shock absorbers. Twin headlights (automatically switched off with ignition), two back-up lights, rear window defroster, pop-out rear windows, tinted glass all around with dark green border on top of windshield, chrome-plated exhaust pipe tip. Cavity seal, undercoating.
Heating and ventilation: Fresh air heating with easily adjustable heater system, low-noise, three-speed blower, defroster, outlets for windshield and side windows, fresh air intake through grills at the side and individual adjustable in the center, with separate adjustment for driver and front seat passenger, illuminated heating controls, flow-through ventilation.

Interior: Instruments and operating elements arranged in a semi-circle around the driver, easily readable and clearly mounted instruments with a tachometer, fuel and temperature gauges, odometer with trip recorder, adjustable orange light instrument panel, automatic windshield wiper/washer system with stalk controls, intermittent operation and two-speed wiper, additional warning lights for fuel reserve, handbrake and braking system, heated rear window, generator, oil pressure and "Fasten Seat Belts" (Reactor Service and EGR Service on California version

only) four-spoke padded steering wheel with safety impact pad and four horn contacts.

Front reclining bucket seats, easy length adjustment on roller bearings, height-adjustable head rests in front, controlled by a push-button and detachable, three-point automatic seat belts with covered reel in front and rear, two-point automatic seat belt rear in the middle, armrests on doors with integrated handgrips on the front passenger side, rear hand grips suspended from roof with clothes hooks.

Full carpeting, carpet on the rear shelf, cloth or leatherette upholstery, storage in lockable (and lighted) glove compartment, on the dashboard in the center console and in the pockets on the doors, cigarette lighter, illuminated safety ashtray in the instrument panel, two ashtrays in the rear, anti-glare rearview mirror, door locks with safety wedges.

Luggage compartment: storage space right and left, tool kit in trunk lid, carpeted trunk.
Interior light with door contact switches, indirect luggage compartment illumination, socket for rechargeable hand lamp (accessory) in the glove compartment.

Optional Equipment

Light alloy wheels, limited slip differential, metallic paints, automatic transmission, sport steering wheel (15.0"), Recaro seats in front, air conditioning, dual operation mechanical sunroof, radios.

GVWR = gross vehicle weight rating
GAWR = gross axle weight rating

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Los Angeles, California 90066

Alterations in models, standard and optional equipment, as described in the text and illustrations, may occur. Precise information should be obtained from your BMW distributor or importer.



The ultimate driving machine

