



DRIVING HINTS, MINOR DEFECTS

Fuel consumption

Economy

Engine oil consumption

Engineering modifications

Cold-weather driving

Breakdowns

Trouble shooting

Bulb changing

US model

The outer scale of the speedometer is calibrated in miles per hour. The inner scale is calibrated in kilometers per hour.

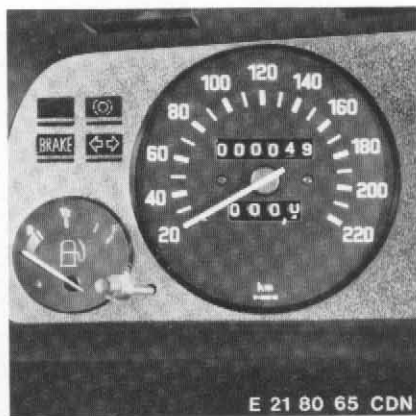
The odometer registers distance travelled in miles.



Canadian version

In this version the scale of the speedometer is calibrated in kilometers per hour.

The odometer registers distance in kilometers.



Engine oil consumption, like fuel consumption, depends on driving style, operating conditions and proper maintenance.

We recommend checking engine oil level regularly, for instance when filling up with fuel. If necessary, add fresh oil of the same grade as before at the filler cap on the cylinder head rocker cover, until the dipstick oil level reaches the upper mark (for oil grades, see page 63, "CARE AND MAINTENANCE").

The most accurate oil level readings will be obtained if the dipstick is examined before starting a cold engine; if the engine is already warm allow a short period for the oil to drain back into the sump. The car should stand on a flat, level surface. Make sure that the loop handle on the dipstick points to the left (forwards), and the dipstick is pushed fully into its tube. The

quantity of oil represented by the space between the upper and lower dipstick marks is 1.25 liters or 1.32 US quarts.

Warning: The oil dipstick must be fully inserted into the dipstick tube or a rough idle will result.

Adding too much oil is useless and may even damage the engine or suggest abnormally high oil consumption. We recommend adding fresh engine oil only when the level has dropped almost to the lower dipstick mark, but before it drops below the minimum-level mark.

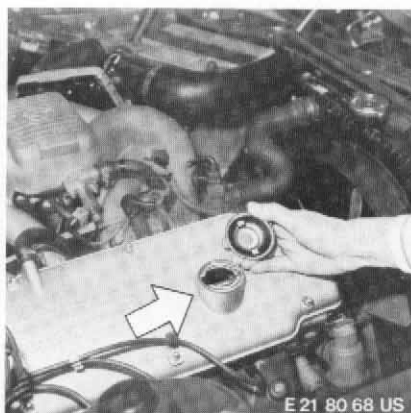
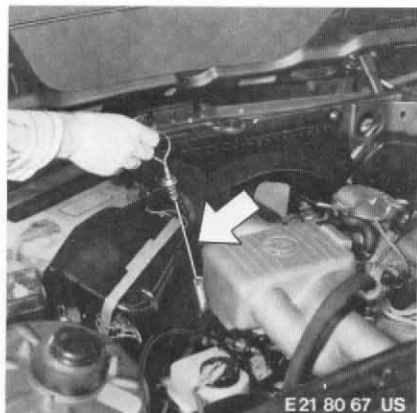
Change to another grade of oil only during a complete engine oil change including filter element renewal.

Our engines are designed to operate with the highly-advanced modern oil available commercially without the addition of any other additives. The same applies to the manual gearbox, automatic transmission, final drive and power steering.

To check oil level in the automatic transmission (check at regular intervals): Park the car on a flat level surface, apply the handbrake and run the engine at normal operating temperature with the selector lever in the "P" position at idling speed.

Remove the transmission oil dipstick, wipe with a **non-fluffy** cloth, re-insert and measure oil level. This must lie between the two marks on the dipstick.

The quantity of oil represented by the space between the two dipstick marks is 0.25 litre/0.25 US quart/0.44 Imp. pint.



On your way

Your BMW is designed to operate with **Unleaded fuel with an anti-knock index of 87**. This designation is comparable to Research Octane Number 91.

Please note that in certain countries it may be difficult to obtain fuel of the correct octane rating or quality at all garages and filling stations.

Traveling in Foreign Countries

Prior to using your BMW in a foreign country, check to ascertain if fuel of the required octane level is available to avoid engine damage.

Should unleaded fuel not be available in the foreign country in which you are traveling or intend to travel, be aware that the use of leaded gasoline will render the oxygen sensor and catalytic converter of your BMW inoperative. As a result, the vehicle will not meet the emission requirements of the US and Canada and maximum fuel economy will not be obtained. It will, therefore, be necessary upon your return to the US or Canada for the fuel system to be purged of the leaded fuel and both the oxygen sensor and catalytic converter to be replaced in order for the vehicle to be legally operated in the US and Canada.

Your car's **fuel economy** is mainly dependent on your style of driving. Highspeed driving, acceleration to the limit in all

gears, violent cornering and sudden braking all take their toll, not only in terms of heavy fuel and oil consumption, but also more rapid wear of brakes, tires and all the engine parts.

After driving for some time in dense city traffic or bumper to bumper, we recommend letting your engine "**take a deep breath**" by covering the next mile or two (some kilometres) at engine speeds of 4500 - 5500 rpm. This will help eliminate any carbon build-up in the cylinders.

The brake booster on your BMW works pneumatically, so that the necessary vacuum is provided only when engine is running. When the car is moving with the engine off, e.g. when it is towed, greater pressure on the brake pedal is needed to reach the desired braking effect.

For checking brake pad wear see 'MINOR DEFECTS'

CAUTION!

Do not drive with your foot resting on the brake pedal. "Riding" the brakes may result in abnormally high temperatures, lining wear and possible brake failure.

The 'Ten Commandments' for energy-conscious driving

- 1. Do not warm up the engine to operating temperature at idle speed, and never leave the engine to idle for long periods.**

Driving your car away immediately after starting is the quickest way of warming up the cold engine to its normal operating temperature. And the right operating temperature means greater fuel economy. Switch off the engine when you stop for a prolonged period. Only three minutes at idle speed cost as much as 1 km (3/4 mile) on the open road.

- 2. Do not drive up to maximum speed in 1st gear – use it only for starting off.**

First gear consumes more fuel than any other gear at a given road speed. Full-throttle getaways result in unnecessarily high fuel consumption.

- 3. Shift up to a higher gear in good time, and try to drive in the higher and more economical 3rd, 4th or 5th gears.**

Example: Driving at a steady 50 km/h (30 mile/h) in 2nd instead of 4th gear consumes up to 100% more fuel.

It can still be as much as 30% more if you use 3rd gear instead of 4th at the same speed. BMW engines have such excellent torque that they can be driven without hesitation at low speeds in high gears, e. g. at 50 km/h (30 mile/h) in town traffic.

- 4. Adopt a moderate driving style and avoid extremes.**

Do not accelerate when you can see that you will have to brake in the next few moments. Drive quickly but smoothly and steadily. Try to keep off the brakes, allow your car to coast and avoid traffic jams wherever possible.

- 5. Avoid driving at full throttle for long periods.**

The maximum power potential of a car is one of its most important safety reserves. However, if you always use maximum power on busy main roads, you will be constantly braking from maximum speeds. That costs energy. Steady average speeds help save fuel, nerves and wear and costs only very little extra time.

- 6. Check tire pressure regularly.**

If the tire inflation pressure is only 0.5 bar (7 lb/in²) less than specified, rolling resistance is increased by 15% and your fuel consumption too.

- 7. Do not carry unnecessary weight (ballast) or use a roof rack.**

Every bit of extra weight wastes energy. Do not carry your 'weekend luggage' with you all the time. A roof rack increases air resistance and fuel consumption. Remove roof or ski racks immediately after use.

8. Plan your journeys in advance if possible.

Every traffic jam and every unnecessary, tiresome search for a parking space costs energy. You should plan to avoid rushhour traffic and times when there is a lack of parking spaces in city centers. You can often miss traffic jams by starting your journey half an hour earlier or later.

9. Have your car serviced regularly and the necessary adjustments for maximum fuel economy performed.

An ideal fuel-air mixture and optimum utilization of fuel depend on the condition of the air cleaner, spark plugs, valves, carburetor or fuel injection system and the ignition system. Regular servicing can produce a fuel saving of up to 10%. That means that the average car user would need some 150 liters (33 Imp., 39.3 US gal) less fuel over the year if his car were always set up and adjusted correctly.

10. Check your car's fuel consumption regularly and accurately.

Only if you know your own car's fuel consumption can you compare it with the car maker's specifications and empirical values. And it is only possible to keep a check on your method of driving and have minor engine adjustments performed in good time if you record the fuel consumption.

We would like to give you a few additional and useful tips

Commandments 1 – 5:

More skilful driving pays off where it is needed most: under difficult conditions.

Let us start at a common point: A medium size BMW car consumes about 7 liters/100 km (40.3 mile/Imp. gal or 33.6 mile/US gal) at a steady 60 km/h (37 mile/h). But in town traffic we average only 20 km/h (12.5 mile/h) and usually consume twice as much in the process. It is in this area therefore that we can adopt new ways of behaving and observe some relatively simple driving rules. The simplest basic rule here is always to drive in the highest possible gear or, put another way, use the lowest engine speed at all times. You will have to change gear a little more often, but the fuel saving is considerable.

While you drive be conscious of the next gear shift or braking decision. Do not accelerate when you can see that you will have to brake a few moments later. Cars which move forwards in a series of jerks not only hinder the smooth flow of traffic, they are constantly wasting energy.

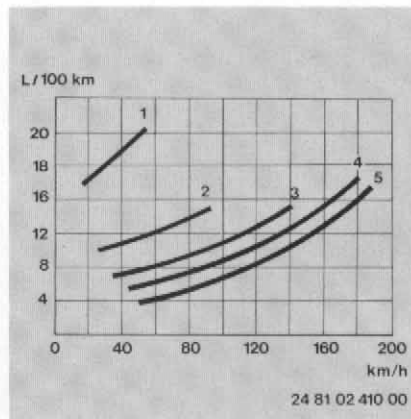
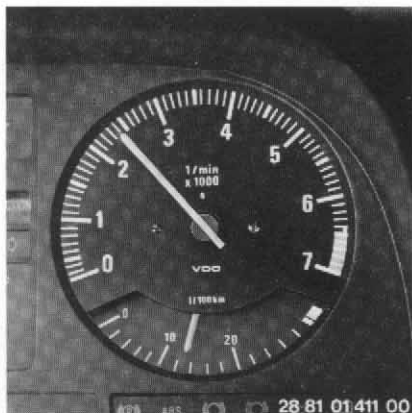
Sensible use of engineering excellence

One very good psychological precondition for staying cool and composed at the wheel are cars which make it just as easy to accelerate as to give way. Cars which make one drive considerably offer safety reserves that enable them to be maneuvered with agility and speed in traffic whenever the need arises and help their driver in many situations in which one suddenly requires the power and safety potential of a BMW. As we said, when you have the power to accelerate, it costs only a smile to hold back and give way.

The instruments show you the way to economy

The graph shows the fuel consumption in relation to road speed in the individual gears. It is clear to see how important it is to change gear in good time. BMW drivers have the advantage of possessing an engine which delivers high torque over a wide rev range and thus allows upshifts to be made very early without sacrificing either safety or comfort.

Our recommendation: Watch your tachometer. Note the most favorable torque range so that you always change to the next gear at the ideal shift point.

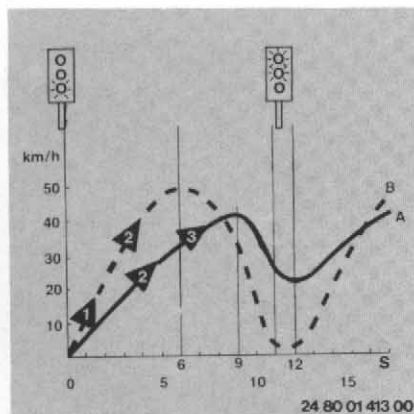


Thoughtfulness reduces the burden on you and your tank

The table of fuel consumptions for cars under different operating conditions, i. e. constant 90 km/h (56 mile/h) and 120 km/h (75 mile/h) and urban motoring (exhaust gas test cycle) shows the more a car is used, the greater the effect of driving style and being at ease at the wheel have on consumption.

The graph below illustrates how different fuel consumptions can be achieved at the same average speed when two different driving styles are employed.

The graph plots the driving methods of two drivers: Driver A (solid line) and driver B (broken line).

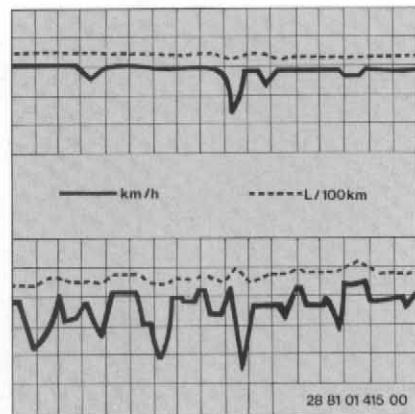


Driver B accelerates fully in 1st and 2nd gears between the first and second set of traffic lights and arrives at the lights earlier than driver A, but must brake hard because the traffic lights are 'red'. Driver A on the other hand does not use full throttle through the gears and shifts up to 3rd gear. He sees that the lights are 'red', reduces his speed and can then drive across the junction in 2nd gear without braking because the lights change to green as he arrives.

A high average is better than high speed

When one looks at the speed diagram of a car that has been driven at the maximum possible speed at every opportunity on a busy main road, one notices the following:

The extreme fluctuations clearly demonstrate that it can be far better to travel at a steady high average speed which matches the general flow of traffic. That saves a lot of nerves and a lot of energy as well. Every time the car is braked heavily the brake discs unnecessarily convert valuable energy into heat.



Commandment 6:

Driving with the tires under-inflated reduces their useful life and increases the risk of tire damage; the tire is flexed and deformed excessively and thus becomes too hot. Its rolling resistance is also increased, more engine power is required and fuel consumption is accordingly higher. Check tire pressures regularly at not more than 14 day intervals.



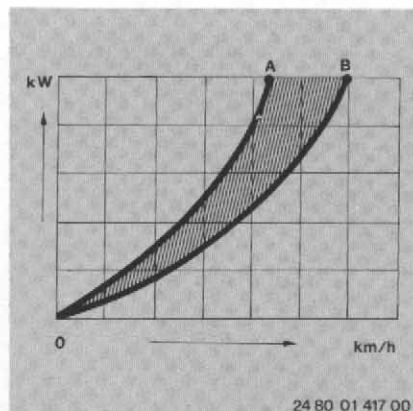
Commandment 7:

Energy – disappearing into thin air?

The graph below shows the power which must be expended to overcome air resistance as vehicle speed rises. A segment is shown (see shaded area) because car shapes vary and therefore have a lower or higher air resistance to overcome.

A = Air resistance high

B = Air resistance low



Commandment 9:

A united effort to reach a common target: May we ask for your undivided attention.

The automobile industry, the European in particular, has progressively reduced fuel consumption over the past decades while satisfying greatly increased customer requirements. Its extraordinarily intensive investment and research programs are directed at improving the results obtained up to now while maintaining or even surpassing present safety and comfort requirements. But that in itself is not enough. As we have to save energy now with the existing car population and no existing technology, we ask all car users to make their contribution – in addition to the efforts of the government and the industry.

BMW engine technology makes it easy for you to adopt a reasonable approach

The best prerequisite for a new economic way of driving is the ultimate in engines – as offered by BMW. An engine that delivers high torque at the lowest possible rev/min.

In this respect a BMW offers you maximum efficiency. The special characteristic of all BMW cars is their ability to accelerate smoothly at high revs as well as giving you plenty of jerk-free bottom end power.

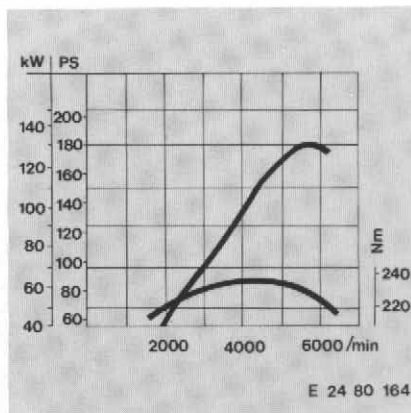
A BMW responds with smooth power delivery when others are still hesitating

The effect of a very high torque at very low revs can be demonstrated by an example: The BMW 320i can climb a gradient of more than 35% with the engine turning at only 1000 rev/min.

Another example: The torque curve shows why a BMW engine is the ideal prerequisite for fuel efficient motoring at low engine speeds. The BMW 320i, for instance, delivers 85% of its maximum torque, i.e. its maximum pulling power, at only 2000 rev/min. It can be driven smoothly, comfortably and safely in high gears, i.e. the economic 3rd and 4th gears, at low speeds on busy city roads.

It does not spit back, will accelerate quickly when required and, because the engine is not under load, consumes very little fuel even when compared with smaller cars.

The engine is supplied with dust-free combustion air by way of the air cleaner. If the air cleaner is very dirty, the engine will be starved of fresh, clean air and the result will be an increase in fuel consumption.



Sooted and worn spark plugs reduce engine power and waste fuel. Checking them regularly also contributes to economic use of energy.

A fuel injection system service, i.e. checking the setting, can suddenly make one realize what economy is about. Your BMW dealer can perform the fuel injection system service not only to provide you with optimum economy but also to ensure that the exhaust gases remain clean and protect the environment.

Commandment 10:

Having faith is good, checking is better

The secret of energy conscious driving is knowing exactly what your car consumes. Only if you establish what the effects of different driving styles are on consumption and what readjustments can do for the engine will you act and react with greater awareness in the future.

Keep a constant check on how much fuel you use.

Preconditions for fuel consumption measurement

1. The engine must be broken in.
2. Fill the tank to the brim.
3. The car should be perfectly level when you fill up.
4. Get rid of air bubbles in the tank by rocking the car.

'Check as you drive':

Try to maintain a constant 90 or 120 km/h (56 or 75 mile/h) in direct top (4th gear).

'Observe' -

Measuring the consumption

After finishing your journey, fill the tank to the brim again.

This is how you calculate your consumption per 100 km (or mile per gallon):

$$\frac{\text{fuel consumed in liters} \times 100}{\text{distance covered in km}}$$

=

fuel consumption in liters per 100 km

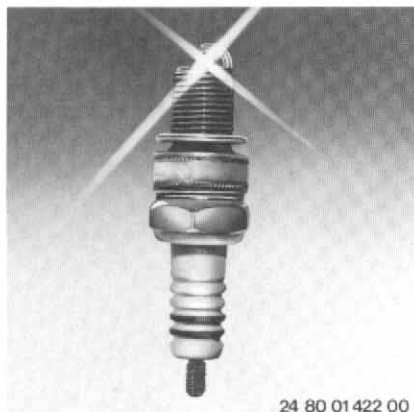
or

$$\frac{\text{distance covered in miles}}{\text{fuel consumed in gallons}}$$

=

fuel consumption in miles per gallon

Please observe the specifications regarding grades of fuel and engine oil.



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Useful information on disc brakes

The brake booster servo on your BMW operates pneumatically, so that the necessary vacuum is built up only when the engine is running. When the car is moved with the engine stopped and the pressure reservoir empty, for instance when being towed, a much higher pedal pressure than usual will be needed to produce the anticipated braking effect.

On long downhill gradients the engine's braking action when the throttle is closed can be increased by selecting a lower gear. Never run downhill with the clutch pedal depressed, the gear lever in neutral or – a very dangerous practice – the ignition switched off.

It is essential to observe the break in instructions for the braking system when new brake pads are fitted – see 'OPERATING INSTRUCTIONS'.

Warning: When replacing brake pads, only BMW-approved brake pads should be used.

A disc brake system offers optimum braking efficiency, smooth response and a high load capacity. The peak temperatures which occur during brake applications, e.g. on mountain passes when driving quickly, necessitate a maximum degree of cooling which is provided exclusively by ram air or the peripheral speed of the brake discs.

Wet conditions, dirt, salt spread on winter roads and corrosion of the brake discs can impair brake behavior by increasing braking distances, altering the car's normal brake pressure distribution, causing variations in the coefficient of friction on the individual wheels and thus make the car pull to one side.

Corrosion of the brake discs is accelerated if the car is used very little or garaged for long periods.

Gentle or moderate use of the brakes also promotes corrosion of the brake discs and allows the brake pads to become dirty because the minimum pressure necessary for the disc brake's self-cleaning action is not reached between the pad and disc.

Corroded brake discs cause a knocking effect when the brakes are applied and this cannot generally be eliminated by prolonged braking.

Dirt burnt into the brake pads (glazing of brake area) and clogged drain grooves cause scoring of the brake discs as well as a change, reduction or delay in braking effect.

Another problem in this connection is brake squeal which tends to increase in intensity as the discs become dirtier or glazed.

All these climatic and environmental effects cause a change in the brakes' coefficient of friction, i.e. less braking efficiency is available for a given pedal effort. If the coefficients of friction change in this way the brakes may respond unevenly or pull to one side.

Warning: Allow the engine to cool (needle of coolant temperature gauge in center of white zone) before unscrewing the radiator cap. To open, turn the cap a quarter-turn counterclockwise, to the first stop. Allow time for excess pressure to escape, then unscrew further and remove. To seal the radiator, screw on the cap as far as the second stop.

When **driving downhill**, the engine's braking action can be increased by shifting down to a lower gear ratio. Never drive downhill with the clutch pedal depressed, the gear or selector lever in neutral or – more dangerous still – with the ignition switched off.

The brake booster servo on your BMW operates pneumatically, so that the necessary engine vacuum is available only when the engine is running. When being towed with the engine stopped, more pedal pressure than usual will be needed to achieve the desired braking effect.

When the minimum brake pad thickness is reached a warning light comes on in the instrument cluster. Additionally, a spreader spring in each disc brake caliper comes into operation and makes increased pedal pressure necessary.

To protect the discs from damage, we recommend that the pads should then be renewed without delay by a BMW dealer.

For major **journeys**, we suggest that certain spare parts be carried as a precaution – bulbs, fuses, V-belts, spark plugs, gaskets etc. Your BMW dealer will gladly assist you in selecting a suitable range of items, available in travel kits.

In most cases, travel abroad calls for a nationality plate to be displayed at the rear of your car. However, some countries have differing or additional regulations. In case of doubt, it is best to approach a consulate, automobile club or similar agency.

For **winter operation** of your car, a few essential steps must be taken before the cold season commences. The coolant, as delivered, contains a **long-life-antifreeze and corrosion inhibitor**. Concentration must be kept at 35% all the year round in order to provide the necessary corrosion resistance anti-boil – anti-freeze protection as shown below.

Total capacity of cooling system including heater:	7.4 US quarts 7 litres 6.0 Imp. quarts
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Anti-freeze protection down to approx.	-13° F -25° C
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Corrosion inhibitors lose their effectiveness in time, therefore it is necessary to change, the coolant completely **every 2 years**. (For draining and refilling the cooling system, see "CARE AND MAINTENANCE"). Check the antifreeze protection of the coolant before and during the cold season of the year. At the same time, examine the cooling system for leaks and replace any porous or brittle hoses.

Engine temperature is controlled by a thermostat, taking into account both engine load and outside temperature. For this reason **the grille must not be blocked off, nor a radiator cover fitted**.

The **windshield washer** can be protected in cold weather by adding 40% domestic alcohol. This is effective down to temperatures in the region of -20° C (-4° F). Please note the instructions regarding engine oil to be followed at the beginning of the cold season (see "CARE AND MAINTENANCE"). If the weather suddenly turns colder, do not wait until the next routine oil change before refilling with a suitable grade of oil.

If the engine is to start reliably in winter, the **battery** must be fully charged. When cold, a battery's output is reduced, yet the demands made on it are greater in winter than in summer.

Warning: To charge the battery **without removal** from the car, the engine must be stopped, then **both battery terminals removed. Never attempt to disconnect the battery terminals while the engine is running.**

If **winter tires** – (M+S) radials – are installed, please note that for good directional stability and light steering, tires of the same make and type should be fitted to **all four wheels** (and to the spare as well if possible).

Warning: For reasons of safety the tire valve should always be exchanged when renewing or refitting tubeless tires see also "TECHNICAL SPECIFICATIONS AND INFORMATIONS".

Do not exceed the maximum legal speeds or maximum speeds recommended by the tire manufacturer.

Observe the prescribed **tire pressures** at all times, and have the wheels rebalanced whenever a wheel or tire is changed.

Snow chains may be used on drive wheels only. Max. speed is then 37 mph or 60 kph.

Traction can be improved on ice or snow covered roads and in mountain districts by carrying approx. 110 lb or 50 kg of **ballast in the luggage compartment**. The ballast should be prevented from moving.

Use a lubricant on your door locks to insure year round reliability. If a lock should freeze heat the blade of the key before inserting.

We recommend applying glycerin to prevent the **sealing rubber strips** on the doors and around the engine compartment and luggage compartment from freezing.

Your car is treated as standard with a **special coating on all cavities and inside surfaces**, and the **underside** is covered with an undercoating.

Do not neglect the **wiper blades** either. If they leave streaks or unwiped areas, they may affect your view of the road. Wiper blades should be renewed at least twice a year, before and after the cold season.

In winter, chromium plated and polished components can be protected with colorless lacquer.

After a heavy snow fall, clear the air inlets in front of the windshield so the car's heating and air extraction systems can function correctly.

In winter, we also suggest carrying the following items in the car:

Sand, for traction on ice-covered slopes;
A shovel to dig the car out of drifts;

A board to act as a firm support for the jack; Handbrush and scraper to remove ice and snow from the body and windows.

If the car gets stuck in deep snow, sand, mud etc do not press the accelerator down too far; or the rear wheels may sink in too deeply. Place some form of support beneath the wheels (in an emergency the car's floor mats can be used) for additional TRACTION. It may help to apply the handbrake lightly to stop one rear wheel from spinning. If this remedy works, do not forget to release the handbrake immediately afterwards.

When leaving your car parked, it should be secured in such a manner to prevent it from rolling. On level ground or slight inclines, this is customarily done by placing the automatic transmission selector in P (park) or standard transmission in first or reverse gear and engaging the handbrake.

Warning: Driving the vehicle through large puddles or on flooded streets could allow water to penetrate to the handbrake shoes. At freezing temperatures, this water could cause the handbrake shoes to freeze to the drum, as with most other vehicles. Should this condition occur, pull the handbrake on as hard as possible and then release it. Attempt to move the vehicle alternately forward and backward. If the rear brakes do not free up, the vehicle should be towed for repairs.

What to do, if . . .

If your car should develop a fault which you are capable of dealing with yourself, proceed as follows if there is no service facility nearby.

Tire trouble is a rare thing these days. But if you should get a flat tire, pull to the side of the road and apply the handbrake. Do not forget to switch on the **hazard warning flashers** and to set up a warning triangle or flashing signal lamp at an adequate distance to the rear, if these measures are required by law.

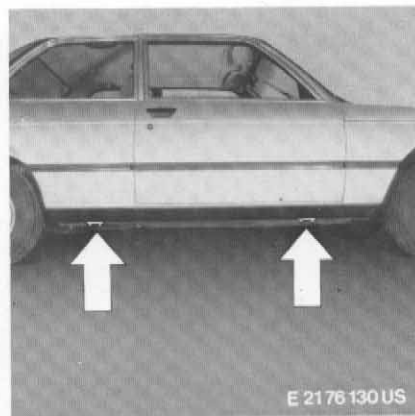
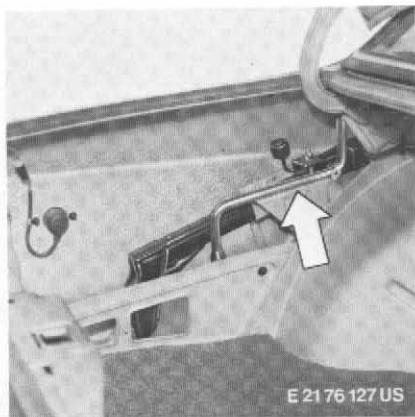
The spare wheel is housed in the luggage compartment, under the floor panel; this can be lifted out.

The wing nut securing the spare wheel can be unscrewed by hand.

The **jack** and **lug wrench** are housed in a compartment on the left of the luggage compartment. The jack can be removed after unscrewing the wing nut (arrow).

Fit the jack to one of the **4 lifting points** provided on the body, and turn until the desired wheel is clear of the ground.

Warning: never work under a jacked-up vehicle.



Loosen the wheel studs.

The hub can also be pressed off from the rear after removing the wheel, using a suitable tool – e.g. a hammer shaft – towards its rim (not in the center).

Remove the wheel studs and take off the wheel. When placing the wheel onto the car, put the centering pin (located in the tool kit) in one of the four tap holes, set on the spare wheel and screw in a wheel stud. Then pull out the centering pin and replace the remaining wheel studs.

Tighten studs evenly until the wheel is held firmly. Lower the car until the wheel is supporting the load, then **finally tighten the wheel studs**, working in a crosswise pattern. Have the tightening torques checked by a service station right away, and have them checked again after 600 miles or 1000 km and then every 15.000 miles or 24.000 km.

Important: The wedge-shaped wheel chock must always be placed beneath the rear wheel on the opposite side of the vehicle from that being lifted. This precaution is made necessary by the design of the handbrake. The chock should be behind the wheel – looking forward – to prevent the car from rolling backwards.



Set on the hub cap and press on with the flat of the hand.

Have the flat tire repaired and the wheel rebalanced as soon as possible.

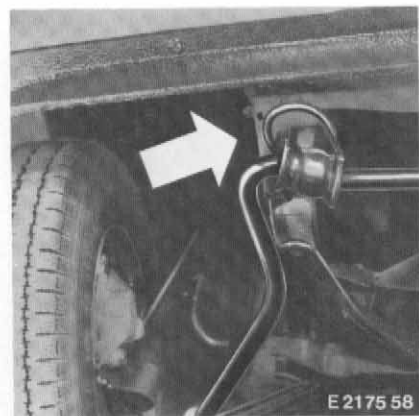
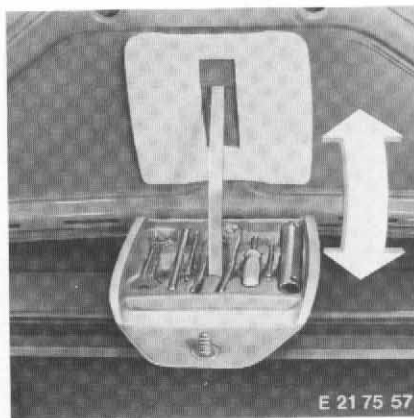
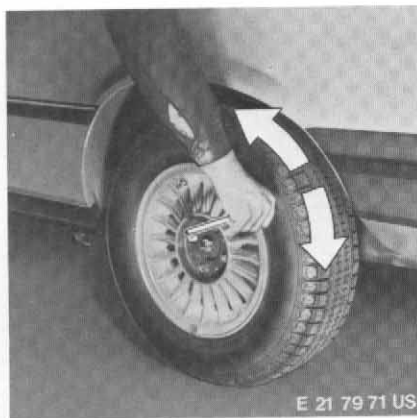
Note: When changing or renewing tubeless tires, always discard and renew the rubber valve as a safety precaution.

The **toolkit** is housed beneath the luggage compartment lid, and can be opened by unscrewing the wingnut.

To tow-start a manual transmission car, declutch, select third gear, and switch on ignition. When the car is moving forward smoothly, engage the clutch gently.

Caution

Owing to the design of the **automatic transmission**, cars so equipped cannot be push-started or towed for starting, and must be towed away for repair. **Towing eyes** are located on the left and right hand sides of the front subframe.



Troubleshooting

	Possible cause
Engine will not start	Battery dead, battery terminals loose or corroded, automatic transmission selector not in "N" or "P" position
Starter runs but engine does not fire	Fuel tank empty, no ignition spark (loose lead), engine flooded
Engine fires but stalls immediately	Loose or leaking air and vacuum hoses, wiring for fuel injection system loose
Erratic idling	Fuel injection idle settings incorrect, misfiring or poorly adjusted ignition
Oil pressure warning light comes on	Oil level too low, oil leak
Coolant temperature too high	Coolant level too low, V-belt slipping or broken cooling system clogged
Charge warning light comes on	Loose or broken V-belt, loose lead or connection on alternator or regulator
Brake warning light comes on	Brake fluid level too low, handbrake not released, leak in clutch hydraulic circuit
Brake pad wear warning light comes on	Brake pads could be worn, Have brake pads inspected
"OXYGEN SENSOR" warning light comes on	Emission Control System needs maintenance oxygen sensor must be replaced

Starter motor does not operate when ignition key is turned to position 3:

Check by switching on headlights, then operate starter again.

1. If the headlights go out slowly, the battery is insufficiently charged or defective. Recharge the battery or have it changed. The car can be push-started or towed (not Automatic) if necessary, or the engine can be started using an auxiliary starting cable and a second 12 Volt battery (from another vehicle)
See next page –
Starting with a run-down battery
2. If the headlights go out immediately, check that the cable terminals at the battery and starter motor are making proper contact, and tighten if necessary.
3. If the brightness of the headlights does not diminish, (a fault in the starter circuit is indicated).

Engine will not start although starter motor is turning:

Provided that the instructions for starting have been observed, and there is enough fuel in the tank, the fault may lie in the ignition system or the fuel supply system.

1. Check that the plug leads are firmly attached to the spark plugs. Check the tightness of all cables on the coil, distributor and other terminals, and ensure that the fault has not been due to water entering the engine compartment during car washing.
2. Unscrew and check spark plugs.
3. Check whether the fuel pumps are running during starting.

If this is not the case, check the main fuel delivery pump (above the right halfshaft of the rear axle), the main fuel filter and the microfilter at the pre-delivery pump suction head, or consult your BMW Dealer.

The fuel injection lines need not be bled if the tank is run dry or drained, as the fuel delivery pumps prime the system automatically when the starter is operated.

Important:

Don't operate or crank the engine with ignition leads disconnected. The injected and unburned fuel can damage the oxygen sensor and catalytic converter.

Warning: Transistorized coil ignition system. It is highly dangerous to touch any ignition components when the engine is running.

Coolant temperature too high:

1. Allow engine to cool until the coolant temperature gauge indicator is in the white zone on the dial. Carefully remove the radiator cap and check coolant level. Never add water to the system if **the engine is hot**, after loosing a large quantity of coolant. Allow the engine to cool until the hand can be placed on the block.
2. If coolant has been lost, check the radiator cap or hose connections and the radiator itself for leaks.
3. Check V-belt condition and tension, adjust or renew as required.
4. Check ignition timing.
5. If necessary have the complete cooling system flushed out.

Fault in brake system:

If the red **brake warning light** comes on while the car is being driven, and the handbrake is released, it indicates a loss of brake fluid; if at the same time brake pedal travel increases considerably, one circuit of the hydraulic safety brake system has failed.

If faults develop on the brake system, have it examined as soon as possible.

If the red **brake pad wear warning light** comes on while the car is being driven, the brake pad minimum thickness has been reached. Have the brake pads inspected as soon as possible to prevent damaging the rotors.

A spreader spring in each brake caliper causes **pedal pressure** to increase when the **minimum brake pad thickness** is reached.

If one circuit of the hydraulic **dual-circuit brakes** should fail, **brake pedal travel** will immediately increase. In addition, higher pedal pressure will be needed to achieve the same braking action. Although the car can still be braked with only the remaining circuit in use, it is essential to have the brake system checked immediately.

If the red **oil pressure warning light** comes on while the car is being driven, declutch **at once** and switch off the ignition after pulling off to the side of the road. If the engine oil level is not too low; it need cause no alarm if the lamp flickers or comes on briefly at idle speed, provided that it goes off immediately when the accelerator is depressed.

If the red **battery charge warning lamp** comes on while the car is being driven, take the car to a service facility as soon as possible, or else the car's battery will gradually discharge, ultimately causing the vehicle to stall.

Starting with a run-down battery

You can start the engine with jumper leads to another 12 Volt battery (in another car) as follows: first connect the positive, then the negative terminals of the two batteries together.

Do not remove the battery cables from the empty battery!

Never remove battery cables when the engine is running!

Warning: do not let the cables touch part of either car or sparking will result. Operate the starter, and when the engine is running disconnect the jumper leads in the reverse order. Have the dead battery recharged if it is not otherwise defective.

Tow-starts – BMW 320 i Automatic

Design of the automatic transmission makes it impossible to start the engine by towing the car; for emergency starting procedure, see "Starting with a run-down battery" below.

Towing away – BMW 320 i Automatic

If the car has to be towed, set the transmission selector lever to "N" = **Neutral**.

Towing speed should not exceed 50 km/h or 30 miles/h, and the distance towed should be limited to 40-50 km or 25-30 miles. If the car has to be towed for a distance greater than 50 km or 30 miles, add 1 liter or 1.1 US quart, 1.8 Imp. pints of ATF (automatic transmission fluid) to the contents of the transmission, or remove the drive shaft. After repairing the car, do not forget that the oil level in the transmission must be reduced to normal before the car is returned to use.

PLEASE TOW IN THE MANNER PRESCRIBED BY STATE LAW(S).

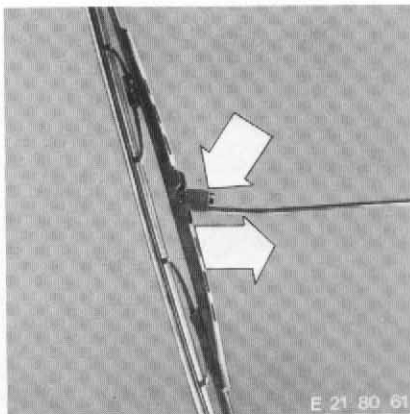
Towing another car:

PLEASE TOW IN THE MANNER PRESCRIBED BY STATE LAW(S)!

If you wish to assist another driver by towing his car with your BMW, you should ensure that the second car is not heavier than your own. A **rear towing eye** is located under the spare wheel pan. The towing eye is designed only for use with a nylon tow rope and under **no** circumstances for a tow bar or chain.

To remove a **wiper blade** first lift the complete arm away from the windshield. Then press the spring catch and pull off the wiper blade.

The **complete wiper arm** can be removed after lifting up the plastic cap and loosening the fastening nut (13 mm wrench).



If any electrically operated device or bulb on your car should become inoperative, first check the fuse.

The **fusebox** current distributor box with spare fuses and relays is located in a plastic case in the engine compartment, above the wheel arch on the left-hand side, and can be reached by opening the engine compartment lid. Details of the circuits and fuse ratings in Amperes are given on the transparent lid of the fusebox.

The melted metal band indicating a blown fuse can be clearly seen through the clear plastic cover of the fuse box. Snap the blown fuse out of its spring clip fastenings and press in a replacement fuse.



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Never try to repair a blown fuse with a piece of wire etc. ("jumping" a fuse could cause the wiring to overheat and result in a fire). If the fuse blows repeatedly, the fault should be investigated.

When **changing a bulb** or carrying out any other work on the car electrical system, always switch off the item in question or detach the earth lead from the battery negative terminal to avoid short circuits.

Never handle new bulbs with bare hands: use a clean cloth, paper napkin, or something similar. Avoid contact with grease or oil.

When changing headlight inserts, make sure that the beam setting screws are not disturbed.

We recommend keeping a "BMW travel kit" in the car. Ask your BMW Dealer for information about this kit.

Instrument lighting:

Before changing the 3 bulbs, the lower trim panel must be removed first. This provides access to the central screw which holds the instrument panel. After this screw and the speedometer shaft has been removed, the instrument panel can be pulled out forwards. The inoperative bulb can then be pulled out of its holder in the upper part of the trim panel.

Lighting: 3 valve-base bulbs,
W 12 V, 1.2 Watt.

Telltale lamps: W 12 V, 1.2 Watt
Battery charge telltale: W 12 V, 3 Watt

The headlight inserts for the **low beam lights** are in the two outer lamps.

After removing the ornamental grille, loosen the three screws on the clamping ring and remove the insert towards the front by pulling back the cable connector.

The headlight inserts for the **high beams** – i.e. the inner lamps – must be replaced in the same way.

Side marker lights, parking light and front turning indicator lights:

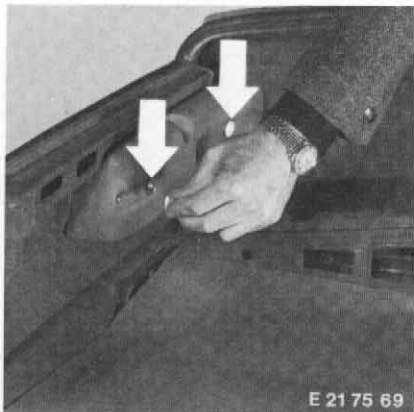
Unscrew the two Philips-head screws holding the plastic lens, and remove the lens. The 21/5 Watt (RL) spherical bulb should be pressed in slightly and turned to remove.

A rear **side marker light** is installed on both sides of your car. The side marker lights are equipped with 4 Watt (HL) bulbs. To replace loosen screws and remove cover.



Rear light:

Open the luggage compartment, unscrew the two knurled nuts and take off the lens.



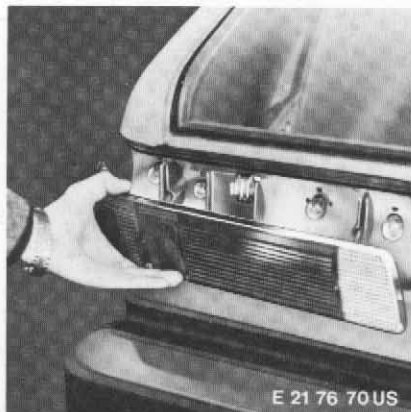
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Remove the defective bulb from its holder and insert the new bulb.

Rear/parking light: spherical bulb (G), 10 Watt;

Turn indicator: spherical bulb (RL), 21 Watt;

Stop light: spherical bulb (RL), 21 Watt;
Back-up light: spherical bulb (RL), 21 Watt.



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License plate light:

Loosen and remove Phillips-head screws and take off the lens frame with rubber seal. The contact clips for the 5 Watt (L) tubulartype bulb must grip the bulb end caps firmly and make good metal-to-metal contact. If necessary, bend the clips carefully or clean the contact areas.



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Interior light:

The 10 Watt (K) tubular-type bulb can be reached by pulling out the interior light.

As correct headlight adjustment is of particular importance in traffic safety, the headlights should be adjusted by a specialist using the proper beam-setting equipment. If this is not possible, open the engine compartment and reset the headlight beam by turning the two knurled plastic knobs as required.

1 = Vertical adjustment

2 = Horizontal adjustment

