630 CS
633 CSi

OWNER'S HANDBOOK

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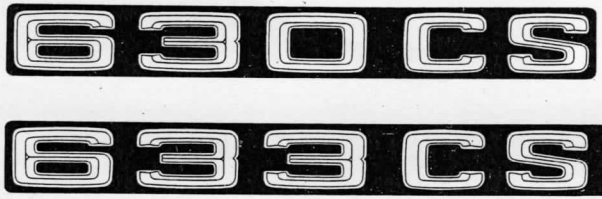

Bayerische Motoren Werke AG Munich


M ED 2449

Dear BMW owner,

Congratulations – you have now taken delivery of your new BMW.

The BMW's advanced design features satisfy the requirements of the most enthusiastic driver. The renowned vitality and ease of handling offered by all BMW models enables you to adopt a fair approach to all other road users and avoid the many trivial irritations which present-day driving can sometimes bring.

Your car's available power, however, only takes on a real meaning if you handle it with confidence. Please spare the time to study this handbook in detail, and to comply with its recommendations for trouble-free driving pleasure.

Sincerely yours,
BAYERISCHE MOTOREN WERKE
Aktiengesellschaft

In the interests of continuing technical development, we reserve the right to modify designs, equipment and accessories.
Dimensions, weights and performance data are quoted to generally accepted tolerances in accordance with German Industrial Standards (DIN).
No claims based on quoted data, illustrations or descriptions will therefore be considered.
Errors and omissions excepted.

Please note that variations in the specification of your vehicle may arise on account of differences in the items of equipment available or specified when ordering.

OPERATING INSTRUCTIONS

SAFETY

DRIVING HINTS, MINOR DEFECTS

CARE AND MAINTENANCE

SPECIFICATIONS

OPERATING INSTRUCTIONS

Maker's plate
Keys and locks
Controls, instruments and switches
Electric window lifts
Front seats, headrests
Sliding roof with elevated vent position
Heating and ventilation
Automatic transmission
Running-in rules

Before you start – what you need to know

The identity or your car can be established by comparing the registration documents with the **maker's plate, chassis and engine numbers.**

The model reference, chassis number and other important data are entered in the documents, and should be verified with the numbers stamped on the car's bodywork. You will find this data is essential for all enquires, inspection work, claims for parts, and similar. You should therefore familiarize yourself with their locations on the car.

Maker's plate: In the engine compartment, on the right hand side looking forward.

Chassis number: In the engine compartment, on the right hand side of the heater bulkhead looking forward.

Engine number: On the engine block at the rear left hand side, looking forward, above the starter motor.

For your new BMW you will have received two **master keys** and also a key which fits the door locks and ignition/starter switch. In addition, you will have been given a self-adhesive label bearing the **key number.** This number must always be quoted if you have to obtain a replacement key. Your BMW service station will gladly assist you in this event.

Be sure to keep the second master key in a safe place so that it can be obtained without delay if the first key is lost.


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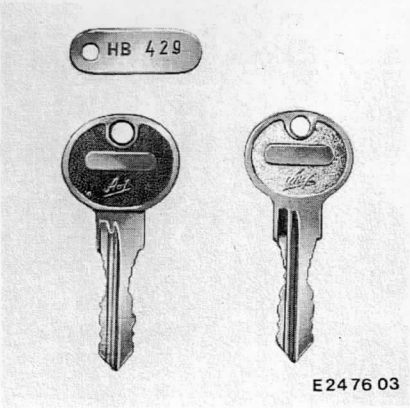

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The black master key fits all the locks on your BMW. The other key fits only the doors and the ignition/starter switch. The doors are opened by inserting the key and turning it forwards, and closed by turning the key rearwards.

This combination of keys and locks enables you to leave the car in the hands of a garage or repair workshop with your luggage and valuables protected against theft.

To open the doors from the outside, lift the flap-type door handle.

To lock a door from the inside, press the safety button down; to unlock and open from the inside, raise the handle beneath the armrest.

If the driver's door is already open, the safety button cannot be pressed down; in this way you cannot accidentally lock yourself out of the car.

The **front passenger door** is locked from the inside by pushing down the safety button. This safety button also remains in the locked position when the car door is shut from outside.

The black key is required to lock and unlock the **luggage compartment.**

Do not forget to lock the luggage compartment after closing.


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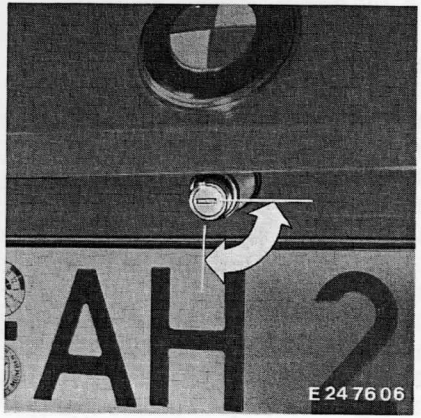
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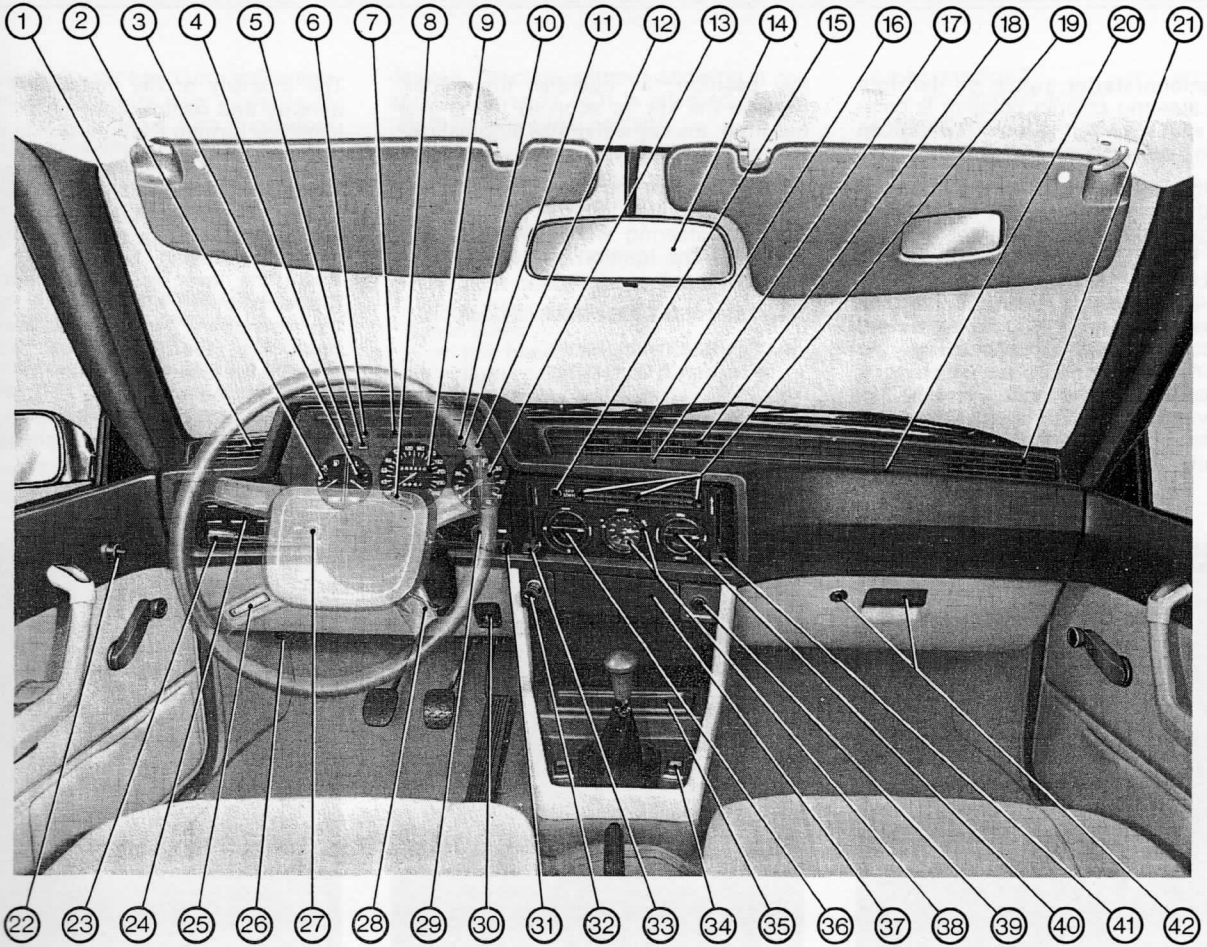
Instruments and controls

Note: Figures in square brackets [ ] = page on which item is described.

1 Left air outlet grille (movable) [25]
2 Fuel gauge with low level telltale lamp (white) [18]
3 Coolant thermometer with overheating telltale lamp (red) [18]
4 Battery charge telltale (red) [15]
5 Turn indicator repeater (green) [13, 15]
6 Oil pressure telltale (red) [15]
7 Selector lever position indicator light (automatic transmission models only) [15]
8 Trip distance recorder reset knob [14]
9 Speedometer with mileage and trip distance recorders
10 Telltale lamp for fog lights (optional) and rear fog guard light (yellow) [15, 16]
11 Headlight high beam telltale (blue) [12, 15]
12 Brake fluid level and handbrake telltale lamp (red) [15, 21]
13 Revolution counter with warning zone
14 Interior rear-view mirror with anti-glare position [21]
15 Push button for heated rear window [16]
16 Left central air outlet grille (movable) [25]
17 Loudspeaker (optional)
18 Right central air outlet grille (movable) [25]
19 Driver's fresh air grille (movable) [25]
20 Facia shelf
21 Right air outlet grille (movable) [25]
22 Switch for electrically adjustable door mirror [18]
23 Turn indicator, parking light, headlight low beam and headlight flashing lever [12]
24 Indicator lamps (green) for Check-Control [15]
25 Horn push [17]
26 Pull handle for engine compartment lid release [14]
27 Main light switch (2-position) with rheostat for instrument lighting intensity [12]
28 Clamp lever for adjustable steering column [20]
29 Fog light pull switch (2-position) (optional) or pull switch for rear fog guard light [16]
30 Automatic circuit breaker for electric window lifts [17]
31 Wiper/windshield washer lever [13]
32 Cigar lighter and power socket [23]
33 Slide control for ventilation, left [25]
34 Rocker switches for electric window lifts [17]
35 Ashtray [23]
36 Rotary temperature control knob [26]
37 Radio (optional) 24
38 Clock, combined with 3-speed blower control [22, 26]
39 Push button for hazard warning flashers [16]
40 Rotary air distribution knob [26]
41 Slide control for ventilation, right [25]
42 Glove box, lockable [22]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The **ignition/starter switch** on the right of the steering column housing is combined with the steering lock. The key can only be inserted in the **"O"** position.

Turn the key clockwise to the **"1"** position: the steering lock will be heard to disengage, but if necessary the steering wheel should be turned slightly to free the lock. The radio, electric window lifts and electric sliding roof (optional) can then be operated. Turning the key further to the **"2"** position switches on the ignition. The red charge and oil pressure warning lamps will come on, and the fuel gauge and the coolant thermometer will operate.

Key position **"3"** operates the starter. Release the key as soon as the engine has fired; the key will return automatically to position **"2".**

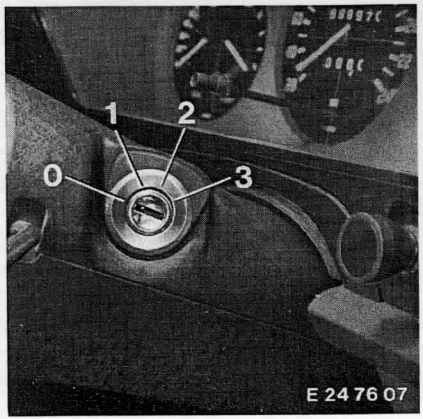
To lock the steering, turn the key to the **"O"** position and remove. If necessary turn the steering wheel until the lock engages. The ignition key can **only** be removed in this position.

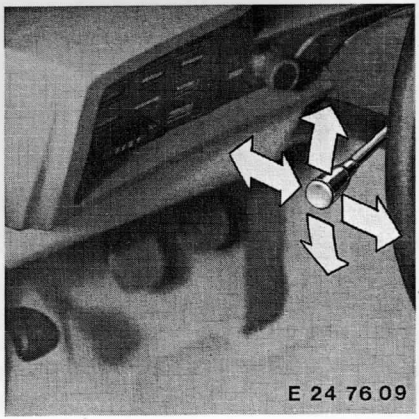
Head and side light switch (2-position)

Position 1: side lights
Position 2: headlights

The intensity of the **instrument panel, ashtray and control lighting** can be adjusted by turning the light switch knob in its pulled-out position.

The **dip lever and turn indicator lever** on the left of the steering column can be finger-tip operated with the left hand without releasing the steering wheel. When the lever is set to **main beam** (upper position) a blue telltale lamp on the instrument panel is illuminated. To **flash the headlights,** pull the lever towards the steering wheel. If the ignition key is turned to **"1"** or **"0"** while the headlights are on, the headlights will be switched off and only the parking lights will remain illuminated.





To operate the right hand **turn indicators** move the turn indicator lever upwards, to operate the left hand turn indicators move the lever down.
A regular ticking sound and illumination of the green telltale lamp in the combination instrument indicates that the flashing turn indicators are operating correctly.

The indicators are automatically cancelled and the lever returned to its initial position once the car has completed its turn. If the turn was only slight it may be necessary to cancel the lever by hand.

If the turn indicators are to be operated for a short period only (e. g. changing lanes, overtaking, moving off) press the turn indicator lever only slightly in the desired direction without allowing it to engage. As soon as it is released it will return to its original position.

The **parking lights** on the right or left of the vehicle are switched on by moving the turn indicator lever up or down after locking the steering.

Lever up
= right hand front and rear parking lights
Lever down
= left hand front and rear parking lights

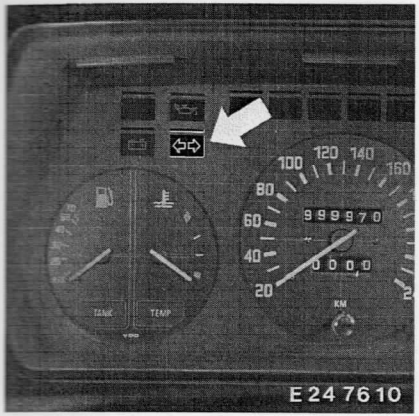
The **wiper and screenwasher lever** on the right has four positions.

To switch the wipers on and off, press the lever knob in towards the steering column.

Lever position 1
= intermittent action
Lever position 2 (center)
= wiper speed 1 (normal)
Lever position 3
= wiper speed 2 (fast)

The automatic screenwasher is operated by pulling up the wiper and screenwasher lever towards the steering wheel rim.

When the main light switch is pulled out, this also operates the headlight cleaning system (optional, see "SAFETY"). The electric washer pump and the wipers are both switched on. When the lever is released, a delaying relay keeps the wipers in operation until the glass is clean.



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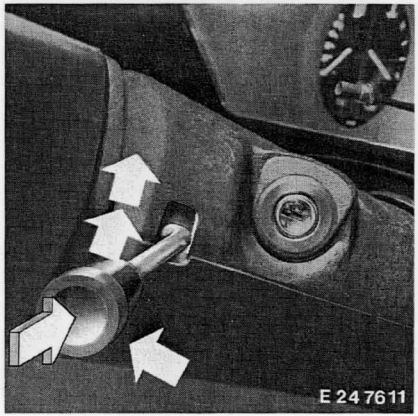
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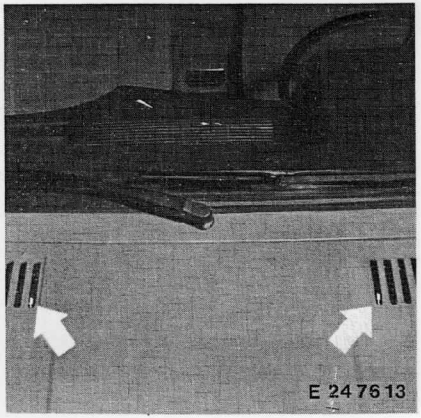
The intermittent action position provides single wiper movements at regular intervals. This avoids having to switch the wipers on and off frequently in light rain, snow etc. Select position 2 (fast) only in heavy rain or snow. The **washer reservoir,** of approx. 2.5 liters (2.6 US quarts, 4.4 Imp. pints) capacity, is at the front right of the engine compartment.

Warning: do not operate the automatic wipe-wash mechanism when the reservoir is empty.

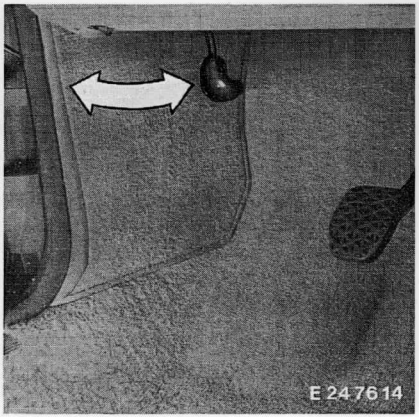
The location of the two **windshield washer jets** is shown below. If the fluid fails to strike the center of the wiped area, the jet can be carefully bent until it points in the correct direction.



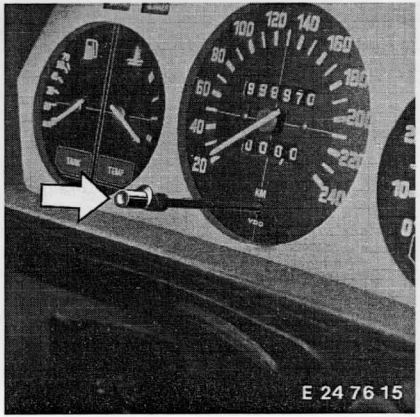
The **engine compartment lid** opens forwards, and is released from inside the car by pulling the lever on the left sidewall.

A built-in spring-loading mechanism ensures that the lid can easily be opened by lifting at the rear.

Warning: Make sure that the lever is pointing to the rear before closing the engine compartment lid. After closing the lid, lock it by pushing the lever forwards.



The **trip distance recorder** in the speedometer can be reset to zero by pressing in the reset knob.



The **instrument cluster** includes the speedometer, the revolution counter, the fuel gauge, the coolant thermometer and telltale or warning lamps for:

1	Battery charge	(red)
2	Oil pressure	(red)
3	Turn indicators	(green)
4	Headlight high beam	(blue)
5	Rear fog guard light or fog lights	(yellow)
6	Brake fluid level and handbrake	(red)
7	Fuel level	(yellow)
8	Coolant temperature	(red)

There are two spare panels, for example to act as a turn indicator telltale if a trailer is being towed.

On cars with automatic transmission, the selector lever position is shown by a series of indicator lamps in the instrument cluster.

P (white)
R (red)
N (white)
D (green)
2 (green)
1 (green)

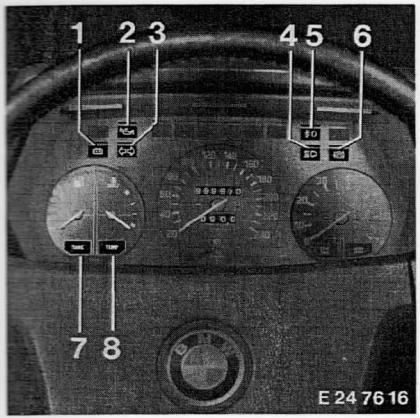
These lamps are wired in an anti-glare circuit, and operate at reduced intensity when the main light switch is pulled out. They also remain alight until the ignition key is turned to **0** or **1** and the lights extinguished.

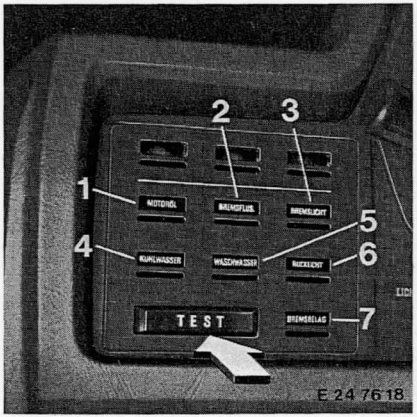
The 'Check-Control' combines function-indicating lamps for:

1	Engine oil	= Level
2	Brake fluid	= Level
3	Brake lights	= Operation
4	Coolant	= Level
5	Washer reservoir	= Level
6	Rear lights	= Operation
7	Brake pads	= Thickness

and also three spare zones.

Before starting the engine, switch on the ignition and the car's lights. Press down the brake pedal and operate the check control button – all function-indicating lamps should show 'green'.
If any lamp does not light up, the corre-





sponding function is not working correctly and should be inspected **before the engine is started** (see "DRIVING HINTS, MINOR DEFECTS").

The **hazard warning flashers** can be operated whether the ignition is switched on or off by pressing the button at the bottom right of the center console (see "MINOR DEFECTS").

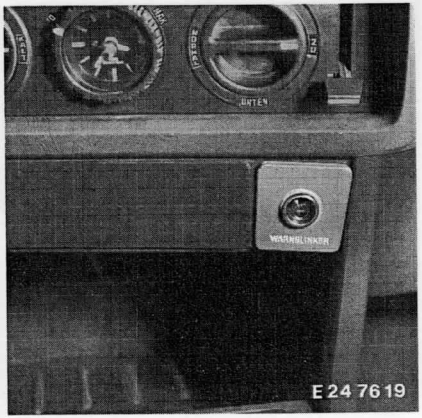
Regular illumination of the **red switch knob and the green turn indicator telltale lamp** show that the hazard warning flashers are operating correctly.

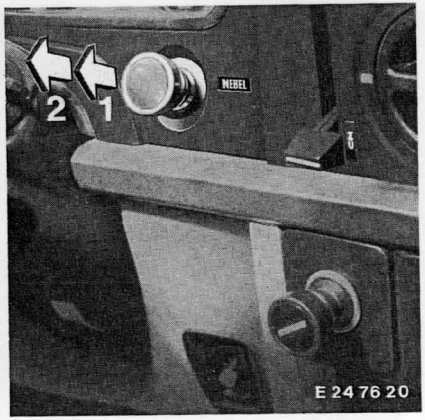
The **rear fog guard light** in the left rear light cluster is switched on with the pull switch to the right of the steering column (see "SAFETY"). At the same time, the yellow telltale lamp in the instrument cluster will light up.

If the fog lights (optional) are installed, the pull switch will have 2 positions:

1st position: Fog lights
2nd position: Fog lights and rear fog guard light

The **heated rear window** (15 elements) is switched on at the upper left push button on the center console (see "SAFETY"). The green switch knob will light up to indicate that the heated rear window is in use.





The **electric window lifts** (optional, with electric rear window lifts standard on BMW 630 CS and 633 CSi) are operated by rocker switches next to the gear lever.

Switch moved forwards = window closed

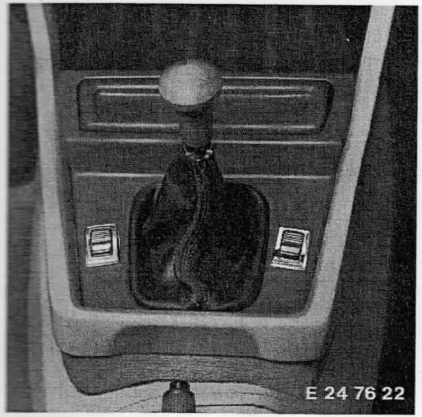
Switch moved back = window opened

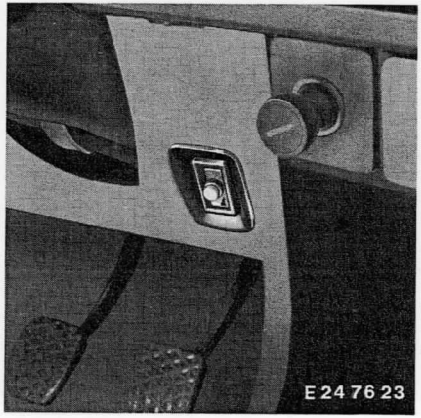
Additional rocker switches in the rear seat side armrests can be used to operate the window immediately above.

The **electric window lift system** is protected against overloading by an **automatic circuit breaker.** This renders the window lift motors inoperative in the event of a fault or obstruction.

The driver can also use the circuit breaker to disconnect the electric window lift mechanisms, for instance when carrying children on the rear seats. See also "SAFETY".

The two-tone horns are sounded by pressing the horn pushes on the steering wheel spokes.





The **outside mirror** on the driver's door can be adjusted to suit the driving position by a motor-driven mechanism.

Switch moved forwards
= mirror turns inwards
Switch moved back
= mirror turns outwards
Switch pressed up
= mirror tilts upwards
Switch pressed down
= mirror tilts downwards

When the switch is released, it returns automatically to the central position, but the mirror remains in the desired setting. See "SAFETY".

When the ignition is switched on, the **fuel gauge** in the instrument cluster shows the fuel level in the tank. If the pointer is in the red zone and the yellow fuel level telltale lamp comes on, you should add fuel as soon as possible, although enough for about 50 km (30 miles) still remains (depending on your style of driving).
If the telltale lamp remains alight all the time the risk of running out of fuel is becoming serious.

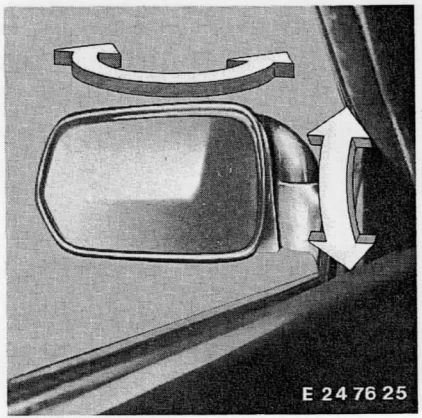
The **fuel filler cap** (lockable) is located behind a flap on the right rear side panel.

The **coolant thermometer** has two colored zones.

Blue: Engine too cold. Keep engine and road speeds moderate.

Red: Engine too hot. It need cause no alarm if the pointer reaches or enters the red zone briefly when outside temperatures are very high or the engine is working very hard. When the pointer enters the red zone, the red "Temperature" warning lamp will also light up. If the pointer tends to stay in the red zone, the cause should be investigated (see "MINOR DEFECTS").

The normal engine operating temperature is with the coolant thermometer between the two colored zones.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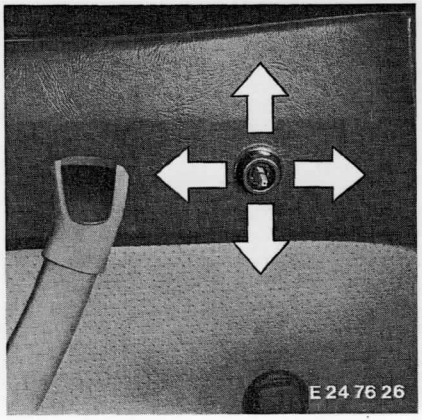
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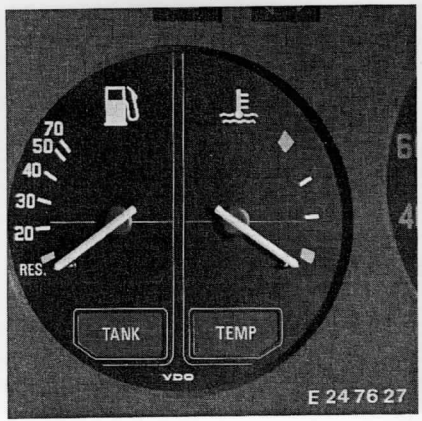

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The arrangement of the **rear light cluster** is as follows:

1. Turn indicator	(yellow)
2. Brake light	(red)
3. Rear fog warning light (left side only)	(red)
4. Rear light, reflector	(red)
5. Reversing light	(white)

When the luggage compartment is **open,** the luggage compartment light will come on.

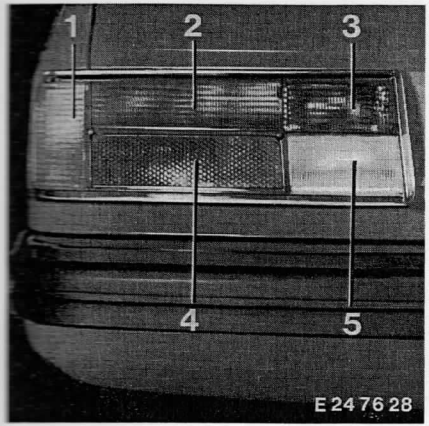
The engine compartment light is switched on when the engine compartment lid is opened and the main light switch pulled out.

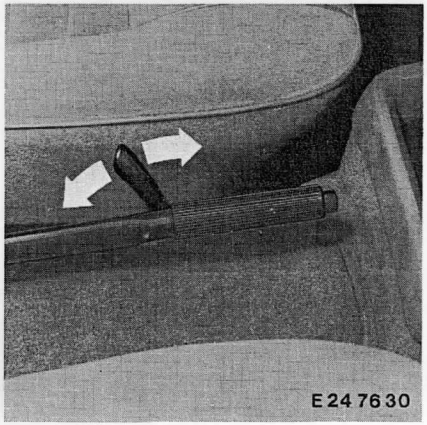
To **adjust the front seats** backwards or forwards, pull up the lever on the outside edge of the seat base and move the seat to the desired position. Then release the lever and ensure that the seat has locked into position. See "SAFETY".

The **front seat backs** can be adjusted to any angle by pulling up the lever on the outside of each seat back support. If the seats are first slid fully forward and the headrests pulled out, the backs can be let down completely to a reclining position.

In addition, the seat backs are provided with safety catches to prevent them from folding forwards accidentally. The catches are released to give access to the rear seats by pulling up the knobs on the outer faces of the front seat backs (and on the inside face of the front passenger's seat).

To adjust the **height and angle** of the **driver's seat** push the lever on the inside of the seat to the front for lifting or lowering the front part of the seat base, or to the rear for lifting or lowering the rear part of the seat base. When the height of the seat has been adjusted it may then be necessary to move the seat backwards or forwards or alter the position of the seat back. See "SAFETY".





After unfolding the clamp lever, the **adjustable steering column** can be moved until the steering wheel is at the correct reach for the driver in relation to the chosen seating position. The clamp lever must then be folded back to hold the steering column firmly in the new position. See "SAFETY".

Your BMW is equipped as standard with **automatic** (inertia-lock) **front seat belts,** with lap and diagonal straps.

Details of how to use the front seat belts and also the automatic lap-and-diagonal rear seat belts available as an optional extra, and information concerning children's seat belts and the BMW child's seat, are given under the heading "SAFETY".

The height of the **front headrests** can be varied after operating the release button. The headrest angle is adjusted by tilting the headrest forwards or back. See "SAFETY".

The **rear headrests** can also be varied in height and angle.

The compartments behind the headrests can be opened by means of cutout handgrips, and used to install the rear stereo loudspeakers (optional).

The left compartment houses the first-aid kit.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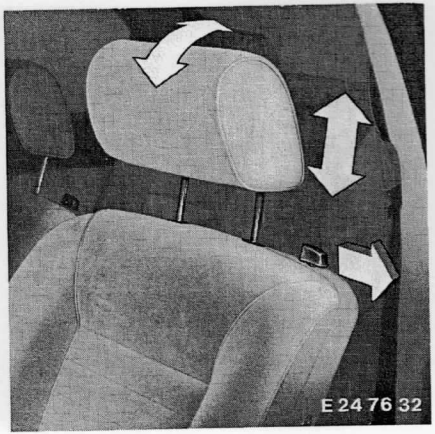
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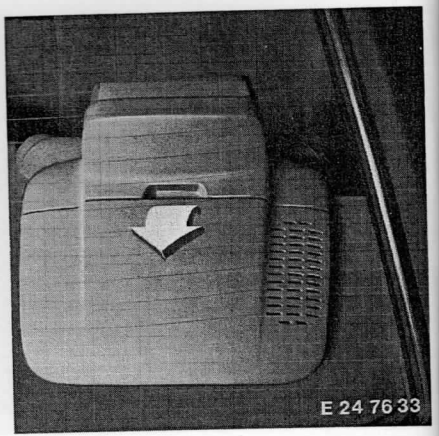
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The **handbrake** operates on the rear wheels. To brake or secure the vehicle, pull the lever up. To release the handbrake lever, pull it up slightly, press in the button on the end and push the lever down. When the handbrake is applied, the **red** "Brake" **warning lamp** in the instrument cluster will come on. This also enables a check on correct operation of the telltale lamp to be made.

If the brake telltale lamp comes on during a journey, see instructions under the "SAFETY" heading.

A useful hint: to apply the handbrake without undue noise, press the button on the lever in as the lever is pulled up.

The **gearbox gate pattern** shown here indicates the gear lever positions for each ratio (for automatic transmission selector lever positions, see page 27). There is synchromesh on all forward gears.

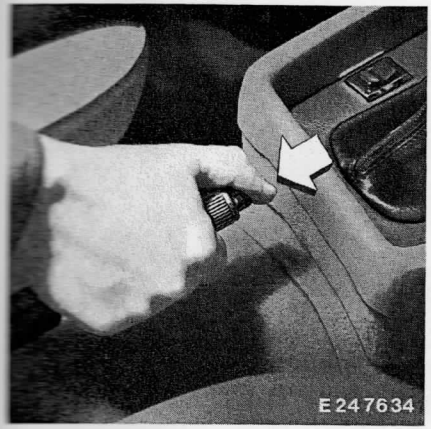
A 5-speed gearbox is available as an option.

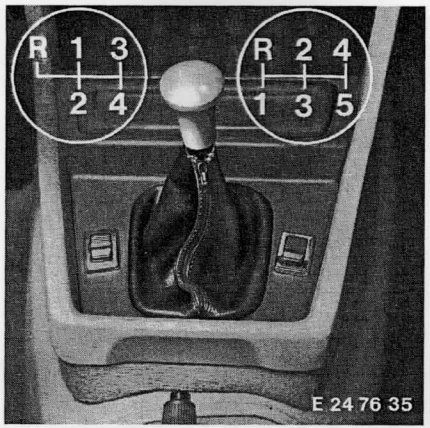
To engage reverse gear (only when the car is standing still) press the gear lever over to the left until slight resistance is overcome. Before selecting reverse, it is best to hold the lever in neutral for 1 second. This will result in smoother reverse gear engagement.

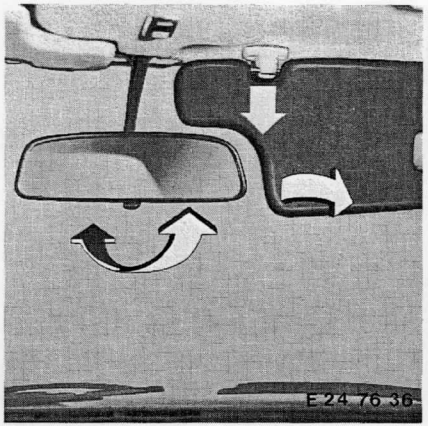
Both **reversing lights** come on when reverse gear is selected and the ignition switched on.

Remember to alter the settings of the **outside and interior mirrors** to suit driving position. (See "SAFETY".) The **interior mirror** has an anti-glare position, obtained by moving the small lever as shown. Use this position when following vehicles' headlights are too bright.

Either **sun visor** can be released from its clip and swung to one side to cover part of the door window if strong sunlight is encountered from that direction. See "SAFETY".







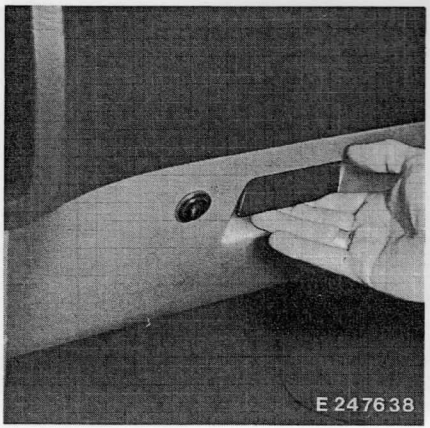
The switch on the **courtesy light** has three positions:

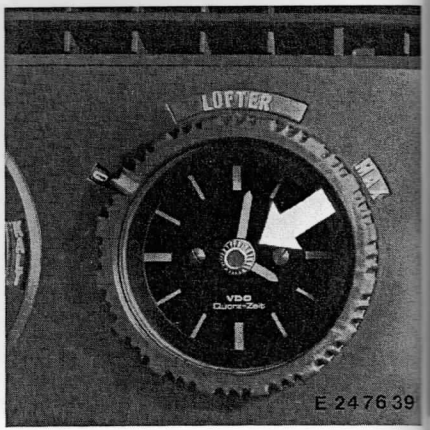
Position 1: light operates only when a door is opened (switches on door pillars)
Position 2: permanently off
Position 3: permanently on

The **lockable glove box** is opened by pulling down the recessed handle and closed by pushing up the lid.

When the lid is lowered, the glove box is automatically illuminated and the rechargeable hand lamp is accessible. This lamp has a built-in excess charging cutout and thus can remain plugged in ready for immediate use at all times.

The hands of the **quartz-crystal electric clock** can be adjusted by pressing and turning the knurled knob.





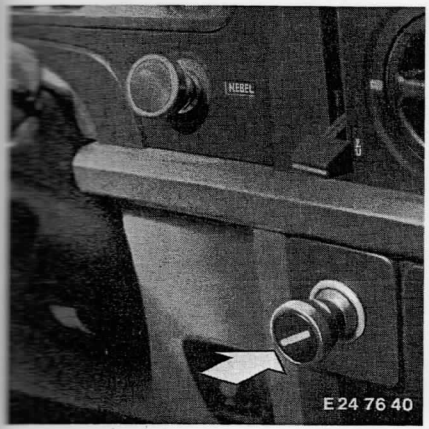
To use the **cigar lighter,** push in the knob. When the element has heated up the knob will spring back to its original position and can then be removed.

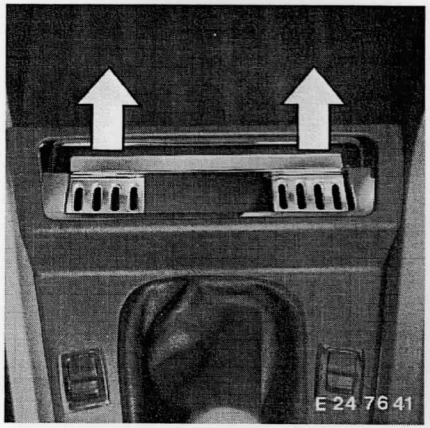
The cigar lighter **socket** can also be used to plug in an inspection lamp, electric razor or similar appliance, provided that the rating does not exceed 12 Volts, 200 Watts. Make sure that the socket is not damaged by attempting to insert unsuitable plugs.

To empty the **ashtray on the front console,** raise the lid and pull the ashtray out upwards.

The rear seats are provided with a **center armrest,** which can be swung down by the loop at the top.

The **rear seat ashtray** is in the center armrest base. To empty, pull fully out, press the leaf spring down and take out the ashtray.





A **car radio** can be installed in your BMW as an option. For operating instructions, please consult the manual supplied for the radio model concerned together with the remaining car documents.

The **steel-panel sliding roof with elevating rear section** installed in your BMW can either be slid back normally, or raised at the back to provide more intensive ventilation of the car's interior.

To open: Unfold the hand crank. Turn clockwise until initial pressure is overcome. The roof can be opened to any intermediate position and is held safely there.

To close: Turn the hand crank anticlockwise to move the sliding roof panel forwards. It is fully closed when definite pressure has been overcome at the hand crank.

Raising at the rear (roof panel closed): Unfold the hand crank and turn anticlockwise until initial pressure is overcome. The roof will then begin to open at the rear.

Lowering: Turn the crank back clockwise. The roof is closed when distinct pressure has been overcome at the hand crank.

Note: After each movement, the hand crank should be folded back into its recess.

If the sliding roof is electrically operated, press the rear of the rocker switch for lowering and opening, and the front of the switch for raising and closing.

On the electric sliding roof the sliding and rear-end raising functions are separate, with an electrical changeover switch. When the roof is slid closed, the drive motor is automatically switched off. To raise the rear of the roof immediately after sliding shut, release the switch, then press it a second time. Observe a similar routine when the roof is slid open after lowering.

If the power sliding roof mechanism should fail, the roof can still be closed manually. See "MINOR DEFECTS".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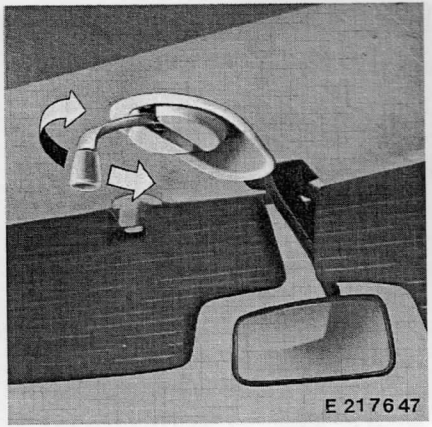
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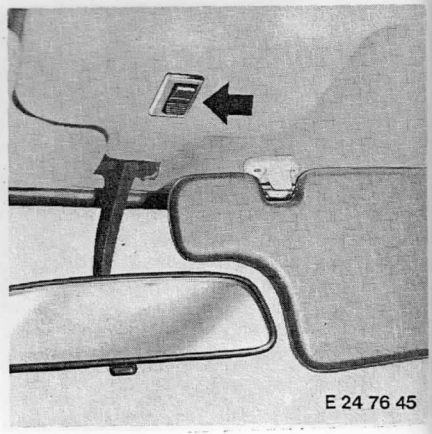
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The **heating and ventilation system** is notable for high output, sensitive adjustment and the ability to enjoy a separate, controllable flow of fresh air in warm weather.

The various controls are located as follows:

1 = Slide for fresh-air supply, left, and driver's fresh air grille
2 = Rotary temperature control
3 = Rotary blower switch
4 = Rotary air distribution control
5 = Slide for fresh-air supply, right
6 = Vertical movement of driver's fresh air grille
7 = Horizontal movement of driver's fresh air grille
8 = Driver's fresh air grille flow control

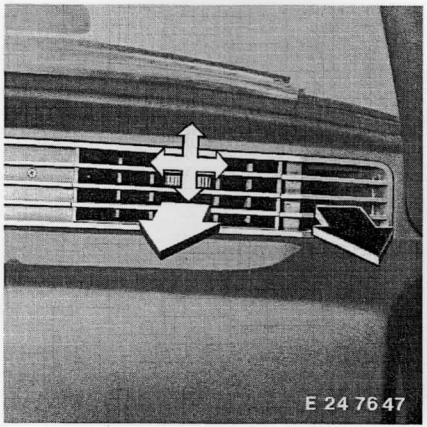
Fresh air supply slides, right (1) **and left** (5)

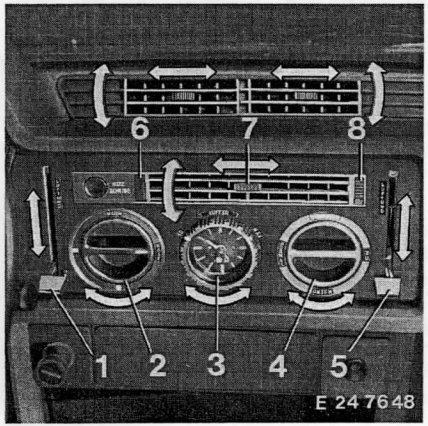
As these levers are moved from bottom ('OFF') to top ('VENT'), they permit an increasing volume of cool air to enter the car's interior. The air enters via the side grilles, two center grilles and a separately controlled driver's fresh air grille in the center console, all of which can be moved vertically and horizontally to deflect the airflow as required.

The left and center pictures below show the side outlets for controlled-temperature air (black arrows) and fresh air (white arrows).

Since the two levers can be operated independently, the ventilation settings for the left and right sides of the car may differ if required.

Simultaneous warm air supply to the footwells is possible, depending on the settings of the distribution (4) and temperature control (2) knobs. This enables a stratified airflow through the car's interior to be achieved and ensures pleasant driving conditions free from the risk of fatigue.





Rotary temperature control (2)
The air delivered by the demisting outlets and the footwell apertures can be varied steplessly in temperature by turning the rotary temperature control increasingly clockwise. The temperature setting, once selected, will be reached after a brief period has elapsed.

Rotary blower switch (3)
This switch regulates the volume of air admitted to the interior of the car. Turning clockwise increases blower speed and thus the total volume of air.
Do not select the "MAX" blower setting if the temperature control knob is already at "WARM" unless the engine has reached its normal operating temperature (see page 18).

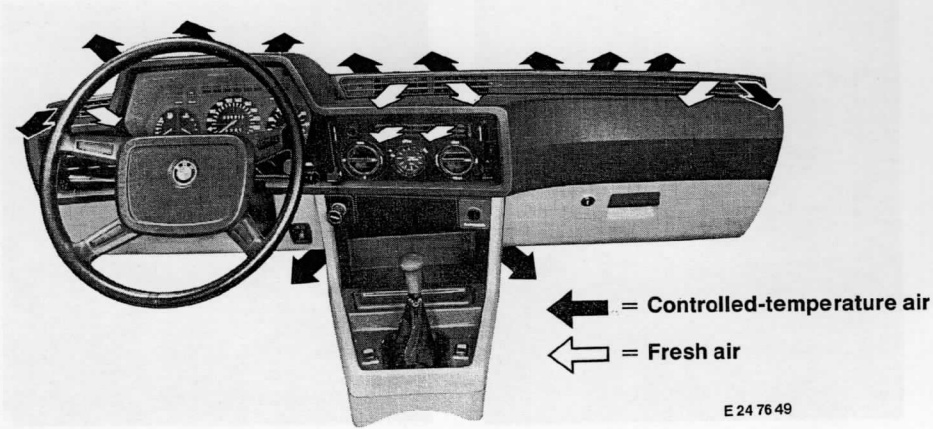
Note: Always run the blower whenever heating, demisting or ventilation are required.

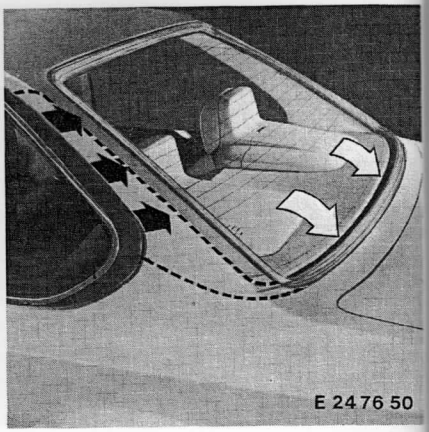
Rotary air distribution control (4)
This rotary knob distributes the controlled-temperature air as required. In the "zu" (Off) position the airflow is shut off. As the control is turned clockwise, the footwell outlets open initially at the "UNTEN" (Down) setting, followed by the footwell and demisting outlets together (the "NORMAL" setting). For demisting or removal of ice from the windows, the knob can be turned further to the "OBEN" (Up) setting, which directs the entire airflow upwards and on to the windows.

Controlled-temperature air is admitted to the car's interior at the following points:

a) to the footwells, via openings on the side of the heater unit;
b) for demisting, via two windshield slots, a center outlet and two side outlets for the side windows.

Air extraction:
Stale air from inside the car escapes via slots below the rear window and emerges through openings in the rear roof pillars.





ZF 3 HP-22 automatic transmission BMW 630 CSA, 633 CSiA

The following selector lever positions are at your disposal, for use as various driving situations demand.

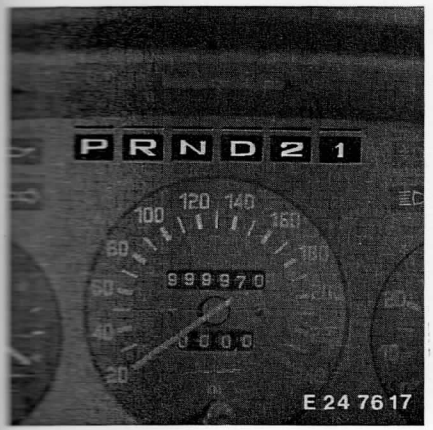
P-R-N-D-2-1

The lever position selected is shown on an illuminated scale in the instrument cluster and also by symbols on the selector lever gate.

P = Park

Select only when the car is at a standstill

In this position, the rear wheels are locked as an additional precaution against rolling away. To select, first press in the locking catch below the selector handle. The engine can be started in this position.



R = Reverse

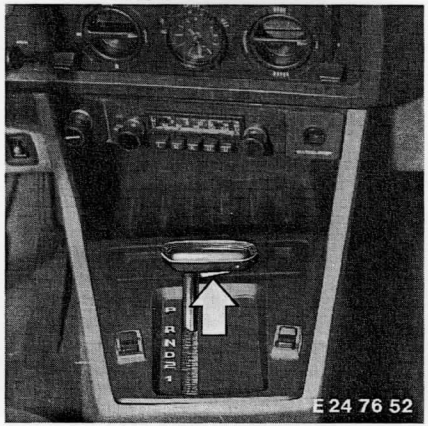
Please select only when the car is at a standstill, first pressing in the locking catch under the selector handle. If reverse were to be selected while the car was still moving forwards, the rear wheels would lock and could cause an accident.

N = Neutral

There is no connection between engine and rear wheels. The engine can be started in this position, which should also be selected during **lengthy stoppages** (for instance in traffic jams).

D = Automatic (Drive)

This position is selected for all normal



driving. The transmission initially selects 1st gear to move the car away from rest, then shifts up automatically into 2nd and 3rd gears at the most efficient and economical engine and road speeds.

2 = Hill-climbing and engine braking

This position may be preferred on mountain roads and other lengthy uphill or downhill gradients. It makes better use of available engine power and increasing engine braking action when the accelerator pedal is released.

Position 2 can be selected at any road speed. If the road speed is initially too high, 2nd gear will engage only at approx. 126 km/h (78 mile/h). After this, the transmission will remain in 2nd gear until the selector lever is moved away from the "2" position, and will not change up to 3rd even if engine speed rises excessively.

1 = Hill-climbing and engine braking

This position is intended for driving conditions which call for 1st gear to remain engaged, for instance extremely steep uphill or downhill gradients.

Position 1 can also be selected at any road speed. At approx. 126 km/h (78 mile/h) the transmission will shift down initially to 2nd gear, and then at approx. 76 km/h (47 mile/h) will shift down to 1st gear, and remain in this ratio without shifting back up into 2nd or 3rd even if engine speed should subsequently rise excessively.

"Kick-down"

The accelerator pedal can be pressed down beyond the normal full throttle position by overcoming increased resistance. In certain driving situations, for instance when overtaking, this will cause the transmission to select the next lower ratio immediately up to a given road speed, so that more rapid acceleration is available.

In this event, the next upward shift will take place at a higher engine speed than usual.

For towing away, tow-starting and starting with the aid of another car's battery, see "MINOR DEFECTS".

Starting off

Before you operate the starter, always make sure that the gear shift lever is in neutral.

On cars fitted with automatic transmission, the engine can only be started when the selector lever is in the **"P"** or **"N"** position.

Before starting the engine, switch on the ignition and the car's lights, depress the brake pedal and push the **'Check-Control'** button (see page 15). All "systems" monitored in this way should respond by showing a green light.

BMW 630 CS
Your BMW is equipped with an automatic-choke carburetor incorporating a heat-sensitive bypass starting system. Please note the following operating instructions:

If the engine is cold (outside temperature below 0° C/32° F), press the accelerator fully down once and release again before operating the starter. This will produce a richer mixture for a brief period and aid reliable starting.

If the engine is already at normal operating temperature or the outside temperature is above 0° C (32° F), do not depress the accelerator before starting the engine.

If the engine is very hot, hold the accelerator down fully while operating the starter.

To **start the engine,** turn the ignition key clockwise to the **"3"** position (without pressing down the accelerator) until the engine fires. Do not allow the engine to turn over without firing for longer than about 20 seconds. When the ignition key is released, it will spring back automatically to the **"2"** position. When a cold engine is started in this way, it will run initially at a relatively high speed during the warm-up phase.

To make starting easier, especially in freezing conditions, switch off all current-consuming items and press down the clutch pedal.

The carburetor will automatically reduce the engine idling speed to normal as soon as the coolant temperature indicator is between the two color zones.

If the starter has to be operated a second time, the ignition key must first be returned from the **"2"** position to the **"1"** position. This deliberate delay is included to prevent as far as possible re-engagement of the starter pinion while the engine is still turning. Try to prevent damage to the flywheel ring or starter pinion teeth by waiting until the engine has ceased to rotate before operating the starter.

If the engine will not start or fires only irregularly after several attempts, try again with the **accelerator pressed down fully.** This will force the choke butterfly open and weaken the fuel/air mixture considerably. Never inject still more fuel into the intake manifolds by pressing down the accelerator repeatedly.

In very severe frost, protect the battery by limiting the first starting attempt to about 20 seconds. Before a second try is made, wait about 20–30 seconds to permit the battery to recover. The second attempt should not be much longer than the first.

BMW 633 CSi
The **fuel injection engine of your BMW** is fitted with an automatic cold starting and warming-up unit.

Enrichment of mixture when starting
When the engine is started cold and before it reaches normal operating temperature, it requires an enriched fuel/air mixture. For this purpose additional fuel is injected into the intake system by means of a magnetic valve controlled by the ignition current. The duration of this injection process depends on the coolant temperature and is cut off after a certain period to avoid flooding of the engine. It is therefore harmful to the engine to repeat the starting procedure at short intervals. Instead, operate the starter without a break until the engine fires (max. approx. 20 seconds).
During the subsequent warming-up phase an auxiliary air valve – operation of which is likewise dependent on the temperature – increases the engine idling speed.

To **start** the engine, turn the ignition key past the **"2"** position to the **"3"** position.

If the **engine is cold,** always start without pressing down the accelerator.

If the **engine is warm,** start with the accelerator pressed down halfway.

After the engine has started, the oil pressure warning lamp (red) and charge telltale lamp (red) in the instrument cluster should go out at fast idling speed.

Starting off with automatic transmission: With the engine idling, positions **D, 2, 1** or **R** can be selected from positions **P** or **N with the car's brakes still applied.** Wait for the slight jerk which indicates that the gear has been selected before pressing down the accelerator.

Stopping the car with automatic transmission: At engine idle speed with a gear still engaged, the car will tend to creep forward slowly on a level surface. To prevent this, keep brake pedal lightly applied.

To stop the engine, turn the ignition key back to **"1".**

Running in – but how?

Your BMW's engine is not governed to reduce its output artificially while still new. It is therefore up to you to observe the following **running-in (break-in) rules** so as to ensure that your car later achieves its full reliable working life and maximum operating economy.

Allowing the engine to work hard at low speeds is just as dangerous during running-in as exceeding the permitted engine speed limits. Try to keep the engine turning over freely at speeds above 1500 rev/min.

During running-in, do not drive at the maximum permissible road speeds in the intermediate gears for more than a short period each time. Vary your speed frequently during longer journeys so that the engine can operate in different speed ranges, and remember to shift to a lower gear in good time, especially on uphill gradients.

During the first 2000 km (app. 1300 miles), do not use the **full throttle** or **kick-down** positions of the accelerator pedal at all.

Engine speed is shown continuously on the **revolution counter.** Please note the following **engine speed limits during running-in:**

From 0 to 1000 km (0– 650 miles): 4000 rev/min
From 1000 to 2000 km (650–1300 miles): 4500 rev/min

Never allow the revolution counter needle to enter the **red engine speed zone,** i. e. above 6400 rev/min, in particular in the lower gears or on long straight sections of downhill gradient.

Remember that the running-in rules apply not only to the engine but to the transmission (gearbox and rear axle) too. If any of these mechanical assemblies is renewed later in the life of the car, the correct running-in procedure should again be observed.

Running-in the brakes:

To enable new brake pads to develop their full wear resistance and friction characteristics, avoid repeated violent brake applications, particularly from high speeds, or extended heavy braking, as when descending mountain passes, until approx. 500 km (300 miles) have been covered. During the running-in period, avoid prolonged endurance tests of the brakes.

Brake pads, discs and drums require to cover this distance before they are run in, and failure to comply with the above conditions may adversely affect their surfaces and lead to uneven wear or lining contact.

Since the handbrake operates entirely separately from the car's main brakes, using its own drums at the rear wheels, it must also be 'run in'.

If road, traffic and weather conditions permit, it is good practice to apply the handbrake lightly at a speed of approx. 40 km/h (25 mile/h) until some resistance is felt. Then pull up the lever by one more notch and drive for about 400 m (440 yards) in this setting. Release the handbrake lever fully after this distance. This running-in procedure will enable the handbrake shoes and drums to attain their full efficiency.

Your BMW Service Station will perform the handbrake running-in work during the pre-delivery check or a subsequent Inspection or Safety Test.

Handbrake running-in can be repeated with due care at intervals of approx. 3 months or when the handbrake seems to be losing efficiency.

Running-in new tires:
The manufacturing techniques used for automobile tires result in less than the full road-surface grip being available initially. We therefore recommend a restrained driving approach during the first 300 km (app. 200 miles) so that the tires can develop their best initial wear pattern.

During the **running-in period,** the driver may feel that the gear shift, steering and other controls are slightly **stiff to move.** However, the normal running-in process will result in these items becoming less stiff, and the effect disappearing completely after a short time.

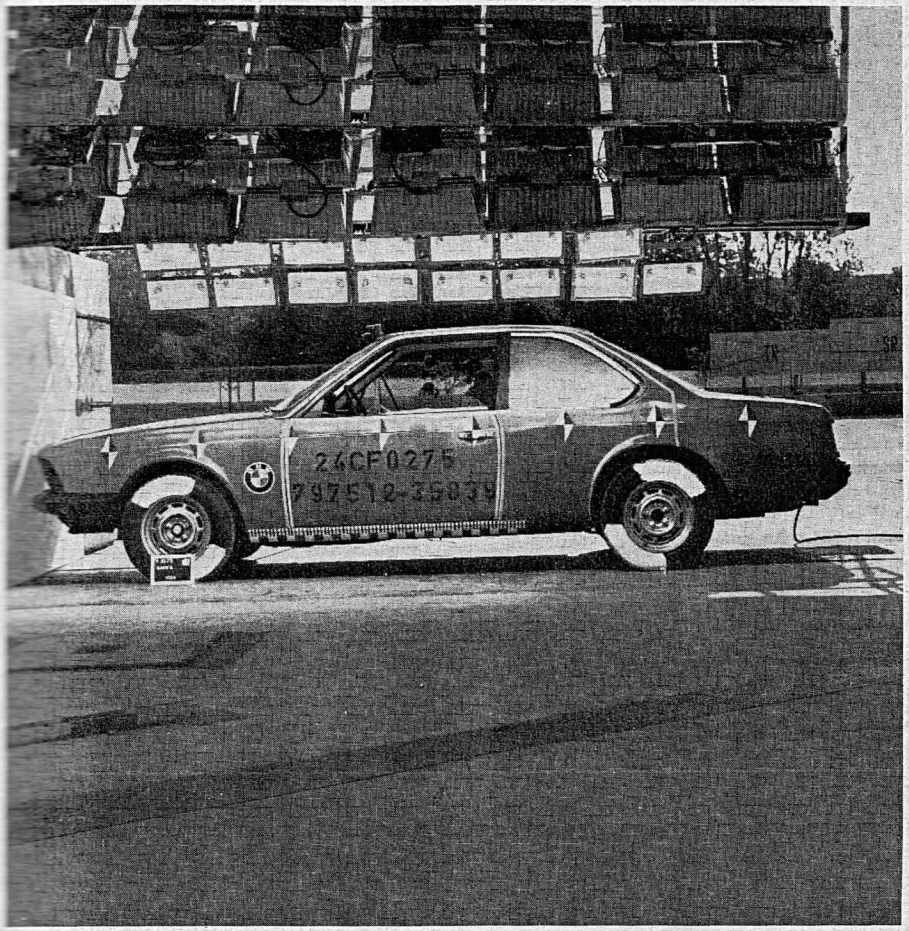
After 2000 km (app. 1300 miles) have been covered, you can **gradually** increase your road speeds – subject to

suitable road and traffic conditions – to the permissible **continuous and maximum speeds.**

For satisfactory operation, the engine requires the following commercially-available fuel for spark-ignition engines, without additives such as upper-cylinder lubricants etc.:

Super (Premium) petrol (gasoline) to German Industrial Standard DIN 51600, minimum octane number 98 (Research Method), 88 (Motor Method)

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.



SAFETY

Exterior and interior
safety features
BMW child's car seat
Automatic inertia-lock
seat belts
'Check-Control'
Function monitoring,
telltale and warning lamps
Headlight cleaning system
Heated rear window
Wiper blades
Fog lights
Tires
Brake fluid
BMW Safety Test

Think of yourself – and others

For your personal safety and that of your passengers, please note the following recommendations:

Before the journey starts, the **windows** all round the car and the **outside mirror** should be clean, so that good vision is assured in all directions. In addition, make sure that the **headlight and other outside light lenses** are clean – so that you can see and be seen better.

Position the **driver's seat** and **steering wheel** correctly for a non-tiring driving position, good all-round vision and easy access to all controls.

The most suitable driving position is normally with the arms slightly bent.

Warning: do not adjust seat position while driving – this constitutes an accident risk.

For safety reasons, position the **headrests** at head height, not at neck height.

Adjust the settings of the **interior and outside mirrors** to suit the chosen seated position.

Remember to swing down the **sun visors** to shield both driver and passengers from direct sunlight or glare.

The seat belts can only protect you and your passengers if they are worn for every journey, even relatively short trips in town.

Automatic (inertia-lock) **seat belts** with **lap and diagonal straps** are standard equipment for the front seats of your BMW.

As an option, the two rear seats can also be equipped with automatic (inertia-lock) lap and diagonal seat belts.

There are seat belt anchorages provided on the floor panel, the rear wheel arches and the rear roof pillars. Your BMW Service Station will gladly fit seat belts to your car subsequently if necessary.

For your personal safety and that of your older or adult passengers, please note also:

The seat belts have been sensibly designed to simplify fastening and wearing. Place the upper strap across the shoulder and chest, the lower strap round the hips (not the waist or stomach). Pull the locking catch section of the belt after insertion to ensure that the lock has engaged correctly, and check that the straps are not twisted.

Special attention should be paid to corrects belt length, as this can greatly influence effective accident protection.

The lap section should be a close fit, with any slack passed back to the reel via the shoulder section of the belt.

The length of the shoulder section is automatically adjusted, but the belt remains free during normal driving to permit the necessary degree of movement at the controls.

During a journey, the lap strap of the seat belt should be kept taut by passing any slack back through the shoulder strap at intervals.

To release the seat belt, press the release panel on the fixed lock unit.

The BMW Service Station will check the two locking actions of the automatic-reel seat belt during an Inspection as follows:

1. By pulling the belt out quickly while the car is at a standstill.
2. By applying the brakes sharply while the upper body is exerting a load on the diagonal strap of the belt.

In both cases the automatic reel must lock and prevent the seat belt from paying out.

Children should always occupy the rear seats only, and depending on their age and size either wear the lap type seat belts or special children's seat belts. For children capable of sitting upright and of max. weight 11 kg (24 lb) and max. height 105 cm (3 ft 5 in), the BMW child's car seat can be installed, and the child strapped firmly into this.

The protection afforded by a child's seat involves not only freedom from injury in an accident but also the frequency with which the chosen 'passive restraint system' is actually used. A child's natural interest in the surroundings and desire to see and be in contact with its parents has been taken fully into consideration in the design of the BMW child's car seat.

Detailed fitting instructions accompany each BMW child's seat.

The lower attachment points for the BMW child's seat are the same as for the automatic-reel lap-and-diagonal rear seat belts. The upper attachment points are under the rear-window shelf, and provide two seating positions. Your BMW Service Station knows the anchorage points and will install the mountings on request.

The front seat ahead of the BMW child's seat should be set to the mid-points of forward/backward and seat back angle adjustment, so that in the event of an accident violent enough to shear the seams in the webbing the child does not strike the top of the front seat back as it is flung forwards.

Installing the BMW child's seat:

Note: the webbing straps must not be twisted. Unfold the loop part of the frame and push into the gap between the seat back and seat base. Attach the retaining straps to the hook catches. Tighten the lower straps to force the BMW child's seat firmly against the seat cushions and prevent it from moving. Adjust the lap straps first by pushing in the spare section of the belt and pulling through.

Open the seat belt buckles by pressing the red "PRESS" catch. Move the belts out of the way and place the child into the seat so that its back is against the rear cushion.

Place the shoulder straps over the child's body like braces (suspenders) and adjust to length by pushing the belt through the adjuster buckle and pulling tight until there is just room to insert the flat of the hand between the strap and the child's body. **Warning:** Always adjust the belts in this sequence, so that the lap strap remains across the pelvis, not across the abdomen. Close the seat belt by pushing the tongue of the strap into the catch. It should be possible to hear the catch engaging.

Do not run the risk of injuring the child by carrying heavy objects on the rear window shelf behind the child's seat. If the brakes are applied violently, such objects could become dislodged.

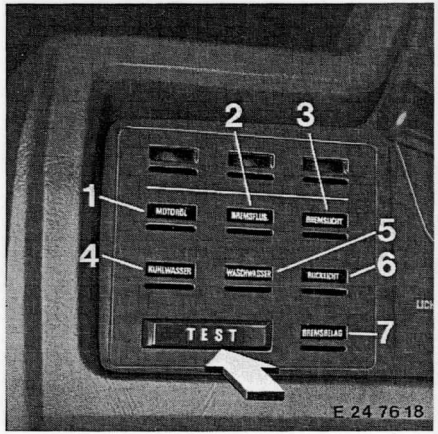
Altering the setting of the BMW child's seat:
A lever is provided to move the BMW child's seat to a comfortable reclining position.

Removing the BMW child's seat from the car:
Press on the locking catches to open the hooks on the straps; the BMW child's seat can then be removed in one piece from the car. The fixed retaining straps remain in place.

Treatment of the Child after an accident:
Should the child be unconscious or complain of a headache or pains in the neck region following an accident, it should be removed from the car with great care, supporting the head all the time, laid down flat on a suitable surface and covered up with blankets or something warm to prevent a chill setting in. **Summon a doctor without delay.**
If the car's main seat belts or those on the BMW child's seat have been subjected to excessive strain during an accident, or have visibly stretched, they must be replaced complete with all attachment fittings in order to ensure full protection for car's occupants in the future.
Instruct your BMW Service Station to check operation of the catches, the automatic reels, the fastenings and the straps themselves at intervals, and to look for signs of damage.
No repair work on the entire passive restraint system, opening up or oiling the automatic reels or restitching of seat belt straps is permitted in the interests of occupant safety. Instructions for routine care of seat belts appear under the heading "CARE AND MAINTENANCE".

The **'Check-Control'** is a means of ensuring that various items of equipment or engineering systems on the car are in good working order before the journey commences.

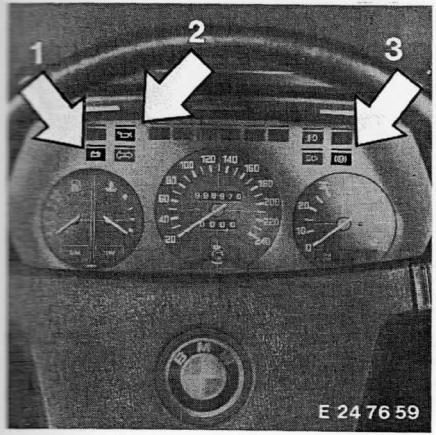
Before starting the engine, switch on the ignition and the lights and press down the brake pedal. At the same time, press the **test button:** all the zones representing the various "systems" should show a green light. If any monitor light fails to come on, the corresponding item or system is defective and should be checked carefully before the journey is undertaken. See "DRIVING HINTS, MINOR DEFECTS".



When starting the engine in a **garage** or enclosed space, always open an **outside** door first. Remember that the exhaust gases contain odorless and invisible but highly toxic carbon monoixde.

After the engine has started, the **battery charge and oil pressure warning lamps** will go out. If either of these lamps remains on, or comes on again during the journey, see instructions in "DRIVING HINTS, MINOR DEFECTS".

The **brake warning lamp** should go out when the handbrake is released. However, this lamp also indicates low brake fluid level in the reservoir by remaining on or coming on during a journey. In this event, see instructions in "DRIVING HINTS, MINOR DEFECTS".



As a further contribution to active driving safety, your BMW may be equipped as an option or subsequently with a **headlight cleaning** (wash/wipe) **system** and an additional washer fluid tank holding approx. 5 liters (5.3 US quarts, 8.8 Imp. pints).

If the car's lights are switched on, operation of the windshield washer will also actuate the headlight cleaning system, at intervals of approx. 30 seconds. Check correct operation of the system at regular intervals.

The **electric heating elements on the rear window** ensure unobstructed rearward vision and remove or prevent misting over or ice formation during cold-weather driving. Never clean the inside of the rear window with a sharp object or a powerful solvent, or the heating elements may be damaged.

Rear vision should not be obstructed by articles placed on the shelf below the rear window, as these may be flung forwards during an emergency brake application and increase the risk of occupant injury.

Examine the **wiper blades** at frequent intervals. If they tend to smear or leave areas of glass unwiped, there is a risk the driver's vision will be impaired. Wiper blades should therefore be renewed at least once a year.

The **rear fog guard light** on your BMW makes your car easier to locate and identify from the rear in thick fog.

Fog lights improve your range of vision just ahead of the car, and like the rear fog guard light, are a useful 'active safety' factor.

Your BMW service station will gladly install them subsequently if necessary. However, note that many countries have statutory regulations governing the use of these lights.

The factory-approved **radial-ply tires** on your BMW Coupé have been carefully chosen to match its performance and handling characteristics, and to offer not only maximum safety but also the desired

level of ride comfort. Radial-ply tires of the same make and tread pattern must always be fitted to all four wheels.

The condition of the tires and maintenance of the **specified tire pressure** can greatly affect both useful tire life but also road safety. At regular intervals, and before starting a lengthy journey (but at least once a week) have the tire pressures checked. Tables showing the specified pressures are given inside the back cover of this handbook.

Inspect the tires frequently for signs of damage, stones or other objects in the treads, excessive or uneven wear and minimum tread depth.

Although the law in many countries permits tires to be used down to a **minimum tread depth** as low as 1 mm, we recommend renewing tires before the tread depth falls below 3 mm (0.12 in). Failing this, there is increased risk of aquaplaning at high speeds and where a sheet of water covers the road.

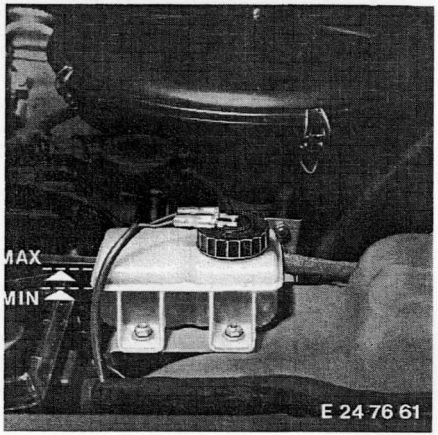
If you are forced to drive over obstacles such as kerbstones or potholes, do so with great care and at low speed in order to prevent damage to the tire carcass which might remain invisible from the outside.

At high speeds, the load on the tires is extremely high, in particular during hot weather and when the car is loaded to the full weight limit. Note that increased tire pressures are specified for these driving conditions, and do not exceed **maximum permissible gross weights.**

Brake fluid is a hygroscopic substance, and thus absorbs moisture from the atmosphere over a period of time. In order to maintain the brakes in a fully operational condition, the **brake fluid must always be changed at least once a year** by your BMW service station.

Add fluid up to the upper "MAX" mark.

Your BMW Service Station knows the brake fluid grades approved by the factory.



Apart from routine twice-yearly inspections, we recommend that the intervening **BMW Safety Tests** also be carried out. They will enhance the safety of your BMW on the roads, and thus protect you and the remaining occupants of the car.

DRIVING HINTS, MINOR DEFECTS

Fuel consumption
Economy
Engine oil consumption
Towing a trailer
Foreign travel
Engineering modifications
Cold-weather driving
Breakdowns
Fault-tracing
Bulb changing

On your way!

For satisfactory operation, the engine should be supplied with the following commercially-available fuel for spark-ignition engines, containing no additives such as upper-cylinder lubricants:

Super (Premium) petrol (gasoline) to German Industrial Standard DIN 51600, minimum octane number 98 (Research Method), 88 (Motor Method)

When driving in various foreign countries, please note that only fuel to the above standards of quality should be used.

If you are obliged to fill up with fuel having a lower octane number, and thus with lower knock resistance, the following hints will assist in avoiding pre-ignition or "pinging" as far as possible: Keep the engine turning at 2500 rev/min or over, change down in good time, accelerate gently and carefully. A graph of road speed/engine speed is shown under "SPECIFICATONS".

Your car's **fuel economy** is mainly dependent on your style of driving. Just as travel by the fastest trains involves payment of a supplement, so high-speed 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 other moving parts.

The **standard test method** (German Industrial Standard DIN 70030) for determining **fuel consumption** is in no way identical with the actual average fuel consumption, which is influenced by a number of factors such as driving style, load, road condition, traffic density and flow, weather, tire pressure etc.

The **fuel consumption** expressed in terms of road speed, for a vehicle in standard trim with driver and one passenger, is shown in the section "SPECIFICATIONS".

After driving for some time in dense city traffic or in a queue of cars, we recommend letting your engine **"take a deep breath"**, as it were, by covering the next mile or two at engine speeds of 4500–5500 rev/min. This will help to dispel any carbon build-up in the cylinders.

It is bad practice to allow the engine to warm up at idling speed. Drive away at moderate engine speeds immediately after starting. However, if the outside temperature is exceptionally low the engine should be allowed to run at increased idle speed for about half a minute, to ensure proper circulation of the engine oil. Never run a cold engine at high speeds or its useful working life will be seriously reduced.

When **declutching,** always push the clutch pedal down fully; never drive with the foot resting on the pedal.

Drivers of cars with automatic transmission should operate the accelerator and brake pedal **with the right foot only.**

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

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 "CARE AND MAINTENANCE").

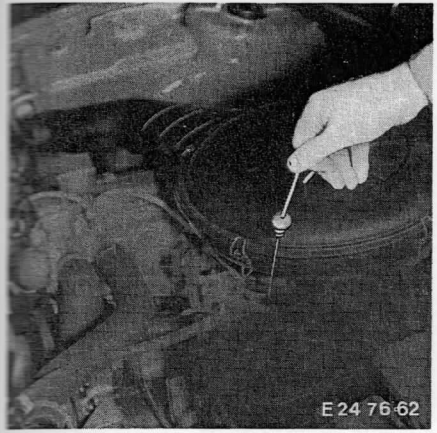
The most accurate oil level readings will be obtained if the dipstick is examined before starting a cold engine; if the engine is already warm, allow a short period for the oil to drain back into the sump. The car should stand on a flat, level surface. Make sure that the loop handle on the dipstick points to the left (forwards), and that the dipstick is pushed fully into its tube. The quantity of oil represented by the space between the upper and lower dipstick marks is 1.5 liters (1.6 US quarts, 2.6 Imp. pints).

Adding too much oil is pointless 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 in conjunction with the highly-advanced modern oils available commercially today without the addition of any other **additives.** The same applies to the manual gearbox, automatic transmission, final drive and power steering.

Check fluid levels in the automatic transmission and **power steering** (see "CARE AND MAINTENANCE") at the same time as engine oil is checked.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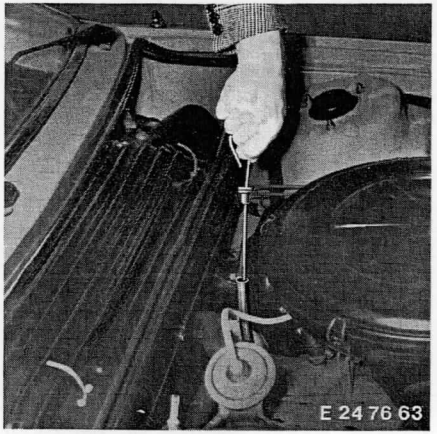
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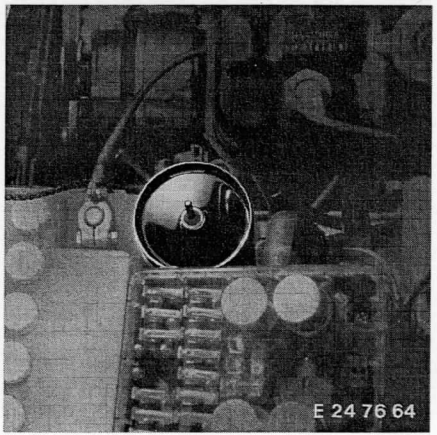
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An old but valuable hint: after a lengthy period of **mountain-pass or high-speed driving** at wide throttle openings, do not switch off the engine as soon as you stop the car, but allow it to idle (or drive very gently) for a few minutes, so that heat pockets in the engine and resulting loss of coolant are avoided.

Warning: Allow the engine to cool (coolant thermometer needle in center of white zone) before unscrewing the radiator overflow tank cap. To open, turn the cap a quarter-turn anti-clockwise, to the first stop. Allow time for excess pressure to escape, then unscrew further and remove. To seal the radiator overflow tank, 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.

After a lengthy period on wet roads, in rain or slush, be prepared for the first brake application to need rather more pedal pressure than usual.

The brake booster servo on your BMW operates pneumatically, so that the necessary partial 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.

Towing a trailer is always more demanding for both driver and vehicle. Should you already be an experienced driver of trailer or caravan outfits, our recommendations will of course already be familiar to you.

On no account exceed the maximum towbar downthrust or trailer weight. Have a factory-tested and approved trailer coupling installed by your BMW service station, and the necessary additional electrical wiring and modifications carried out at the same time. In many countries, for instance in Federal Germany, the attachment of a trailer coupling to the car must be recorded in the registration documents.

If the size or shape of your trailer or caravan prevents you from obtaining a clear view of events behind your outfit with the standard mirrors, a second mirror should be attached.

Before starting the journey, check the **rear lights on the trailer** in the usual way (note that the car's "Check-Control" can only indicate failure of the car's own rear lights).

Raise **tire pressures** to the values specified for maximum load.

Uniform weight distribution within the trailer or caravan not only affects the load exerted at the towbar, but also governs the outfit's handling and road safety in general terms. You should therefore measure **towbar downthrust,** with a suitable spring balance or bathroom scales, and distribute the load on the trailer in such a way as to keep the downthrust within the permitted limits. For example, very heavy items such as an outboard motor are best secured directly over the trailer axle and prevented from slipping, or else stowed inside the car. However, the carriage of heavy objects in the car, coupled with the additional towbar load of the trailer, must not be permitted to exceed either the gross weight limit or the specified maximum axle loads.

Always drive at moderate speed, and comply with local speed limits for cars towing trailers. In your own interest we recommend not exceeding a speed of 80 km/h (50 mile/h).

During the journey, nobody should remain in the caravan or on the trailer.

When towing a trailer, the car's luggage compartment lid should remain closed in order to prevent toxic exhaust fumes from being drawn into the car via the air extraction system. Should you be obliged to carry a load which prevents the lid from being closed, we recommend leaving all the windows (and the sliding roof if fitted) open and running the heater blower at medium or high speed to ensure adequate air circulation.

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

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 authority.

When crossing the border into a country where the traffic drives on the opposite side of the road, the wedge-shaped areas on the low-beam headlights must be blanked off with adhesive tape, to prevent the asymmetric dipped beam from annoying oncoming traffic. The illustration below shows a left-hand drive car prepared in this manner for driving on the left.

Before you undertake any **engineering modifications, changes of tire size** or similar conversion work on your car, please contact your BMW service station for advice as to the value, legality or manufacturer's recommendations concerning the proposed work.

When BMW-approved light alloy wheels or "VR" radial-ply tires are fitted, always use tubes with the 40 G DIN 7771 screw-in metal valve.

Winter tires:
175 SR 14 or 195/70 SR 14 tubeless, with 43 GS/11.5 DIN 7780 rubber valve, or with tube and 40 G DIN 7771 metal screw-in valve.

Warning: When new tires are fitted, always discard and renew the tubes as well.

The BMW 7 × 14 H2 light alloy wheel (with 10 mm (0.39 in) rim offset) may be used on your car **without** affecting the validity of the documents, and without a letter of approval from the manufacturer. Since this alternative specification is included in the car's General Operating Permit, it need not necessarily appear in the registration papers.

For **winter operation** of your car, a few essential steps must be taken in good time before the cold season commences. The cooling water, 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.

Total capacity of cooling system including heater:	21.1 pints (Imp.) 25.4 pints (US) 12 litres
Frost protection down to approx.:	−13° F −25° C

Your BMW service station can recommend factory-approved brands of antifreeze. Change the coolant completely **every 2 years.** (For draining and refilling the cooling system, see "CARE AND MAINTENANCE".) Check the antifreeze properties 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 thermostat, taking into account both engine load and outside temperature. For this reason **the grille must not be blanked off, nor a radiator blind fitted.**

The **screenwasher and headlight washer** can be protected in cold weather by adding 40% domestic alcohol spirit. 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) radial – are installed, please note that for good directional stability and light action 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 tubes should also be renewed when new tires are fitted.

Do not exceed the maximum speeds laid down by law or recommended by the tire manufacturer. In Federal Germany, for instance, there is a speed limit of 160 km/h (100 mile/h) for winter tires, and **a label** must be displayed within the driver's field of view to this effect, e.g. on the windshield or facia. Your local tire dealer will advise you and supply a suitable label if its use is required by law.

Oberserve 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 the drive wheels (with rim size 6×14 H2) only. Max. speed is then 45 mph (70 kph).

When leaving your car **parked in freezing conditions,** engage 1st or reverse gear to prevent it from rolling away, or select automatic transmission position 'P', but do not apply the handbrake. There is a risk that the handbrake shoes may freeze solid to their drums.

In order to improve handling and grip on icy or snow-covered roads and in the mountains we recommend loading an **empty luggage compartment with approx. 110 lbs (50 kg).** Prevent the load from slipping.

Use only factory-approved products for the **locks** (your BMW service station can advise you), so as to avoid difficulties in functioning. These products will prevent the locks from freezing. If a lock freezes up despite these precautions, heat the key blade before insertion.

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 a **one-season underseal**

coating. This treatment must be renewed at the latest 14 months after your car has been registered and then after 36 months (see "CARE AND MAINTENANCE").

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

After a heavy fall of snow, clear the air inlets in front of the windshield that 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 starting 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.

Car stuck in deep snow, sand, mud etc.: Do not press the accelerator down too far; before the rear wheels sink in too deeply, place some form of support beneath them (in an emergency the car's floor mats can be used). 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.

What to do, if . . .

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

Tire trouble is a rare thing these days. But if you should be unlucky and suffer a flat tire, pull in 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 left floor panel; this is held by spring clips and can be lifted out.

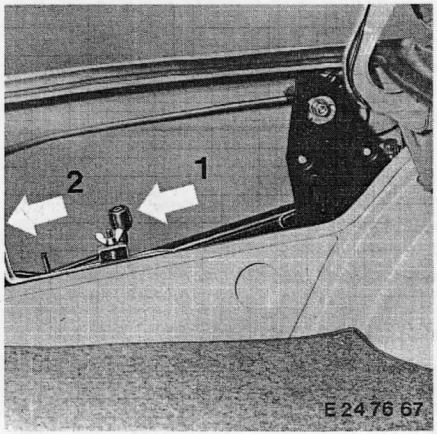
The hexagon nut securing the spare wheel can be unscrewed with the aid of an open-ended wrench.

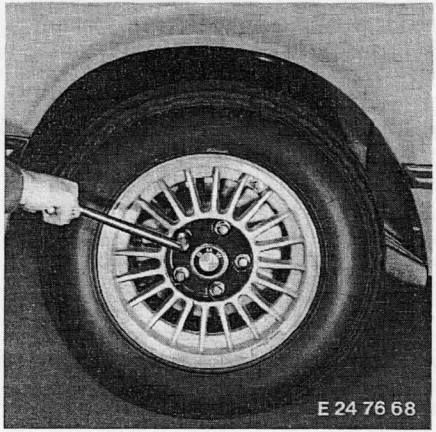
The **jack** (1) and **wheel brace** (2) are housed in a compartment on the left of the luggage compartment. The jack can be removed after unscrewing the wing nut (arrow).

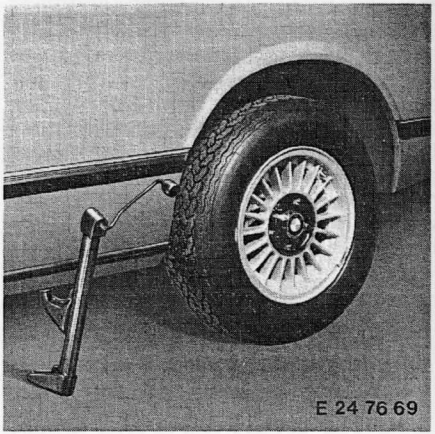
Loosen the wheel studs. After removing a wheel, its hub cap can be pressed out from the inside.

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

Remove the wheel studs and change the wheel. Place the centering pin in one of the five threaded holes. Place the wheel over the pin, insert a wheel stud, then remove the pin. Screw in the remaining wheel studs and tighten them uniformly.



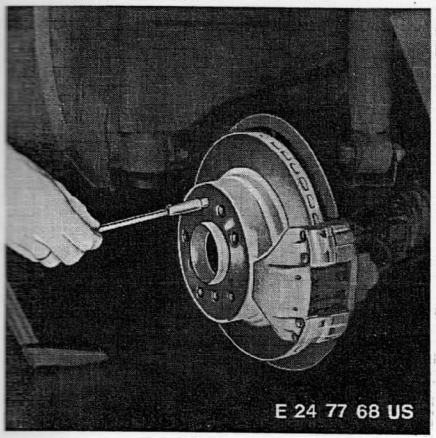




Lower the car by turning the jack handle. Tighten the wheel studs finally in a crosswise pattern across the center of the wheel. Have the tightening torque checked as soon as possible. Additional checks are necessary after a further 1000 km (app. 600 miles) and every 15000 km (10000 miles) during a BMW Inspection.

Offer up 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.

Tire repairs should be carried out exclusively by a BMW Service Station or a specialist repair shop, since otherwise the full extent of any damage may not be recognized.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Warning: when new tires are fitted, the tubes should also be renewed as a safety precaution.

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

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

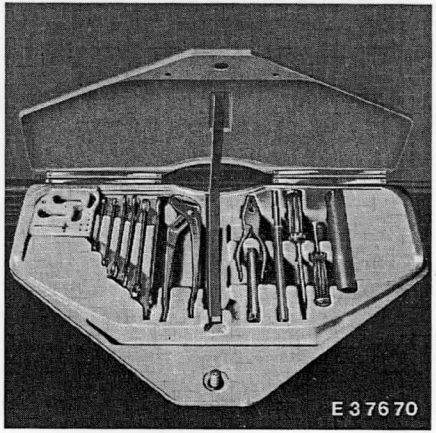
Check by switching on headlights, then operating starter again.

1. If the headlights go out quite slowly the battery is insufficiently charged or defective. Recharge or renew the battery. The car can be push-started, tow-started or, if necessary, the engine can be started using jump leads connected to a second 12-volt battery (in another vehicle). See description under "Starting with a flat battery".

   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 (see page 50). **Towing eyes** are located on the left and right hand sides of the front axle beam.

   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.

2. If the headlights go out immediately, check the cable terminals on the battery and starter motor for tightness, and take up any slack.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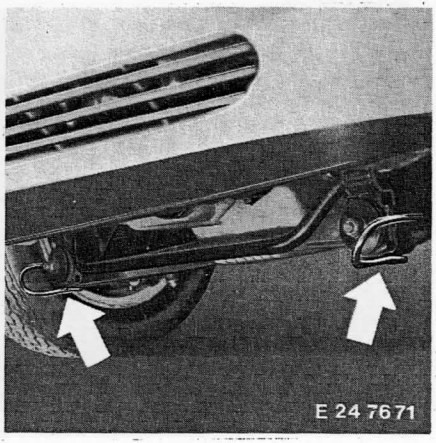
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3. If the brightness of the headlights does not diminish, consult your BMW service station (a fault in the starter is indicated).

Engine will not start although starter motor is turning:
Provided that the instructions for starting were 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 is not due to water that got into the engine compartment during a car wash.
2. Check spark plug gaps and general appearance.
3. Each plug can be checked by attaching the appropriate lead and laying the metal body of the plug on an unpainted part of the engine block. When the starter is operated, sparks should be seen jumping the electrode gap.
   If no spark is visible, attach a different plug to the same lead and repeat the test. If no spark occurs this time, the ignition distributor must be examined.

BMW 630 CS

4. To check that fuel is reaching the engine, separate the fuel supply line from the carburetor and operate the starter. If no fuel emerges from the supply line, the fuel line and the fuel pump must be examined.
   On the other hand, if fuel is pumped through to the carburetor, unscrew the carburetor jets (see pages 69 and 70) one after the other and clean them. This work is best entrusted to a BMW service station.

BMW 633 CSi

5. Check that fuel is delivered to the system at starting speed. This is done by unscrewing both hexagon nuts (10 mm wrench) at the valve flange, removing the starting valve and operating the starter motor **briefly.** Fuel should be sprayed out. **Warning:** risk of fire.
   Then install the starting valve again and tighten the nuts carefully
   If the engine is warm, perform the same test by detaching the fuel hose at the starting valve, since this valve delivers fuel only up to 45°C (113°F). If, on the other hand, no fuel is supplied to the system, check that the corresponding fuse has not blown. If the fuse is intact, consult a BMW service station.

If the tank is run dry, there is no need to bleed the fuel injection system, as this takes place automatically at the fuel delivery pump when the starter is operated.

Coolant temperature too high:

1. Allow the engine to cool until the coolant thermometer needle is within the white marks. Carefully remove the radiator cap and check coolant level. Never add water to the system **if the engine is hot,** after having lost a large quantity of coolant. Allow the engine to cool until a hand can be placed on the block.
2. If coolant is lost, check the radiator cap, all hose connections and the radiator 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 by your BMW service station.

Fault in brake system:
If the red **brake warning lamp** 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, you are recommended to consult a BMW service station as soon as possible.

If **one circuit of the** hydraulic **twin 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 satisfactorily with only the remaining circuit in use, it is essential to consult your BMW service station immediately.

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

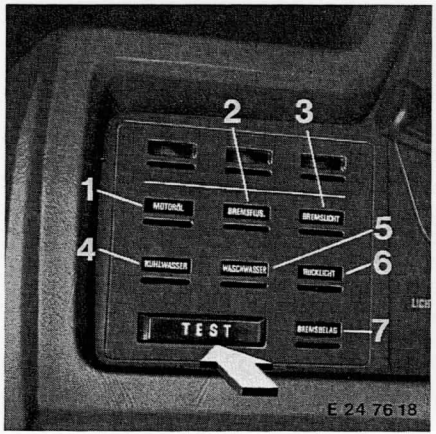
Minimum brake pad thickness is also indicated by failure of the green 'brake pad' lamp in the 'Check-Control' to respond when the brake pedal is pressed down and the test button operated. To avoid damage to the brake discs, the pads should be renewed by a BMW service station without delay.

If any of the function-monitoring lamps in the **Check-Control** fails to come on, proceed as follows:

1. **Engine oil:** check level (see page 41), and restore to correct level with fresh oil of the same grade as previously used.
2. **Brake fluid:** check fluid level (see page 68) and top up with a factory-approved grade of brake fluid if necessary. Have the brake system examined by a BMW service station without delay.
3. **Brake lights:** renew either the corresponding fuse (see page 53) or, if fuse is intact, the spherical (RL) 21 Watt brake light bulb (see page 56).
4. **Coolant:** check level and restore if necessary (see page 71). As soon as convenient, have a BMW service station check the concentration of the long-life antifreeze and corrosion inhibitor (see page 44).
5. **Washer reservoir:** refill reservoir of windshield washer unit (see page 13), refill antifreeze if necessary (see page 44).
6. **Rear lights:** renew either the corresponding fuse (see page 63) or the spherical (G) 5 Watt rear light bulb (see page 56).
7. **Brake pads:** have the pads renewed by a BMW service station without delay.

If the red **oil pressure warning lamp** comes on while the car is being driven, declutch **at once** and switch off the ignition. If engine oil level is not too low, consult the BMW service station. It need cause no alarm if the lamp flickers or comes on briefly at idle speed, provided that it is extinguished immediately the accelerator is depressed.

If the red **charge warning lamp** comes on while the car is being driven, take the car to a BMW service station as soon as possible, or else the car's battery will gradually run down and become flat.



Some hints on rectifying faults in the power steering

Steering heavy to turn on right or left lock:

Not enough oil in the system. Check oil level and if necessary examine the steering gear for leaks or possible damage.

V-belt inadequately tensioned or defective. Retension or renew. See "CARE AND MAINTENANCE".

Steering heavy when steering wheel is turned quickly:
V-belt inadequately tensioned or defective. Retension or renew. See "CARE AND MAINTENANCE".

Unusual noises:
Not enough oil in the system. Top up and check steering gear for leaks.
Oil filter clogged with dirt: renew.

If these measures do not rectify the trouble, always consult a BMW service station without delay.

Tow-starts – BMW automatic models
Design of the automatic transmission makes it impossible to start the engine by towing the car; for emergency starting procedure, see "Starting with a flat battery" below.

Towing away – BMW automatic models
If the car has to be towed, set the transmission selector lever to "N" = **Neutral.**

Towing speed should not exceed 50 km/h (30 mile/h), and the distance towed should be limited to 40–50 km (25–30 miles). If the car has to be towed for a distance greater than 50 km (30 miles), add 1 liter (1.1 US quart, 1.8 Imp. pints) of ATF (automatic transmission fluid) to the contents of the transmission, or remove the propeller 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.

Starting with a flat 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 poles of the two batteries together.

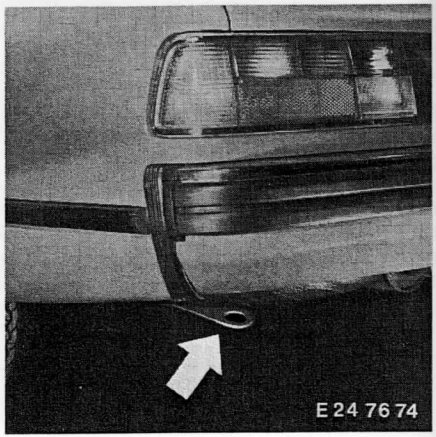
Warning: do not let the cables touch any part of either car or sparking will result. Operate the starter, and when the engine is running disconnect the jumper leads in the reverse order. Have the flat battery recharged if it is not otherwise defective.

Towing

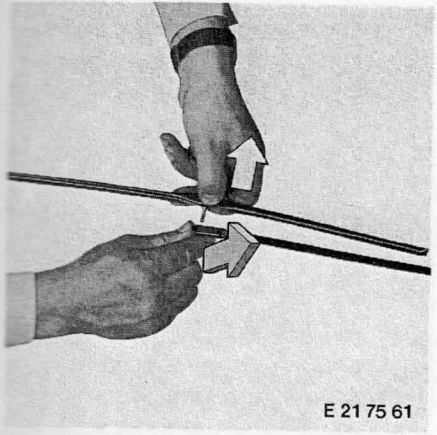
There are **towing eyes** on the left and right of the front axle beam (illustration on page 47) and below the rear bumper.

Use only **nylon towropes or straps** since these possess the necessary elasticity to avoid excessive strain on both vehicles. Steel cables or towbars should not be used.

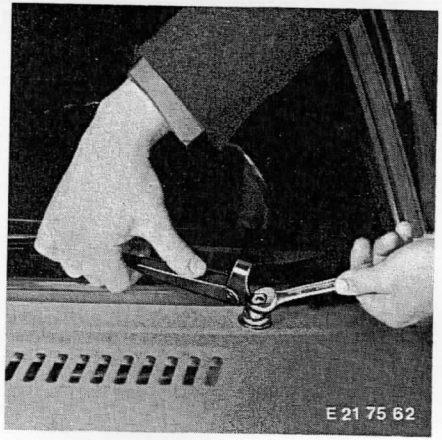
If you wish to assist another driver by towing his car with your BMW, you should ensure first of all that the second car is not heavier than your own.



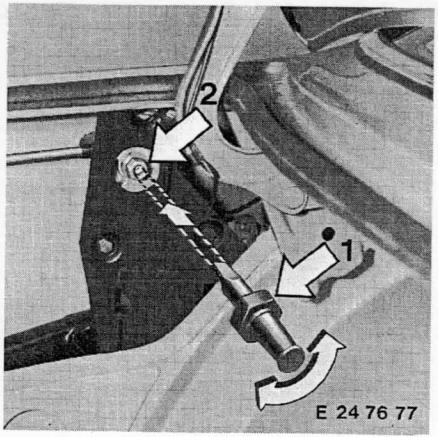
To remove a **wiper blade,** hinge the wiper arm away from the glass. Raise the safety spring and pull the blade away to the side.



The complete **wiper arm** can be pulled off after folding up the plastic cap and loosening the retaining nut (13 mm wrench).



If the electric sliding roof (optional) should fail, the roof panel can still be closed manually as follows:
Remove the spacer (1) from the mounting on the drive motor and insert into the slot within hexagon (2). Close the roof with a 20 mm wrench.



Fault Tracing – Minor Defects

	Cause	see Page
Engine will not start	Battery flat, battery terminals loose, automatic transmission selector not in "N" or "P" position	47
Starter runs but engine does not fire	Fuel tank empty, no ignition spark (loose lead), engine flooded (mixture too rich)	48
Engine fires but immediately stalls	Loose or leaking vacuum hoses, wiring for fuel injection system loose	48
Erratic idling	Carburetor or fuel injection idle settings incorrect, misfiring or poorly adjusted ignition	75, 76, 81
Oil pressure warning light comes on	Oil level too low, oil being lost, check oil filter	49
Coolant overheating warning light comes on	Coolant level too low, V-belt slipping or broken	48
Charge warning lamp comes on	Loose or broken V-belt, loose lead or connection on alternator or regulator	49
Brake warning lamp comes on	Brake fluid level too low, handbrake not released, leak in clutch hydraulic circuit	49
Power steering heavy to turn	Fluid level too low, slack or broken V-belt to pump	50
Check-Control function-monitoring lamp does not light up	Corresponding item or system is out of order	49

If any item of electrical equipment on your car fails to work, first check the fuses.

The **fuse box** (current distributor) with spare fuses and relays, is located inside the engine compartment on the left. It is mounted on the wheel arch and protected against damp. The transparent cover is marked with a **list of fuses,** showing the **items of equipment protected** and the **fuse ratings in Amps.**

A blown fuse can be recognized by the melted metal strip inside the transparent cap. Pull the blown fuse out of the spring clips and push in a replacement of the correct rating.

Never attempt to repair blown fuses with wire or other unsuitable materials (risk of fire). If the fuse blows repeatedly, have the fault traced and repaired by a qualified service station.

When **changing bulbs** or working on the electrical system, always switch off the affected item of equipment to avoid accidental short-circuits, or disconnect the negative lead at the battery post.

Never handle new bulbs with the fingers, but hold them in a clean cloth, paper napkin or similar to prevent grease from adhering to the glass.

When renewing headlight bulbs, make sure that the beam setting screws are not disturbed.

We recommend carrying a "BMW spare bulb pack" with you for use in emergencies. Your authorized BMW dealer will gladly advise you.

Instrument cluster:

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

Telltale and warning lamps in instrument cluster: pull out blown bulb complete with bulb holder.

Charge warning: 1 valve-base bulb, W12 V, 3 Watt.

Oil pressure warning: 1 valve-base bulb, W 12 V, 1.2 Watt.

Turn indicator repeater: 1 valve-base bulb, W 12 V, 1.2 Watt.

Headlight high-beam telltale: 1 valve-base bulb, W 12 V, 1.2 Watt.

Fog light telltale: 1 valve-base bulb, W 12 V, 1.2 Watt.

Brake warning light: 1 valve-base bulb, W 12 V, 1.2 Watt.

Fuel level warning light: 1 valve-base bulb, W 12 V, 1.2 Watt.

Coolant temperature warning lamp: 1 valve-base bulb, W 12 V, 1.2 Watt.

Automatic transmission selector lever position indicator: 6 valve-base bulbs, W 12 V, 1.2 Watt.

Check-Control: 7 valve-base bulbs, W 12 V, 1.2 Watt.

Push button switches for heated rear window and hazard warning flashers:

Unscrew the push button and pull out the affected bulb. Each switch: 1 valve-base bulb, W 12 V, 1.2 Watt.

Control lighting:

The valve-base bulbs can be changed after pulling out the holders. 4 valve-base bulbs, W 12 V, 1.2 Watt.

Inscription lighting:

"Light" and "Fog" inscriptions: 1 valve-base bulb each, W 12 V, 1.2 Watt.

Clock lighting:

1 valve-base bulb, W 12 V, 1.2 Watt.

Ashtray:

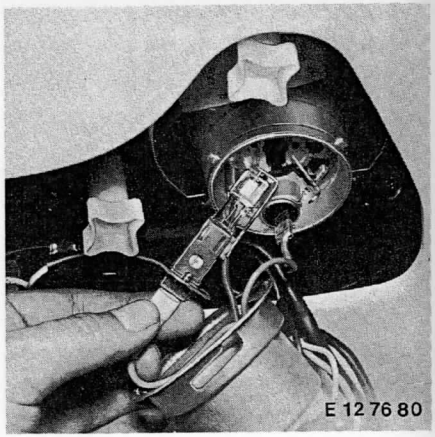
Pull out the ashtray.
1 valve-base bulb, W 12 V, 1.2 Watt.

Glove box lighting:

Remove the blown bulb from the switch assembly by pressing in slightly and turning.
1 bulb, HL 12 V, 4 Watt.

The **low (dipped) beams** and the **parking lights** are provided by the outer headlight units.

To change bulbs, open the engine compartment and remove the plastic cover from the back of the headlight. Turn the sealing cap to remove. The H1 halogen bulb (55 Watt) is held in the reflector by a wire spring clip. Release the clip and pull the bulb out to the rear. When inserting a new bulb, note position of cutout in reflector.



To change a **side or parking light bulb** (4 Watt [HL] indicator type) pull the holder out of the reflector and turn the bulb while pressing in slightly. After changing the bulb and replacing the cover, connect the cables as follows:

Earth cable – round plug at side;
Dipped beam cable – flat plug at top;
Side/parking light cable – flat plug at bottom.

The **main beam headlights** – the inner units – come on in addition to the dipped beams.

To change the bulbs, open the engine compartment, pull off the headlight cover to the rear and turn the sealing cap to remove.

The H 1 55 Watt quartz-iodine bulb is retained in the reflector by a spring clip, which should be swung back so that the bulb can be withdrawn rearwards. When replacing, note the position of the cutout in the reflector.

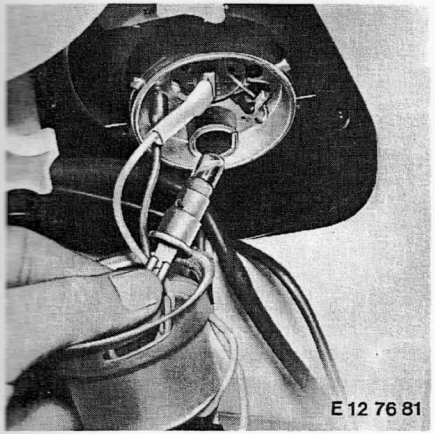
Correct headlight adjustment is of particular importance in today's traffic especially in view of safety requirements, and should therefore be carried out by a specialist workshop using the proper beam-setting equipment.

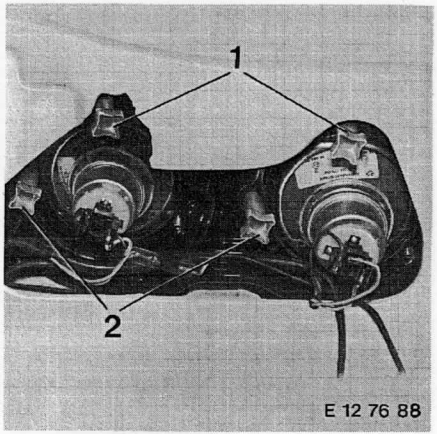
If this is not possible, open the engine compartment and reset the headlight beam by turning the two knurled plastic knobs as required.

1 = vertical adjustment
2 = horizontal adjustment

Front turn indicators:

Unscrew the 3 Phillips-head screws holding the plastic lens, and remove the lens with its seal. The 21 Watt (RL) spherical bulb should be pressed in slightly and turned to remove.


E 12 76 81



E 12 76 88

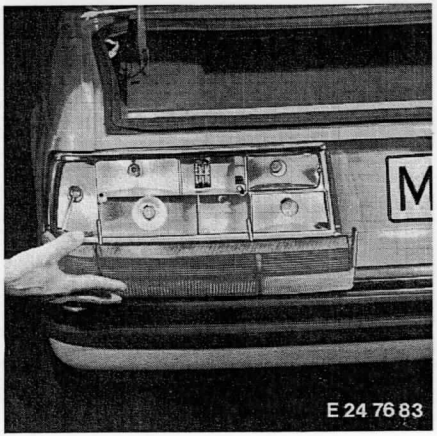

E 24 76 82

Rear lights:

Open the luggage compartment, remove the inside rear panel trim, unscrew the 2 knurled nuts and take off the light glass.

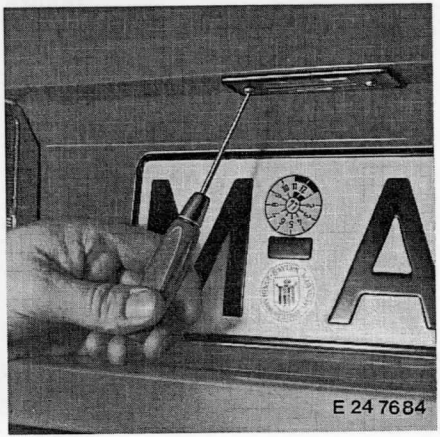
Remove the blown bulb from its holder and insert a new bulb.

Turn indicator: spherical bulb, RL 21 Watt
Rear/parking light: spherical bulb, G 10 Watt
Rear fog guard light: spherical bulbs, RL 21 Watt
Brake light: spherical bulb, RL 21 Watt
Reversing light: spherical bulb, RL 21 Watt.



License plate light:

Remove the two Phillips-head screws, the glass frame and rubber seal. Make sure that the spring contacts for the 5 Watt (L) festoon bulb are clean and press firmly against the bulb caps. If necessary, scrape or bend the contacts.



Interior light:

The two 10 Watt festoon bulbs are accessible after the interior light has been pulled out.

Luggage and engine compartment lighting:

Remove the two Phillips-head screws and the plastic lens.
Remove the 10 Watt (L) festoon bulb if defective and insert a new bulb.

CARE AND MAINTENANCE

Cleaning and washing the car
Corrosion protection
Service
Engine oil grades
Description of maintenance routines
Carburetor
Adjusting idle speed

Care and maintenance

Your brand new BMW is certainly a fine sight, but how long it will keep its smart appearance depends on the care and attention you devote to it.

Road dirt, dust and in particular the pollution encountered in industrial areas (rust particles, lime, soot etc.), but also dead insects and splashes on the paintwork caused by parking under trees all contain various aggressive chemicals which, if left unattended on the paintwork for too long, will damage the finish. For this reason your car should be washed as often as possible.

In order to harden and preserve new paintwork, wash it frequently with clean tap water.

Do not wash the car when the engine compartment lid is still warm or after the car has stood in the sun. Wash the car in the shade to prevent marks and fading paintwork.

Tar stains, insect smears and minor paint blemishes caused by flying stones should be removed or touched in as soon as possible in order to prevent paint discoloration or patches of rust.

Remove spilt fuel, oil, grease or brake fluid immediately, or else the paintwork will be attacked and the finish affected.

Clean the interior of the car with a brush and pan or a vacuum cleaner.

Soften dirt on the body with a finely atomized water spray before rinsing off.

Do not direct the water hose into the air inlet or outlet slots for the ventilation system.

After rinsing the paintwork, wash down with a sponge, special washing glove or similar and an abundant supply of water (not more than luke-warm), starting with the roof. Rinse out the sponge frequently.

Clean the lower part of the body and the wheels last of all, if possible with a second sponge kept only for these areas.

After washing down, rinse the car again thoroughly with the hose and dry off with a clean wash-leather to prevent patches from forming.

If washing with water alone is insufficient, you can add a car-wash product of reputable make in the concentration recommended by the manufacturer, rinsing down afterwards with plenty of water. However, too frequent use of car-wash products will remove fats from the paintwork pigment and render it brittle, so that the car will then have to be given a coat of a reputable paintwork preservative.

If the car is put through a **machine car washing plant,** try to choose one without excessive brush pressure and with ample rinse water available. Most modern installations operate to these high standards.

During the cold season of the year, try to have the car washed more frequently than usual, since the roads are dirtier and the resulting dirt more likely to damage the paintwork if not removed quickly.

A sure sign that your car's paintwork needs a further protective coating or polishing is when water no longer forms round droplets on the surface and tends to flow off.

Please use only brand-name car care products, and follow their manufacturers' instructions.

Minor paint blemishes can be rectified with a BMW paint spray aerosol or a BMW touching-in pencil. The paintwork shade designation is shown on an adhesive label close to the car's type plate.

Corrosion protection: your car is given body cavity protective coating and an additional one-season underseal before leaving the factory.

After not more than 14 months and again after 3 years from the date of initial registration of the car, the body cavity treatment and undersealing should be renewed, in order to ensure that your BMW maintains its value.

Full details are enclosed with each car, depending on which national market it is intended for. Your BMW service station knows the BMW-approved products and the company's official body treatment and undersealing procedures.

When applying underseal, shield the disc brakes carefully. None of the material applied should be allowed to reach the

brake piston sealing cups or the discs themselves.

Spraying with substances with an oil base does not offer any long-term protection against rust, but instead damages rubber components under the car and tends to loosen and dislodge the existing underseal coating.

Chromium plated and polished parts should be cleaned with water or soapy water.

Tar stains must be removed as soon as possible with a commercially available tar remover; do not use a hard object or a knife.

Rubber parts should be cleaned only with water, but can also be treated with glycerine.

To clean the **inside windows** we recommend water and vinegar mixed in equal parts.

Clean the **wiper blades** with soapy water. The blades should be renewed at least once a year.

Stains and spots on **cloth upholstery** are best treated with a proprietary stain remover, but the product should not be allowed to come into contact with leatherette or real leather.

Rub down **artificial leather (leatherette) and real leather** with a damp cloth, and wipe dry immediately.

Clean **seat belt straps** while installed in the car only with a dilute soap and water solution. Chemical or dry cleaning may destroy the fabric.

Automatic inertia-lock seat belts should never be allowed to wind up while still damp. Dirt on the straps will interfere with the action of the reel and thus could affect safety.

The documents handed over with your new car will include a **Service Booklet,** made out in your name and including details of your car. Your BMW dealer will have already performed the free pre-delivery check and detached the relevant section from the booklet. An entry in the Service Booklet confirms that the work has been carried out. A similar procedure will be adopted when it is time for the first BMW Inspection (to be invoiced) after 1000 km (app. 600 miles).

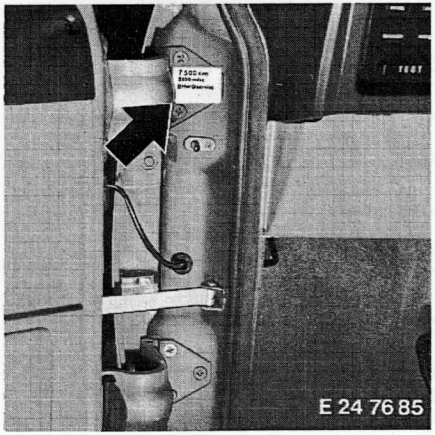
In addition, your BMW dealer will attach the first adhesive label to the driver's door post, as a reminder that the next BMW Oil Service (with optional BMW Safety Check) is due after the distance shown on the label has been covered.

Confirmation of this and all subsequent BMW Oil Services and Inspections will be entered in the appropriate sections of the Service Booklet.

Please ensure that the entries are actually made at the time, as they are essential if claims under warranty become necessary, or as later evidence that your car was regularly maintained.

We recommend you to have the specified maintenance work and safety checks performed **regularly** by a BMW authorized service station. This is the only way to ensure that all work is executed in accordance with the latest factory instructions. A list of BMW dealers is supplied with the car's documents, so that you can obtain the necessary facilities from the worldwide BMW dealership network wherever you happen to be.

In the interests of your car's reliability and useful working life, we recommend having **at least two BMW Inspections performed per year,** even if the car has not covered the normal distance specified between maintenance operations.



1st BMW Inspection

after 1000 km (app. 600 miles)

1. Change engine oil (including oil filter) while at normal operating temperature. Renew oil filter element.
2. Change oil while at normal operating temperature in the manual gearbox.
3. Change oil in the final drive while at normal operating temperature.
4. Halfshafts: check flexible gaiters for leaks.
5. Check steering box, steering arm bearing (RHD cars) or power steering for leaks; check oil level and add more oil if necessary.
6. Check cooling system hoses for leaks and tighten hose clips. Check coolant level and antifreze concentration; top up if required.
7. Check unions and pipes in brake system for leaks, damage or incorrect location.
8. Clean strainer in carburetor feed line and take up any slack at fuel pump bolts.
9. Take up any slack at the carburetor nuts and bolts.
10. Fuel injection engines: Grease throttle butterfly lever pivot points and gate. Take up any slack at retaining clips and bolts on injector holders. Check pipes for correct location and absence of leaks.
11. Check free movement of automatic intake air preheat flap valve.
12. Check V-belt tension and adjust if necessary.
13. Take up any slack at nuts and bolts (note correct tightening torques, see Specifications) on: left and right rubber/metal engine mountings, engine timing case cover, distributor flange, intake air stub pipes and exhaust manifold, oil sump, cylinder head bolts.
14. Check valve clearances and adjust if necessary.
15. Take up any slack at nuts and bolts (note correct tightening torques, see Specifications) on: front axle, steering, track rods, gearbox, exhaust system, propeller shaft, halfshafts, rear, axle, brakes, wheels.
16. Take up slack at nuts and bolts on engine and luggage compartment hinges and catches, door locks and strikers.
17. Check steering for freedom from play and adjust if necessary.
18. Check foot brake and bleed if necessary. Check handbrake and adjust if necessary. Check brake fluid level in reservoir and add more fluid if necessary.
19. Check front wheel bearing play and adjust if necessary.
20. Check front wheel toe-in and adjust if necessary.
21. Check tire pressures and correct if necessary.
22. Check headlight and auxiliary driving light beam settings and correct if necessary.
23. Check lighting equipment (parking, rear, reversing, license plate, interior, glove box, engine and luggage compartment lights), warning equipment (hazard warning flashers, turn indicators, brake lights, horns, headlight flasher, rear fog guard light), instrument and inscription lighting, telltale and warning lamps, windshield wipers and washers (blades, washer unit for windshield and for headlights if fitted, reservoir fluid level and antifreeze concentration, jet positioning for windshield and for headlights if fitted) and heater blower.
24. Specified engine test with BMW Program Tester. Check engine idle and exhaust emission settings and correct if necessary.
25. Final inspection with safety check (brakes, bedding in handbrake linings, steering, clutch or automatic transmission).

Note: Balance wheels (to be invoiced additionally) if requested.

BMW Oil Service

with optional BMW Safety Check

Every 15000 km (app. 10000 miles), beginning after 7500 km (app. 5000 miles)

Change engine oil including filter while at normal operating temperature. Renew the filter element.

Note: During the BMW Oil Service at 7500 km (app. 5000 miles), the cylinder head bolts must be tightened (note correct tightening torque: see SPECIFICATIONS). This work is invoiced additionally.

BMW Safety Check

Check steering:
Steering box, linkage, joint disc, threaded connections, leaks, oil content, V-belt tension and condition on power steering cars

Check brakes:
Brake pads (including removing and refitting wheels), brake discs, pipes, hoses, unions, fluid level, handbrake cables, handbrake adjustment, bedding in handbrake linings.

Warning: Brake fluid should be renewed at least once a year.

Check tires and wheels:
Condition, pressures, correct sizes.

Check lighting:
Headlights, auxiliary driving lights (including beam settings), parking lights, rear lights, reversing lights, license plate lighting, instrument and inscription lighting, telltale and warning lamps.

Check warning equipment:
Horn, turn indicators, hazard warning flashers, brake lights, headlight flasher, rear fog guard light.

Check windshield wipers and washer:
Wiper blades, washer unit (windshield, headlights if fitted), fluid tank level and antifreeze concentration, jet positions (windshield, headlights if fitted).

Check seat belts:
Condition and correct operation.

Check exhaust emissions.

Note:

All repair and adjustment work found to be necessary is charged additionally.

BMW Inspection

Every 15000 km (app. 10000 miles), beginning after 15000 km (app. 10000 miles)

1. Renew spark plugs.
2. Renew breaker points. Apply a wedge-shaped area of Bosch Ft 1 v 4 grease to the sliding section of the breaker arm.
3. Change engine oil including oil filter while at normal operating temperature. Renew filter element.
4. Check gearbox oil level and add oil if necessary.
5. Check final drive oil level and add oil if necessary.
6. Halfshafts: check flexible gaiters for leaks.
7. Steering box or power steering: check for leaks and low oil level. Add more oil if necessary.
8. Check cooling system hoses for leaks. Check coolant level and antifreeze concentration, top up if required.
9. Check acid level in cells of battery and add distilled water if necessary.
10. Check brake fluid level in reservoir and add fluid if necessary.
    Note: Brake fluid should be renewed at least once a year.
11. Check free movement of automatic intake air preheat flap valve.
12. Check V-belt condition and tension, and adjust if necessary (renew and invoice additionally if required).
13. Oil pivots and joints on carburetor linkage or rotary shaft or throttle butterfly operating linkage, or grease

throttle butterfly lever pivot points and gate.
14. Tighten nuts at exhaust manifold (note correct tightening torque). Check carburetor and fuel pump mountings.
15. Check valve clearances and adjust if necessary.
16. Renew intake air cleaner elements. If car is operated in dusty conditions, renew at more frequent intervals.
17. Check steering for freedom from play and adjust if necessary. Check condition of track rod and front suspension joints and pivots.
18. Halfshafts and propeller shaft: check condition of joints and rubber coupling.
19. Take up any slack at nuts and bolts (note correct tightening torques, see SPECIFICATIONS) on: steering box mounting, brake caliper mountings, halfshafts.
20. Check condition, positioning, attachment and freedom from leakage of exhaust system.
21. Disc brakes: check overall pad thickness (pads removed) and condition of disc surfaces; renew pads if necessary.
22. Front wheel bearings: check play and adjust if necessary.
23. Check tire pressures and correct if necessary. Check tire condition: if wear is uneven, option of wheel alignment check and adjustment (to be invoiced additionally).
24. Check brake system unions and pipes for leakage, damage or incorrect positioning. Check free movement of handbrake cables. Adjust brake.
25. Take up slack at hinges and catches on doors, engine and luggage compartment lids, and oil or grease as specified. Check adjustment and correct operation.
26. Check lighting equipment (headlights*, auxiliary driving lights*, parking, rear, reversing, license plate, interior, glove box, engine and luggage compartment lights), warning equipment (turn indicators, hazard warning flashers, brake lights, horn, headlight flasher, rear fog guard light), instrument and inscription lighting, telltale and warning lamps, wipers and washer (blades, washer unit [windshield and headlights if so equipped], fluid tank level and antifreeze concentration and jet positions [windshield and headlights if so equipped]), and heater blower.
27. Check condition and correct operation of seat belts.
28. Test engine with BMW Program Tester as specified. Check engine idle settings and exhaust emissions and adjust if necessary.
29. Final inspection of items affecting road safety (brakes, bedding in handbrake linings, steering, clutch or automatic transmission, springs and shock absorbers [visual inspection only], mirrors).

Note: If requested, balance wheels as specified after interchanging (to be invoiced additionally).

Every 30000 km (20000 miles), to be invoiced additionally:

Change oil while at normal operating temperature in the manual gearbox or automatic transmission and final drive. Check clutch driving plate for wear. Correct headlight and auxiliary driving light beam settings if necessary. Clean strainer in carburetor feed line. Clean inlet filter in fuel tank suction unit or in immersed level sensor. Renew main fuel filter.

Every 60000 km (40000 miles), to be invoiced additionally:

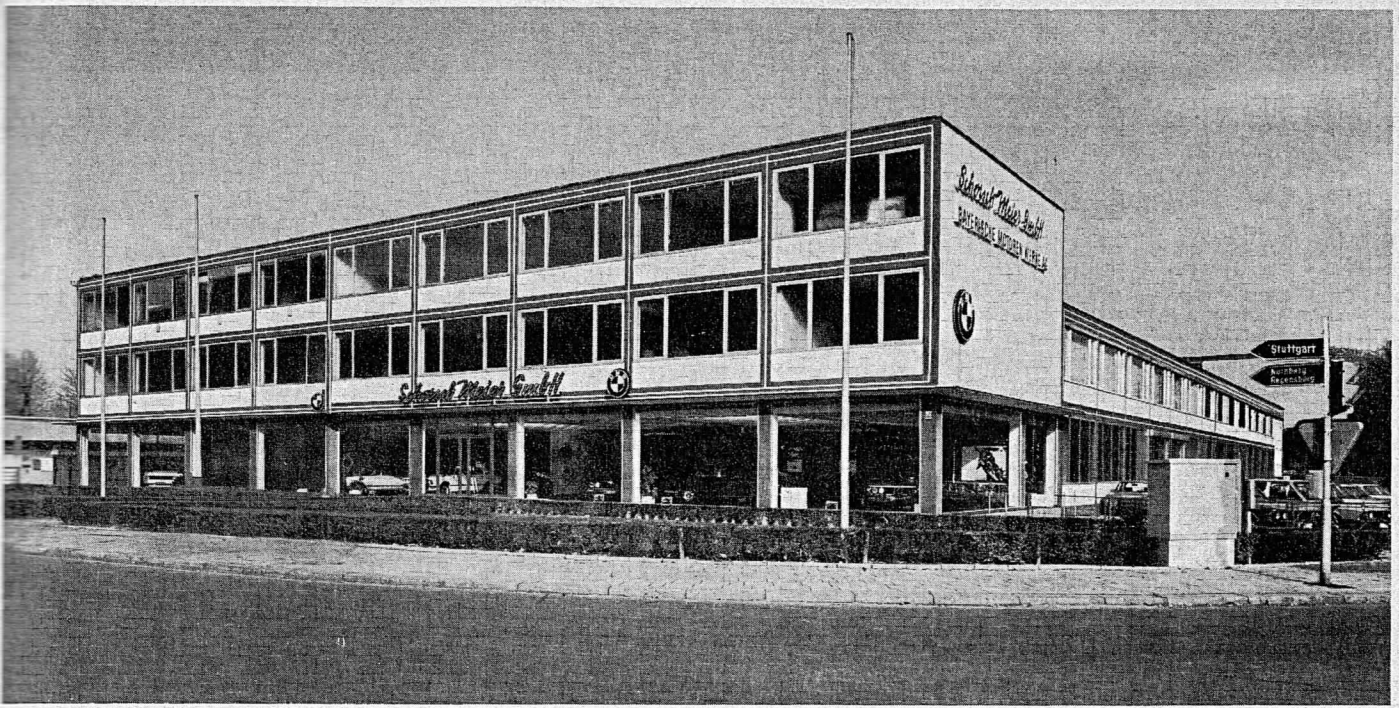
Power steering: check correct operation, renew filter.

Important: renew coolant every 2 years.

Apply fresh underseal and renew body cavity treatment not later than 14 months after initial registration of the car, then after 36 months.

* Check correct operation only; adjustment not included.

BMW Automobiles:
An investment for your safety



BMW Service:
Safety for your investment

False economy – or how to buy experience the hard way

The advanced automotive engineering that goes into your BMW, and the high performance and efficiency that result, are not just unnecessary effort on the part of our designers, but essential requirements for the reliability and unrestricted ability to travel that is a feature of modern transportation, and indeed of our civilization itself. Within this concept, BMW Service is an extension of the same maximum-efficiency principle from which the original purchaser of a BMW benefits. And a sensible precaution, too, since BMW Service continues the advanced technological approach and attention to detail designed into every new BMW vehicle.

The decision to purchase a high-grade automobile is an investment in your own safety. Protect this investment reliably by regular and careful Service checks. And entrust the work to those who know your BMW best: the carefully trained, skilled BMW Service team. Routine checks of this kind not only keep your BMW safe on the roads, but above all prolong its already exceptionally long operating life and, in addition, increase its trade-in value.

No chain is stronger than its weakest link

BMW carries out an uninterrupted series of complex, lavishly organized actual road tests and behavior simulation experiments to assess the value of every improvement or modification made to its models. The objective is not just to test the efficacy of the BMW safety systems as technical improvements are developed, but above all to establish how many hundreds of apparently insignificant details behave or react as the step-by-step BMW safety system takes effect.

Genuine BMW parts for your car are not in themselves good just because they bear the BMW badge. Their true value lies in an unsurpassed systematic testing routine capable of determining, for example, how each part will behave and interact with many other details of the car's design in an emergency. Every single part in your BMW, viewed in this way may be called upon to make an important contribution to the vehicle's overall performance. This explains why price alone is never a sufficient reason to depart from the firm rule: use only genuine BMW parts, and let the BMW Service organization install them.

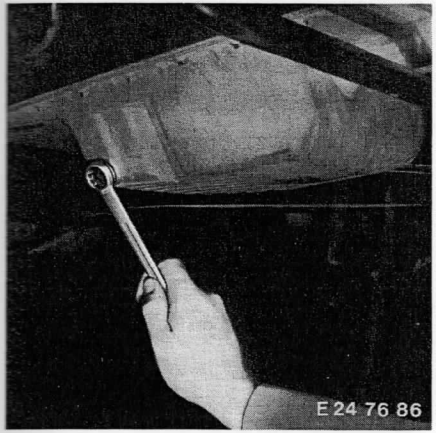
To sum up: bargain prices can look tempting. But hard-won experience may later convince you that putting your trust in BMW Parts and Service pays off in the end.

BMW: supreme automobile engineering for drivers whose commonsense attitudes are the same as those of our design team.

Description of maintenance routines

Engine oil

Frequency of oil changes	Outside temperatures	Oil grades	
		Branded 4-stroke HD oil in API 'SE' category	
		multigrade oil	single grade oil
Every 5000 miles (7500 km) or every 6 months at the latest, for every season of the year.	Usually above 86° F (30° C)	SAE 20 W 50	SAE 40
	The whole year above 14° F (−10° C)	SAE 20 W 40 SAE 20 W 50	SAE 30
	Usually below 50° F (10° C)	SAE 10 W 30 SAE 10 W 40 SAE 10 W 50	SAE 20



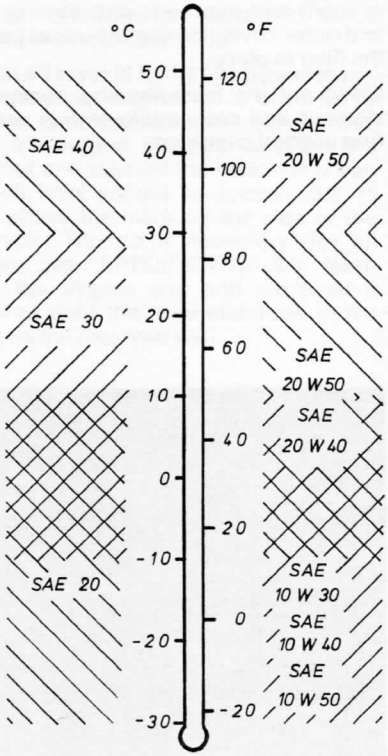
Total oil capacity: 8.8 Imp. pints/5.3 US quarts/5 liters +1.3 Imp. pints/0.8 US quarts/0.75 liters if the filter is also changed.

On BMW 633 CSi: +0.75 liter (1.3 Imp. pints, 0.8 US quarts) in oil cooler – to be added only after a repair.

Oil level: Fill to the upper mark on the dipstick, never higher.

Changing engine oil:

Remove drain plug (19 mm wrench) on the bottom right of the sump. Replace and screw up firmly after the old oil has drained away fully.



Oil filter element: Renew every 5000 miles (7500 km) when the engine oil is changed:

Unscrew the clamping bolt (17 mm wrench) and remove it with sealing ring and outer cover, leaving the upper part of the filter in place.

Clean out the filter housing, renew the element and reassemble with a sealing ring in good condition.

Change the oil in the manual gearbox only while at normal operating temperature, after 1000 km (app. 600 miles) and then every 20000 miles (30000 km): Remove oil drain plug (17 mm intl. hex) then oil filler plug (17 mm intl. hex) on the right of the gearbox housing. This will help the oil to drain more rapidly. When fully drained, replace the drain plug (screw in firmly). Both plugs have conical threads and may not be replaced with plugs having metric threads.

Total oil capacity: 1.9 Imp. pints/1.2 US quarts/1.1 liters.

Oil level: up to underside of filler orifice.

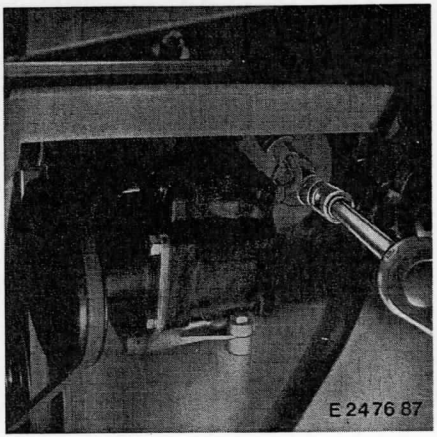
Oil grade: Branded SAE 80 gearbox oil (not hypoid gear oil); in an emergency, HD engine oil.

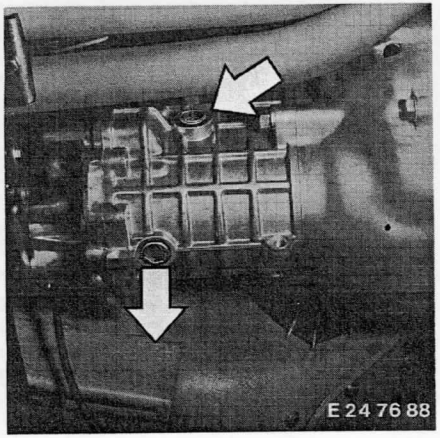
To check oil level in the automatic transmission:

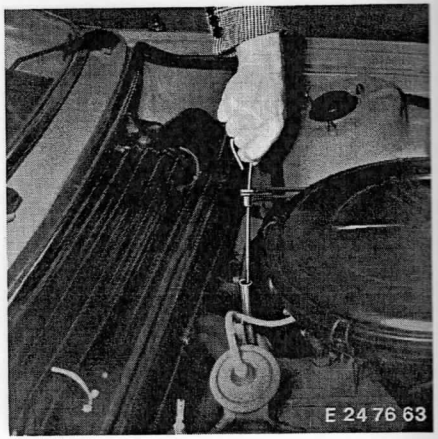
Park the car on a flat, level surface, apply the handbrake and run the engine at normal operating temperature with the selector lever in the "P" or "N" position, at idling speed.

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.

Change the oil in the automatic transmission while at normal operating temperature, every 20000 miles (30000 km): Park the car on a flat, level surface, apply the handbrake, select lever position "P", switch off engine.



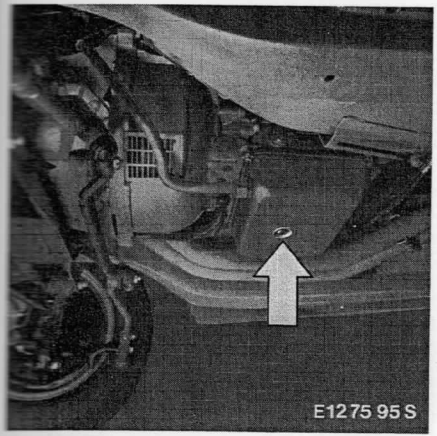




Remove the oil drain plug (17 mm wrench) from the oil sump, allow the oil to drain and replace the plug, tightening firmly.
Add 1.75 Imp. pints/1.1 US quart/1 liter of oil at first, run the engine at idling speed and continue to add oil until two-thirds of the way up the space between the two markings on the dipstick.

Oil capacity when refilling: approx. 3.5 Imp. pints/2.1 US quarts/2 liters. Total oil capacity for initial filling of new or exchange transmission:
12.8 Imp. pints/7.7 US quarts/7.25 liters.
Always check oil level with transmission at operating temperature.

Oil quantity between the two dipstick marks approx. 0.25 liter (0.44 Imp. pint/0.26 US quart.



Oil grades:
see "SPECIFICATIONS".

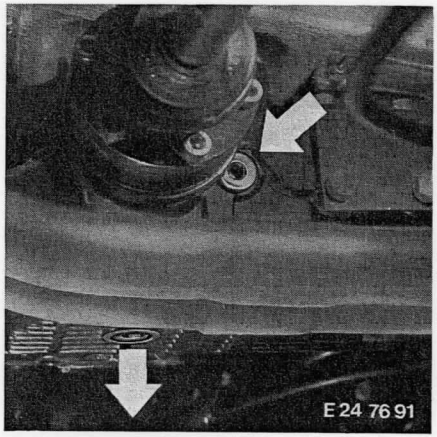
Change the oil in the final drive while at normal operating temperature after 1000 km (app. 600 miles) and then every 20000 miles (30000 km).

Remove the oil drain plug (10 mm Allen key), then the filler plug (10 mm Allen key) on the right hand side of the final drive casing. This will assist the oil in draining more rapidly. Clean the drain plug and replace, screwing in firmly.

Total oil capacity: 2.8 Imp. pints/1.7 US quarts/1.6 liters.

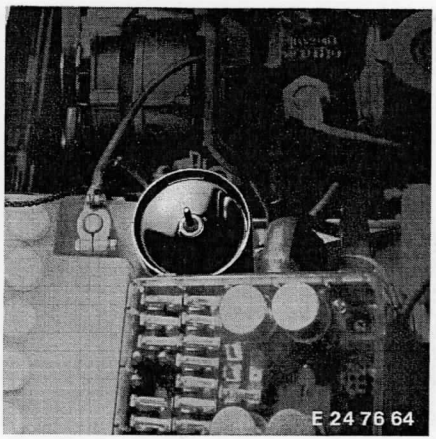
Oil level: up to lower edge of filler orifice. Check every 10000 miles (15000 km).

Oil grades: Branded SAE 90 hypoid gear oil, running-in and constant use grade (your BMW service station knows the factory-approved grades).



During each 15000 km (10000 mile) Inspection, inspect the **flexible gaiters** on the halfshafts for leaks and check tightness of retaining bolts.

Check oil level in hydraulic power steering whenever **engine oil** is checked or **routine maintenance work** carried out. With the **engine stopped,** unscrew the wingnut and take off the reservoir cover. The oil level should be approx. 0.2" (5 mm) above the mark on the side of the reservoir. Top up if necessary (for oil grades, see "SPECIFICATIONS"). Next, **start the engine** and add more oil if required until the level stabilizes at the mark on the reservoir wall.



After the engine has been stopped, fluid level may rise by approx. 5 mm (0.2 in) above the level mark. Replace the cover in position and tighten the wingnut. Make sure that the lid seats correctly and that there are no leaks in the steering system. All other work – filter renewal and operational checking – should always be carried out by an authorized BMW service station.

Lubricate the distributor (BMW 630 CS) during a BMW Inspection every 15000 km (10000 miles).

Apply a narrow wedge of Bosch Ft 1 v 4 grease to the **fiber sliding section** of the breaker arm on the side facing the arm pivot.

The distributor on the breakerless transistorized coil ignition system used on the BMW 633 CSi needs no routine maintenance.

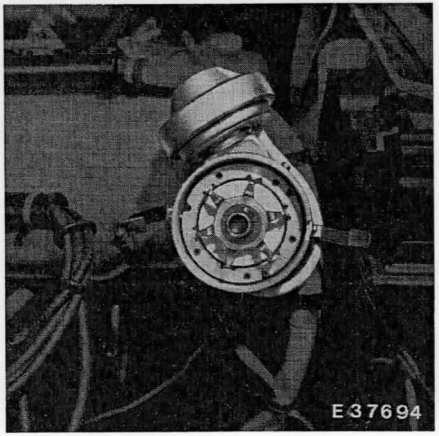
The transparent reservoir for **brake fluid** (and for the **hydraulic clutch withdrawal mechanism**) is inside the engine compartment on the left, and enables the fluid level to be checked without removing the cap.

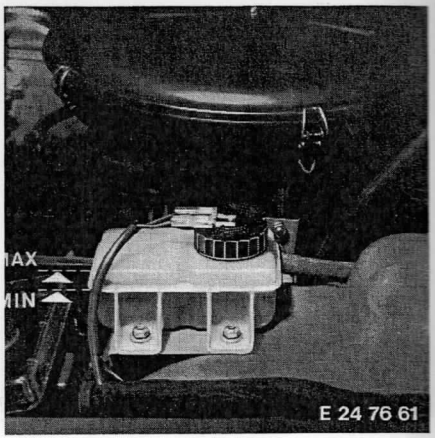
If the fluid level should fall below a certain level, an electric warning device in the reservoir will cause the red "Brake" warnig lamp in the instrument cluster to light up.

Brake fluid is hygroscopic, that is to say it absorbs moisture from the air gradually over a period. In order to ensure that the safety and efficiency of your brakes remain unaffected, the **brake fluid must be renewed once a year** by an authorized BMW service station.

Add fluid up to the upper "MAX" mark.

Your BMW Service Station knows the factory-approved grades of brake fluid.





The **clutch needs no maintenance,** and is automatically adjusted for wear by the clutch slave cylinder.

During a BMW Inspection every 30000 km (20000 miles), clutch driving plate wear should be checked in situ.

As the driving plate wears, distance "a" becomes smaller. When the wear limit is reached, "a" = 5 mm (0.2 in).

At this point, the clutch driving plate must be renewed by an authorized BMW service station.

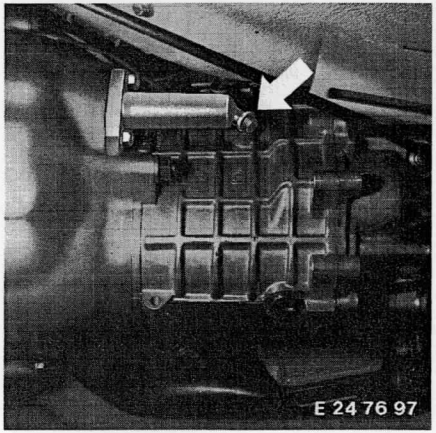
Loss of fluid from the clutch hydraulic system, or penetration of air into the circuit, can lead to incomplete clutch withdrawal and possibly to gearbox damage.

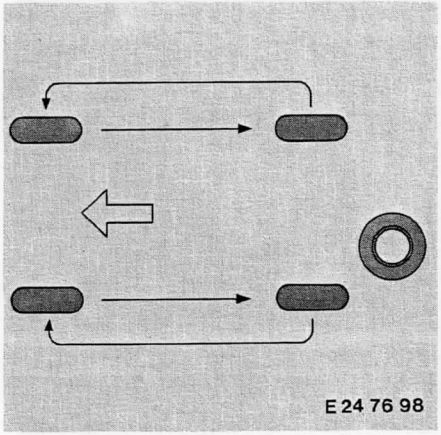
The system should be bled in good time via the bleed screw.

In the interests of uniform tire wear at all wheels, the **wheels** can be interchanged if desired during a BMW Inspection every 15000 km (10000 miles). The front and rear wheels on each side of the car may be interchanged, but wheels should never be moved to the opposite side of the car. The spare wheel can be brought into use to replace one of the road wheels if so desired.

Have the wheels balanced statically and dynamically, if possible in position on the car, following interchanging. This work can be specified during a BMW Inspection every 15000 km (10000 miles).

The tires should be regularly inspected for wear, damage, penetration by foreign bodies etc. If uneven wear patterns are detected, have the car's wheel alignment checked using the proper equipment and with the car loaded to the specified weight.





Every 7500 km (5000 miles) or at least once a month, **battery acid level** should be checked. Remove the battery top cover and unscrew the 6 cell plugs. The acid level should be about 5 mm (0.2 in) above the top of the plates in each cell, or up to the level mark visible inside the cell.

If acid level has fallen too low, add distilled water (not acid).

Keep the upper part of the battery clean and dry.

Warning: Never allow acid or lead oxide from the terminals of the battery to reach the clothing. Never bring a naked light close to the battery, as there is a risk of explosion.

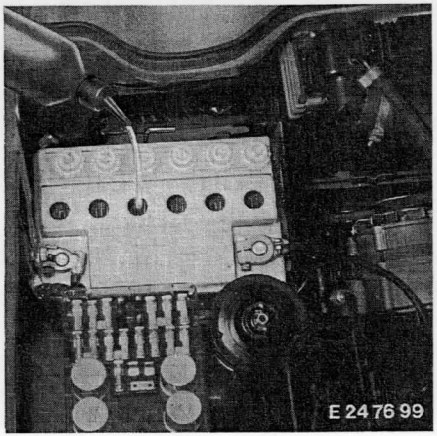
To **remove and install the battery,** unscrew und tighten the toggle handle holding the clamp rail.

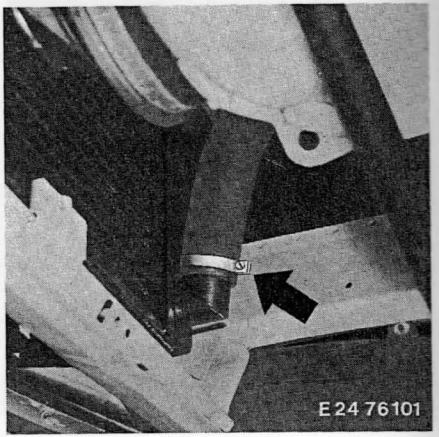
Apart from regular checking of coolant level and antifreeze and corrosion inhibiting properties (minimum concentration 35% all the year round), and also of hoses and hose connections, we recommend draining and refilling the cooling system completely **every 2 years.** At the same time, check the radiator overflow tank cap for leakage and correct operation of the pressure relief and vacuum valve.

The **cooling system including the heater** holds approx. 12 liters (21.1 Imp. pints, 12.7 US quarts).

To drain the coolant:

Loosen the hose clip at the lower radiator stub pipe, and pull off the hose.

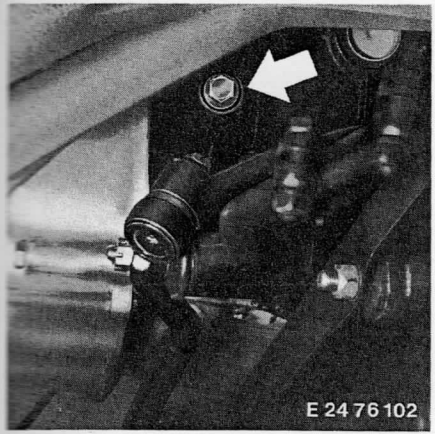




Warning: if the engine is hot, there is a risk of scalding.

Remove the hexagon bolt (19 mm wrench) at the right-hand rear end of the engine block.

The left rotary heater control on the facia must previously be set to "WARM" (see "OPERATING INSTRUCTIONS").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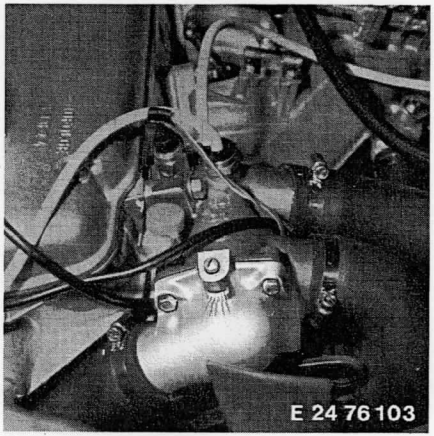
Refilling the cooling system after draining:

Turn the left heater control to "WARM" and unscrew the cooling system bleed screw in the thermostat housing. Slowly add long-life antifreeze and corrosion inhibitor mixed with water in a concentration of 35%, via the overflow tank. This will provide protection against freezing at temperatures down to −25°C (−13°F). Tighten the bleed screw as soon as coolant emerges free from air bubbles.

Seal the cooling system by screwing on the filler cap as far as the second step. Run the engine at approx. 2000–2500 rev/min until warm, then switch off.

After about 1 minute, restart the engine and run at not less than 4000 rev/min for 30 seconds. Next, allow the engine to idle and check that the heater is delivering warm air.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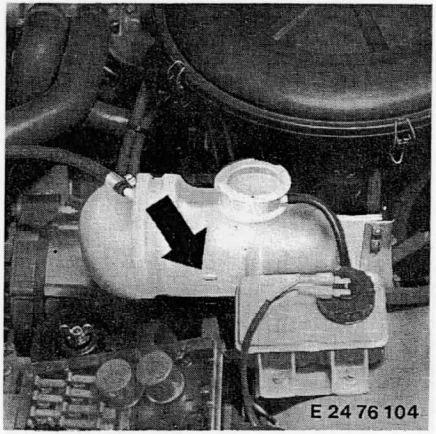
Allow the engine to cool down until the coolant thermometer needle is between the two white marks. Add coolant until the level is at the mark on the header tank, then seal again by screwing on the cap.

Adding more water will dilute the concentration of the antifreeze and corrosion inhibitor in the system, as liquid will be lost via the overflow.

The **windshield** and **headlight washer systems** can be prevented from freezing by adding 40% domestic alcohol spirit (1 liter for a 2.5 liter fluid reservoir); this will give protection down to −20°C (−4 °F). Check operation of the systems at regular intervals.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The **air cleaner element** in the intake air silencer should be renewed during a BMW Inspection every 15000 km (10000 miles), or at more frequent intervals, depending on the amount of dust normally encountered.

An air cleaner element blocked with dust or dirt will increase fuel consumption and reduce engine output.

BMW 630 CS
Open the snap fasteners, take off the cover and remove the element.

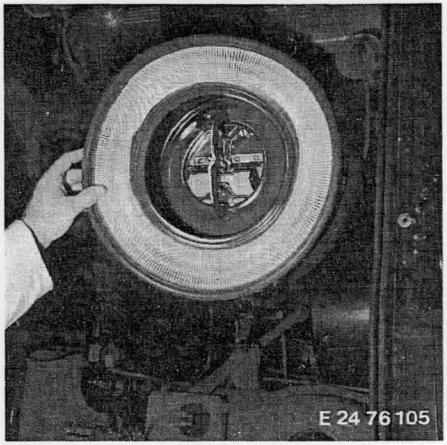
BMW 633 CSi
Disconnect the hose clip (1) on the flexible gaiter between the airflow meter and the air cleaner at the airflow meter end.
Pull the flexible gaiter away from the airflow meter and lift the air cleaner out of its mounting (2). Release the snap fasteners and take out the element (3).

Fuel filter – BMW 633
Every 30000 km (20000 miles), the strainers in the fuel circuit must be cleaned and the main fuel filter renewed.

Fine mesh strainer in carburetor feed line (BMW 630 CS):
Detach fuel line at carburetor, remove mesh strainer and wash in clean gasoline (petrol).

Renewing the main fuel filter (BMW 633 CSi):
1. Slacken the fuel hose and filter retaining clips.
2. Pull off the hoses and renew the complete filter.

Warning: When installing the filter, note the correct direction of fuel flow shown on the instruction label.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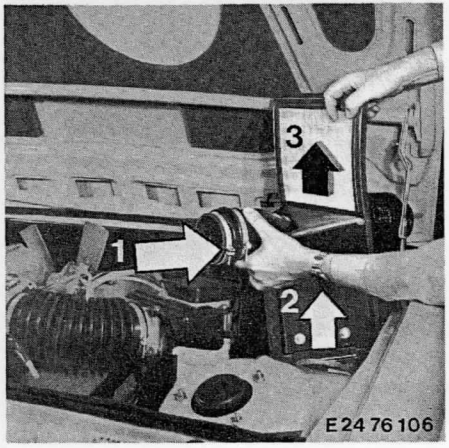

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Fine-mesh strainer in fuel tank immersed level sensor:

1. Remove the right floor panel in the luggage compartment.
2. Loosen clip on intake and return hoses and pull hoses away from intake unit.
3. Turn the intake unit anti-clockwise with a suitable tool (screwdriver) to unscrew the bayonet fastening, then pull out of the tank.
4. Clean the fine-mesh strainer.

Warning: Do not re-use the old gasket when installing.

Checking spark plug electrode gaps: before installing new spark plugs, check the electrode gaps with a feeler gauge and bend the earth (ground) electrode carefully if necessary until the gap "a" is 0.6+0.1mm (0.024+0.004 in) as specified.

Renew spark plugs every 15000 km (10000 miles) during a BMW Inspection.

Before inserting spark plugs, apply a light coating of graphite grease to the threads.

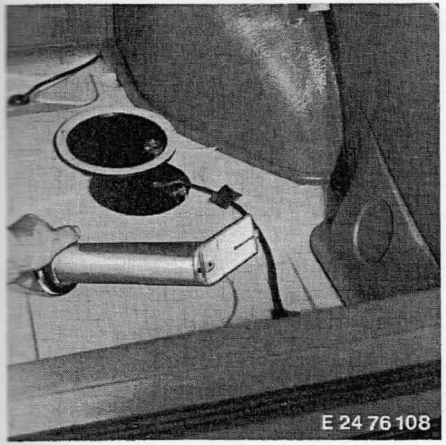
Details of the correct spark plug types are shown on the inside back cover.

Renew the breaker points every 15000 km (10000 miles) during a BMW Inspection.

Adjust the dwell angle with the aid of the BMW Program Tester's dwell angle meter. BMW 630 CS: 35–41°; BMW 633 CSi: 52+5° at 4500 rev/min.

If no dwell angle tester is available in an emergency or during a journey, adjust the breaker points gap on the BMW 630 CS as follows:

Turn the engine over slowly until the breaker arm is fully raised ("A" – fiber slider pad at highest point on distributor shaft cam).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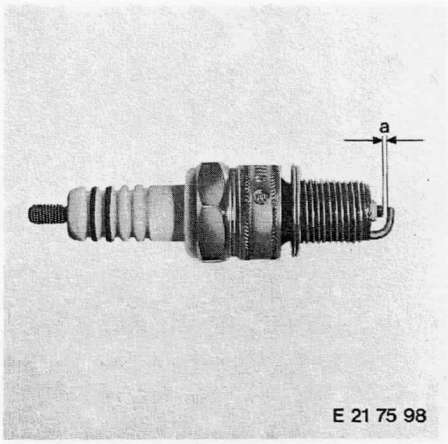

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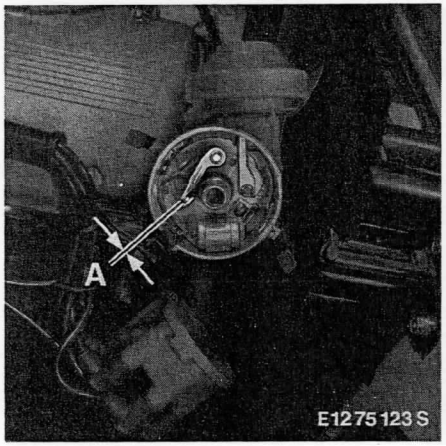

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Adjusting breaker points gap:

Loosen locking screw "a" slightly, insert a screwdriver blade between the two small pins "b" and into slot "c" on the breaker points plate, and turn slightly until a gap of 0.35–0.40 mm (0.014–0.016 in) is measured with a feeler gauge. Tighten screw "a" firmly, and check that the breaker points gap has not changed.

Checking ignition timing during a BMW Inspection every 15000 km (10000 miles) – always necessary after resetting the points gap – should be performed dynamically with vacuum ignition control out of action, using a strobe light and a revolution counter.

Test engine speeds:

BMW 630 CS	1500 rev/min
BMW 633 CSi	1800 rev/min

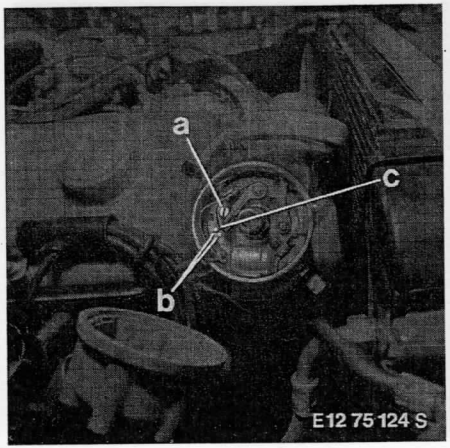
The ignition timing mark "Z" (a pressed-in steel ball, or on automatic transmission cars the longer taper pin at the side of the starter gear ring) refers to the first cylinder. It can be seen by examining the flywheel through the inspection hole in the transmission housing on the left, behind the starter.

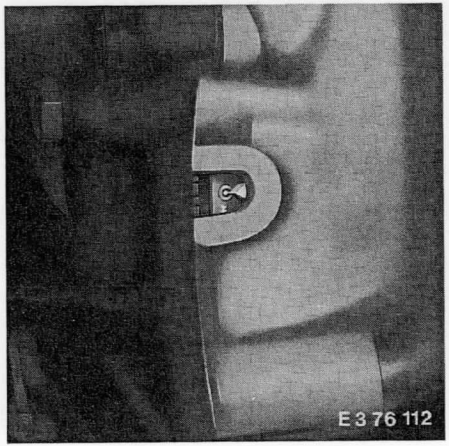
Checking and adjusting ignition timing should always be entrusted to an authorized BMW service station.

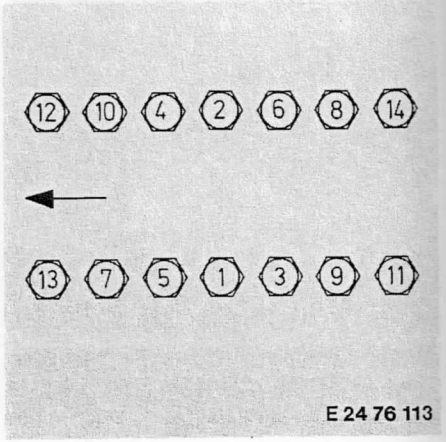
During the first BMW Inspection after 1000 km (approx. 600 miles), and again during the 7500 km (5000 miles) BMW Oil Service, the **cylinder head bolts** should be tightened in the specified sequence while the engine is cold. Note the correct tightening torque (see "SPECIFICATIONS").

Take off the air cleaner.

Detach the rocker cover (10 mm cap nuts and washers).

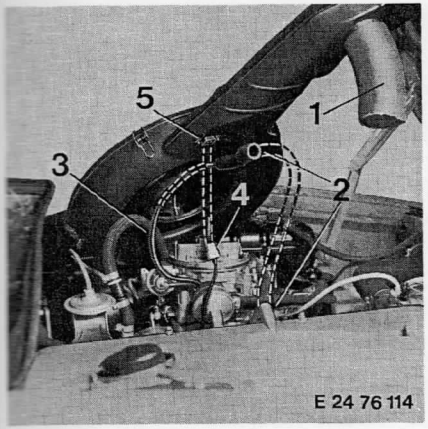






Detaching the air cleaner (BMW 630 CS):

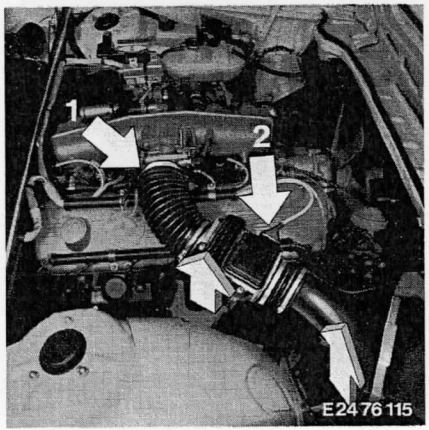
Unscrew the nut holding the air cleaner. Pull off the hoses for intake air preheating (1), primary (2) and secondary (3) breathing, and the plug (4) at the heat-sensitive switch (5). Take off the air cleaner.



Detaching the air cleaner with airflow meter (BMW 633 CSi)

Loosen the hose clip (1) on the throttle butterfly stub pipe and pull off the flexible gaiter. Detach plug (2) at the airflow meter and lift out the air cleaner complete with airflow meter from the mountings.

Take off the rocker cover (cap nuts and washers, 10 mm wrench).

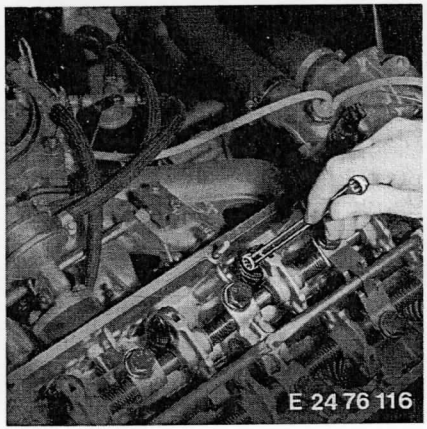


Checking and adjusting valve clearances: every 15000 km (10000 miles) during a BMW Inspection, with the **engine stopped and cold** (coolant temperature max. 35°C (95°F) or as stated in repair shop instructions.

Take off the air cleaner.

Detach the rocker cover (10 mm cap nuts and washers).

Measure the specified valve clearances of 0.25–0.30 mm (0.010–0.012 in) with a feeler gauge between the inlet or exhaust valves and their rockers. Checking sequence should correspond with the **firing order (1–5–3–6–2–4),** and the measurement should be taken at top dead center on the compression stroke. Adjust valve clearance if necessary in this position.



The compression stroke top dead center for each cylinder is obtained when the valves of the cylinder next but one in the firing order are on the overlap.

Compression stroke TDC – cyl. No.		Valve overlap in cylinder No.
1	=	6
5	=	2
3	=	4
6	=	1
2	=	5
4	=	3

To adjust valve clearance at the rocker, loosen the hexagon nut (10 mm wrench).

Turn the eccentric with a piece of 2.5 mm diameter wire bent to a slight angle, until the specified clearance is obtained.

Tighten hexagon nut and check that clearance has not altered.

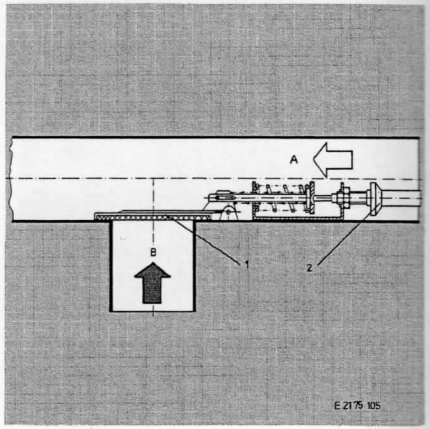
Installing air cleaner (BMW 630 CS):

Connect the plug (4) from the heat-sensitive switch and the secondary breather line (3). Place the air cleaner on the upper section of the carburetor. Connect the primary breather (2) and the intake air preheat pipe (1). Attach the air cleaner housing with the cap nut.

Installing air cleaner with airflow meter (BMW 633 CSi):

Place air cleaner with airflow meter in mounting. Connect plug (2) at airflow meter. Push flexible gaiter on to throttle butterfly stub pipe, and tighten hose clip (1).

The **automatic intake air preheat** flap valve (1) on the BMW 630 CS is installed in the intake pipe of the air cleaner and silencer, and is opened and closed by an expansible element (2). During a BMW Inspection every 15000 km (10000 miles), check correct operation and free movement of the flap valve and element, and oil the pivots if necessary. When the flap valve is closed, air already preheated by the exhaust manifold is drawn into the engine. As the outside temperature rises above approx. 15° C (59° F), the flap valve opens and the supply of preheated air is discontinued.



Check **V-belt tension** every 15000 km (10000 miles) during a BMW Inspection.

V-belts are correctly tensioned if they can be pressed in by 5–10 mm (0.2–0.4 in) at the center of the run between the two pulleys.

1 Alternator V-belt

2 High pressure vane type pump V-belt

3 Compressor V-belt (for cars equipped with air conditioning)

Correcting V-belt tension:

V-belt **1**

Loosen the upper and lower alternator retaining bolts (13 mm wrench) and move the alternator on its tensioning strap until V-belt tension is correct.

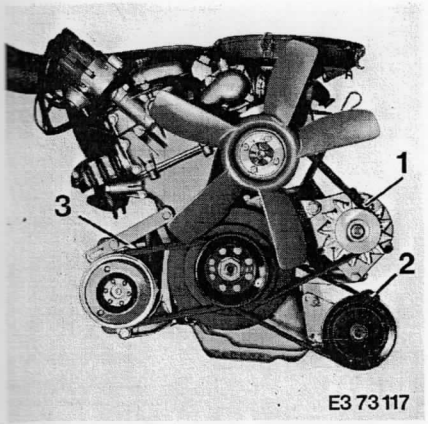
V-belt **2**

Loosen the two bolts (13 mm wrench) holding the high pressure vane type pump and move the pump housing along its slot until V-belt tension is correct.

Renewing V-belts:

V-belt **1**
First remove V-belts **2** and **3**.
Loosen upper and lower alternator retaining bolts (13 mm wrench) and swing the alternator over as close to the engine block as possible. Pass the new V-belt over the vibration damper, fan pulley and alternator pulley, and tension correctly.

V-belt **2**
First remove V-belt **3** (if fitted).
Loosen the high pressure vane type pump retaining bolts (13 mm wrench) and move the pump as close as possible to the alternator. Pass the new V-belt over the crankshaft and pump pulleys, and tension correctly.



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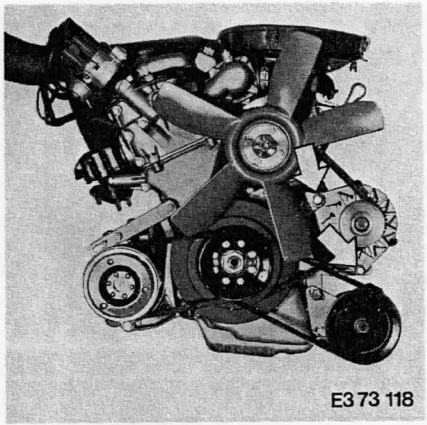
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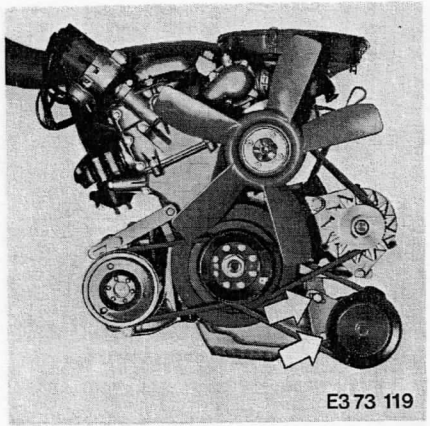

E3 73 119

Adjusting handbrake

If the handbrake lever can be pulled up by 4 notches before any braking effect is noticed, the handbrake requires adjustment.

The handbrake should always be adjusted by an authorized BMW service station, but in exceptional circumstances the work may be carried out as follows:

Loosen the wheel studs of both rear wheels. Jack up the car, remove both rear wheels and turn the left rear brake disc until the larger inspection hole is approx. 10° behind vertical at the top. For the right brake disc, the large inspection hole must be approx. 10° ahead of the top vertical position.

In this position, the adjusting nuts should be visible through the inspection holes. Insert a screwdriver blade into the splines on the adjusting nut.

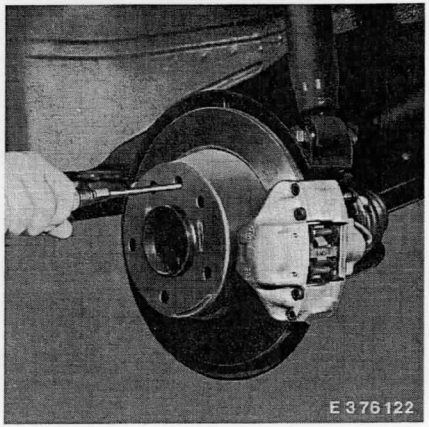
Turn the adjusting nut with the screwdriver until the brake shoes are touching the drums and the main brake disc can no longer be turned. Then back off the adjusting nut by 4–6 splines.

Screwdriver moved down = handbrake applied
Screwdriver moved up = handbrake released.

Repeat the procedure on the opposite rear wheel.

After this, the handbrake cables must be adjusted. Pull up the rubber cap on the base of the handbrake lever. Loosen the locknut (10 mm wrench) on each adjusting nut, apply the handbrake lever by 4 notches, then take up slack at the adjusting nuts (10 mm wrench) while preventing the adjusting screw from turning with pliers. Check that the rear wheels can just be turned **by hand** without undue effort. Tighten the locknuts.

Finally, check that the rear wheels can be turned freely when the handbrake is released.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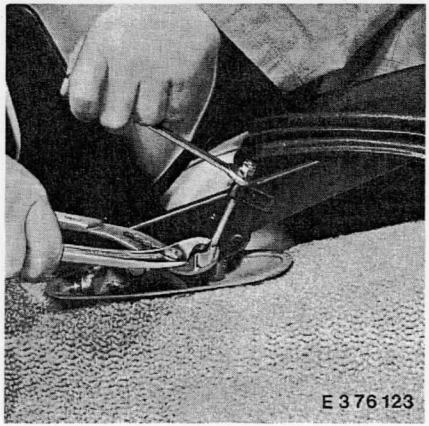
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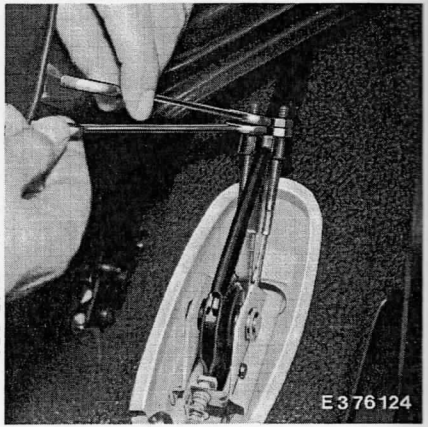
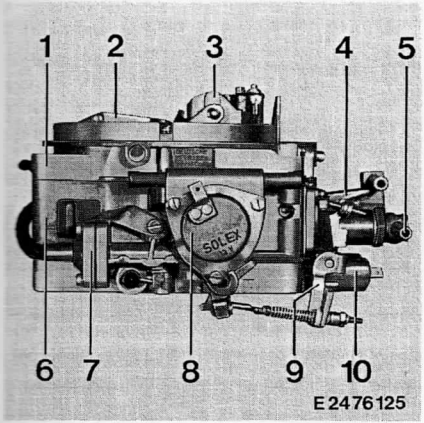
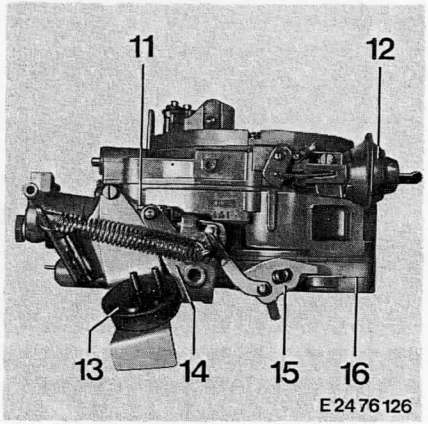

E 3 76 124

Solex 4A1 duplex two-stage carburetor

1 Carburetor cover
2 Throttle butterfly
3 Choke butterfly
4 Thermal cold-start mixture bypass starter
5 Fuel feed
6 Carburetor body
7 Pull-down
8 Automatic choke
9 Accelerator pump lever
10 Idle speed shutoff valve
11 Throttle lever stop screw
12 Throttle butterfly damper
13 Heat-sensitive timer valve
14 Throttle lever, stage 1
15 Throttle lever, stage 2
16 Throttle butterfly section





The Solex Type 4A1 carburetor is a duplex two-stage instrument with barrel diameters of 2×32 mm for stage 1 and 2×54 mm for stage 2. It is equipped with a starting and warm-up system made up of a combined automatic choke (with electric and coolant heating), a thermostat-controlled bypass starting system and a vacuum-controlled speed regulator. Carburetor and automatic choke need no maintenance.

Adjustment work on carburetors and fuel injection systems

All mixture preparation systems have been set up on the test bench in accordance with the ECE R 15 Type II exhaust emission control regulations and other relevant legislation, and sealed to prevent unauthorized tampering with the settings.

Any adjustment work which becomes necessary must be performed only by a BMW Service Station, since only these possess the necessary measuring equipment, up-to-date adjustment data and factory instructions.

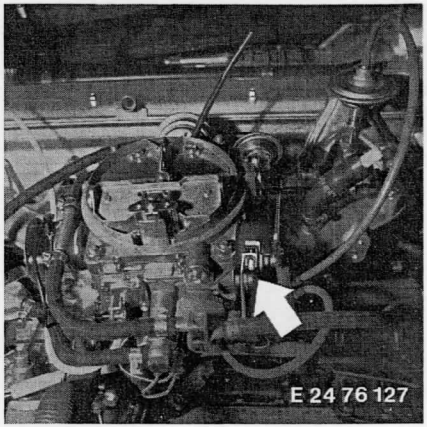
Adjusting engine idling – BMW 630 CS

The necessary adjustment work should always be entrusted to an authorized BMW service station, which will possess the necessary equipment.

In exceptional circumstances only, adjust engine idling as follows, with the engine at its normal operating temperature:

Turn the stage 1 throttle butterfly arm stop screw clockwise to increase engine idling speed, or anti-clockwise to reduce idling speed.

The correct idling adjustment procedure should be carried out as soon as possible afterwards by an authorized BMW service station.

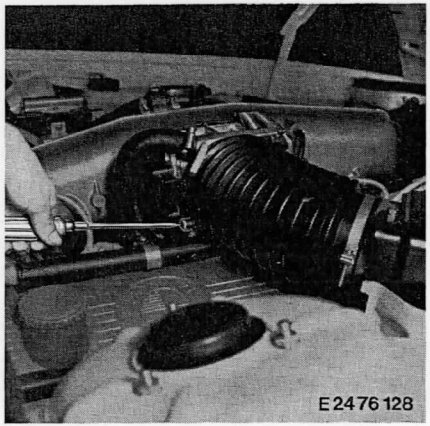


Adjusting engine idling – BMW 633 CSi

The necessary adjustment work should always be carried out by an authorized BMW service station in possession of the proper equipment for working on BMW fuel injection engines.

In an emergency only, the following provisional engine idling adjustment method may be adopted:

Vary idle speed **only** at the idling adjustment screw below the throttle butterfly switch.



Turning the screw clockwise reduces airflow, and idling speed drops.

Turning the screw anti-clockwise increases airflow, and idling speed accordingly rises.

Correct engine idling adjustment must be carried out as soon as convenient after this by taking the car to an authorized BMW service station.

Notes:

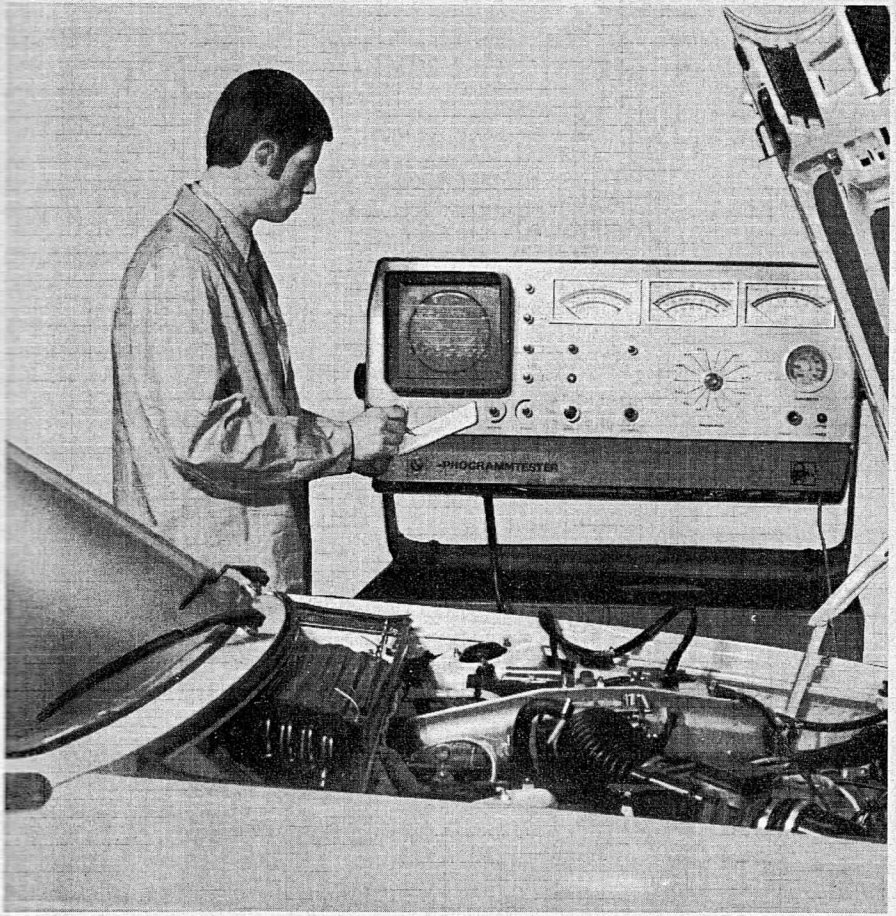
Never disconnect or connect the plug at the airflow meter when the ignition is switched on.

Never run the engine without a battery in circuit.

Never attempt to start the engine by using a rapid battery charger as a starting aid.

When recharging the battery with a rapid charger, first disconnect it from the car's electrical system.

When installing a battery, make quite sure that the polarity at the terminals is correct before making any connections.



SPECIFICATIONS

Engine
Fuel injection system
Clutch and gearbox
Front and rear axles
Steering and brakes
Heating and ventilation
Electrical system
Dimensions and weights
Performance data
Tightening torques
Service instruction chart
Electrical wiring diagrams
Oil grades for automatic transmission and power steering
Item reference list
At a glance

Specifications

ENGINE

Design

Six-cylinder, four-stroke inline, water cooled, with single overhead camshaft and inclined valves in triple-hemisphere swirl-action combustion chambers designed to suit the mixture preparation system in use.

Installation

Inclined at 30° to one side, over front axle. Three-point engine mountings: at either side, with rubber bushings close to center of gravity and attached directly to front axle beam; at rear, flanged to gearbox, with single rubber mounting on transmission cross-member.

Cylinder block

Special-grade grey cast iron.

Cylinder head

Light alloy, with shrunk-in valve seat rings and guides.

Crankshaft

Heat-treated steel forging, with 12 counterweights; 7 three-layer main bearings each with 2 oil supply drillways.

Connecting rods and pistons

Forged steel connecting rods with replaceable three-layer big-end bearings; pistons with raised flat crown and chromium plated spheroidal graphite cast upper rings.

Valves

Overhead, inclined in V-pattern in cylinder head to form a hemispherical combustion chamber. Exhaust valve armoured, with hard chromium plated stem. Valve clearances adjustable at eccentrics in rockers.

Valve gear

Light alloy rockers with chill-cast pads, single overhead camshaft driven by duplex roller chain with automatic oil-damped chain tensioner and backlash prevention.

Valve clearances

Inlet and exhaust 0.25 to 0.30 mm (0.010–0.012 in), measured with engine stopped and cold (max. coolant temperature 35°C [95° F]).

Valve timing (for test purposes)

Inlet opens	14° before TDC	±2.5°
Inlet closes	54° after BDC	
Exhaust opens	54° before BDC	
Exhaust closes	14° after TDC	
Total opening period	248°	

Measured with 0.5 mm (0.02 in) clearance between rocker and cam base circle.

Lubrication

Pressurized oil circuit with full flow oil filter and pressure regulating valve in filtered oil circuit. Rotor oil pump (Eaton system) chain driven from crankshaft. Light alloy sump.

Oil consumption

Up to 0.15 liter/100 km (200–235 miles/pint).

Oil filter

Full flow filter with paper element and pressure relief valve; opening pressure 2.5 ±0.2 bar (35.5 ±2.8 lb/in²).

Engine breather

Crankcase and valve cover linked by passage in block and connected to air cleaner and intake manifold (BMW 630 CS) or throttle stub pipe (BMW 633 CSi).

Air cleaner

One filter element in intake air silencer.

Air intake

BMW 630 CS

Through automatic intake air preheat flap valve operated by expansible element.

BMW 633 CSi

Via intake air silencer, airflow meter, throttle butterfly stub pipe and air collector to the 6 intake pipes with injectors.

Fuel delivery

BMW 630 CS

Mechanical fuel pump, overpressure 0.22 bar (3.12 lb/in²) at 4000 rev/min.

BMW 633 CSi

Electric fuel pump with expansion vessel; delivery rate 110 liters (24.2 Imp. gal, 29.1 US gal)/h. Delivery overpressure: 2.0 bar (28.5 lb/in²).

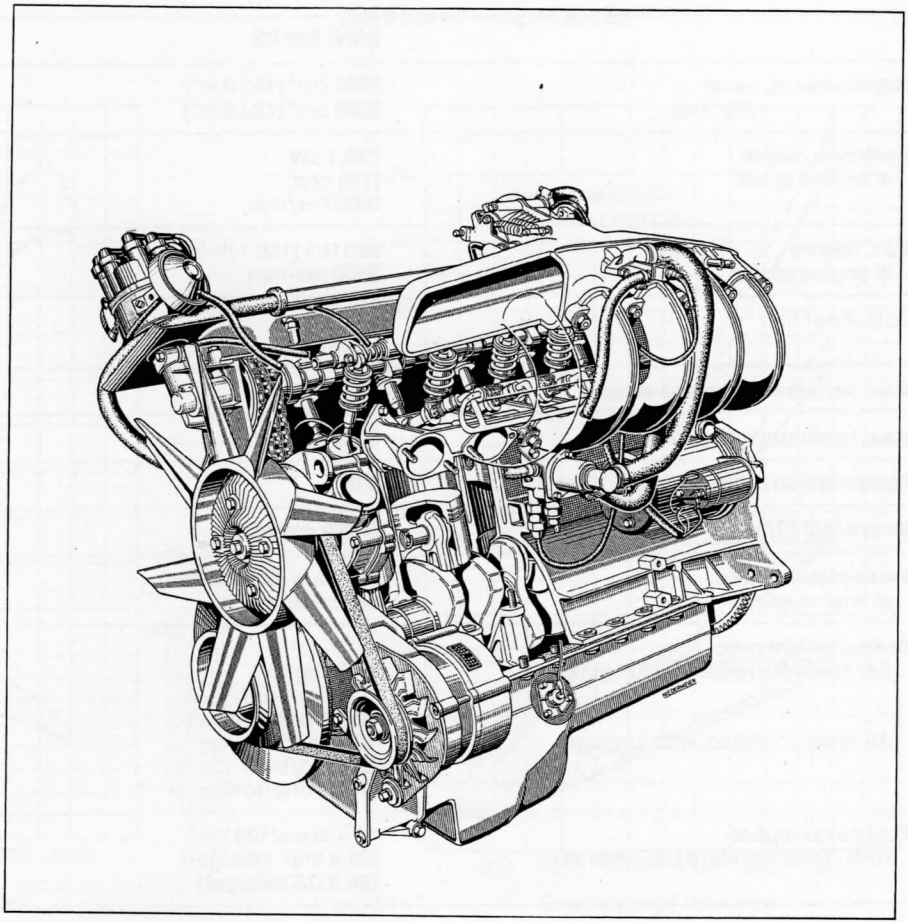
Fuel filter

BMW 630 CS

Fine-mesh strainers in carburetor feed line and at immersed tank level indicator.

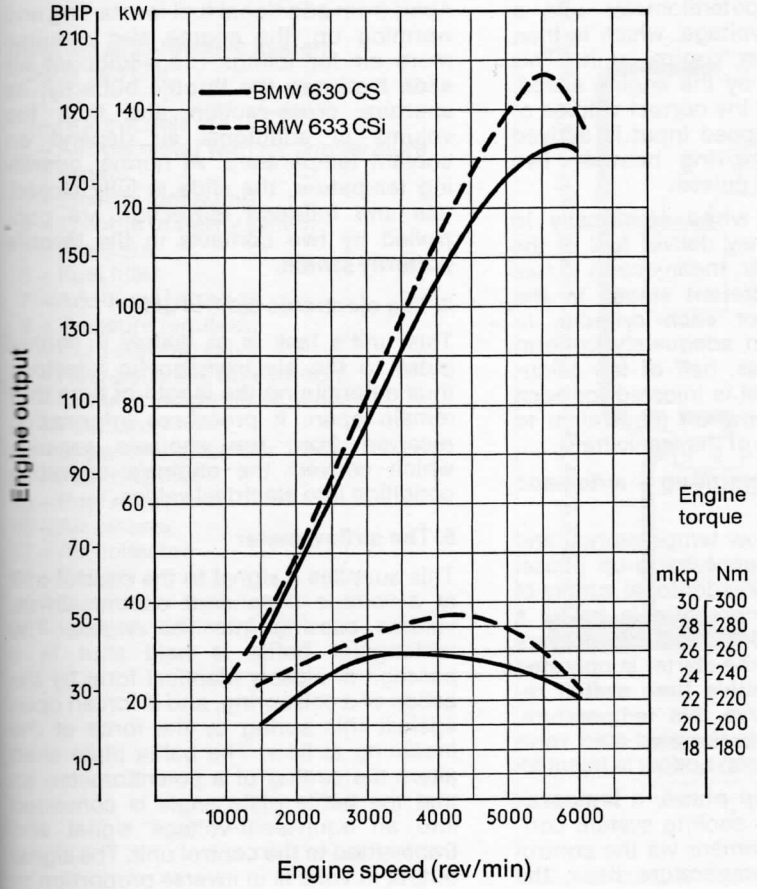
BMW 633 CSi

Main fuel filter with throwaway cartridge element in feed line, fine-mesh strainer at immersed tank level indicator.

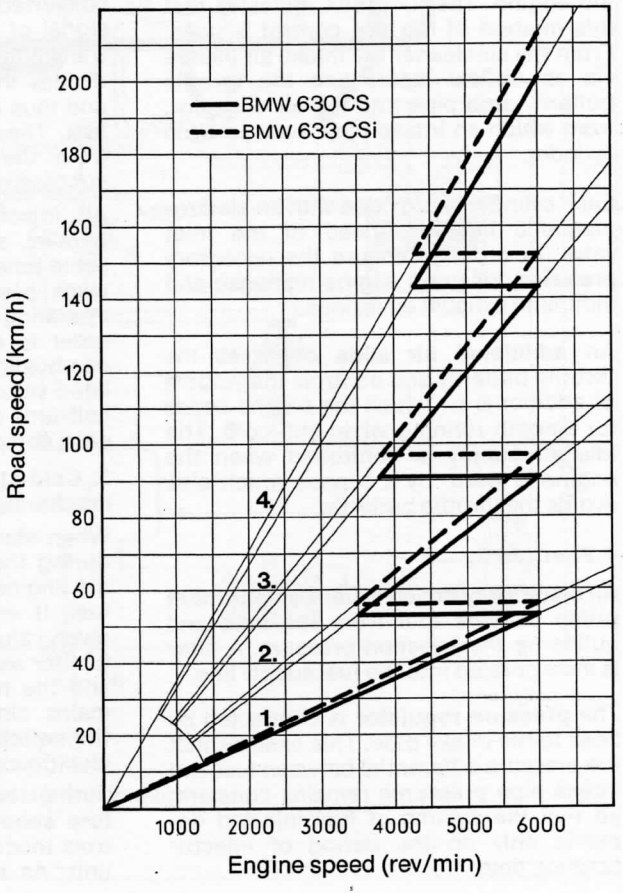


	BMW 630 CS	BMW 633 CSi
Displacement, fiscal effective	2966 cm^3 (181.0 in^3) 2986 cm^3 (182.2 in^3)	3188 cm^3 (194.5 in^3) 3210 cm^3 (195.9 in^3)
Maximum output at engine speed	136.1 kW (185 bhp) 5800 rev/min	147.1 kW (200 bhp) 5500 rev/min
Max. torque at engine speed	260 Nm (188.1 lb.ft) 3500 rev/min	290 Nm (209.7 lb.ft) 4250 rev/min
Output per liter	45.6 kW (61.9 bhp)	45.8 kW (62.3 bhp)
Max. permissible engine speed	6400 rev/min	6400 rev/min
Max. continuous engine speed	6000 rev/min	6000 rev/min
Compression ratio	9.0 : 1	9.0 : 1
Stroke/bore (ratio)	80/89 mm (0.9)	86/89 mm (0.97)
Mean piston speed at engine speed	15.5 m/s (3051 ft/min) 5800 rev/min	15.8 m/s (3110 ft/min) 5500 rev/min
Power/weight ratio Car ready for road, with full tank All seats occupied, with luggage	 10.66 kg/kW (7.84 kg/bhp) (129.6 bhp/ton) 13.45 kg/kW (9.89 kg/bhp) (102.7 bhp/ton)	 10.0 kg/kW (7.35 kg/bhp) (138.2 bhp/ton) 12.44 kg/kW (9.15 kg/bhp) (111.0 bhp/ton)
Fuel consumption (DIN 70030 standard test method)	11.4 liters/100 km (24.8 Imp. mile/gal) (20.6 US mile/gal)	11.0 litres/100 km (25.7 Imp. mile/gal) (21.4 US mile/gal)

Engine output



Road speed – engine speed



BMW 633 CSi – fuel injection

The L-Jetronic system on your BMW measures the volume of air drawn into the engine. The 'L' prefix indicates that this method of mixture control is used. From the air cleaner the intake air passes via an **airflow meter** and the throttle butterfly stub pipe into the air collector, from which an intake pipe leads to each cylinder.

Each cylinder is provided with an electromagnetic **injector** ahead of the inlet valve, in order to ensure the necessary precision for good engine response and minimum exhaust emissions.

An **additional air slide** bypasses the throttle butterfly and controls the volume of additional air which the engine needs for smooth running when still cold. The idle air supply is controlled when the engine is warm by a bypass which also avoids the throttle butterfly.

1. Fuel supply

An electrically driven **roller compartment pump** delivers fuel from the tank and builds up the injection pressure. A filter is incorporated into the fuel supply line.

The **pressure regulator** is connected by hose to the intake pipe. This ensures that the pressure differential between fuel and intake pipe pressures remains constant, so that the volume of fuel injected depends only on the period of injector opening time.

2. Control of fuel volume

The volume of air drawn in by the engine is measured by the airflow meter and converted by a potentiometer into a signal of a given voltage, which is then transmitted to the control unit. This divides the signal by the engine speed, and thus arrives at the correct volume of fuel. The engine speed input is derived from the time elapsing between two successive ignition pulses.

All injectors are wired electrically in parallel, so that they deliver fuel at the same time. However, the injection of fuel takes place at different stages in the operating cycle for each cylinder. In order to ensure an adequately uniform combustion process, half of the calculated volume of fuel is injected for each half-turn of the camshaft (equivalent to each complete turn of the crankshaft).

3. Cold-start and warm-up – automatic mechanism

When starting at low temperatures, and during the subsequent warm-up phase, the engine needs an additional supply of fuel. If engine temperature is below a given value, the **cold-start valve** delivers fuel for as long as the starter is operated and the **heat-sensitive time switch** remains closed. Above this temperature, the switch interrupts the cold-start valve electric circuit, so that no fuel is injected.

During the warm-up phase, a **temperature sensor** in the cooling system controls mixture enrichment via the control unit. As engine temperature rises, the volume of additional fuel gradually decreases to zero at normal operating temperature.

Apart from additional fuel for starting and warming up, the engine also requires more air for idling. The **additional air slide** bypasses the throttle butterfly; its aperture cross-section and thus the volume of additional air depend on coolant temperature. At normal operating tempature, the slide is fully closed. Idle and full-load correction are controlled by two contacts in the **throttle butterfly switch.**

4. The electronic control unit

This unit's task is to supply a control pulse to the electromagnetic injectors, thus determining the length of time they remain open. It processes information received from the engine's sensors, which convert the engine's operating condition into electrical values.

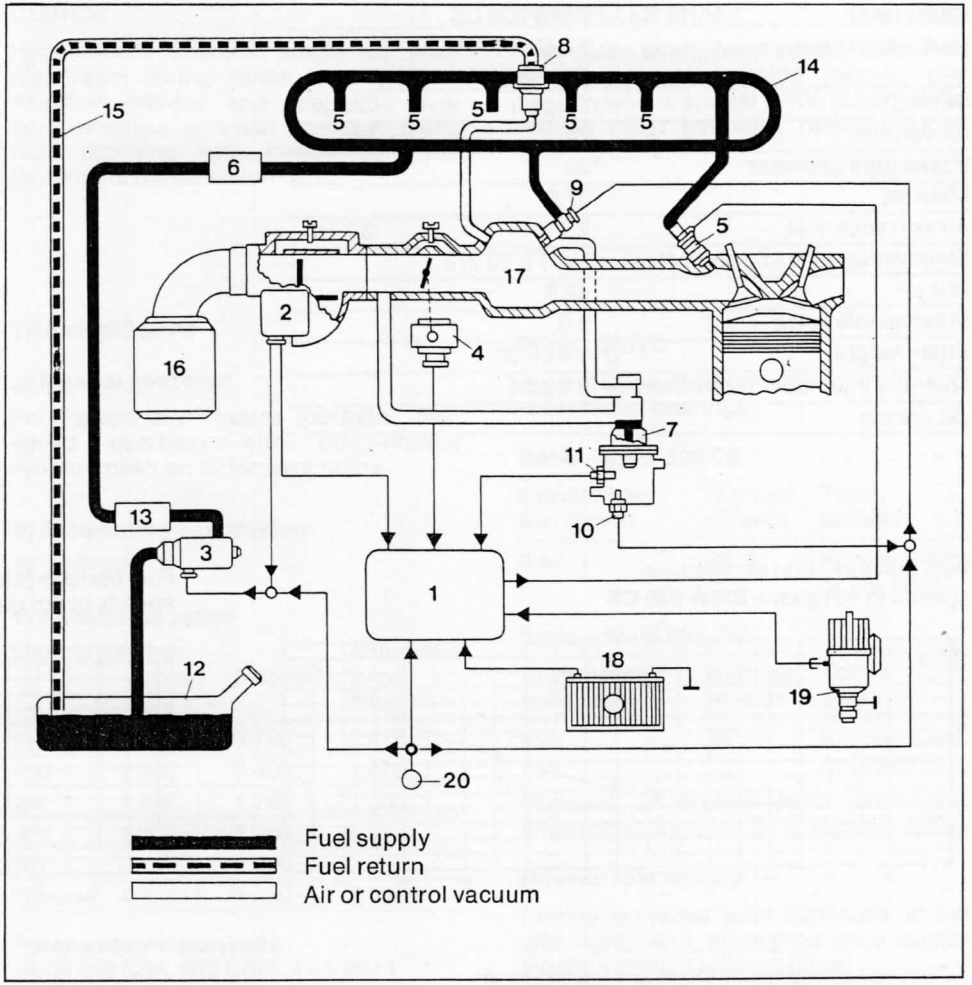
5. The airflow meter

This supplies a signal to the control unit at a voltage dependent on the airflow volume passing into the engine. The rectangular baffle is held shut in a passage of closely identical form by the action of a coil spring, and is forced open against this spring by the force of the incoming airflow. The baffle plate shaft alters the setting of a potentiometer, so that the baffle plate angle is converted into an equivalent-voltage signal and transmitted to the control unit. The signal output in volts is in inverse proportion to

the airflow volume. An intake air temperature sensor is installed at the airflow meter.

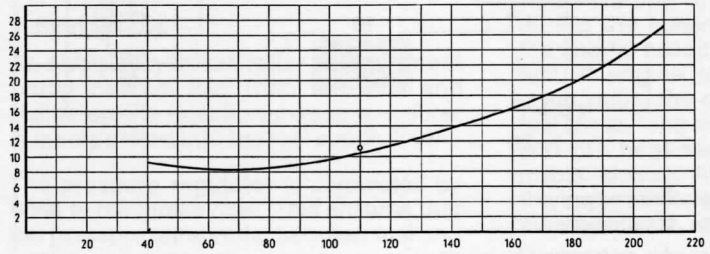
Diagram of L-Jetronic system – BMW 633 CSi

1 – Control unit
2 – Airflow meter with air temperature sensor
3 – Electric fuel pump
4 – Throttle butterfly switch
5 – Injectors
6 – Fuel filter
7 – Additional air slide
8 – Pressure regulator
9 – Cold starting valve
10 – Heat-sensitive time switch
11 – Coolant temperature sensor
12 – Fuel tank
13 – Expansion chamber
14 – Fuel ring line
15 – Fuel return line
16 – Air cleaner
17 – Air collector
18 – Battery
19 – Distributor
20 – Ignition/starter switch

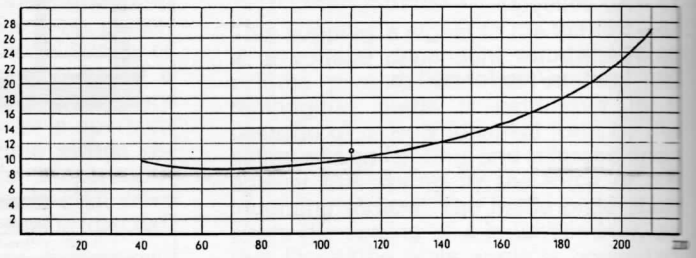


Carburetor		**BMW 630 CS**	
Carburetor type		1 Solex 4 A 1 duplex twin-barrel	
Settings		Stage 1	Stage 2
Air venturi		20	54
Intake pipe diameter		32	54
Main jet		97.5	
Air correction jet		2.1 H7	3.7 H7
Electromagnetic idle shutoff valve		No. PE 20 273	
Idle jet		42.5	
Float needle valve		3.0	
Float weight	g	6.8±0.35	
Quantity injected	cm^3/stroke	0.6±0.1	
Jet needle			B 3

Fuel consumption at constant speeds in 4th gear – **BMW 630 CS**



Fuel consumption at constant speeds in 4th gear – **BMW 633 CSi**



○ Fuel consumption by standard test method

COOLING SYSTEM

Radiator design

Cross-flow gilled tube radiator with header tank; automatic transmission cars with additional transmission oil cooler in right-hand water compartment. Pressure relief and underpressure equalizing valve in header tank filler cap.

Opening pressure of cap valves:

Overpressure 1 $^{+0.15}_{-0.10}$ bar

($14.2\ ^{+2.1}_{-1.4}$ lb/in²)

Underpressure down to 0.1 bar (1.4 lb/in²)

Fan

8 blades, with Holset system viscous coupling; automatic transmission cars and cars with air conditioning (optional) are equipped with an additional electric fan.

Coolant thermostat

Themostatic control of engine coolant circuit in feed pipe to engine, with equalization of engine load and outside temperature variations (BMW system).

Opening commences: 80 ±1.5° C (176 ± app. 3° F)
(Mixed temperature, representing approx. 89 to 99° C (192–210° F) at outlet from engine).

Oil cooler – BMW 633 CSi

Separate engine oil/air heat exchanger below radiator, offset forwards.

CLUTCH

Hydraulically operated single dry plate diaphragm spring clutch with torsional vibration damper and automatic wear compensation (manual gearbox cars); fluid coupling with torque converter (automatic transmission cars).

TRANSMISSION

a) Manual gearbox:

Four-speed and reverse (optional: five-speed gearbox) with Borg-Warner synchromesh on all forward ratios.

b) Automatic transmission:

ZF 3 HP-22.

Transmission ratios

	Manual gearbox 4-speed	5-speed	Automatic transmission
1st	3.855 : 1	3.720 : 1	2.478 : 1
2nd	2.203 : 1	2.400 : 1	1.478 : 1
3rd	1.402 : 1	1.765 : 1	1.000 : 1
4th	1.000 : 1	1.263 : 1	–
5th	–	1.000 : 1	–
Reverse	4.300 : 1	4.230 : 1	2.09 : 1

Torque conversion ratio

BMW 630 CSA, 633 CSiA: 1–1.96 : 1

PROPELLER SHAFT

Two-piece shaft; front section with joint disc centered in guide journal, rear section with universal joints at both ends. Needle roller bearings, resilient center bearing mount.

FINAL DRIVE

Hypoid bevel, supported on roller thrust bearings.

Ratio – BMW 630 CS

Crownwheel and pinion	Number of teeth	Tooth pattern
3.45 : 1	38 : 11	Klingelnberg or Gleason

Ratio – BMW 633 CSi

Crownwheel and pinion	Number of teeth	Tooth pattern
3.25 : 1	39 : 12	Klingelnberg or Gleason

Optional: ZF 'Lok-O-Matic' limited-slip differential, approx. 25% locking action.

Drive to rear wheels

Double universal joint halfshafts at left and right, with no-maintenance homo-kinetic constant velocity joints.

SUSPENSION

Front suspension

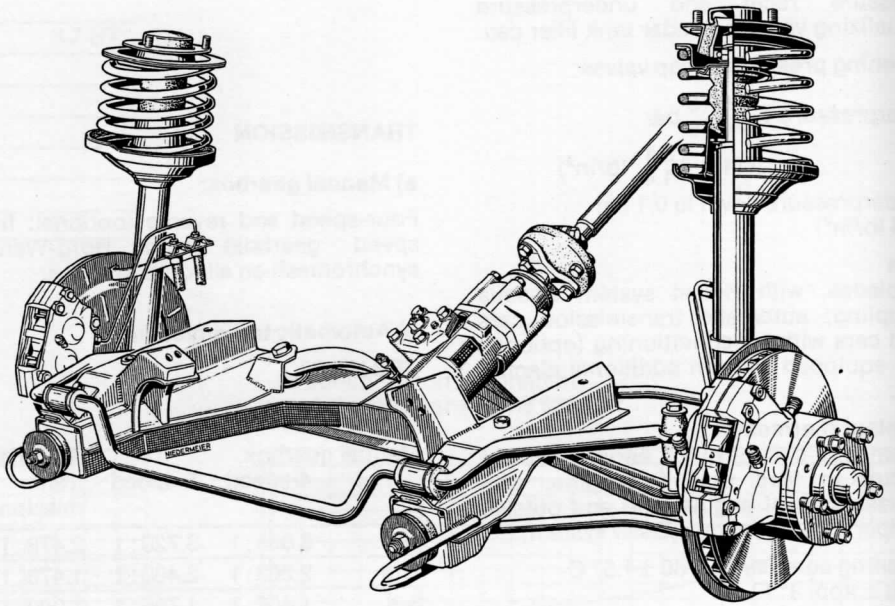
Independent, with wishbones, trailing links and spring/ damper struts; double-acting telescopic hydraulic dampers. Camber angle offset, lateral force equalization.

Coil springs mounted at top of struts and offset from centerline; rubber auxiliary springs and bump stops. Wheel travel 200 mm (7.9 in). Torsion bar stabilizer (anti-roll bar) mounted in no-maintenance rubber bushings.

Toe-in (normal load position)*	$1.5\ ^{+1.0}_{-0.5}$ mm	($0.06\ ^{+0.04}_{-0.02}$ in)
equivalent to	$0°\ 14'\ ^{+9'}_{-4'}$	
Camber angle (normal load position)*	0° ±30′	
Caster angle	7° 40′ ±30′	
Kingpin inclination	8° ±30′	
Toe-out on turns at 20° inner wheel lock	1° ±30′	
Max. wheel lock		
Inner wheel	43°	
Outer wheel	32° 30′	

* Normal load position: car with tank full, 2× 68 kg (2×150 lb) on front seats, 14 kg (31 lb) in luggage compartment.

Front suspension



Rear suspension

Independent, with separate wheel springing systems; wheel location by semi-trailing arms pivoting on no-maintenance rubber bushings. Welded U-section semi-trailing arms, secured together with final drive to body at three points, using rubber mounting. Rear element of rubber mounting asymmetrically shaped to act as self-aligning support.

Spring/damper strut with double-acting hydraulic telescopic damper; coil springs and auxiliary rubber springs (bump stops). Wheel travel 217 mm (8.5 in).

Torsion-bar stabilizer (anti-roll bar) with no maintenance rubber bushings.

Toe-in

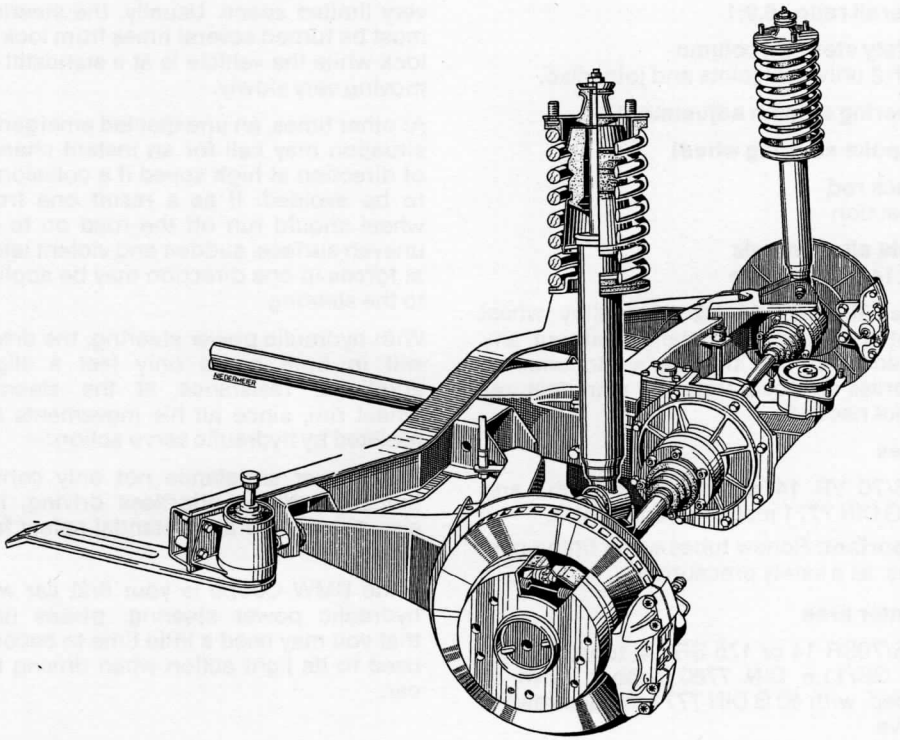
at normal load position*	1 ±1 mm (0.04 ±0.04 in)
equivalent to	0° 10′ ±10′

Camper angle

at normal load position*	2° ±30′ negative

* Normal load position: car with tank full, 2 × 68 kg (2 × 150 lb) on front seats, 14 kg (31 lb) in luggage compartment.

Rear suspension



Steering

ZF ball and nut hydraulic power steering

Ratio 14.5:1

Overall ratio 16.9:1

Safety steering column
with 2 universal joints and joint disc.

Steering column adjustment

4-spoke steering wheel

Track rod
3-section

Light alloy wheels
6×14 H2 well base

The BMW 7×14 H2 light alloy wheel (optional) can be installed without any amendment to the car's documents; express approval from the manufacturer is not needed.

Tires

195/70 VR 14 radial ply with tube and 40 G DIN 7771 metal threaded valve.

Important: Renew tubes when fitting new tires, as a safety precaution.

Winter tires

195/70SR 14 or 175 SR 14, tubeless with 43 GS/11.5 DIN 7780 rubber valve or tubed, with 40 G DIN 7771 metal threaded valve.

Snow chains may be used only on the driving (rear) wheels, rim size 6×14 H2.

Power steering

A frequent necessity in today's traffic, particularly in crowded city centers is manoeuvring and parking the car in a very limited space. Usually, the steering must be turned several times from lock to lock while the vehicle is at a standstill or moving very slowly.

At other times, an unexpected emergency situation may call for an instant change of direction at high speed if a collision is to be avoided. If as a result one front wheel should run off the road on to an uneven surface, sudden and violent lateral forces in one direction may be applied to the steering.

With hydraulic power steering, the driver will in both cases only feel a slight additional resistance at the steering wheel rim, since all his movements are assisted by hydraulic servo action.

This power assistance not only contributes greatly to effortless driving, but also constitutes a substantial safety factor.

If the BMW Coupé is your first car with hydraulic power steering, please note that you may need a little time to become used to its light action when driving the car.

Construction:

The housing of the ZF ball and nut power steering mechanism contains the control valves, actuating cylinder and a complete mechanical steering gear assembly. Oil is supplied under pressure to operate the steering from a ZF high pressure vane type pump driven by V-belt from the engine. The circuit includes a reservoir with oil filter.

The design of the power steering ensures that in the event of a fault in the hydraulic system or a breakdown (involving towing the car with a dead engine) the car can still be steered manually, although the effort required at the steering wheel is then much higher.

Check fluid level in the power steering reservoir whenever the engine oil is checked, and during each maintenance session (see "CARE AND MAINTENANCE"). For initial or subsequent filling of the power steering system, and for topping up minor fluid losses, use only the grades of hydraulic fluid specified under the appropriate headings on page 115.

Every 60000 km (40000 miles), the filter element should be renewed and correct operation of the power steering fully checked. This work and any other attention needed to the power steering should only be carried out by an authorized BMW service station.

Disc-type limited-slip differential (optional)

Bad road conditions can mean that one wheel on a car fitted with a normal differential is not able to transmit its share of the driving force without spinning. In certain circumstances a spinning wheel can be inconvenient or dangerous, and can largely be avoided by fitting a limited-slip differential.

The locking action of the limited-slip differential is derived from internal friction dependent on load, and produced by the action of the equalizing shafts, thrust rings and symmetrically positioned friction discs.

Thanks to the internal friction of the disc and the outward thrust generated by the differential bevel pinions, wheelspin is retarded or totally avoided. The outward thrust is therefore proportional to the total torque being transmitted to the wheels.

The limited-slip differential is of particular value in that it operates as and when required, without any action on the part of the driver.

BRAKES

Foot brake (twin dual-circuit system)
Hydraulic, acting via booster servo on all 4 wheels. Duplex 9″ 'Mastervac' servo (2 'Hydrovac' on RHD cars). Tandem master cylinder diameter 23.81 mm (0.94 in). Transparent fluid reservoir in engine compartment, with electric low-level warning device and "Brake" warning lamp in instrument cluster.

Front
4-piston fixed caliper disc brakes, with automatic pad wear adjustment and minimum pad thickness warning device on left brake.

Disc diameter	280 mm (11.0 in)
Piston diameter	40 mm (1.5 in)

Rear
2-piston fixed caliper disc brakes with automatic pad wear adjustment and minimum pad thickness warning device on right brake.

Disc diameter	272 mm (10.7 in)
Piston diameter	42 mm (1.65 in)

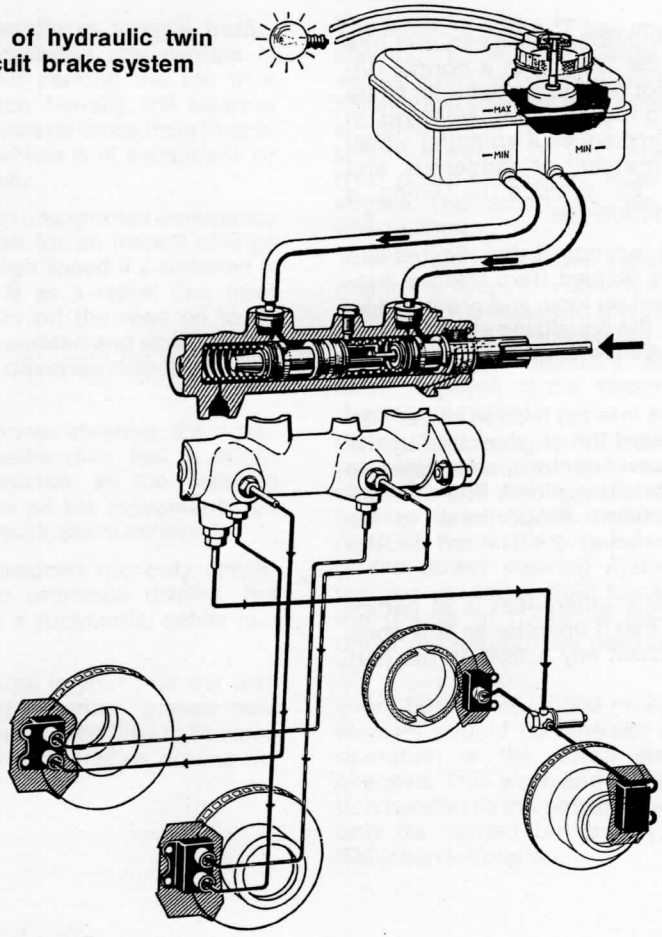
Ventilated discs front and rear.

Handbrake
'Duo-Servo' drum brakes, acting mechanically on rear wheels. Adjustment by means of adjusting nuts at brake shoes and under rubber cap on handbrake lever. Each handbrake cable adjustable separately.

Brake drum diameter	160 mm (6.3 in)
Brake lining width	25 mm (1.0 in)

Brake force limiter for rear axle
Cut-in pressure 20 ±2 bar
(284 ±28 lb/in²)

Diagram of hydraulic twin dual-circuit brake system



Stopping distances

The stopping distance is made up of the distance covered during the approx. 1 second reaction time (at 100 kph = 62 mph, about 28 meters = 92 feet), the time needed for the brakes to act and the actual braking distance.

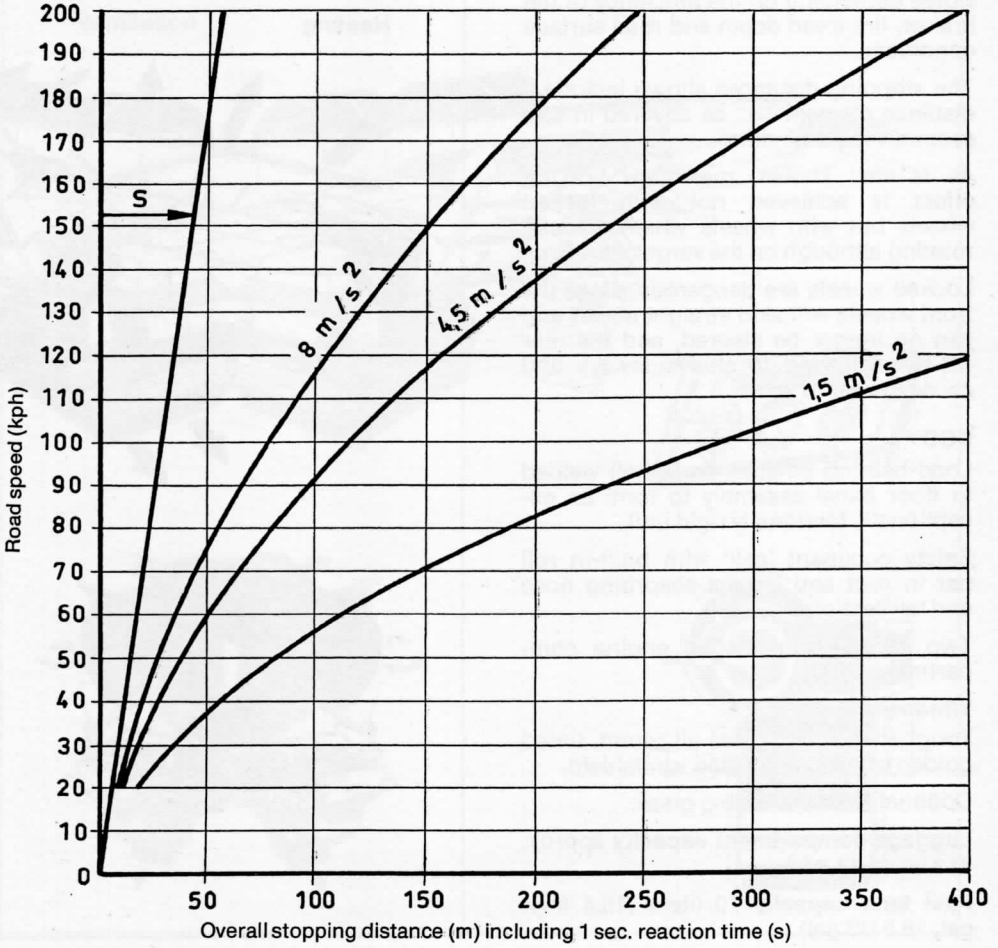
The best possible brakes can only attain an efficiency corresponding to the available friction between tires and road surface. As the graph shows, the maximum possible retardation of a vehicle travelling on an icy surface is only in the region of 4.9 ft. per sec^2 (1.5 m/sec^2).

This implies that your car's speed is reduced by only 4.9 feet per second; in other words, every second the speed drops by only 3.375 mph (5.4 kph). If you had, for example, been travelling at 34 mph (54 kph), it would therefore take you 10 seconds to stop. As the graph shows, you would cover almost 330 feet (100 meters) in that time. The lowest curve (1.5 m/sec^2) shows you your braking distance related to road speed under the conditions just described.

In contrast, the uppermost curve (8 m/sec^2) refers to the shortest braking distances generally obtainable in ideal conditions.

The middle curve (4.5 m/sec^2) applies to a damp road not entirely devoid of grip for the tyres, and thus represents an average set of values for normal-strength braking during everyday driving on dry roads as well.

Overall stopping distance related to road speed and retardation



The values quoted can vary for better or worse depending on the efficiency of the brakes, tire tread depth and road surface conditions.

The stopping distances shown include a distance element "S" as covered in one second's reaction time.

As is well known, maximum braking effect is achieved not with locked wheels but with wheels which are still rotating although on the verge of locking.

Locked wheels are dangerous, since the front wheels will skid straight ahead and can no longer be steered, and the rear wheels will tend to skid sideways and cause the car to spin.

BODY

Load-bearing all-steel bodyshell welded to floor panel assembly to form an exceptionally torsionally rigid unit.

Safety occupant 'cell' with built-in roll bar in roof and impact-absorbing nose and tail sections.

Two doors; front-hinged engine compartment lid.

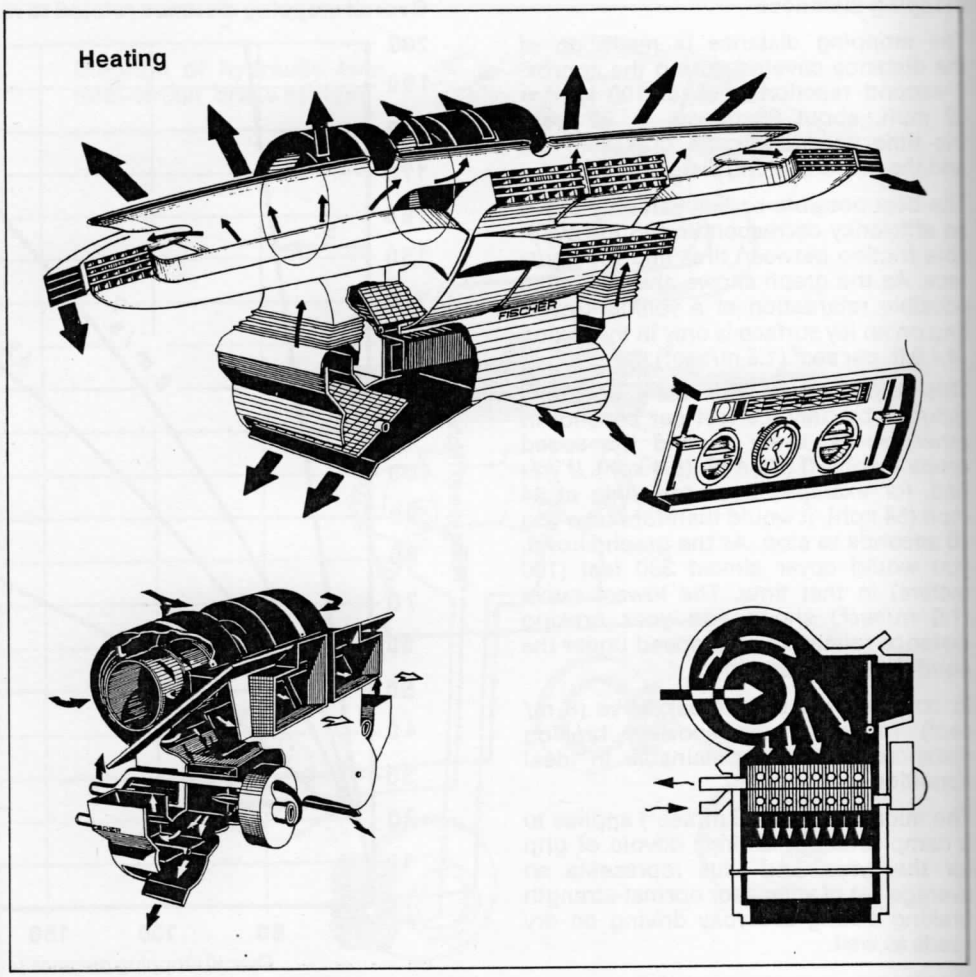
Windows

Toughened safety glass all round, tinted golden bronze; laminated windshield.

Optional: heat-insulating glass.

Luggage compartment capacity approx. 413 liters, 14.6 ft³).

Fuel tank capacity 70 liters (15.4 Imp. gal, 18.5 US gal).



Heating and ventilation

Fresh air heater with hot water valve heat control and 4-flow, three-speed radial blower (160 W). 270° cam disc valve and cross-flow heater matrix. Straightforward yet sensitive control by two slide levers, cables and knee-action locking mechanisms for independent fresh air supply, two rotary knobs with universal-joint shafts for air distribution and temperature and a rotary blower speed switch.

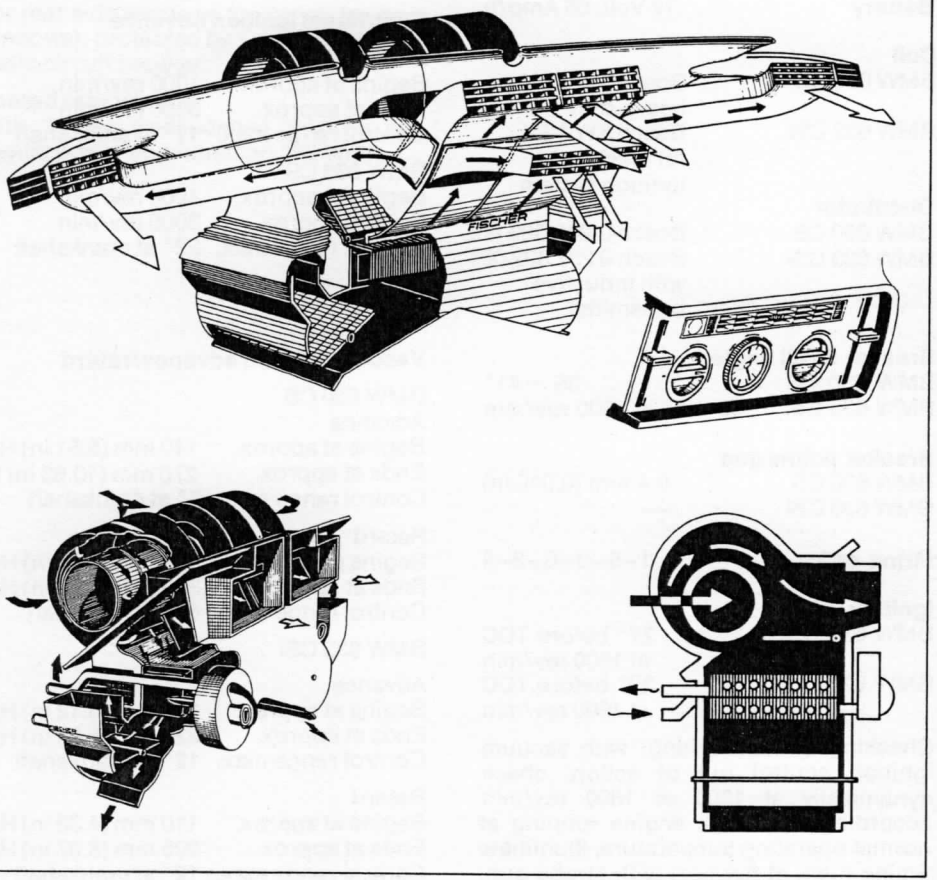
Max.heater output: 8000 kcal/h (31750 Btu).

Independently of the inflow of heated air, cool air can be admitted to the car's interior on either the left or right sides as required via the two side grilles and the center grille (all movable horizontally and vertically to direct the airflow) and via the separately-controlled driver's fresh-air grille in the center console (also with horizontally and vertically movable directing slots). These facilities ensure stratified temperatures within the car and fatigue-free driving.

The total air entry points to the interior of the car comprise 2 footwell apertures, 2 demister nozzles, 1 center nozzle, 2 side window demisting outlets, 3 center and 2 side grilles.

Stale extraction is by way of slots below the rear window leading to openings in the rear roof pillars.

Ventilation



ELECTRICAL SYSTEM

Battery 12 Volt, 66 Amp/h

Coil

BMW 630 CS	Bosch KW 12 V heavy-duty
BMW 633 CSi	Bosch KW 12 V for electronic ignition system

Distributor

BMW 630 CS	Bosch 0 231 309 005
BMW 633 CSi	Bosch 0 237 302 001 with inductive transmitter

Breaker dwell angle

BMW 630 CS	35 −41°
BMW 633 CSi	52 +5° at 4500 rev/min

Breaker points gap

BMW 630 CS	0.4 mm (0.016 in)
BMW 633 CSi	—

Firing order 1–5–3–6–2–4

Ignition timing

BMW 630 CS	22° before TDC at 1500 rev/min
BMW 633 CSi	22° before TDC at 1800 rev/min

Checking ignition timing: with vacuum ignition control out of action, check dynamically at 1500 or 1800 rev/min according to model; engine running at normal operating temperature. Illuminate timing mark at flywheel with strobe gun.

Ignition control
Centrifugal and vacuum

Centrifugal ignition advance

BMW 630 CS	
Begins at approx.	1000 rev/min
Ends at approx.	3500 rev/min
Control range max.	11° at crankshaft
BMW 633 CSi	
Begins at approx.	1000 rev/min
Ends at approx.	3000 rev/min
Control range max.	22° at crankshaft

Vacuum ignition advance/retard

BMW 630 CS	
Advance	
Begins at approx.	140 mm (5.51 in) Hg
Ends at approx.	270 mm (10.63 in) Hg
Control range max.	7° at crankshaft
Retard	
Begins at approx.	190 mm (7.48 in) Hg
Ends at approx.	330 mm (13.0 in) Hg
Control range max.	6° at crankshaft
BMW 633 CSi	
Advance	
Begins at approx.	130 mm (5.12 in) Hg
Ends at approx.	225 mm (8.86 in) Hg
Control range max.	12° at crankshaft
Retard	
Begins at approx.	110 mm (4.33 in) Hg
Ends at approx.	205 mm (8.07 in) Hg
Control range max.	12° at crankshaft

Alternator
Bosch K 1/14 V 55 A 20 (770 Watt)

Regulator Bosch EE/14 V 3

Starter Bosch GF 12 V 1.2 kW

Spark plugs

Beru	175/14/3 A
Bosch	W 175 T 30
Champion	N 10 Y

Spark plug gap 0.6 +0.1 mm (0.024 +0.004 in)

Horns
Two electric (twin tone) horns well located for good sound dispersion behind radiator grille, and protected against dirt.

Headlights
High beam: 2 halogen units (inner) and 2 low-beam halogen units (outer) operating together

Low beam: 2 asymmetric beam halogen units also containing the parking (side) lights; lens diameter 135 (5.3 in).

Headlight cleaning equipment (optional)

Fog lights (optional)

12 Volt bulbs
See "DRIVING HINTS, MINOR DEFECTS"

Fuse box
Inside engine compartment on left wheel arch.

Socket with rechargeable hand lamp
In glove box.

Cigar lighter and power socket on facia
Can be used to connect hand lamp, electric shaver or other items with a rating not exceeding 200 Watts, 12 Volts, and equipped with a standardized plug.

Windshield wipers
Tandem 2-speed wipers controlled by lever on right of steering column, with additional settings for intermittent-wipe action and automatic wash-wipe.

Automatic windshield washer
Elecric gear-type pump with delaying relay for wipers; operated by lever on right of steering column.

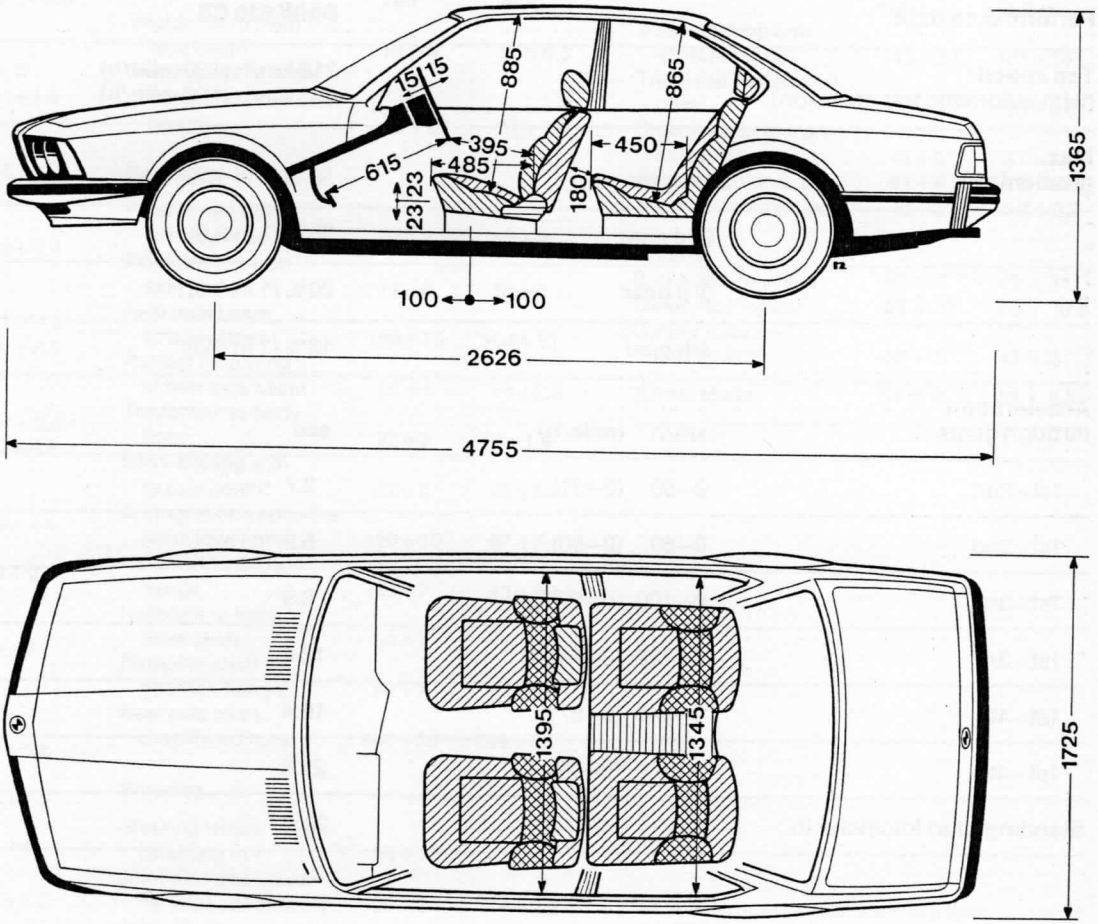
Electric window lifts
For rear side windows (optional: for door windows); protected by 1 additional automatic circuit breaker.

Heated rear window
With 15 electrodeposited heating elements; power consumption 160 Watts.

Dimensions and weights	BMW 630 CS	BMW 633 CSi
Length	4755 mm (187.2 in)	
Width	1725 mm (67.9 in)	
Height (unladen)	1365 mm (53.7 in)	
Wheelbase	2626 mm (103.4 in)	
Ground clearance (laden)	95 mm (3.7 in)	
Front overhang	1005 mm (39.6 in)	
Rear overhang	1124 mm (44.3 in)	
Front track (at max. permissible axle load)	1422 mm (56.0 in)	
Rear track (at max. permissible axle load)	1487 mm (58.5 in)	
Min. turning circle (wheels)	10.1 m (33 ft 2 in)	
Min. turning circle (overall)	11.2 m (36 ft 8 in)	
Weight, unladen (ready for road, with tank full)	1450 kg [1470 kg]* (3197 lb) [(3241 lb)]	1470 kg [1490 kg]* (3241 lb) [3285 lb]
Permissible gross weight	1830 kg (4034 lb)	
Permissible front axle load	970 kg (2138 lb)	
Permissible rear axle load	950 kg (2094 lb)	
Permissible trailer load		
unbraked	650 kg (1433 lb)	
braked, max. gradient 16% (1 in 6.25)	1300 kg (2866 lb)	
max. gradient 12% (1 in 8.33)	1800 kg (3968 lb)	
Permissible towbar downthrust	50 kg (110 lb)	
Permissible roof load (when fully laden, axle load limits must not be exceeded)	75 kg (165 lb)	

*Automatic transmission models

Dimensions (in millimeters)



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Performance data		BMW 630 CS	BMW 633 CSi
Top speed (with automatic transmission)		210 km/h (130 mile/h) 203 km/h (126 mile/h)	215 km/h (134 mile/h) 207 km/h (129 mile/h)
Max. gradients in	1st gear	58% (1 in 1.72)	58% (1 in 1.72)
	2nd gear	35% (1 in 2.9)	36% (1 in 2.78)
	3rd gear	20% (1 in 5.0)	20% (1 in 5.0)
	4th gear	12% (1 in 8.3)	12% (1 in 8.3)
Acceleration through gears	km/h (mile/h)	sec	sec
1st–2nd	0–50 (0–31)	2.7	2.6
1st–2nd	0–80 (0–50)	5.9	5.6
1st–3rd	0–100 (0–62)	8.9	7.9
1st–3rd	0–120 (0–75)	12.4	11.4
1st–4th	0–140 (0–87)	16.4	15.1
1st–4th	0–160 (0–99)	23.4	20.9
Standing-start kilometer in		29.9	29.0

TIGHTENING TORQUE VALUES FOR NUTS AND BOLTS

Engine	Nm	lb.ft
Cylinder head studs	70±2	51±1.4
Vibration damper on crankshaft shoulder nut	450	325
Crankshaft belt pulley	140	101
Exhaust manifold at cylinder head	30+3	22+2.2
Coolant pump pulley	40	29
Support bracket on engine left (M 8)	22+2	16+1.4
right (M 10)	43+5	31+3.6
Rubber mounting nuts on front axle beam or support stirrup (M 10)	43+5	31+3.6
Oil filter casing clamp bolt	30+5	22+3.6
Gearbox		
Flange mounting to engine	25+2 (M 8)	18+1.4
	47+4 (M 10)	34+2.9
Joint disc or rubber coupling	105+13 (M 12)	76+9
Front axle		
Spring strut, center top	72+8	52+5.8
Spring strut thrust bearing	22+3	16+2.2
Track rod arm at kingpin	45+15	33+11
Guide joint at track rod arm	60+10	43+7.2
Front axle beam to engine mounting	73+8	53+5.8
Wishbone to front axle beam	81+9	59+6.5
Trailing link to wishbone and front axle beam	70+20	51+14
Rear axle		
Final drive casing to body floor	72+8	52+6
Final drive to rear axle beam	72+8	52+6
Rear axle beam to body floor	140+15	104+11
Rubber mounting at rear axle beam	36+4	26+2.9
Thrust link to body floor	22+2	16+1.4
Semi-trailing arm to axle beam*	67+8	48+5.8
Spring/shock absorber strut, lower end	120+10	87+7
Halfshaft to drive flange	60+7	43+5.1
Halfshaft to final drive shaft	60+7	43+5.1
Propeller shaft to gearbox flange	60+7	43+5.1
Rear axle shaft castellated nuts	400+50	290+36
Steering		
Steering wheel retaining nut	85+10	61+7
Joint disc and universal joint attachment	20+3	14+2.2
Joint flange attachment	22+3	16+2.2
Steering drop arm at steering box	140+20	101+14
Track rod castellated nuts	35+5	25+3.6
Steering box to front axle beam	43+5	31+3.6
Steering guide arm	81+9	59+6.5
Track rod clamp bolts	12+3	8.7+2.2
Brakes		
Brake disc to wheel	60 + 7	43 + 51
Caliper to kingpin	80 + 15	58 + 10.8
Caliper to semi-trailing arm	60 + 7	43 + 5
Wheel studs	81 + 9	59 + 6.5

*With car under normal load: full tank, 2×68 kg (2×150 lb) on the front seats and 14 kg (31 lb) in the luggage compartment.

Service instruction chart

		1st BMW Inspection at 600 miles (1000 km)	BMW Oil Service every 5000 miles (7500 km)	BMW Inspection every 10 000 miles (15 000 km)
Engine	Check oil level regularly Change oil Brand-name HD oil for spark-ignition engines (see "CARE AND MAINTENANCE")	X	X	X
Engine oil filter	Change filter	X	X	X
Hydraulic power steering	Check oil level regularly (see "CARE AND MAINTENANCE") For oil grades, see page 115 Change filter	X	X	X X[2])
Manual gearbox	Check oil level Change oil Brand-name SAE 80 gear oil (see "CARE AND MAINTENANCE"). In an emergency, HD engine oil. Never use hypoid gear oils	X		X X[1])
Automatic transmission	Check oil level regularly Change oil For oil grades, see page 114			X X[1])
Rear axle (final drive)	Check oil level Change oil Brand-name running-in hypoid gear oil, SAE 90 (your BMW dealer knows the approved oil grades)	X		X X[1])
Wheel bearings	Grease: Shell Retinax A			
Distributor	Maintenance Bosch Ft 1 v 4 or Ft 1 v 26 grease			X
Carburetor linkage	Oil Engine oil			X
Throttle butterfly lever and gate	Grease Multi-purpose grease	X		X
Door and front lid hinges	Oil Engine oil			X
Front and rear lid catches, door lock latches and strikers	Grease Multi-purpose grease			X
Fuel tank	Premium (Super) grade fuel to DIN 51600 standard; min. octane number 98 (RM), 88 (MM)			

		1st BMW Inspection at 600 miles (1000 km)	BMW Oil Service every 5000 miles (7500 km)	BMW Inspection every 10 000 miles (15 000 km)
Radiator	Check coolant level regularly (see "CARE AND MAINTENANCE") Antifreeze – your BMW dealer knows the factory approved grades		Renew anti-freeze every 2 years	
Brakes, clutch	Check fluid level regularly Your BMW Service Station knows the factory-approved grades.		Always renew fluid once a year	
Battery	Check acid level regularly			X
Windshield washer and headlight cleaning system	Add more water regularly Antifreeze: protect by adding 40% household alcohol spirit (see "CARE AND MAINTENANCE")			
Fuel system				
Screen filter in carburetor feed line	Clean (see "CARE AND MAINTENANCE")			X[1]
Screen filter in immersed level indicator	Clean (see "CARE AND MAINTENANCE")	X		X[1]
Main fuel filter	Replace (see "CARE AND MAINTENANCE")			X[1]
Intake air cleaner element	Replace			X

[1]) Every 20 000 miles (30 000 km)
[2]) Every 40 000 miles (60 000 km)

Lifting points for car hoists with 4 pick-up arms:

Outer extremity of body, under the seam directly adjacent to the reinforced points used for the car's own jack.

Warning: If the car is jacked up directly beneath the front axle support or the final drive, use suitable hoisting equipment or place a suitable piece of material between the jack pad and the housing to prevent damage to the final drive.

Key to electrical circuit diagram – BMW 630 CS – 633 CSi

1 Turn indicator, front right
2 Headlight, right, with parking light
3 High beam headlight, right
4 Fog light, right (optional)
5 Horn, right
6 Horn, left
7 Fog light, left (optional)
8 High beam headlight, left
9 Headlight, left, with parking lights
10 Turn indicator, front left
11 Connector for right turn indicator
12 Solder tag II
13 Connection for fog lights
14 Solder tag I
15 Connector for left turn indicator
16 Connection for engine compartment light
17 Engine compartment light
18 Switch for engine compartment light
19 Windshield washer pump
20 Earth (ground), body
21 Earth (ground), engine
22 Coil
23 Solder tag 15u
24 Distributor
25 Battery
26 Automatic-choke carburetor
27 Idle shutoff valve
28 Air temperature switch (17° C)
29 Starter
30 Idle shutoff valve
31 Solder tag 15
32 Heat-sensitive timer valve
33 Earth (ground)
34 Reversing light switch
35 Alternator
36 Coolant temperature sensor
37 Oil level
38 Oil pressure contact
39 Power distribution box
a) High beam headlight relay
b) Low beam headlight relay
c) Fog light relay (optional)
d) Horn relay
e) Load-shedding relay
f) Connection to busbar 30
g) Connection to busbar 30
h) Engine plug
i) Connector to power distribution box
k) Diagnosis plug
l) Connector to front wiring harness
m) Connection at front wiring harness
40 Washer water level
41 Connection for electric fuel pump
42 Plug for optional equipment
43 Clock
44 Instrument lighting I
45 Instrument lighting II
46 Instrument lighting III
47 Instrument lighting IV
48 Connector 31
49 Blower speed control (continuously variable)
50 Heater blower
51 Hazard warning flasher switch
52 Connector 58d
53 Connection to main power supply
54 Switch for heated rear window
55 Heated rear window
56 Mirror switch
57 Connector to wiring harness
58 Electric outside mirror motor
59 Connection to electric outside mirror
60 Hazard warning flasher unit
61 Hand lamp
62 Solder tag 15
63 Solder tag 30
64 Glove box light
65 Cigar lighter
66 Solder tag 31
67 Wipe-wash intermittent wipe unit
68 Connector to wiper switch
69 Wiper switch
70 Wiper motor
71 Earth (ground)
72 Solder tag 31
73 Earth (ground) for front left brake disc
74 Connector for turn indicator and dip switch
75 Turn indicator and dip switch
76 Connection for wiring harness
77 Connector for ignition/starter switch
78 Horn push
79 Ignition/starter switch
80 Connection for turn indicator and dip switch
81 Fog light switch
82 Main light switch
83 Window lift switch, rear left
84 Switch lighting 'Lights'
85 Switch lighting 'Fog'
86 Solder tag 58d
87 Relay I for window lift
88 Automatic circuit breaker
89 Relay II for window lift

90 Check control lights for:
- a) Brake fluid level (green)
- b) Brake linings (green)
- c) Engine oil level (green)
- d) Coolant level (green)
- e) Rear lights (green)
- f) Brake lights (green)
- g) Washer water level (green)

91 Coolant level
92 Brake fluid level
93 Solder tag 30u
94 Brake pad, front left
95 Connection to front left brake pad
96 Connection to rear right brake pad
97 Instrument lighting
98 Ashtray lighting
99 Brake pad, rear right
100 Radio connection
101 Connection to front left window lift
102 Window lift motor, front left (optional)
103 Switch for front left window lift (optional)
104 Earth (ground)
105 Solder tag 2
106 Solder tag 1
107 Window lift motor, rear left
108 Switch for rear left window lift
109 Switch for front right window lift (optional)
110 Connection to front right window lift
111 Window lift motor, front right (optional)
112 Window lift motor, rear right
113 Switch for rear right window lift
114 Bulb tester
115 Brake light switch
116 Connection for electronic control unit
117 Connector
118 Handbrake contact
119 Instruments
- a) Connection for selector lever position indicator lights (automatic transmission cars only.
- b) Line resistor
- c) Line resistor
- d) Indicator light '1' (green)
- e) Indicator light '2' (green)
- f) Indicator light 'A' (green)
- g) Indicator light '0' (white)
- h) Indicator light 'R' (red)
- i) Indicator light 'P' (white)
- k) Handbrake telltale lamp (red)
- l) Revolution counter
- m) Rear fog light telltale (yellow)
- n) High beam telltale (blue)
- o) Instrument plug
- p) Oil pressure telltale (red)
- r) Turn indicator repeater (green)
- s) Coolant thermometer
- t) Overheating telltale (red)
- u) Battery charge telltale (red)
- v) Fuel gauge
- w) Fuel level telltale (yellow)

120 Immersed tube level indicator
121 Rear light, right
- a) Reversing light
- b) Brake light
- c) Rear light
- d) Turn indicator

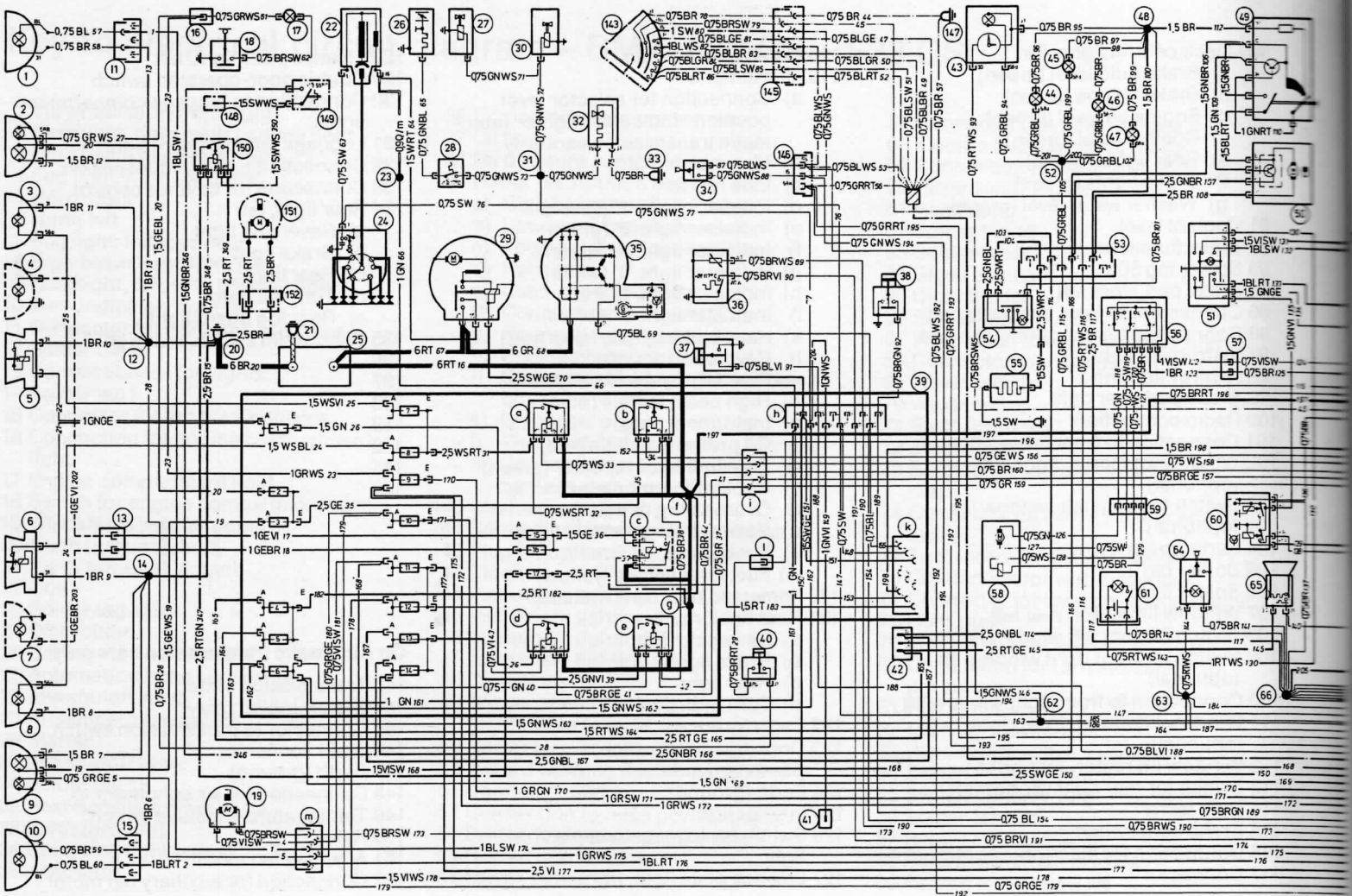
122 Earth (ground)
123 Door-operated switch, passenger side
124 Earth (ground)
125 Interior light
126 Switch for luggage compartment light
127 Licence plate light, right
128 Licence plate light, left
129 Double door-operated switch
130 Connection to luggage compartment light
131 Luggage compartment light
132 Connection for rear loudspeaker
133 Connection for balance control
134 Rear light, left
- a) Reversing light
- b) Brake light
- c) Rear light
- d) Turn indicator
- e) Rear fog guard light

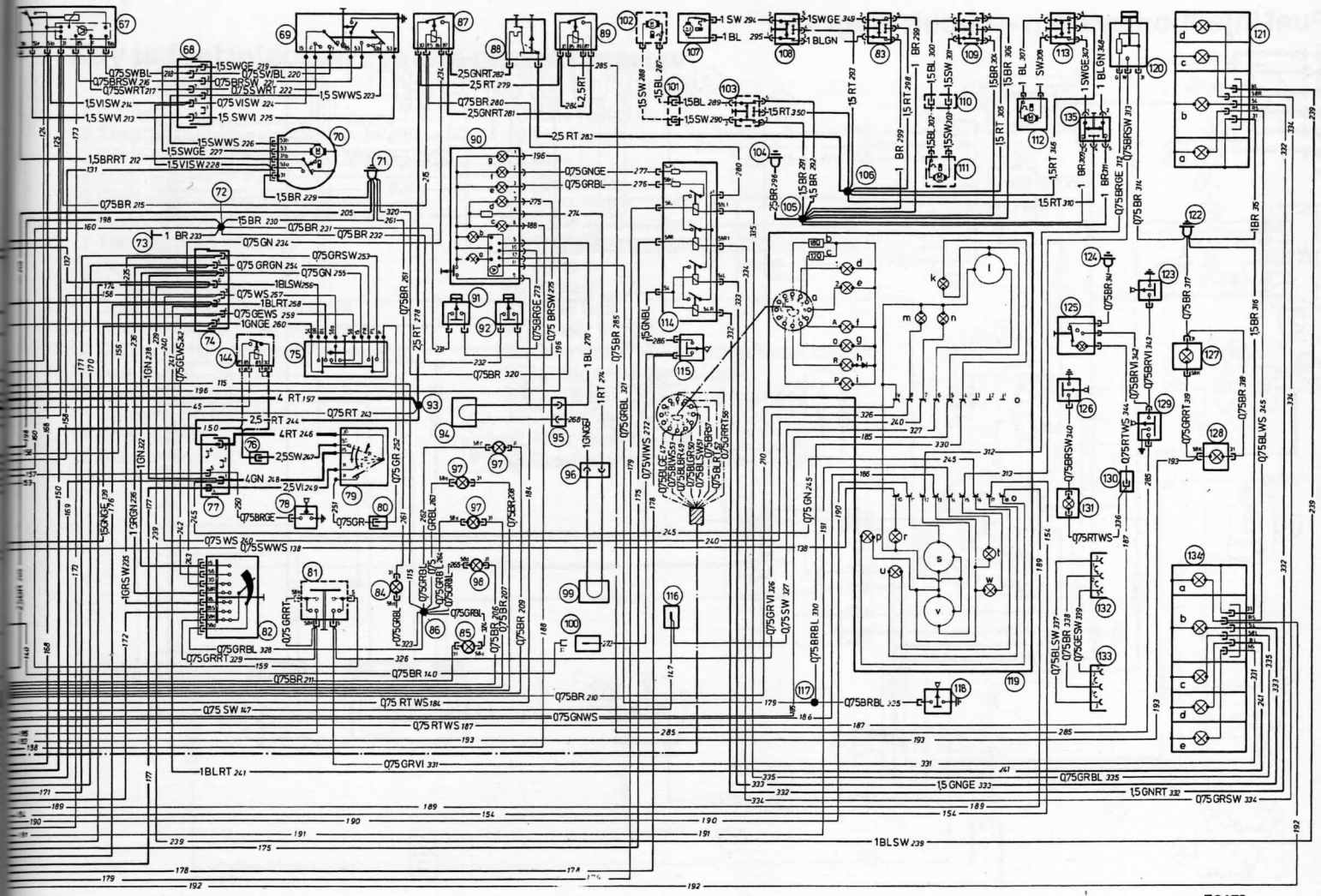
135 Window lift switch, rear right
136
137
138
139
140
141
142

On Automatic transmission cars only

143 Transmission switch
144 Starter inhibit relay
145 Connector to transmission switch
146 3-pin connector
147 Earth (ground)
148 Connection for air conditioning
149 Temperature-sensitive switch
150 Relay
151 Auxiliary fan motor
152 Connection for auxiliary fan motor

Electrical circuit diagram – BMW 630 CS – 633 CSi





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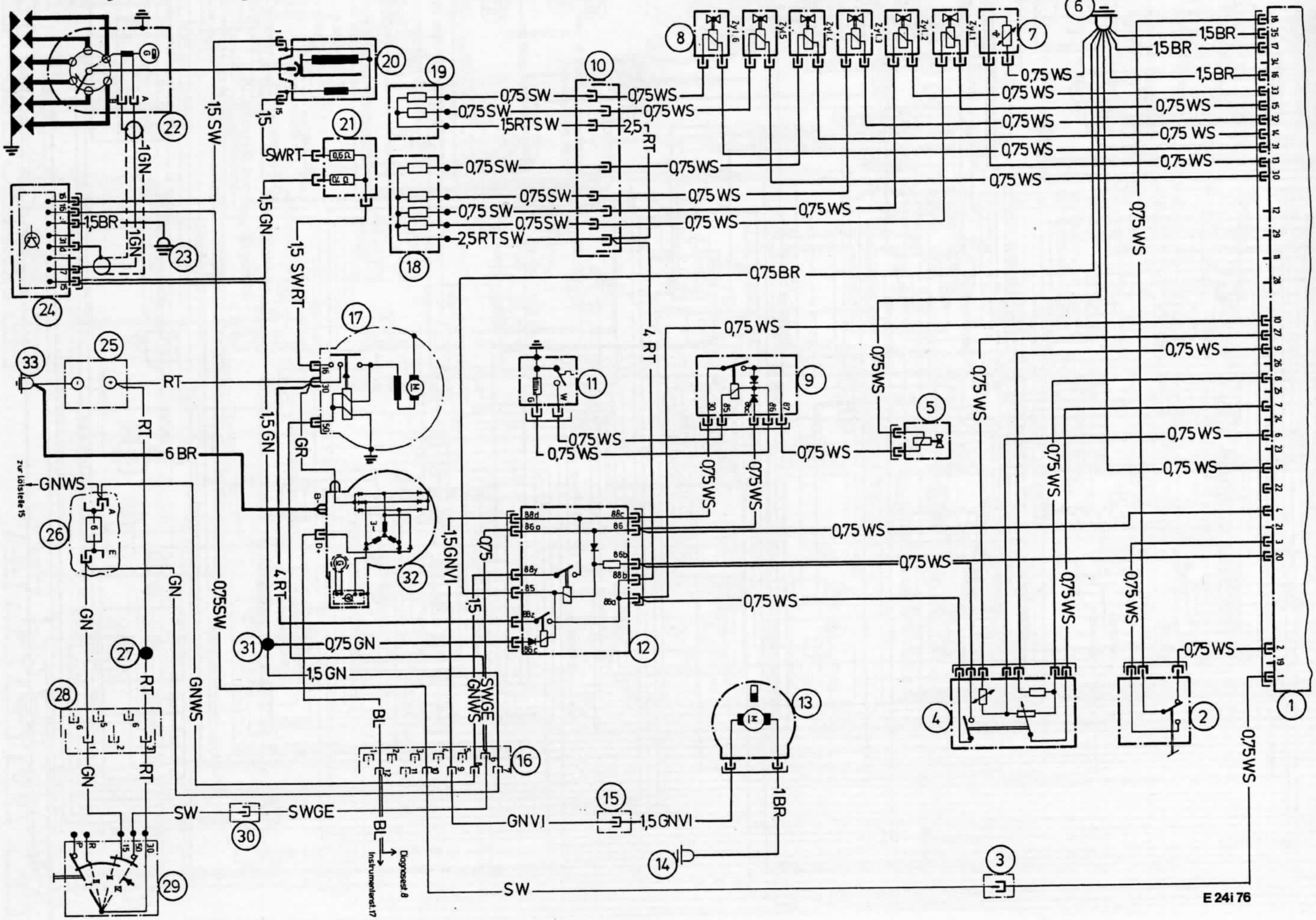
Fuel injection system – circuit diagram



Key to fuel injection system circuit diagram

1 Control unit
2 Throttle butterfly switch
3 Connection for electronic control unit
4 Airflow meter
5 Cold-start valve
6 Earth (ground)
7 Temperature sensor II
8 Injectors for cylinders 1 to 6
9 Cold-start relay
10 Connector for line resistors
11 Heat-sensitive timer switch
12 Double relay for injection system
13 Fuel pump
14 Earth (ground)
15 Connection for electric fuel pump
16 Engine plug
17 Starter
18 Line resistors
19 Line resistors
20 Coil
21 Resistors
22 Distributor
23 Earth (ground)
24 Transistorized coil ignition control system
25 Battery
26 Fuse box
27 Solder tag 30u
28 Connector for ignition/starter switch
29 Ignition/starter switch
30 Connection to wiring harness
31 Solder tag
32 Alternator
33 Ground (earth), engine

Approved oil grades for automatic transmission

Initial filling of new and exchange transmissions, restoring fluid level

Manufacturer	Designation	
Agip	AGIP F 1 ATF Dexron	B-11 297
BP	BP AUTRAN DX	B-11 026
Castrol	TQ Dexron	B-10658
Chevron	Chevron ATF	B-11 061
Esso	ESSO AUTOM. TRANSM. FLUID (D)	B-10 102
Esso	ESSO AUTOM. TRANSM. FLUID (D)	B-10 696
Mobil Oil	Mobil ATF 220	B-10 467
Shell	Shell ATF Dexron	B-10 378
Shell	Shell ATF Dexron	B-10 709
Sunoil	Sunamatic 128	B-10 492
Sunoil	Sunamatic 128	B-10 107
Texaco	Texamatic Fluid 6673	B-10 101
Restoring level only		
Prinz-Schulte	AERO-LIME ATF Dexron	B-10 492
Usoco	AMALIE ATF DEXRON	B-10 162
Amoco	Amoco ATF DEXRON	B-10 690/B-10 595
Antar	ANTAR DEXRON	B-10 968
Aral	ARAL Getriebeöl ATF Dexron	B-11 499
Aseol	ASEOL DEXRON 16-712	B-11 094
Autol-Werke	Autol – DEXRON	B-10 812
Elan	Austromatic B DEXRON	B-10 945
Avia	AVIA FLUID ATF 68 DEXRON	B-11 045
Finke	Aviaticon ATF/DEXRON	B-10 334
		B-10 844
BayWa	BayWa Automatic TF 25	B-10 653
Bechem	BECHEM Fluid-Getriebeöl ATF DEX.	B-10 752
Beverol	BEVEROL DEXRON ATF	B-10 614
Caltex	CALTEX Texamatic Fluid 6673	B-10 190
Calypsol	CALYPSOL Fluid ATF-AA Dexron	B-10 752
Castrol	CASTROL TQ Dexron	B-10 658
		B-11 020
Cofran	COFRATATIC DEXRON	B-10 619
Condor	CONDOR FLUID B-Getriebeöl (DEX.)	B-10 752
Merk	Deltinol Getriebeöl ATF Dexron	B-10 752
Deutzer Öl	DEUTZ OEL Dexron	B-10 797
Zeller + Gmelin	DIVINOL Fluid Dexron	B-10 752
Duckham	Duckham D-MATIC	B-10 793
Wenzel u. Weidmann	ECUMATIC Dexron	B-10 947
Elf Union	ELFMATIC G	B-11 607
Eller	ELLMO Fluid Dexron	B-10 334
Esa	ESA AUTOMATIC TRANSM. FL. DEX.	B-10 653

Manufacturer	Designation	
Esso	ESSO AUTOM. Transm. Fluid (D.)	B-11 276
Eterna	ETERNA Transmatic ATF D	B-10 467
Minera	EXACTOL HFL DEXRON	B-10 752
Stinnes	FANAL ATF Dexron	B-10 755
Fina	FINA DEXRON ATF	B-10 572
		B-11 137
Duckham	FLEET MATIC CB	B-10 794
Condat	FLUID B 2846	B-10 492
Schindler	FRONTOL Getriebeöl DXS Dexron	B-11 026
Fuchs	FUCHS AUTOMATIC TF 25	B-10 653
Martin	GIROMATIC DEXRON	B-10 752
Golden Fleece Petr.	Golden Fleece Dexron	B-10 314
Gulf	Gulf ATF DEXRON	B-11 572
Sofra	HAFA TRANSMATIC	B-10 611
Homberg	HOMBERG-Getriebe-Fluid	B-11 081
Mineralölw. Osnabrück	IROKAL Dexron	B-11 081
Kendall	Kendall ATF DEXRON	B-10 166
Labo	LABO DEXRON	B-10 547
Lubrication Eng.	Lubrication-Engineers Dexron ATF	B-11 033
Mihag	MIHAG ATF DB 1140	B-10 653
Mobil Oil	Mobil ATF 220	B-10 104
Bucher	MOTOREX ATF DEXRON	B-10 494
Motul	MOTUL AUTOMATIC B-DEXRON	B-10 608
Nynäs	NYNÄS ATF Dexron	B-11 219
ÖMV	ÖMV Austromatic Dexron	B-10 848
Oest	OEST ATF DEXRON	B-10 752
Optimol	Optimol Dexron B 92 Fluid	B-10 631
Orvema	ORVEMATIC	B-10 588
Pennzoil-Oil City	Pennzoil Hydra Flo Dexron	B-11 493
		B-11 583
		B-11 510
		B-11 643
Quaker St.-Oil City	Quaker State Dexron ATF	B-11 336
Käppler	Selectol Fluid Getriebeöl, Dex. B 334	B-11 051
Sonol	Sonol »Dexron«	B-10 574
Texaco	Texamatic Fluid 6673	B-10 844
		B-10 334
C. F. P.	TOTAL Dexron	B-10 631
Unil-Beauvais	UNI-MATIC DEXRON	B-10 787
Valvoline	Valvomatic ATF Type B Dexron	B-10 756
Veedol	Veedol ATF Dexron	B-10 579
Sauerstoffwerk	WESTFALEN Getriebeflüss. ATF DEX.	B-10 752
Weva	WEVAG Automatic Getriebeöl Dexron	B-11 026
Yacco	YACCO ATF DEXRON	B-10 666

Approved oil grades for power steering

Initial filling, restoring level

Agip AG, Munich	Agip AG, München
BP Autran DX B 11026	BP-Benzin und Petroleum AG, Munich
BP Autran D	BP-Benzin und Petroleum AG, Munich
Castrol TQ Dexron B 10476	Deutsche Castrol GmbH, Hamburg
Esso Glido ATF Typ F	Esso AG, Hamburg
Mobil ATF 220 B 10476	Mobil Oil AG, Hamburg
Mobil ATF 220 B 10569	Mobil Oil AG, Hamburg
Shell Donax T 7	Deutsche Shell AG, Hamburg
Shell ATF Dexron B 10378	Deutsche Shell AG, Hamburg
Texaco Texamatic Fluid 6673 (E) B 10334	Texaco Inc., New York (USA)
Texaco Texamatic Fluid 6991 Code 1865	Texaco Inc., New York (USA)

Restoring level only

Antar Dexron B 10968	Antar, Pétroles de l'Atlantique, Paris
Aral Getriebeöl ATF Dexron B-10546	Aral AG, Bochum
Aral Getriebeöl ATF 33	Aral AG, Bochum
Aral Getriebeöl SGF AQ 1841 A	Aral AG, Bochum
Avia Fluid ATF 66 M (Type A Suffix A) AQ 1020 A	Deutsche Avia Mineralöl GmbH, Munich
BP ATF Type A Suffix A AQ-ATF 1020 A	BP-Benzin und Petroleum AG, Munich
Caltex Texamatic Fluid AQ 1800 A	Caltex Petroleum, Corp., New York
Calypsol Fluid ATF-AA, Dexron B-10752	Deutsche Calypsogesellschaft, Düsseldorf
Calypsol Fluid ATF-AA, AQ 2415 A	Deutsche Calypsogesellschaft, Düsseldorf
Castrol TQ AQ 737 A	Deutsche Castrol GmbH, Hamburg
Deutz Öl H 4-F AQ 2415	Deutzer Öl GmbH, Cologne
Esso Automatic Transmission Fluid AQ 2974 A	Esso AG, Hamburg
Gulf Automatic Transmission Fluid Type F	Gulf Oil Deutschland GmbH, Hamburg
Gulf Automatic Transmission Fluid Dexron B-10486	Gulf Oil Deutschland GmbH, Hamburg
Gulf ATF Type A Suffix A AQ 1200 A	Gulf Oil Deutschland GmbH, Hamburg
Mobil ATF 200 AQ 752 A	Mobil Oil AG, Hamburg
Mobil ATF 210	Mobil Oil AG, Hamburg
Mobil ATF 220 B 10104	Mobil Oil AG, Hamburg
Shell Donax T 7 AQ 2415 A	Deutsche Shell AG, Hamburg
Sunoco Automatic Transmission Fluid AQ-ATF 737 A	Sun Oil Company, Antwerp (Belgium)
Total Fluid A, AQ 1577 A	Deutsche Total GmbH, Düsseldorf

Service all the way

Superior engineering is worthy of your confidence. You will certainly have noticed that after having driven just a few miles in your new BMW.

Naturally, a quality car like yours should be serviced and cared for in the correct way, to that your sheer driving pleasure will remain just as great for years to come.

When having your car serviced or when a repair is to be done, please make sure that this is carried out by an authorized BMW service station only. BMW service stations have all the equipment and tools that are specially designed for your car, and they are obliged by contract to use only GENUINE BMW PARTS for your BMW.

You are wise to be suspicious when offered other spare parts for your car, since we are unable to check their quality.

In this connection, please note the terms of our Warranty, in particular Item 7, as printed in your Service Booklet.

Thanks to GENUINE BMW PARTS, you can always protect yourself against any such trouble and need not run a risk. GENUINE BMW PARTS are not like normal spares. They are completely identical with the original parts used in a new BMW. **So that "replacing an genuine part by another genuine part" gives you the same technical superiority that is so characteristic of BMW. Needless to say, this is essential for maintaining the supreme power and inner safety of your car.**

Every BMW dealer has concluded a contract with the factory, stipulating that he must always keep a stock of the following GENUINE BMW PARTS:

- spare parts and replacement parts required frequently
- GENUINE BMW ACCESSORIES (complete range)

GENUINE BMW PARTS needed only rarely – after all, there are about 30000 parts altogether – can be obtained very quickly by small dealers from the nearest distributor or BMW branch, or abroad from a main dealer or the BMW Importer.

'Genuine BMW parts' comprise all parts and assemblies, and also accessories, supplied by the Bayerische Motoren Werke AG. regardless of whether manufactured by BMW itself or by a subcontractor on the company's behalf.

For reasons of safety we recommend you to install only GENUINE BMW Accessories as well.

BMW Quality Guarantee

Genuine BMW parts are completely identical with the parts used in a new BMW.

Bayerische Motoren Werke AG guarantees that BMW Parts are genuine and free of defects in material and finish.

BMW – Perfection to the very last detail.

Genuine BMW Parts

Look for this sign

Personalized equipment for your BMW

Car radios
The new BMW BAVARIA car radio and other BMW-tested units from leading manufacturers can be installed, using genuine BMW installation and suppression kits and antennas – to match the engineering quality and interior finish of your BMW. Incidentally, stereo in the car is just fascinating as in the home.

BMW floor mats
For front and rear, cut to exact size, non-slip, to protect and enhance the appearance of your car. Choose between velour carpets and rubber floor mats.

BMW rear seat belts
The rear seats of your car can be equipped subsequently with seat belts (including the automatic inertia-lock type). The car's structure is programmed for their installation.

BMW halogen fog lights
Your BMW is already programmed for the installation of these fog lights. In many countries there is a risk of fog all the year round.

BMW breakdown kit
Contains vital electrical components and a V-belt to suit your BMW. Items were selected in consultation with an Automobile Club.

BMW trailer coupling
For caravans, boat trailers or horseboxes. Available with detachable ball head.

BMW headlight cleaning system
Special nozzles clean the headlight lenses while on the move, and the dirt is wiped off immediately afterwards by special blades.

BMW air conditioning
A high-performance BMW air conditioning unit can be specified for your BMW or installed subsequently if required.

BMW mudflaps
These show the BMW driver's consideration for other road users when overtaking, and protect your own car from dirt and flying stones.

BMW first-aid cushion
Available in brown, blue or black, with BMW emblem. Contains the first-aid kit which is compulsory equipment in Germany and many other countries.

BMW gear lever knob
Attractive accessories – in real wood or leather, with a recessed BMW emblem.

BMW child's car seat
Safe, strong and easy to clean. For children able to sit upright, and up to max. 18 kg (40 lb) weight and 105 cm (3 ft 5 in) tall. Precise fitting instructions.

BMW roof rack
Rigidity, attachment points, fastenings and safety to BMW's own high quality standards. One-piece or sectioned versions available.

BMW snow chains
Edge-track pattern, designed to suit BMW cars. Optimum material quality and workmanship. High mileage without excessive wear is doubled by ability to run on either side of chains.

Other car accessories from the genuine BMW range
Rear loudspeakers, safety sports steering wheel, sports seats, hand lamp with or without lead, warning triangle, fire extinguisher, fluorescent-finish driving light covers, sports mirrors, BMW paint touching-in spray, 'rally' spray, touching-in pencils, spare bulb box, car gloves, towrope, wind deflector.

Please note:
Depending on the BMW model you own, many genuine BMW accessories may already form part of the standard specification or have been ordered when the car was new. In addition, certain items from the accessory range may not be approved or available for all BMW models. Your BMW dealer will gladly advise you and also provide details of new items in the genuine BMW accessories range.

Item Reference List

At a glance

Tire pressures in bar (lb/in²) for radial-ply tires, cold (if warm, allow 0.3 bar (4 lb/in²) more in each case):

BMW 630 CS, 633 CSi: Load	front	**195/70 VR 14** rear
Up to 2 persons	2.3 (33)	2.1 (30)
Heavier loads	2.4 (34)	2.4 (34)

Winter tires – **BMW 630 CS, 633 CSi:**
For winter-tread radial-ply tires, size 175 SR 14 or 195/70 SR 14, use the same pressures as for standard tires. Speed limit 160 km/h (100 mile/h).

For **competition driving,** special regulations apply.

V-belts:
12.5×1060 mm narrow-section
9.5×900 DIN 7753
(hydraulic power steering pump drive)

Spark plugs:

Beru	175/14/3 A
Bosch	W 175 T 30
Champion	N 10 Y

Electrode gap: 0.6+0.1 mm
(0.024 +0.004 in)

Breaker points gap:
BMW 630 CS 0.35–0.40 mm
(0.014–0.016 in)

Dwell angle
BMW 630 CS 35–41°
BMW 633 CSi 52 +5° at 4500 rev/min

Ignition timing
BMW 630 CS 22° b. TDC at 1500 rev/min
BMW 633 CSi 22° b. TDC at 1800 rev/min

Valve clearances
With engine cold, inlet and exhaust valves 0.25–0.30 mm (0.010–0.012 in).

Capacities		**Notes**
Fuel tank	70 liters (15.4 Imp. gal, 18.5 US gal)	Super (premium) grade petrol (gasoline) for spark ignition engines to DIN 51600 standard, min. octance number 98 (RM), 88 (MM)
Cooling system including heater	12 liters (21.1 Imp. pints, 12.7 US quarts)	For details, see pages 72 and 73
Engine oil	5 liters (8.8 Imp. pints, 5.3 US quarts) +0.75 liter (1.3 Imp. pints, 0.8 US quart) if oil filter is renewed; on BMW 633 CSi, 0.75 liter (1.3 Imp. pints, 0.8 US quart) in oil cooler – to be added only after a repair	Brand-name HD oil for spark ignition engines; for grades, see page 67
Manual gearbox	app. 1.1 liters (1.9 Imp. pints, 1.2 US quarts)	Brand-name SAE 80 gear oil (in an emergency, HD engine oil; see page 68)
Automatic transmission	app. 2.0 liters (3.5 Imp. pints, 2.1 US quarts) – total capacity for initial filling or of new or exchange transmission 7.25 liters (12.8 Imp. pints, 7.7 US quarts)	For oil grades, see page 114
Final drive	1.6 liters (2.8 Imp. pints, 1.7 US quarts)	Brand-name running-in grade hypoid gear oil, SAE 90 (your BMW service station knows the factory-approved grades)
Power steering	1.2 liters (2.1 Imp. pints, 1.3 US quarts)	For oil grades, see page 115

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