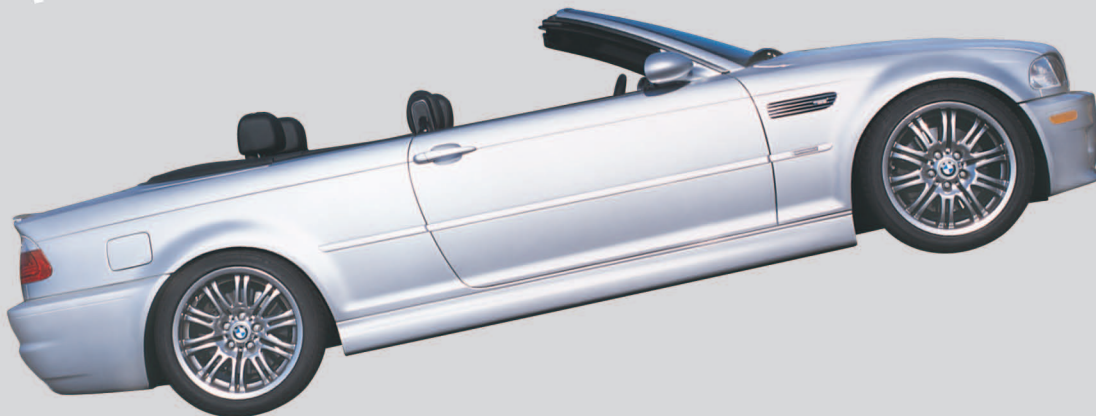


BMW 3 Series

Service Manual

M3, 323i, 325i, 325xi, 328i, 330i, 330xi
Sedan, Coupe, Convertible, Sport Wagon
1999, 2000, 2001, 2002, 2003, 2004, 2005



How to Use This Manual

WARNING!

Your common sense and good judgment are crucial to safe and successful service work. Read procedures through before starting them. Think about whether the condition of your car, your level of mechanical skill, or your level of reading comprehension might result in or contribute in some way to an occurrence that might cause you injury, damage your car, or result in an unsafe repair. If you have doubts for these or other reasons about your ability to perform safe repair work on your car, have the work done at an authorized BMW dealer or other qualified shop.

The manual is divided into ten sections:

- ◆ 0 GENERAL DATA AND MAINTENANCE
- ◆ 1 ENGINE
- ◆ 2 TRANSMISSION
- ◆ 3 SUSPENSION, STEERING AND BRAKES
- ◆ 4 BODY
- ◆ 5 BODY EQUIPMENT
- ◆ 6 ELECTRICAL SYSTEM
- ◆ 7 EQUIPMENT AND ACCESSORIES

- ◆ ELE ELECTRICAL WIRING DIAGRAMS

- ◆ OBD ON BOARD DIAGNOSTICS

0 GENERAL DATA AND MAINTENANCE covers general vehicle information (Repair Group 010) as well as the recommended maintenance schedules and service procedures to perform BMW scheduled maintenance work (Repair Group 020).

The next seven sections (Repair Groups 1 through 7) are repair based and organized by three digit repair groups. Most major sections begin with a General repair group, e.g. 100 Engine–General. These “00” (double zero) groups are mostly descriptive in nature, covering topics such as theory of operation and troubleshooting. The remainder of the repair groups contain the service and repair information. The last two major sections contains detailed electrical wiring schematics and scan tool codes.

A master listing of the individual repair groups can be found on the inside front cover. A comprehensive index can be found at the back of the manual.

Warnings, cautions and notes

Throughout this manual are many passages with the headings WARNING, CAUTION, or NOTE. These very important headings have different meanings.

WARNING!

The text under this heading warns of unsafe practices that are very likely to cause injury, either by direct threat to the person(s) performing

the work or by increased risk of accident or mechanical failure while driving.

CAUTION!

A caution calls attention to important precautions to be observed during the repair work that will help prevent accidentally damaging the car or its parts.

Note:

A note contains helpful information, tips that will help in doing a better job and completing it more easily.

Please read every WARNING, CAUTION, and NOTE at the front of the manual and as they appear in repair procedures. They are very important. Read them before you begin any maintenance or repair job.

WARNING!

- ◆ ***Never run the engine in the work area unless it is well-ventilated. The exhaust should be vented to the outside. Carbon monoxide (CO) in the exhaust kills.***

- ◆ ***Remove all neckties, scarfs, loose clothing, or jewelry when working near running engines or power tools. Tuck in shirts. Tie long hair and secure it under a cap. Severe injury can result from these things being caught in rotating parts.***

- ◆ ***Remove rings, watches, and bracelets. Aside from the dangers of moving parts, metallic jewelry conducts electricity and may cause***

shorts, sparks, burns, or damage to the electrical system when accidentally contacting the battery or other electrical terminals.

- ◆ **Disconnect the battery negative (-) cable whenever working on or near the fuel system or anything that is electrically powered. Accidental electrical contact may damage the electrical system or cause a fire.**
- ◆ **Fuel is highly flammable. When working around fuel, do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.**
- ◆ **The fuel system is designed to retain pressure even when the ignition is off. When working with the fuel system, loosen the fuel lines slowly to allow the residual pressure to dissipate gradually. Take precautions to avoid spraying fuel.**
- ◆ **Illuminate the work area adequately and safely. Use a portable safety light for working inside or under the car. A fluorescent type light is best because it gives off less heat. If using a light with a normal incandescent bulb, use rough service bulbs to avoid breakage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.**
- ◆ **Keep sparks, lighted matches,**

and any open flame away from the top of the battery. Hydrogen gas emitted by the battery is highly flammable. Any nearby source of ignition may cause the battery to explode.

- ◆ ***Never lay tools or parts in the engine compartment or on top of the battery. They may fall into confined spaces and be difficult to retrieve, become caught in belts or other rotating parts when the engine is started, or cause electrical shorts and damage to the electrical system.***

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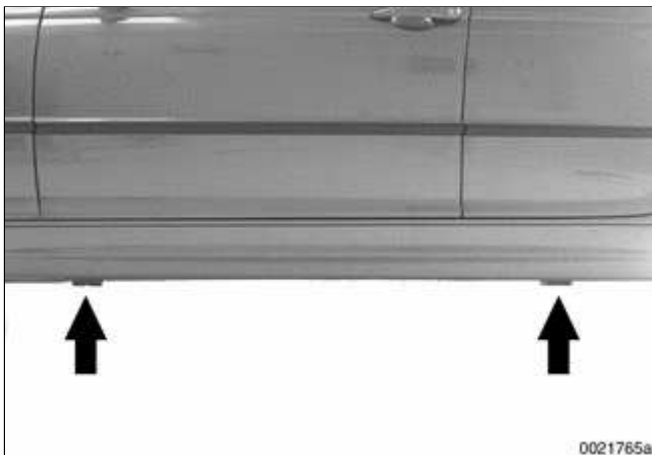
Getting Started

Most of the necessary maintenance and minor repair that an automobile will need can be done with ordinary tools. Below is some important information on how to work safely, a discussion of what tools will be needed and how to use them.

Safety

Although an automobile presents many hazards, common sense and good equipment can help ensure safety. Many accidents happen because of carelessness. Pay attention and stick to safety rules in this manual.

Lifting the car



- ✦ The proper jacking points should be used to raise the car safely and avoid damage. The jack supplied with the car can only be used at the four side points (arrows)—just behind the front wheels or just in front of the rear wheels.

WARNING!

- ✦ ***Never work under a lifted car unless it is solidly supported on jack stands that are intended for that purpose.***
- ✦ ***When raising the car using a floor jack or a hydraulic lift, carefully position the jack pad to prevent damaging the car body. Plastic pads are provided for this purpose by the manufacturer at the jacking***

points.

- ♦ ***Watch the jack closely. Make sure it stays stable and does not shift or tilt. As the car is raised, it may roll slightly and the jack may shift.***

Raising car safely

- Park car on flat, level surface.
- If changing a tire, loosen lug bolts before raising car. See ⇒ [Changing a tire.](#)



- ▲ Place jack into position. Make sure jack is resting on flat, solid ground. Use a board or other support to provide a firm surface for the jack, if necessary
- Raise car slowly while constantly checking position of jack and car.
- Once car is raised, block wheel that is opposite and farthest from jack to prevent car from unexpectedly rolling.

WARNING!

- ♦ ***Do not rely on the transmission or the emergency brake to keep the car from rolling. They are not a substitute for positively blocking the opposite wheel.***
- ♦ ***Never work under a car that is supported only by a jack. Use jack stands that are designed to support the car. See ⇒ [Tools.](#)***

Working under car safely

- Disconnect negative (–) cable from battery so that no one can start car. Let others know what you will be doing.

CAUTION!

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.

- Raise car slowly as described above.
- Use at least two jack stands to support car. Use jack stands designed for the purpose of supporting a car. For more information on jack stands, see ⇒ [Tools](#).

WARNING!

- ♦ ***A jack is a temporary lifting device and should not be used alone to support the car while you are under it.***
- ♦ ***Do not use wood, concrete blocks, or bricks to support a car. Wood may split. Blocks or bricks, while strong, are not designed for that kind of load, and may break or collapse.***
- Place jack stands on firm, solid surface. If necessary, use a flat board or similar solid object to provide a firm footing.

- Lower car slowly until its weight is fully supported by jack stands. Watch to make sure that the jack stands do not tip or lean as the car settles on them.

- Observe all jacking precautions again when raising car to remove jack stands.

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