

Because your Mazda is a large piece of intricate machinery, it needs regular care in the form of maintenance and servicing. Many owners prefer to do much of this work themselves.

Section 7 has been prepared as a guide for the operator who wants to self-serve such minor jobs as changing the engine oil, replacing bulbs and wiper blades, charging the battery, and rotating the tires. All maintenance schedules are included, along with instructions on how to make regular inspections of such things as fluid levels.

Introduction	7- 2
Scheduled Maintenance	7- 3
Owner Maintenance	7- 8
Bulb Replacement (Front)	7-38
Bulb Replacement (Rear)	7-40

Introduction

Be extremely careful to prevent injury to yourself and others and damage to your vehicle when using this manual for inspection and maintenance.

If you're unsure about any procedure it describes, we strongly urge you to have a reliable and qualified service shop perform the work, preferably an Authorized Mazda Dealer.

Factory-trained Mazda technicians and genuine Mazda parts are best for your vehicle. Without this expertise and the parts that have been designed and made especially for your Mazda, inadequate, incomplete, and insufficient servicing may result in problems. This could lead to vehicle damage or an accident and injuries.

For expert advice and quality service, consult an Authorized Mazda Dealer.

The owner should retain evidence that proper maintenance has been performed as prescribed.

A claim against a warranty will not qualify if it results from lack of maintenance and not from defective material or authorized Mazda workmanship.

Any auto repair shop using parts equivalent to your Mazda's original equipment may perform maintenance. **But we recommend that it always be done by an Authorized Mazda Dealer using genuine Mazda parts.**

Scheduled Maintenance

Follow Schedule 1 if the vehicle is operated mainly where none of the following conditions apply. If any do apply, follow Schedule 2.

- Repeated short-distance driving when outside temperatures remain below freezing
- Driving in dusty conditions
- Towing a trailer
- Operating in hot weather in stop-and-go “rush hour” traffic
- Extended periods of idling or low-speed operation
- High-speed operation with a fully loaded vehicle

NOTE
After 120 months or 120,000 miles (193,000 km), continue to follow the prescribed maintenance and intervals periodically.

Maintenance

Schedule I — Normal Driving Conditions

B — Required for all vehicles.

Normal driving service intervals — perform at the months or distances shown, whichever occurs first.

MAINTENANCE OPERATION	Miles (Thousands)	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	100	105	112.5	120	
	Kilometers (Thousands)	12	24	36	48	60	72	84	96	108	120	132	144	156	160	168	181	193	
Emission Control Systems																			
Change engine oil and filter — every 6 months OR		B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
Replace spark plugs (2.3L)*									B										B
Replace spark plugs (3.0L/4.0L)*									B*1						B				
Replace engine coolant — every 36 months OR					B				B				B						B
Check engine coolant condition and protection, hoses and clamps annually — prior to cold weather		Annually																	
Replace air cleaner filter — every 30 months OR					B				B				B						B
Replace PCV valve									B/1										B
Replace ignition wires									B										B
Inspect timing belt condition and tension (2.3L)									B										B
Other Systems																			
Check wheel lug nut torque §		B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
Rotate tires		B		B		B		B		B		B		B					B
Check clutch reservoir fluid level		B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
Inspect and lubricate automatic transmission shift linkage (cable system/fluid)		B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	
Inspect and lubricate front wheel bearings					B				B				B						B
Inspect disc brake system and lubricate caliper slide rails			B		B		B		B		B		B					B	B

* Refer to Vehicle Emission Control Information for Spark Plug and Gap Specifications.

*1 Change spark plugs every 60,000 miles (96,000 km) if vehicle is subject to Unique Driving Conditions as listed on page 7-6.

Schedule I — Normal Driving Conditions (Continued)

B — Required for all vehicles.

MAINTENANCE OPERATION	Miles (Thousands)		7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	100	105	112.5	120	
	Kilometers (Thousands)		12	24	36	48	60	72	84	96	108	120	132	144	156	160	168	181	193	
Inspect drum brake linings, lines and hoses				B		B		B		B		B		B			B		B	
Inspect exhaust system for leaks, damage or loose parts						B				B				B					B	
Inspect manual transmission fluid			B							B									B	
Inspect and remove any foreign material trapped by exhaust system shielding			B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	B
Lubricate propeller shaft U-joints if equipped with grease fittings			B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	B
Inspect parking brake system for damage and operation						B				B				B					B	
Lubricate throttle and kick down lever ball studs						B				B				B					B	
Lubricate rear propeller shaft double cardan joint centering ball (SWB 4x4)			B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	B
Lubricate front axle R.H. axle — Shaft slip yoke (4x4)						B				B				B					B	
Inspect spindle needle bearing spindle thrust bearing lubrication (4x4)						B				B				B					B	
Inspect hub lock lubrication (4x4)						B				B				B					B	
Change transfer case oil (4x4)										B									B	
Lubricate steering linkage joints if equipped with grease fittings			B	B	B	B	B	B	B	B	B	B	B	B	B			B	B	B

§ Wheel lug nuts must be retightened to proper torque specifications at 500 miles/800 km of new vehicle operation. See Section 5 for proper torque specifications. Also retighten to proper torque specification at 500 miles/800 km after (1) any wheel change or (2) any other time the wheel lug nuts have been loosened.

/1 At 60,000 miles/96,000 km, your dealer will replace the PCV Valve at no cost **except California and Canada vehicles.**

Replace rear axle lube quantities every 100,000 miles (160,000 km) or if the axle has been submerged in water. Otherwise, the lube should not be checked or changed unless a leak is suspected or a repair required.

■ **Schedule 2 —
Unique Driving Conditions**

If your driving habits **FREQUENTLY** include one or more of the following conditions:

- Short trips of **less** than 10 miles (16 km) when outside temperatures remain below freezing.
- Towing a trailer, or carrying maximum loads.
- Operating in severe dust conditions.
- Operating during **hot weather** in stop-and-go “rush hour” traffic.
- Extensive idling, such as police, taxi or door-to-door delivery service.
- High speed operation with a fully loaded vehicle (max. GVW).

Change **ENGINE OIL AND OIL FILTER** every 3 months or 3,000 miles (4,800 km) whichever occurs first.

NOTE

Idling the engine for extended periods will accumulate more hours of use on your vehicle than is actually indicated by the mileage odometer. Consequently, the odometer reading can be often misleading when determining the right time to change your engine oil and filter.

If you are using your vehicle in a manner which allows it to remain stationary while the engine is running for long periods (door-to-door delivery, taxi, police, power/utility company trucks, or similar duty), then Mazda recommends you increase the frequency of oil and filter changes to an interval equivalent to 200 ENGINE HOURS of use. Since most vehicles are not equipped with hour-meters, it may be necessary for you to approximate your idle time and plan oil/filter changes accordingly.

▼ Air cleaner and crankcase emission air filters

— If operating in severe dust conditions, ask your dealer for proper replacement intervals.

▼ Automatic transmission fluid

Change each 30,000 miles (48,000 km) — if your driving habits **FREQUENTLY** include one or more of the following conditions:

- Operating during hot weather (above 90°F, 32°C) and carrying heavy loads and driving in hilly terrain.
- Towing a trailer.
- Door-to-door delivery, police or taxi.

▼ Extreme service items

If your vehicle is operated **off-highway**, perform the following items every 1,000 miles (1,600 km). If your vehicle is operated in mud and/or water, perform the following items daily:

- Lubricate front axle, steering and clutch linkages, axle and propeller shaft U-joints and slip yoke, if equipped with fittings.
- Inspect front wheel bearings and lubrication.
- Lubricate automatic transmission external controls (cable system).

- Inspect disc brake system and lube caliper slide rails.
- Inspect drum brake system, hoses and lines.
- Inspect exhaust system for leaks, damage or loose parts and remove any foreign material trapped by shielding.

Owner Maintenance

■ Owner Maintenance Schedule

The owner or a qualified service technician should make these vehicle inspections at the indicated intervals to ensure safe and dependable operation.

Bring any problem to the attention of an Authorized Mazda Dealer or qualified service technician as soon as possible.

▼ While operating your vehicle

- Note any changes in the sound of the exhaust or any smell of exhaust fumes in the vehicle.
- Check for vibrations in the steering wheel. Notice any increased steering effort or looseness in the steering wheel, or change in its straight ahead position.
- Notice if your vehicle constantly turns slightly or “pulls” to one side when traveling on smooth, level road.

- When stopping, listen and check for strange sounds, pulling to one side, increased brake pedal travel or “hard to push” brake pedal.
- If any slipping or changes in the operation of your transmission occur, check the transmission fluid level.
- Check automatic transmission Park function.
- Check parking brake.

▼ When refueling

- Check engine oil level (page 7-15).
- Check washer fluid level (page 7-27).

▼ At least monthly

- Check tire inflation pressures (page 7-31).

- Check coolant level in the coolant reservoir (page 7-19).
- Check lights, horn, turn signals, windshield wipers and washers, and hazard warning light operation.
- Check for fluid leakage by inspecting the surface beneath your vehicle for oil, coolant, or other fluid drips. Clean water from the air-conditioning system is normal.

▼ At least once a year

- Lubricate door hinges and checks, and hood hinges.
- Lubricate door and hood locks and latches.
- Lubricate door rubber weatherstrips.
- Inspect and lubricate automatic transmission linkage and controls.

- Clean battery and terminals, check electrolyte level on low maintenance batteries.
 - Check manual transmission, 4x4 transfer case, and front drive axle. Rear axle fluid levels should not be checked unless a leak is suspected or a repair is required.
- ▼ **At least twice a year
(for example, every spring and fall)**
- Check power steering fluid level (page 7-24).
 - Check clutch fluid level (page 7-23).
 - Check radiator, heater and air-conditioning hoses for leaks or damage (page 7-19).
 - Check for worn tires (page 7-33).
 - Clean body and door drain holes.
 - Flush the underside of the vehicle completely.
 - Inspect underbody components for damage.
 - Check exhaust system for leaks, damage or loose parts and remove any foreign material trapped by shielding.
 - Check parking brake (page 4-21).
 - Check seat and shoulder belt webbing, buckles and release mechanisms (page 2-22).
 - Inspect seatback latches for proper operation.
 - Check air pressure in spare tire.

■ Owner Maintenance Precautions

Improper or incomplete service may result in problems. This section gives instructions only for items easy to perform.

WARNING

Maintenance Procedures:

Performing maintenance work on a vehicle can be dangerous. You can be seriously injured while performing some maintenance procedures. If you lack sufficient knowledge and experience or the proper tools and equipment to do the work, have it done by a qualified technician.

As explained in the Introduction (page 7-2), several procedures can be done only by a qualified service technician with special tools.

Improper owner maintenance during the warranty period may affect warranty coverage. For details, read the separate Mazda Warranty statement provided with the vehicle. If you're unsure about any servicing or maintenance procedure, have it done by an Authorized Mazda Dealer.

 **WARNING**

Running the Engine:

- Working under the hood with the engine running is dangerous. It becomes even more dangerous when you wear jewelry or loose clothing. Either can become entangled in moving parts and result in injury. Therefore, if you must run the engine while working

(Continued)

under the hood, make certain that you remove all jewelry (especially rings, bracelets, watches, and necklaces) and all neckties, scarves, and similar loose clothing before getting near the engine or cooling fan.

- Set the parking brake fully, and make sure that the gearshift is securely latched in Park (automatic transmission) or Neutral (manual transmission) and block the wheels. This will prevent your vehicle from moving unexpectedly.
- Do not start your engine with the air cleaner removed and do not remove it while the engine is running.

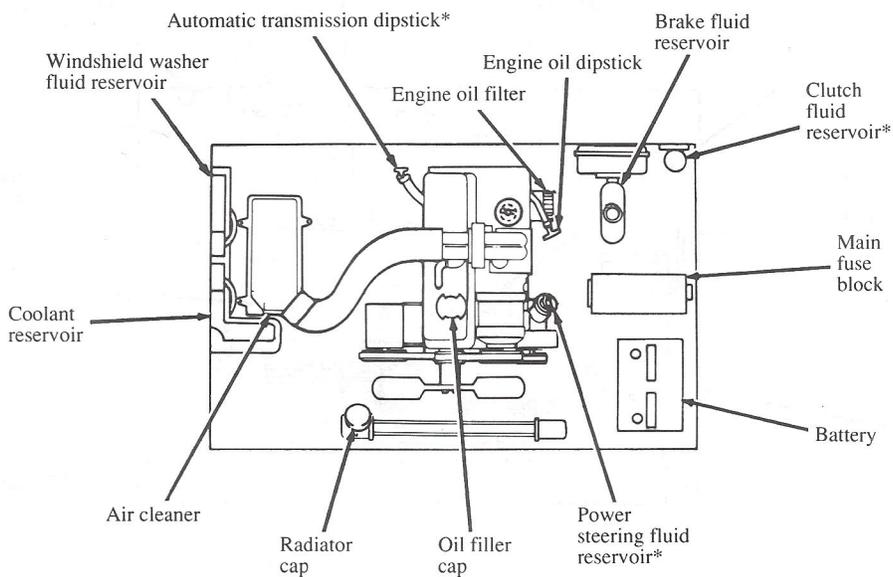
 **WARNING**

Set Parking Brake Fully:

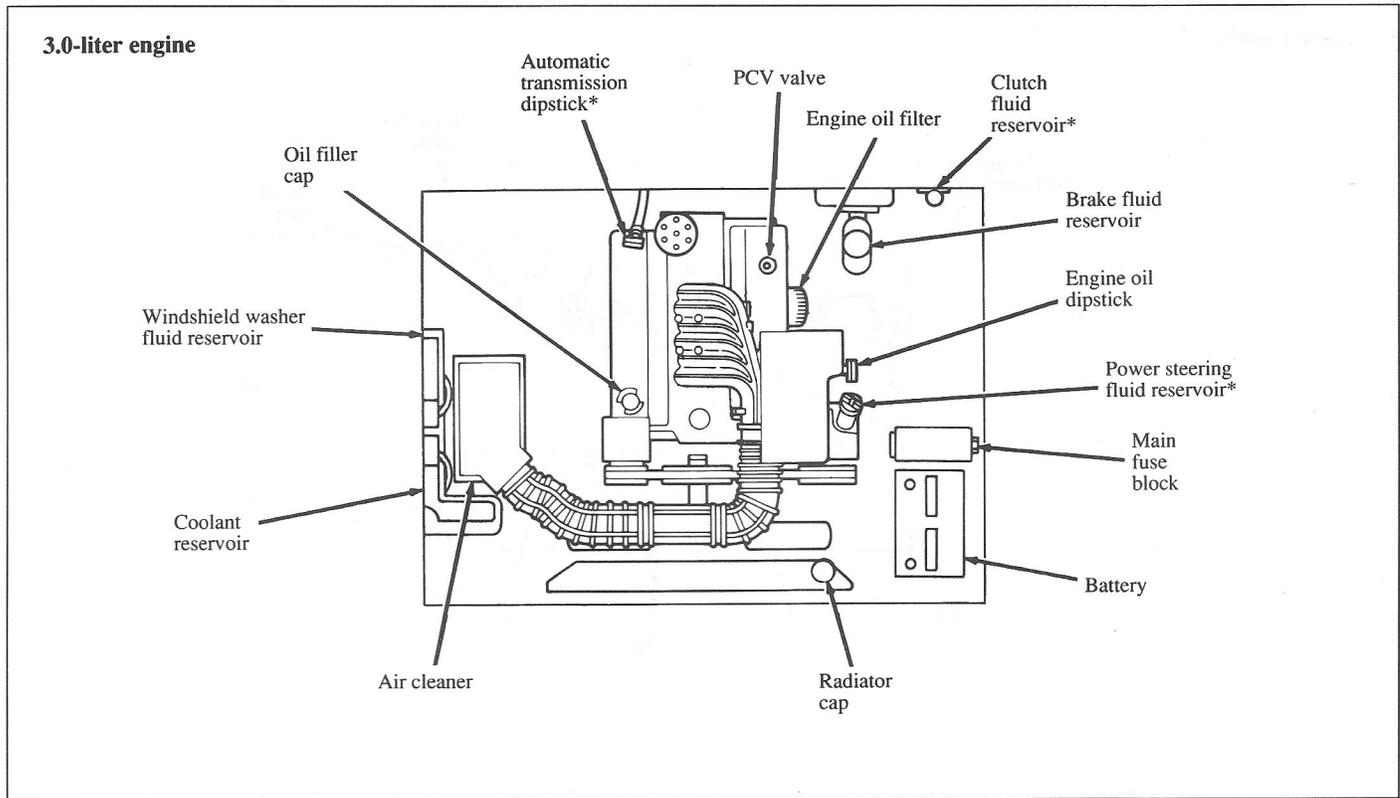
When the transfer case is in the N (Neutral) position, the engine and transmission are disconnected from the rest of the driveline. Therefore, the vehicle is free to roll even if the automatic transmission is in P (Park) or the manual transmission is in gear. Do not leave the vehicle unattended with the transfer case in the N (Neutral) position. Always set the parking brake fully and turn off the ignition when leaving the vehicle.

■ Engine Compartment Overview

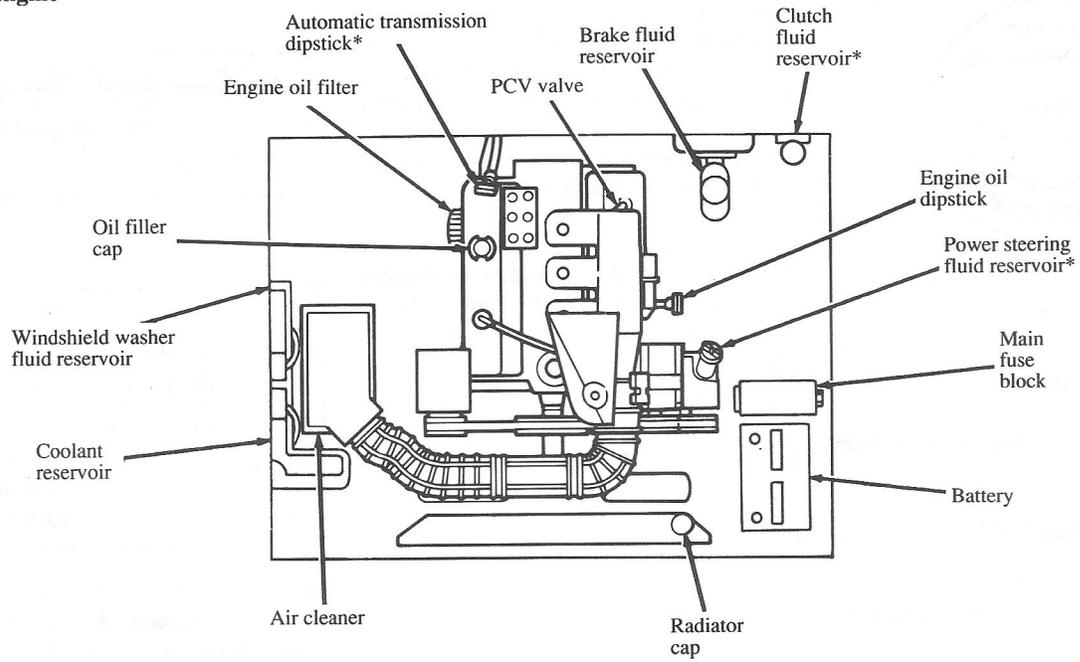
2.3-liter engine

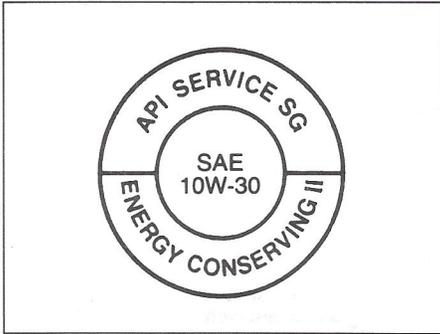


* Some models. **7-11**



4.0-liter engine





■ Engine Oil

▼ Recommended oil

Oil container labels contain important information.

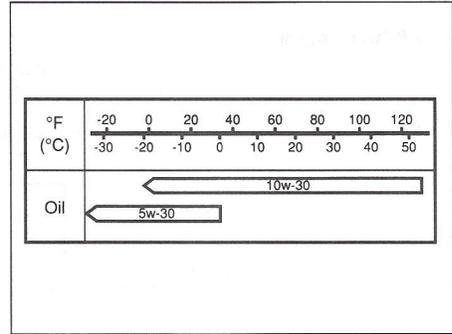
The quality designation “SG” must be on the label.

The viscosity numbers are in the center of the label.

Engine oil viscosity, or thickness, has an effect on fuel economy and cold-weather operation (starting and oil flow). Low-viscosity engine oils can provide improved fuel economy and cold-weather performance.

High-temperature weather conditions require higher-viscosity engine oils for satisfactory lubrication.

When choosing an oil, consider the temperature range your vehicle will operate in before the next oil change. Then select the recommended viscosity from the following chart.



⚠ CAUTION

Using oils of viscosity besides those recommended for specific temperature ranges could result in engine damage.

Engine oils labeled “Energy Conserving II” are recommended. A chief contribution they make to fuel economy is reducing the amount of fuel necessary to overcome engine friction.

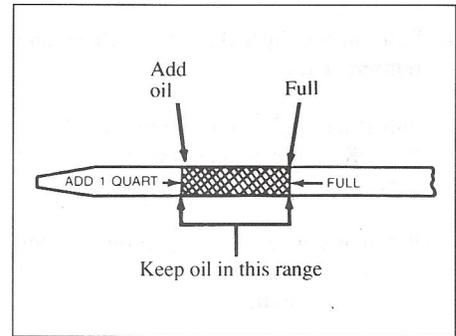
■ Engine Oil Pressure Gauge

This gauge indicates whether or not there is adequate oil pressure. If the engine is running the pointer should be in the center band, indicating adequate oil pressure. If the pointer drops below or remains below the center band while the engine is running, you have inadequate oil pressure.

If this happens, follow this procedure:

1. Drive safely to the side of the road and park off the right-of-way. Set an automatic transmission in P (Park), a manual transmission in N (Neutral). Apply the parking brake. Turn the engine off. Allow it to reach normal operating temperature.
2. Protect yourself from engine heat.

3. Be sure the vehicle is on level ground. Wait five minutes for the oil to return to the oil pan.
4. Pull out the dipstick, wipe it clean, and reinsert it fully.
5. Pull it out again and examine the level. It's OK if it's within the crosshatched area. If it's near or at the bottom of the crosshatched area, add enough oil to bring the level to Full.



▼ Inspecting engine oil level

1. Be sure the vehicle is on a level surface.
2. Warm up the engine to normal operating temperature.
3. Turn it off and wait 5 minutes for the oil to return to the oil pan. Refer to the heading in this section called Engine Compartment Overview for location of the engine oil dipstick.

4. Pull out the dipstick, wipe it clean, and reinsert it fully.
5. Pull it out again and examine the level. It's OK if it's within the crosshatched area.

But if it's near or at the bottom of the crosshatched area, add enough oil to bring the level to Full.

 **CAUTION**

Overfilling with engine oil will damage your engine.

▼ **Changing engine oil and filter**

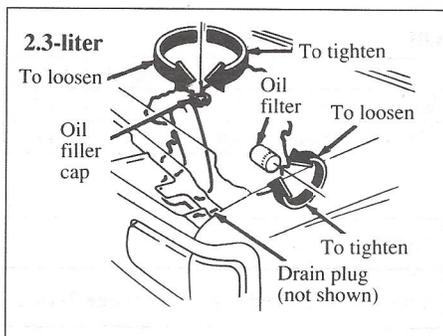
Change engine oil and filter according to Scheduled Maintenance, pages 7-4 through 7-6.

Please act responsibly — protect the environment and take used oil to a recycling facility. Ask your dealer or a service station for information.

 **WARNING**

Used Engine Oil:

Continuous contact with USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after this work.

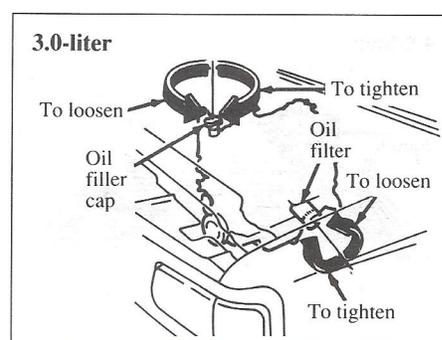


1. Warm up the engine for a few minutes and turn it off after it has reached normal operating temperature. Set the parking brake fully and latch the gear selector in P (Park) (automatic transmission), or 1 (First) (manual transmission). Block the wheels. Remove the oil filler cap.
2. Then remove the drain plug and drain the oil into a suitable container.

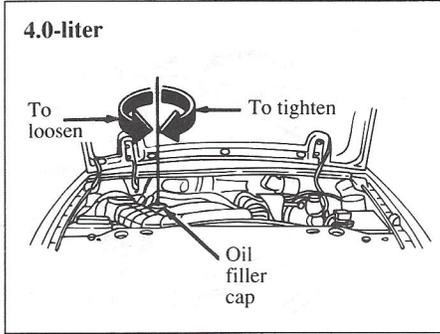
⚠ WARNING

Hot Engine Oil:

When the engine and the oil are hot, they can badly burn. Don't burn yourself with either.



3. Remove the engine oil filter with an oil-filter wrench.
4. Use a clean rag to clean the surface where the filter mounts on the engine.
5. Apply a small amount of engine oil to the rubber seal of a new oil filter.



6. Install the new filter and tighten it. (Refer to the caution label on the oil filter for tightening instructions.)
7. Replace the plug(s) tightly after the oil has thoroughly drained.
8. Fill the engine with new oil to the Full mark on the dipstick.
9. Securely replace the oil filler cap.

10. Start the engine and inspect around the oil filter seal for leaks.

11. Turn engine off and wait 5 minutes for the oil to return to the oil pan.

Check the oil level and fill to the Full mark if necessary.

Oil capacity

2.3L

	US qt	Imp qt	Liter
with oil filter	5.0	4.2	4.7
without oil filter	4.0	3.4	3.8

3.0L

	US qt	Imp qt	Liter
with oil filter	4.5	3.8	4.3
without oil filter	4.0	3.4	3.8

4.0L

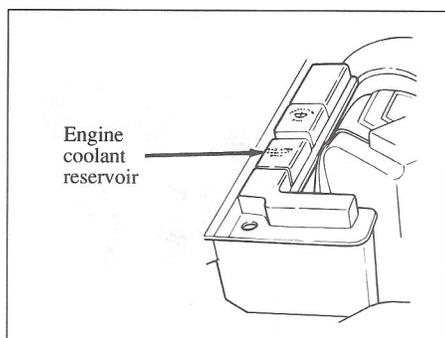
	US qt	Imp qt	Liter
with oil filter	5.0	4.2	4.7
without oil filter	4.0	3.4	3.8

NOTE

Use only specified engine oil (page 7-14).

⚠ CAUTION

- Follow these instructions carefully. An incorrectly installed filter can cause leakage and engine damage.
- Although oil filters may look the same, they may be very different inside. They are not interchangeable. To avoid engine damage, use only specified filters.



■ Engine Coolant

▼ Inspecting coolant level

Inspect the antifreeze protection and coolant level at least once a month, at the beginning of the winter season and before traveling where temperatures may drop below freezing.

Inspect the condition and connections of all cooling system and heater hoses. Replace any that are swollen or deteriorated.

The coolant should be at full in the radiator and to the appropriate level marks on the coolant reservoir when the engine is cool.

If coolant level is low, add enough coolant to provide freezing and corrosion protection and to bring the level to the appropriate level marks on the coolant reservoir when the engine is cool.

Do not overfill.

If new coolant is required frequently, consult an Authorized Mazda Dealer.

⚠ CAUTION

Radiator coolant will damage paint. Rinse it off quickly.

▼ Changing coolant at the proper intervals

Change coolant according to Scheduled Maintenance, page 7-3.

⚠ CAUTION

- Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
 - The engine has aluminum parts and must be protected by an ethylene glycol-based coolant to prevent corrosion and freezing.
- DO NOT USE alcohol or methanol antifreeze. DO NOT MIX alcohol or methanol with the coolant. This could damage the cooling system.
- Don't use a solution that contains more than 60 percent antifreeze. This would reduce effectiveness.
 - Do not add windshield washer fluid to the engine coolant reservoir. This could damage your cooling system.

For mixture percentage:

Protection	Volume	
	Antifreeze solution	Water
Above -11°F (-24°C)	40	60
Above -62°F (-52°C)	60	40

⚠ WARNING

Removing the Radiator Cap:

Removing the radiator cap or drain plug while the engine is running is dangerous. This might lead to cooling system and engine damage and could result in serious injury from escaping hot coolant or steam.

Be careful when adding engine coolant. Do not put engine coolant or antifreeze in the container for the windshield washer fluid. If sprayed to clean the glass, engine coolant or antifreeze could make it difficult to see through the windshield.

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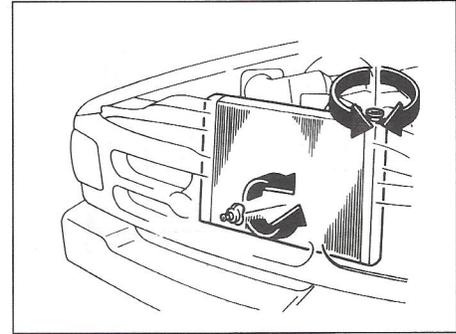
Never remove the radiator cap while the engine is running or hot.

If you must remove the radiator cap, follow these steps to avoid personal injury that can be caused by escaping steam or engine coolant.

Turn off the engine and wait until it's cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counter-clockwise to the first stop. Step back while the pressure escapes.

When you're sure all the pressure is gone, press down on the cap — still using a cloth — turn it, and remove it.

Stand away from the radiator opening. Hot steam may blow out or hot engine coolant may even splash out.



To Change Coolant

1. Shut off the engine and allow engine to cool.
2. Remove the radiator cap.
3. Only when the engine is cool, attach a small hose to the drain tube at the bottom of the radiator. Loosen the radiator drain plug. Drain the coolant into a suitable container.
4. With the drain plug loose but not fully removed, flush out the system with running water.