Mazda 323

1988
Workshop Manual

mazda

1988 Mazda 323 Workshop Manual

FOREWORD

This workshop manual is intended for use by service technicians of authorized Mazda dealers to help them service Mazda vehicles. This manual can be also useful for Mazda owners in diagnosing certain problems and performing some repair and maintenance on Mazda vehicles.
For proper repair and maintenance, it is important to be thoroughly familiarized with this manual. It is recommended that this manual always be kept in a handy place for quick and easy reference.
All the contents of this manual, including photographs, drawings, and specifications, are the latest available at the time of printing. As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Mazda dealers. This manual should be kept up-to-date.

Mazda Motor Corporation reserves the right to alter the specifications and contents of this manual without obligation or advance notice.

Mazda Motor Corporation
HIROSHIMA JAPAN

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GENERAL INFORMATION

83U0GX-001

IMPORTANT INFORMATION

BASIC ASSUMPTIONS

This workshop manual assumes that you have and know how to properly use certain special tools which are necessary for the safe and efficient performance of service operations on Mazda vehicles. The manual also assumes that you are generally familiar with automobile systems and basic service and repair procedures. You should not attempt to use this manual unless these assumptions are correct and you understand the consequences described below.

SAFETY RISK

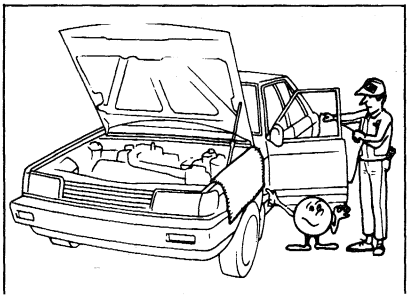
This manual contains certain notes, warnings, etc., which you should carefully read and follow in order to eliminate the risk of personal injury to yourself or others and the risk of improper service which may damage the vehicle or render it unsafe. The fact that there are not such notes, etc., with respect to any specific service method does not mean that there is no possibility that personal safety or vehicle safety will be jeopardized by the use of incorrect methods or tools.

POSSIBLE LOSS OF WARRANTY

The manufacturer's warranty on Mazda vehicles and engines can be voided if improper service or repairs are performed by persons other than an authorized Mazda dealer.

FUNDAMENTAL PROCEDURES

As you read through the procedure, you will come across NOTES, CAUTIONS, and WARNINGS. Each one is there for a specific purpose. **NOTES** give you **added information** that will help you to complete a particular procedure. **CAUTIONS** are given to prevent you from making an error that could **damage the vehicle. WARNINGS** remind you to be especially careful in those areas where carelessness can cause **personal injury.** The following list contains some general WARNINGS that you should follow when you work on a vehicle.



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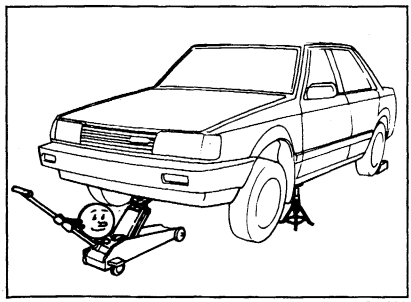
PROTECTION OF THE VEHICLE

Always be sure to cover fenders, seats, and floor areas before starting work.



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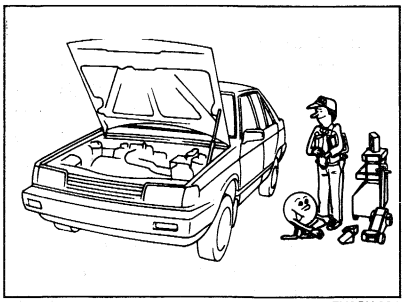
A WORD ABOUT SAFETY

The following precautions must be followed when jacking up the vehicle.

1. Block wheels.
2. Use only specified jacking positions.
3. Support vehicle with safety stands (rigid racks).

Start the engine only after making certain the engine compartment is clear of tools and people.



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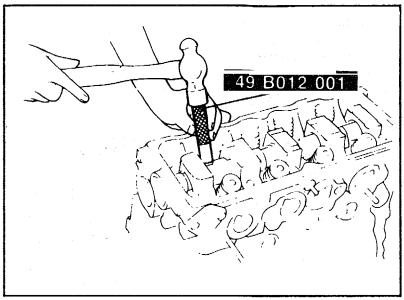
PREPARATION OF TOOLS AND MEASURING EQUIPMENT

Be sure that all necessary tools and measuring equipment are available before starting work activity.



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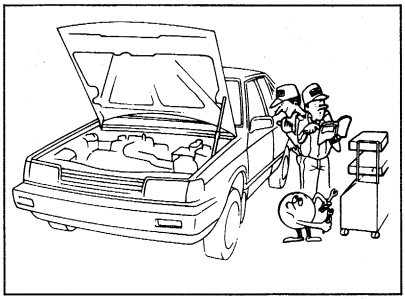
SPECIAL TOOLS

Use special tools when they are required.



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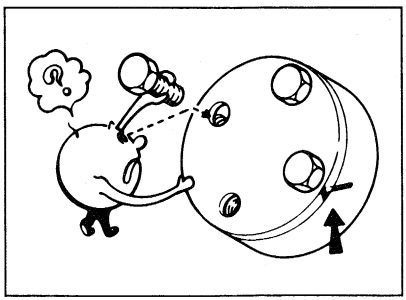
REMOVAL OF PARTS

While correcting a problem, try also to determine the cause. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement or repair.



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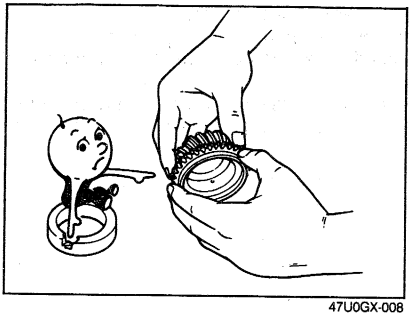
DISASSEMBLY

If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be disassembled in a way that will not affect their performance or external appearance and can be identified so that reassembly can be performed efficiently.



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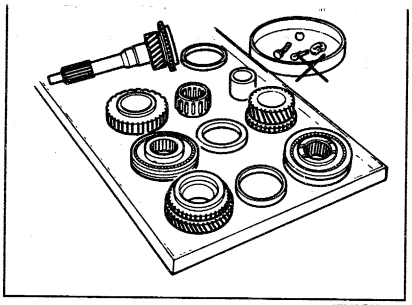
DISASSEMBLY

1. Inspection of parts

Each part when removed should be carefully inspected for malfunctioning, deformation, damage or other problems.



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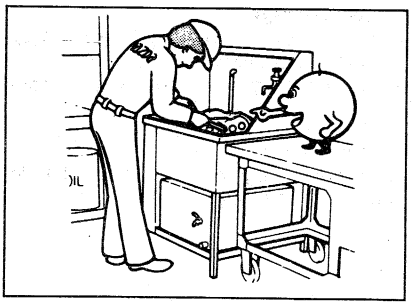
2. Arrangement of parts

All disassembled parts should be carefully arranged for reassembly.

Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.



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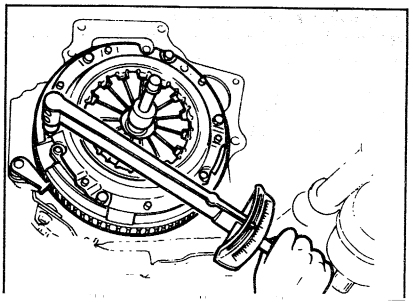
3. Cleaning parts for reuse

All parts to be reused should be carefully and thoroughly cleaned by the appropriate method.



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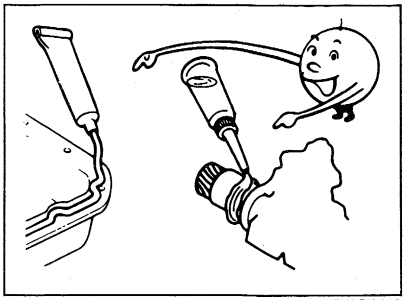
REASSEMBLY

Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.

If removed, these parts should be replaced with new ones.

1. Oil seals
2. Gaskets
3. O-rings
4. Lock washers
5. Cotter pins (split pins)
6. Nylon nuts



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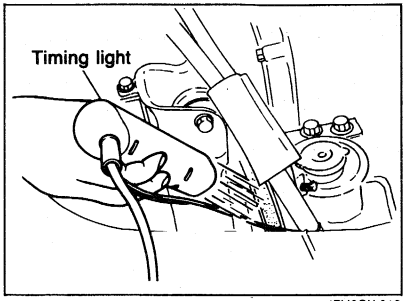
Depending on where they are;
1. Sealant should be applied to gaskets
2. Oil should be applied to moving components of parts
3. Specified oil or grease should be applied at the prescribed locations (oil seals, etc.) before assembly.



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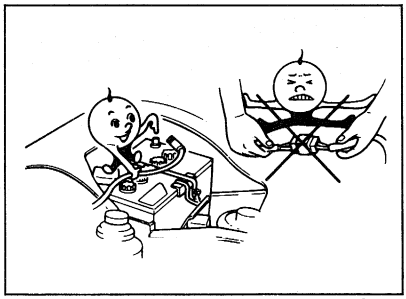
ADJUSTMENTS
Use gauges and testers to make adjustments to standard values.



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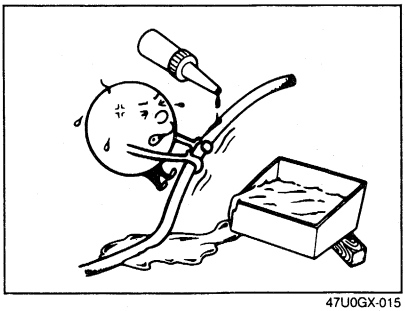
ELECTRICAL SYSTEM
Be sure to disconnect the battery cable from the negative (–) terminal of the battery.
Never pull on the wiring when disconnecting connectors.
Locking connectors must be heard to click for the connector to be secure.
Handle sensors and relays carefully. Be careful not to drop them or hit them against other parts.



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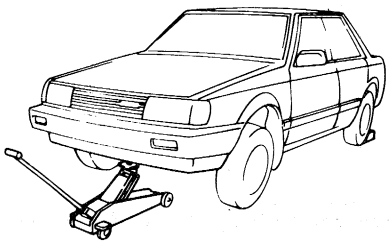
RUBBER PARTS AND TUBING
Always prevent gasoline or oil from touching rubber parts or tubing.

JACK AND SAFETY STAND (RIGID RACK) POSITIONS

FRONT

Jack position:
At the front of the engine mount member



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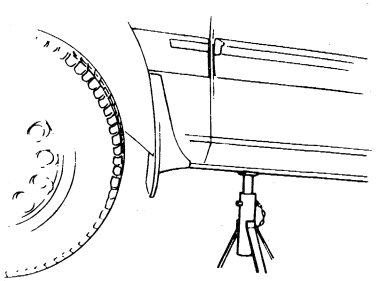
Safety stand positions:
On both side sills (front)



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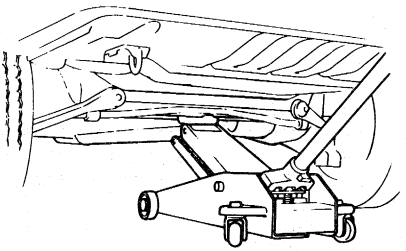
REAR

Jack position:
At the center of the rear crossmember (2WD)
At the rear differential (4WD)



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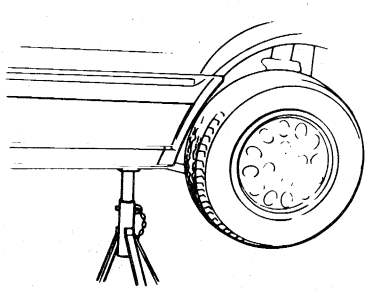
Safety stand positions:
On both side sills (rear)



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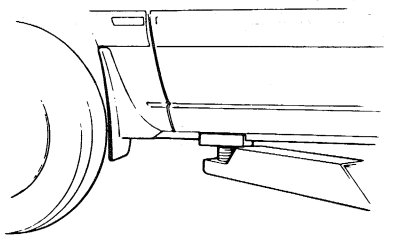
VEHICLE LIFT (2-SUPPORT TYPE) POSITIONS

Front
On both side sills



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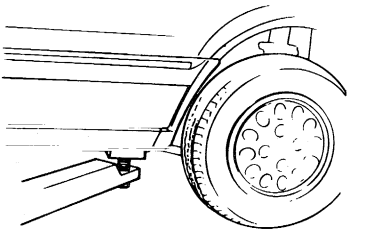
REAR
On both side sills



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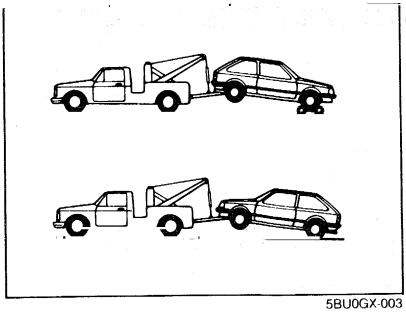

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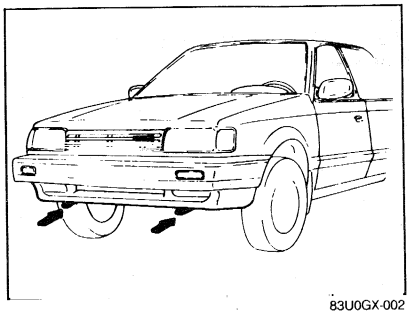
TOWING

Proper towing equipment is necessary to prevent damage to the vehicle during any towing operation. Laws and regulations applicable to vehicles in tow must always be observed.
Release the parking brake, place the shift lever in neutral, and set the ignition key in the "ACC" position. As a rule, towed vehicles should be pulled with the drive wheels off the ground.



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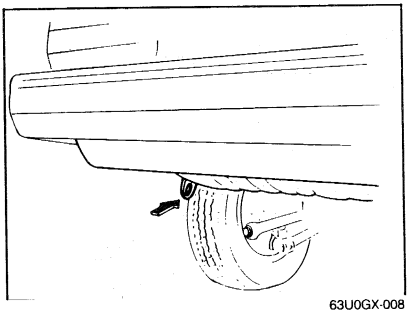
If excessive vehicle damage or other conditions prevent towing a vehicle with its drive wheels up, use wheel dollies. With all four wheels on the ground, the vehicle may be towed only forward. In this case, it cannot be towed at a speed exceeding 56 km/h (35 mph) for more than 80 km (50 miles) without danger of damaging the transaxle.

If the towing speed will exceed 56 km/h (35 mph), or if the towing distance will exceed 80 km (50 miles), use either of these two methods:
1. Place the front wheels on dollies.
2. Tow with the front wheels raised.



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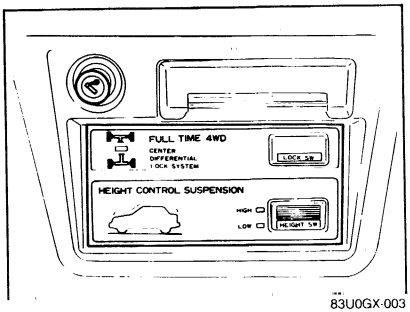
CAUTION

a) The power assistance for the brakes and steering will be in-operable while the engine is off.

b) When either towing hooks or chains are used, always pull the cable or chain straight away from the hook and do not apply any sideways force to it. To further help prevent damage, do not take up slack too quickly in the cable or chain.

c) The rear towing hook should be used only in an emergency situation, (e.g., to pull the vehicle from a ditch, a snowbank, or mud).



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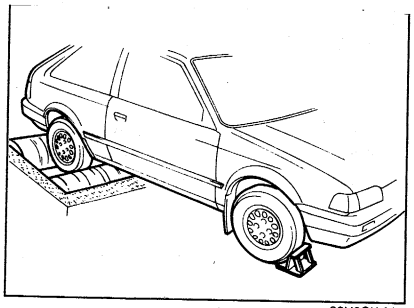
d) (4WD model)
The center differential must never be in "Lock".



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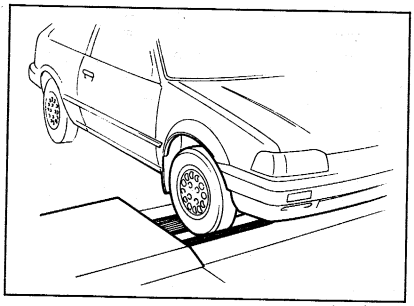

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MAINTENANCE NOTES (4WD MODEL)

If a speedometer tester or brake tester is used, **unlock the center differential**, and also note the followings.

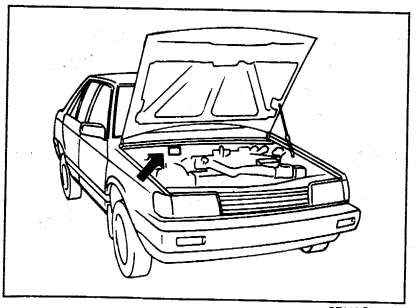
Speedometer Tester

- Place the rear wheels on the rollers
- Be sure to block the front wheels
- Shift to 2nd gear, carefully engage the clutch at low engine rpm, and increase engine speed gradually
- After completing the test, do not brake suddenly.

Brake Tester

- Place the wheels to be measured on the rollers.
- Shift to neutral

CHASSIS NUMBER LOCATION



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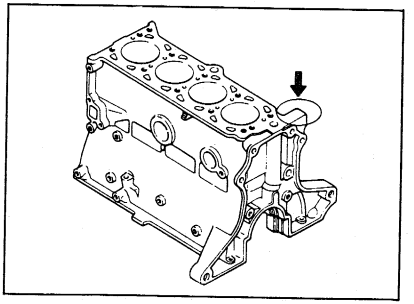
ENGINE MODEL AND NUMBER LOCATION



ABBREVIATIONS

AAS	Air adjust screw
AAV	Anti-afterburn valve
ABDC	After bottom dead center
ACC	Accessories
A/C	Air conditioner
ACV	Air control valve
ASA	Adjustable shock absorber
ASS'Y	Assembly
ATDC	After top dead center
ATF	Automatic transmission fluid
ATX	Automatic transaxle
BAC	Bypass air control
BBDC	Before bottom dead center
BTDC	Before top dead center
CPU	Central processing unit
CSD	Cold start device
DOHC	Double overhead camshaft
EGI	Electrical gasoline injection
EGR	Exhaust gas recirculation
E/L	Electrical load
ELR	Emergency locking retractor
EX	Exhaust
Fig	Figure
IC	Integrated circuit
IG/IGN	Ignition
IN	Intake
INT	Intermittent
ISC	Idle speed control
JB	Joint Box
LH	Left hand
M	Motor
MAS	Mixture adjust screw
MIL	Malfunction indicator light
M/T	Manual transmission
MTX	Manual transaxle
O/D	Overdrive
OFF	Switch off
ON	Switch on
PBV	Proportioning by-pass valve
PCV Valve	Positive crankcase ventilation valve
PS	Power steering
PW	Power window
QSS	Quick start system
RH	Right hand
Sec	Second(s)
SST	Special service tool
ST	Start
SW	Switch
TDC	Top dead center
4WD	4-wheel drive

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UNITS

N·m (m-kg, ft-lb)	Torque
rpm	Revolutions per minute
A	Ampere(s)
V	Volt(s)
Ω	Ohm(s)(resistance)
KPa (kg/cm^2, psi)	Pressure (usually positive)
mm Hg (in Hg)	Pressure (usually negative)
W	Watt

PRE-DELIVERY INSPECTION AND SCHEDULED MAINTENANCE SERVICES

63U00X-025

PRE-DELIVERY INSPECTION

PRE-DELIVERY INSPECTION TABLE

EXTERIOR

INSPECT and **ADJUST**, if necessary, the following items to specification:
- ☐ Glass, exterior bright metal and paint for damage
- ☐ Wheel lug bolts/nuts 88—118 N·m (9—12 m-kg, 65—87 ft-lb)
- ☐ Tire pressures Front 196 N (2.0 kg/cm², 28 psi)
  Rear 177 N (1.8 kg/cm², 26 psi)
- ☐ All weather strips for damage or detachment
- ☐ Operation of hood release and lock
- ☐ Operation of trunk lid, back door and fuel lid opener (if equipped)
- ☐ Door operation and alignment
- ☐ Headlight aim

INSTALL following parts:
- ☐ Wheel caps or rings (if equipped)
- ☐ Outside mirror (s)

UNDER HOOD-ENGINE OFF

INSPECT and **ADJUST**, if necessary, the following items to specification:
- ☐ Fuel, coolant and hydraulic lines, fittings, connections and components for leaks
- ☐ Engine oil level
- ☐ Power steering fluid level (if equipped)
- ☐ Brake master cylinder fluid level
- ☐ Clutch master cylinder fluid level (if equipped)
- ☐ Windshield washer reservoir fluid level
- ☐ Radiator coolant level and specific gravity

Protection	Specific gravity at 20°C (68°F)
Above −4°C (25°F)	1.028
Above −16°C (3°F)	1.054
Above −26°C (−15°F)	1.066
Above −40°C (−40°F)	1.078

- ☐ Tightness of battery terminals
- ☐ Manual transaxle oil level
- ☐ Drive belt(s) tension...Refer to section 1
- ☐ Accelerator cable for free movement

CLEAN spark plugs

INTERIOR

INSTALL the following parts:
- ☐ Rubber stopper for inside rearview mirror (if equipped)
- ☐ Fuse for accessories

CHECK the operation of the following items:
- ☐ Seat controls (sliding and reclining) and headrest
- ☐ Seat belts and warning system
- ☐ Ignition switch and steering lock
- ☐ Power window (if equipped)
- ☐ Inhibitor switch (ATX only)
- ☐ All lights, including warning and indicator lights
- ☐ Ignition key reminder buzzer (if equipped)
- ☐ Horn, wipers, and washers (front and rear, if equipped)
- ☐ Radio and antenna (if equipped)
- ☐ Center differential lock switch
- ☐ Cigarette lighter and clock (if equipped)
- ☐ Remote control outside mirror (S) (if equipped)
- ☐ Heater, defroster, and air conditioner at various mode selections (if equipped)
- ☐ Sunroof (if equipped)

ADJUST antenna trimmer on radio (if equipped)

CHECK the following items:
- ☐ Presence of spare fuse
- ☐ Upholstery and interior finish

CHECK and **ADJUST**, if necessary, the following items:
- ☐ Operation and fit of windows
- ☐ Pedal height and free play of brake and clutch pedal

		Pedal height mm (in)	Free play mm (in)
Clutch pedal	2WD	214.5–219.5 (8.44—8.64)	9—15 (0.35—0.59)
	4WD	229—234 (9.02—9.22)	0.6—3.0 (0.02—0.12)
Brake pedal		214—219 (8.43—8.63)	4—7 (0.16—0.28)

- ☐ Parking brake
  5—7 notches/98 N (10 kg, 22 lb)

UNDER HOOD-ENGINE RUNNING AT OPERATING TEMPERATURE

CHECK following items:
- ☐ Operation of throttle sensor
- ☐ Automatic transaxle fluid level
- ☐ Initial ignition timing...BTDC 2 ± 1° Non turbo
  BTDC 12° ± 1° Turbo

ON HOIST

CHECK the following items:
- ☐ Underside fuel, coolant and hydraulic lines, fittings, connections, and components for leaks
- ☐ Tires for cuts or bruises
- ☐ Steering linkage, suspension, exhaust systems, and all underside hardware for looseness or damage

REMOVE protective cover from brake disc (if equipped)

ROAD TEST

CHECK the following items:
- ☐ Brake operation
- ☐ Clutch operation (MTX only)
- ☐ Steering control
- ☐ Operation of meters and gauge
- ☐ Squeaks, rattles, or unusual noises
- ☐ Engine general performance
- ☐ Emergency locking retractors
- ☐ Cruise control system (if equipped)

AFTER ROAD TEST

REMOVE seat and floor mat protective covers

CHECK for necessary owner information materials, tools, and spare tire in vehicle

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SCHEDULED MAINTENANCE SERVICES

Follow the Schedule 1 (Normal Driving Condition) if you mainly operate your vehicle where none of the following conditions apply. Contrary follow the Schedule 2 (Unique Driving Condition) if one or more them apply;

- Repeated short distance driving.
- Driving in dusty condition.
- Driving in extended use of brakes.
- Driving in areas using road salt or other corrosive materials.
- Driving on rough and/or muddy road.
- Extended periods of idling and/or low speed operation.
- Driving for a prolonged period in cold temperature and/or extremely humid climates.

Schedule 1 (Normal Driving Condition)

MAINTENANCE INTERVALS / MAINTENANCE OPERATION		Number of months or miles (kilometers), whichever comes first									Service data and inspection points	Page
		Months	7.5	15	22.5	30	37.5	45	52.5	60		
		x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60		
		x 1,000 km	12	24	36	48	60	72	84	96		
Drive belts						I				I	• Check for damage • Tension	1A—6 1B—6
Engine oil	Non turbo		R	R	R	R	R	R	R	R	• Oil pan capacity: B6 EGI engine 3.0 liters (3.2 US qt, 2.5 Imp qt)	1A—5
	Turbo		Replace every 5,000 miles (8,000 km) or 5 months								B6 DOHC engine 3.2 liters (3.4 US qt, 2.8 Imp qt)	1B—5
Oil filter	Non turbo		R	R	R	R	R	R	R	R	• Oil filter capacity: 0.3 liter (0.32 US qt, 0.26 Imp qt)	2A—4 2B—4
	Turbo		Replace every 5,000 miles (8,000 km) or 5 months									
Engine timing belt *1			Replace the timing belt every 60,000 miles (96,000 km)								—	1A—11 1B—11
Air cleaner element						R				R	—	1A—5 1B—5
Spark plugs						R				R	• Plug gap: 1.0—1.1 mm (0.039—0.043 in) • Recommended spark plugs	1A—8 1B—8 5—29
Cooling system				I		I		I		I	• Hoses for cracks or wear • Coolant level • Coolant capacity:	3A—4 3B—4
Engine coolant						R				R	B6 EGI: 5.0 liters (5.3 US qt, 4.4 Imp qt)..MTX 6.0 liters (6.3 US qt, 5.3 Imp qt)..ATX B6 DOHC 6.0 liters (6.3 US qt, 5.3 Imp qt)	3A—4 3B—4
Fuel filter										R	—	1A—45 1B—51

	B6 EGI	B6 DOHC
NGK	BPR5ES-11	BCPR6E-11
NIPPON DENSO	W16EXR-U11	Q20PR-U11
CHAMPION	RN11YC4	—

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Schedule 1 (Normal Driving Condition)

MAINTENANCE INTERVALS / MAINTENANCE OPERATION	Number of months or miles (kilometers), whichever comes first									Service data and inspection points	Page
	Months	7.5	15	22.5	30	37.5	45	52.5	60		
	x 1,000 miles	7.5	15	22.5	30	37.5	45	52.5	60		
	x 1,000 km	12	24	36	48	60	72	84	96		
Idle speed					A*2				A*2	• 850 ± 50 rpm...ATX P range ...MTX N range	—
Fuel lines					1*3				1*3	• Fittings, connections and components for leaks	4A—33 4B—36
Brake line hoses and connection			I		I		I		I	• Proper attachment and connections	—
Clutch pedal			I		I		I		I	• Operation • Pedal height: 214.5 $^{+5}_{-0}$ mm (8.44 $^{+0.2}_{-0}$ in) 2WD model 229 $^{+5}_{-0}$ mm (9.02 $^{+0.2}_{-0}$ in) 4WD model • Free play: 9—15 mm (0.35—0.59 in) 2WD model 0.6—3.0 mm (0.02 0.12 in) 4WD model	6—5 6—9
Drum brake					I				I	• Wheel cylinder operation and leakage • Lining for wear or damage • Thickness of lining minimum...1.0 mm (0.039 in) • Drum inner diameter maximum...201 mm (7.91 in)	11—38
Disc brake			I		I		I		I	• Caliper operation • Thickness of disc plate minimum...Front 16 mm (0.63 in) Rear 9 mm (0.35 in) • Thickness of pad minimum...Front 2.0 mm (0.079 in) Rear 1.0 mm (0.039 in)	11—27
Steering operation and linkage					I				I	• Operation and looseness • Fluid leakage or oozing • Free play...0—30 mm (0—1.18 in)	10—7 10—9
Front suspension ball joint					I				I	• Damage, looseness and grease leakage	—
Driveshaft dust boots					I				I	• Cracking and damage	9—7
Bolts and nuts on chassis and body			T				T			• Retighten all loose nuts and bolts	—
Exhaust system heat shield					I				I	• Insulation clearance	4A—71 4B—86
Transfer oil (4WD model)		R			R				R	• Oil capacity...0.5 liter (0.53 US qt, 0.44 Imp qt)	7C—7
Rear axle oil (4WD model)									R	• Oil capacity...0.65 liter (0.69 US qt, 0.57 Imp qt)	9—42

Note
I ...Inspect, and if necessary correct, clean or replace
A...Adjust
R...Replace or change
T...Tighten
L...Lubricate

After 60 months or 60,000 miles (96,000 km), continue to follow the described maintenance items and intervals periodically.

As for * marked items in this maintenance chart, please pay attention to the following points.
*1 Replacement of timing belt is required at every 60,000 miles (96,000 km). Failure to replace the timing belt may result in damage to the engine.
*2 This maintenance operation is required for all states except California. However we do recommended that this operation be performed on California vehicles as well.
*3 This maintenance operation is recommended by Mazda. However, this maintenance is not necessary for emission warranty coverage or manufacturer recall liability.

Schedule 2 (Unique Driving Condition)

MAINTENANCE OPERATION \ MAINTENANCE INTERVALS		Number of months or miles (kilometers), whichever comes first												Service data and inspection points	Page
	Months	5	10	15	20	25	30	35	40	45	50	55	60		
	x 1,000 miles	5	10	15	20	25	30	35	40	45	50	55	60		
	x 1,000 km	8	16	24	32	40	48	56	64	72	80	88	96		
Drive belt							I						I	• Check for damage • Tension	1A—6 1B—6
Engine oil	Non turbo	R	R	R	R	R	R	R	R	R	R	R	R	• Oil pan capacity: B6 EGI engine...3.0 liters (3.2 US qt, 2.6 Imp qt)	1A—5
	Turbo	Replace every 3,000 miles (5,000 km) or 3 months												B6 DOHC engine...3.2 liters (3.4 US qt, 2.8 Imp qt)	1B—5
Oil filter	Non turbo Turbo	R	R	R	R	R	R	R	R	R	R	R	R	• Oil filter capacity: 0.3 liter (0.32 US qt, 0.26 Imp qt)	2A—4 2B—4
Engine timing belt *1		Replace the timing belt every 60,000 miles (96,000 km)												—	1A—11 1B—11
Air cleaner element				I*2			R			I*2			R		1A—5 1B—5
Spark plugs							R						R	• Plug gap: 1.0—1.1 mm (0.039—0.043 in) • Recommended spark plugs B6 EGI: NGK BPR5ES-11; NIPPON DENSO W16EXR-U11; CHAMPION RN11YC4 B6 DOHC: NGK BCPR6E-11; NIPPON DENSO Q20PR-U11	1A—8 1B—8 5—29
Cooling system				I			I			I			I	• Hoses for cracks or wear • Coolant level	3A—4 3B—4
Engine coolant							R						R	• Coolant capacity B6 EGI: 5.0 liters (5.3 US qt, 4.4. Imp qt)...ATX 6.0 liters (6.3 US qt, 5.3 Imp qt)...ATX B6 DOHC 6.0 liters (6.3 US qt, 5.3 Imp qt)	3A—4 3B—4
Idle speed							A*2						A*2	• 850 ± 50 rpm...ATX P range ...MTX N range	—
Fuel filter													R	—	1A—45 1B—45
Fuel lines							I*3						I	• Fittings connections and components for leaks	4A—33 4B—36
Brake line hoses and connection				I			I			I			I	• Proper attachment and connections	—
Brake fluid							R						R	• Brake fluid FMVSS116 DOT3 or DOT4 or SAEJ1703a	11—11

Schedule 2 (Unique Driving Condition)

MAINTENANCE INTERVALS / MAINTENANCE OPERATION	Number of months or miles (kilometers), whichever comes first												Service data and inspection points	Page
	Months	5	10	15	20	25	30	35	40	45	50	55	60	
	x 1,000 miles	5	10	15	20	25	30	35	40	45	50	55	60	
	x 1,000 km	8	16	24	32	40	48	56	64	72	80	88	96	
Clutch pedal				I			I			I			I	• Operation • Pedal height: 214.5 $^{+5}_{-5}$ mm (8.44 $^{+0.20}_{-0.20}$ in) 2WD model 229 $^{+5}_{-5}$ mm (9.02 $^{+0.20}_{-0.20}$ in) 4WD model • Free play 9—15 mm (0.35—0.59 in) 2WD model 0.6—3.0 mm (0.02—0.12 in) 4WD model	6—5 6—9
Drum brake							I						I	• Wheel cylinder operation and leakage • Lining for wear or damage • Thickness of lining minimum 1.0 mm (0.039 in) • Drum inner diameter maximum 201 mm (7.91 in)	11—29
Disc brake				I			I			I			I	• Caliper operation • Thickness of pad minimum Front...2.0 mm (0.79 in) Rear...1.0 mm (0.039) • Thickness of disc plate minimum Front...16 mm (0.63 in) Rear...9 mm (0.35 in)	11—27
Steering operation and linkage														• Operation and looseness	10—7
Front suspension ball joint						I			I			I		• Fluid leakage or oozing • Free play...0—30 mm (0—1.18 in)	10—9
Front and rear wheel bearing							I						I	• Damage looseness and grease leakage	—
Drive shaft dust boots													L	• Lubricate with lithium grease (NLGI No. 2)	9—28
Bolts and nuts on chassis and body				T			T			T			T	• All friction surfaces • Cracking and damage • Retighten all loose nuts and bolts	9—33 9—7 —
Exhaust system heat shield													I	• Insulator clearance	4A—71 4B—86
Transfer oil (4WD model)	R					R			R			R		• Oil capacity...0.5 liter (0.53 US qt, 0.44 Imp qt)	7C—7
Rear axle oil (4WD model)													R	• Oil capacity...0.65 liter (0.69 US qt, 0.57 Imp qt)	9—42

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