

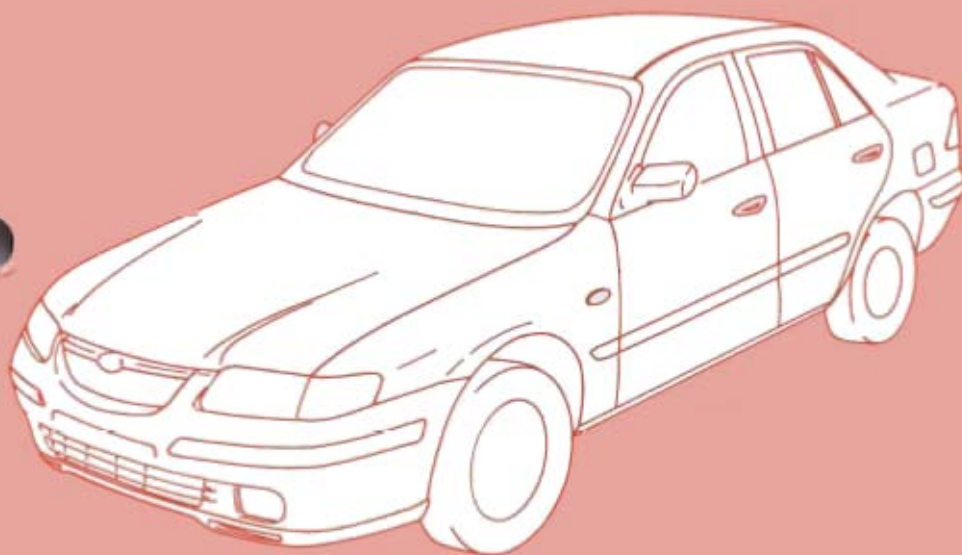
# Mazda

## 626

## 626 Station Wagon

### Workshop Manual Supplement

JMZ G F 1 \*  
JMZ G W 1 \*  
JMZ G W 6 \*



9/1999 1671-1E-99I

# MAZDA

European (L.H.D. U.K.) specs.

## **WARNING**

Servicing a vehicle can be dangerous. If you have not received service-related training, the risks of injury, property damage, and failure of servicing increase. The recommended servicing procedures for the vehicle in this workshop manual were developed with Mazda-trained technicians in mind. This manual may be useful to non-Mazda trained technicians, but a technician with our service-related training and experience will be at less risk when performing service operations. However, all users of this manual are expected to at least know general safety procedures.

This manual contains "Warnings" and "Cautions" applicable to risks not normally encountered in a general technician's experience. They should be followed to reduce the risk of injury and the risk that improper service or repair may damage the vehicle or render it unsafe. It is also important to understand that the "Warnings" and "Cautions" are not exhaustive. It is impossible to warn of all the hazardous consequences that might result from failure to follow the procedures.

The procedures recommended and described in this manual are effective methods of performing service and repair. Some require tools specifically designed for a specific purpose. Persons using procedures and tools which are not recommended by Mazda Motor Corporation must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

The contents of this manual, including drawings and specifications, are the latest available at the time of printing, and Mazda Motor Corporation reserves the right to change the vehicle designs and alter the contents of this manual without notice and without incurring obligation.

Parts should be replaced with genuine Mazda replacement parts or with parts which match the quality of genuine Mazda replacement parts. Persons using replacement parts of lesser quality than that of genuine Mazda replacement parts must satisfy themselves thoroughly that neither personal safety nor safety of the vehicle will be jeopardized.

Mazda Motor Corporation is not responsible for any problems which may arise from the use of this manual. The cause of such problems includes but is not limited to insufficient service-related training, use of improper tools, use of replacement parts of lesser quality than that of genuine Mazda replacement parts, or not being aware of any revision of this manual.

# Mazda 626 626 Station Wagon Workshop Manual Supplement

## FOREWORD

This manual contains the changes and/or additions relating to on vehicle service and diagnosis procedures for the Mazda 626 and 626 Station Wagon.

For proper repair and maintenance, a thorough familiarization with this manual is important, and it should always be kept in a handy place for quick and easy reference.

All the contents of this manual, including 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.

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**Mazda Motor Corporation  
HIROSHIMA, JAPAN**

## APPLICATION:

This manual is applicable to vehicles beginning with the Vehicle Identification Numbers (VIN), and related materials shown on the following page.

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Title		Section
<b>General Information</b>		<b>G1</b>
<b>Engine</b>	<b>FP, FS, FS (Hi-power)</b>	<b>B1</b>
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Lubrication System		<i>B</i>
Cooling System		<i>E</i>
<b>Fuel and Emission Control Systems</b>	<b>FP, FS, FS (Hi-power)</b>	<b>F1</b>
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<b>Engine Electrical System</b>		<b>G</b>
Clutch		<i>H</i>
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<b>Technical Data</b>		<b>TD</b>
<b>Special Tools</b>		<b>ST</b>

There are explanations given only for the sections marked with shadow (■).

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1671-1E-99I

## VEHICLE IDENTIFICATION NUMBERS (VIN)

### U.K. specs.

JMZ GF12P20#	400001 —	JMZ GF14R20#	400001 —
JMZ GF12F20#	400001 —	JMZ GF12S*0#	400001 —
JMZ GF12R20#	400001 —	JMZ GW19F20#	200001 —
JMZ GF14P20#	400001 —	JMZ GW19S20#	200001 —
JMZ GF14F*0#	400001 —	JMZ GW19R20#	200001 —
JMZ GF14S*0#	400001 —		

### European (L.H.D.) specs.

JMZ GF12P20#	400001 —	JMZ GW19P20#	200001 —
JMZ GF12P2Y#	400001 —	JMZ GW19P2Y#	200001 —
JMZ GF12F50#	400001 —	JMZ GW69P2Y#	200001 —
JMZ GF12F5Y#	400001 —	JMZ GW69P20#	200001 —
JMZ GF12F20#	400001 —	JMZ GW19F50#	200001 —
JMZ GF12F2Y#	400001 —	JMZ GW19F5Y#	200001 —
JMZ GF12S50#	400001 —	JMZ GW69F5Y#	200001 —
JMZ GF12S5Y#	400001 —	JMZ GW69F50#	200001 —
JMZ GF12S20#	400001 —	JMZ GW19F20#	200001 —
JMZ GF12S2Y#	400001 —	JMZ GW19F2Y#	200001 —
JMZ GF12T2Y#	400001 —	JMZ GW69F2Y#	200001 —
JMZ GF12R2Y#	400001 —	JMZ GW69F20#	200001 —
JMZ GF12T20#	400001 —	JMZ GW19S50#	200001 —
JMZ GF12R20#	400001 —	JMZ GW19S5Y#	200001 —
JMZ GF14P20#	400001 —	JMZ GW69S5Y#	200001 —
JMZ GF14P2Y#	400001 —	JMZ GW69S50#	200001 —
JMZ GF14F50#	400001 —	JMZ GW19S20#	200001 —
JMZ GF14F5Y#	400001 —	JMZ GW19S2Y#	200001 —
JMZ GF14F20#	400001 —	JMZ GW69S2Y#	200001 —
JMZ GF14F2Y#	400001 —	JMZ GW69S20#	200001 —
JMZ GF14S50#	400001 —	JMZ GW69T2Y#	200001 —
JMZ GF14S5Y#	400001 —	JMZ GW69R2Y#	200001 —
JMZ GF14S20#	400001 —	JMZ GW19T2Y#	200001 —
JMZ GF14S2Y#	400001 —	JMZ GW19R2Y#	200001 —
JMZ GF14T2Y#	400001 —	JMZ GW69T20#	200001 —
JMZ GF14R2Y#	400001 —	JMZ GW69R20#	200001 —
JMZ GF14T20#	400001 —	JMZ GW19T20#	200001 —
JMZ GF14R20#	400001 —	JMZ GW19R20#	200001 —

## RELATED MATERIALS

626 Training Manual (Europe) .....	3303-10-97D
626 Workshop Manual (Europe) .....	1577-10-97D
626 Station Wagon Workshop Manual Supplement (Europe) .....	1603-10-97J
626 626 Station Wagon Workshop Manual Supplement RF Turbo .....	1614-10-98D
626 626 Station Wagon Wiring Diagram (Europe (L.H.D.)) .....	5468-1*-99I
626 626 Station Wagon Wiring Diagram (UK) .....	5469-1*-99I
Engine Workshop Manual FP FS .....	1579-10-98D
Engine Workshop Manual RF Turbo .....	1615-10-98D
Manual Transaxle Workshop Manual G25M-R .....	1441-10-94F
ATX Workshop Manual GF4A-EL .....	1414-10-93I
ATX Workshop Manual GF4A-EL .....	1393-10-93H
ATX Workshop Manual FN4A-EL .....	1623-10-98E
626 Bodyshop Manual .....	3310-10-97D
626 Station Wagon Bodyshop Manual Supplement	3317-10-97J

\*: Indicates the printing location

E—Europe

O—Japan

# GENERAL INFORMATION

GI

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# HOW TO USE THIS MANUAL

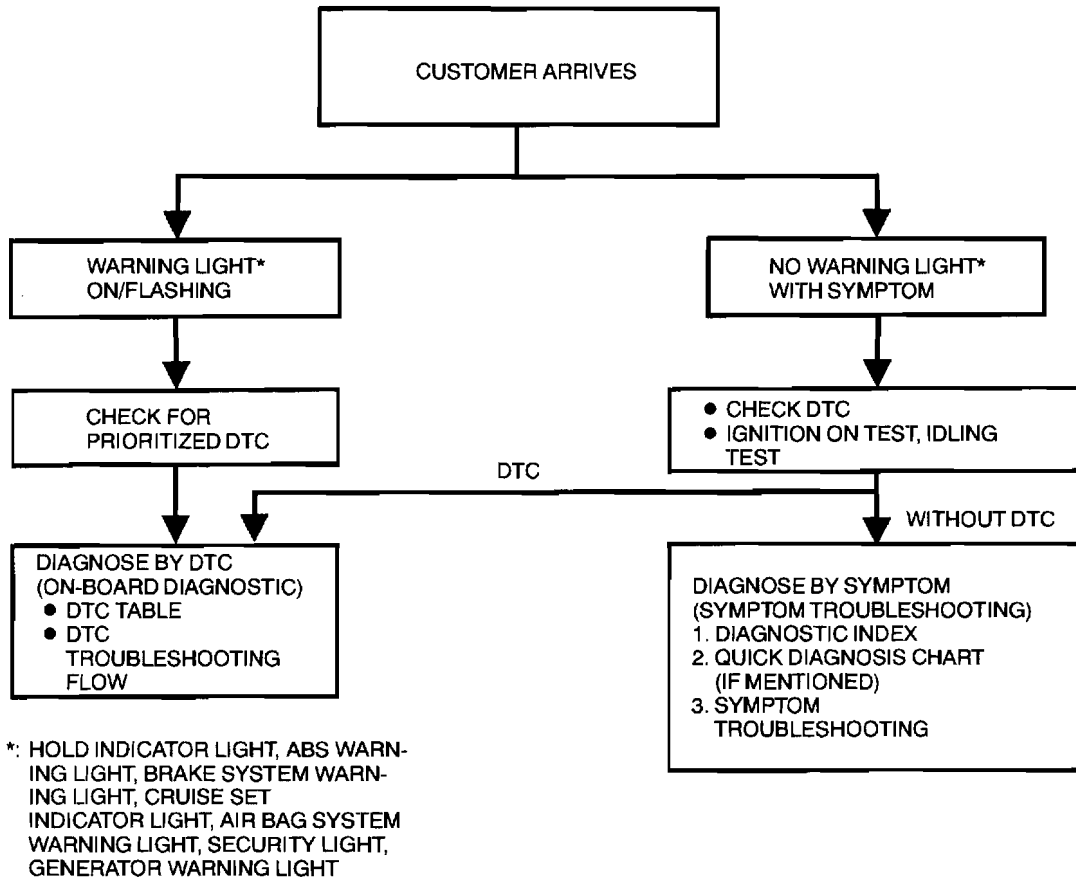
## HOW TO USE THIS MANUAL

### RANGE OF TOPICS

- This manual indicates only changes/additions, as it is the supplemental for the related materials. Therefore it may not contain the necessary referential service procedures to operate the services indicated in this manual. Only the referential section, e.g. (See Section B), is indicated, so refer to the appropriate section of the related materials for details.

### TROUBLESHOOTING PROCEDURE

#### Basic flow of troubleshooting



#### DTC troubleshooting flow (on-board diagnostic)

- Diagnostic trouble codes (DTCs) are important hints for repairing malfunctions that are difficult to simulate. Perform the specific DTC diagnostic inspection to quickly and accurately diagnose the malfunction.
- The on-board diagnostic function is used during inspection. When a DTC is shown specifying the cause of a malfunction, continue the diagnostic inspection according to the items indicated by the on-board diagnostic function.

#### Diagnostic index

- The diagnostic index lists the symptoms of specific malfunctions. Select the symptoms related or most closely relating to the malfunction.

#### Quick diagnosis chart (If mentioned)

- The quick diagnosis chart lists diagnosis and inspection procedures to be performed specifically relating to the cause of the malfunction.

#### Symptom troubleshooting

- Symptom troubleshooting quickly determines the location of the malfunction according to symptom type.

# HOW TO USE THIS MANUAL

## Procedures for Use

### Using the basic inspection (section K)

- Perform the basic inspection procedure before symptom troubleshooting.
- Perform each step in the order shown.
- The reference column lists the location of the detailed procedure for each basic inspection.
- Although inspections and adjustments are performed according to the reference column procedures, if the cause of the malfunction is discovered during basic inspection, continue the procedures as indicated in the remarks column.

GI

	SHOWS INSPECTION ORDER		SHOWS ITEM NAMES FOR DETAILED PROCEDURES		SHOW POINTS REQUIRING ATTENTION BASED ON INSPECTION RESULTS
<b>AUTOMATIC TRANSAXLE BASIC INSPECTION</b>					
STEP	INSPECTION	Yes	No	ACTION	
1	<ul style="list-style-type: none"> <li>• Turn ignition switch is on.</li> <li>• Does O/D OFF indicator light (illuminate/go out) correspond to O/D OFF switch position (on/off)?</li> </ul>	Go to next step.	Perform symptom troubleshooting No.26 "O/D OFF indicator light does not illuminate when O/D OFF switch is turned to on", or No.27 "O/D OFF indicator light illuminates when O/D OFF switch is not turned to on".		
2	<ul style="list-style-type: none"> <li>• Turn ignition switch is on.</li> <li>• When selector lever is moved, are selector lever position and indicator aligned? Also, when other ranges are selected from N or P during idling, does vehicle creep within 1 to 2 seconds?</li> </ul>	Go to next step.	Inspect selector lever.	Repair or replace defective areas.	
3	<ul style="list-style-type: none"> <li>• Inspect the ATF color condition.</li> <li>• Are ATF color and odor normal?</li> </ul>	Go to next step.	Repair or replace any defective parts according to inspection result.	Flush ATX and cooler line as necessary.	
4	<ul style="list-style-type: none"> <li>• Perform line pressure test. See K-2 Line Pressure Test</li> <li>• Is line pressure okay?</li> </ul>	Go to next step.	Adjust accelerator cable as necessary.	Repair or replace any defective parts according to inspection result.	
5	<ul style="list-style-type: none"> <li>• Perform stall test. See K-2 Stall Speed Test</li> <li>• Is stall speed is okay?</li> </ul>	Go to next step.	Repair or replace defective parts according to inspection result.		



# HOW TO USE THIS MANUAL

## Using the DTC troubleshooting flow

- DTC troubleshooting flow shows diagnostic procedures, inspection methods, and proper action to take for each DTC.

**TROUBLE CONDITION**

DETECTION CONDITION describes the condition under which the DTC is detected.

**DTC P0103**

<b>DTC P0103</b>	<b>MAF circuit high input</b>	
<b>DETECTION CONDITION</b>	PCM monitors input voltage from TP sensor after ignition key is turned on. If input voltage at PCM terminal 68 is above 8.25 V, PCM determines that TP circuit has a malfunction.	
<b>POSSIBLE CAUSE</b>	<p><b>Diagnostic support note</b></p> <ul style="list-style-type: none"> <li>This is a continuous monitor (CCM).</li> <li>MIL illuminates if PCM detects the above malfunction condition during first drive cycle. Therefore, PENDING CODE is not available.</li> <li>FREEZE FRAME DATA is available.</li> <li>DTC is stored in the PCM memory.</li> </ul> <ul style="list-style-type: none"> <li>MAF sensor malfunction</li> <li>Connector or terminal malfunction</li> <li>Open circuit in wiring between MAF sensor terminal D and PCM terminal 36</li> <li>Open circuit in MAF sensor ground circuit</li> </ul>	

POSSIBLE CAUSE describes possible point(s) of malfunction

Indicates the circuit to be inspected (F1, F2 and K section)

Indicates the inspection step No. to be performed (F1, F2 and K section)

Indicates the connector related to the inspection

STEP shows the order of troubleshooting

**Diagnostic procedure**

STEP	INSPECTION	ACTION
1	<b>VERIFY FREEZE FRAME DATA HAS BEEN RECORDED</b> • Has FREEZE FRAME DATA been recorded?	Yes Go to next step.
		No Record FREEZE FRAME DATA on repair order, then go to next step.
2	<b>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</b> • Are related Service Bulletins and/or on-line repair information available?	Yes Perform repair or diagnosis according to available repair information. If vehicle is not repaired, then go to next step.
		No Go to next step.
3	<b>VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT</b> • Connect NGS tester to DLC-2. • Start engine. • Access MAF V PID using NGS tester. • Is MAF V PID within 0.2 – 8.3 V?	Yes Intermittent concern is existing. Go to INTERMITTENT CONCERNS TROUBLESHOOTING procedure. See F1-33 INTERMITTENT CONCERN TROUBLESHOOTING
		No Go to next step.
4	<b>INSPECT POOR CONNECTION OF MAF SENSOR CONNECTOR</b> • Turn ignition key to OFF. • Disconnect MAF sensor connector. • Check for poor connection (damaged, pulled-out terminals, corrosion etc.). • Are there any malfunctions?	Yes Repair or replace terminals, then go to Step 8.

INSPECTION describes the method to quickly determine the failed part(s).

ACTION describes the appropriate action to take as according to the result (Yes/No).

Reference item(s) to perform ACTION.

## HOW TO USE THIS MANUAL

### Using the diagnosis index

- The symptoms of the malfunctions are listed in the diagnostic index for symptom troubleshooting.
- The exact malfunction symptoms can be selected by following the index.

GI

No.	TROUBLESHOOTING ITEM	DESCRIPTION	Page
1	Melting of main or other fuses	—	See F2-6 MELT NO.1 MAIN OR OTHER FUSE
2	Will not crank	Starter does not work	See F2-7 NO. 2 MIL COMES ON
3	Hard start/long crank/erratic start/erratic crank	Starter cranks engine at normal speed but engine requires excessive cranking time before starting.	See F2-8 NO. 3 WILL NOT CRANK
4	Engine stalls.      After start/at idle	Engine stops unexpectedly at idle and/or after start.	See F2-9 NO.4 HARD START/ LONG CRANK/ERRATIC CRANK
5	Cranks normally but will not start	Starter cranks engine at normal speed but engine will not run.	See F2-11 NO. 5 ENGINE-STALLS AFTER START/AT IDLE
6	Slow return to idle	Engine takes more time than normal to return to idle speed.	See F2-15 NO.6 CRANKS NORMALLY BUT WILL NOT START
7	Engine runs rough/rolling idle	Engine speed fluctuates between specified idle speed and lower speed and engine shakes excessively.	See F2-19 NO. 7 SLOW RETURN TO IDLE
8	Fast idle/runs on	Engine speed continues at fast idle after warm-up. Engine runs after ignition key is turned to OFF.	See F2-20 NO. 8 ENGINE RUNS ROUGH/ROLLING IDLE
9	Low idle/stalls during deceleration	Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.	See F2-23 NO 9 FAST IDLE/RUNS ON

# HOW TO USE THIS MANUAL

## Using the quick diagnosis chart

- The chart lists the relation between the symptom and the cause of the malfunction.
- The chart is effective in quickly narrowing down the relation between symptom and cause of the malfunction. also specifies the area of the common cause when multiple malfunction symptoms occur.
- The appropriate diagnostic inspection relating to malfunction cause as specified by the symptoms can be selected by looking down the diagnostic inspection column of the chart.

### ② PARTS WHICH MAY BE THE CAUSE OF PROBLEMS

**QUICK DIAGNOSIS CHART**

**PART WHICH MAY BE THE SYMPTOM**

Possible factor		Cooling fan seated improperly	Accelerator cable free play misadjustment	Fuel quality	Engine overheating	Air cleaner element clogged or restriction	Air leakage from intake-air system (Loose tubes, cracks, broken gaskets)	IAC valve improper operation	Throttle body malfunction	Vacuum leakage (Vacuum hose damage, misrouting)	Ignition coil malfunction (e.g. open, short or cracks)	Initial ignition timing misadjustment (CMP & crankshaft pulley misadjustment)	Spark plug malfunction	High-tension leads malfunction (Cracks, open, low resistance)	CMP sensor damaged (e.g. open or short circuits)
Troubleshooting item															
1	Melting of main or other fuses														
2	Will not crank														
3	Hard to start/long crank/erratic start/erratic crank			x		x	x			x			x	x	x
4	Engine stalls. After start/at idle			x	x	x	x	x		x	x	x	x	x	x
5	Cranks normally but will not start			x	x		x	x		x	x	x	x	x	x
6	Slow return to idle								x						
7	Engine runs rough/rolling idle			x	x		x	x		x		x	x	x	x
8	Fast idle/runs on		x												
9	Low idle/stalls during deceleration						x	x							
10	Engine stalls/quits. Acceleration/cruise			x	x	x	x		x	x			x		x
	Engine runs rough. Acceleration/cruise			x	x	x	x		x	x			x		x
	Misses. Acceleration/cruise			x	x	x	x		x	x			x		x
	Buck/jerk. Acceleration/cruise/ deceleration			x	x	x	x		x	x			x		x
	Hesitation/stumble. Acceleration			x	x	x	x		x	x			x		x
	Surges. Acceleration/cruise			x	x	x	x		x	x			x		x
11	Lack/loss of power. Acceleration/cruise			x	x	x	x		x				x		x
12	Knocking/pinging. Acceleration/cruise				x										
13	Poor fuel economy			x		x							x	x	
14	Emissions compliance					x	x		x				x	x	
15	High oil consumption/leakage														
16	Cooling system concerns. Overheating														
17	Cooling system concerns. Runs cold														
18	Exhaust smoke					x							x	x	
19	Fuel odor (in engine compartment)														
20	Engine noise						x		x						
21	Vibration concerns (engine)	x													
22	A/C does not work sufficiently.														
23	A/C is always on or A/C compressor runs continuously.														
24	A/C is not cut off under WOT conditions.														
25	Exhaust sulphur smell			x											
26	Intermittent concerns							x		x	x		x	x	x
27	Constant voltage														
28	Automatic transmission (AT) concerns. Upshift/downshift/ engagement														See Section K TROUBLESHOOTING

**① CHOOSE THE ACTUAL SYMPTOM**

# HOW TO USE THIS MANUAL



## Using the symptom troubleshooting

- Symptom troubleshooting shows diagnostic procedures, inspection methods, and proper action to take for each trouble symptom.

**DESCRIPTION**  
describes what kind of TROUBLE SYMPTOM

### TROUBLE SYMPTOM

14	<b>Engine flares up or slips when upshifting or down shifting</b>
<b>DESCRIPTION</b>	<ul style="list-style-type: none"> <li>• When accelerator pedal is depressed for driveway, engine speed increase but vehicle speed increase slowly.</li> <li>• When accelerator is depressed while driving, engine speed increases but vehicle not.</li> </ul>
<b>POSSIBLE CAUSE</b> describes possible point of malfunction	<ul style="list-style-type: none"> <li>— There is clutch slip because clutch is stuck or line pressure is low.                             <ul style="list-style-type: none"> <li>— Clutch stuck, slippage (forward clutch, 3-4 clutch, 2-4 brake band, one-way clutch 1, one-way clutch 2)                                     <ul style="list-style-type: none"> <li>• Line pressure low</li> <li>• Malfunction or mis-adjustment of TP sensor</li> <li>• Malfunction of VSS</li> </ul> </li> <li>• Malfunction of input/turbine speed sensor</li> <li>• Malfunction of sensor ground</li> <li>• Malfunction of shift solenoid A, B or C</li> <li>• Malfunction of TCC solenoid valve</li> <li>• Malfunction of body ground</li> <li>• Malfunction of throttle cable</li> <li>• Malfunction of throttle valve body</li> </ul> </li> <li>— Poor operating of mechanical pressure                             <ul style="list-style-type: none"> <li>• Selector lever position disparity</li> <li>• TR switch position disparity</li> </ul> </li> </ul> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>• Before following troubleshooting steps, make sure that Automatic Transaxle On-board Diagnostic and Automatic Transaxle Basic Inspection are conducted.</li> </ul>

**STEP** shows the order of troubleshooting.

### Diagnostic procedure

STEP	INSPECTION	ACTION				
1	<ul style="list-style-type: none"> <li>• Is line pressure okay?</li> </ul>	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Yes</td> <td>Go to next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Repair or replace any defective parts according to inspection results.</td> </tr> </table>	Yes	Go to next step.	No	Repair or replace any defective parts according to inspection results.
Yes	Go to next step.					
No	Repair or replace any defective parts according to inspection results.					
2	<ul style="list-style-type: none"> <li>• Is shift point okay?</li> <li>— See K-5 Road Test Preparation</li> </ul>	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Yes</td> <td>Go to next step.</td> </tr> <tr> <td style="text-align: center;">No</td> <td>Go to symptom troubleshooting No.9 "Abnormal shift".</td> </tr> </table>	Yes	Go to next step.	No	Go to symptom troubleshooting No.9 "Abnormal shift".
Yes	Go to next step.					
No	Go to symptom troubleshooting No.9 "Abnormal shift".					
3	<ul style="list-style-type: none"> <li>• Stop engine and turn ignition switch on.</li> <li>• Connect NGS tester to DLC-2.</li> <li>• Simulate SHIFT A, SHIFT B and SHIFT C PIDs for ON.</li> <li>• Is operating sound of shift solenoids heard?</li> </ul>	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Yes</td> <td> <ul style="list-style-type: none"> <li>• Overhaul control valve body and repair or replace any defective parts.</li> <li>— See ATX Workshop Manual GF4A-EL (1666-1A-99F)</li> <li>• If problem remains, replace or overhaul transaxle and repair or replace defective parts.</li> </ul> </td> </tr> <tr> <td style="text-align: center;">No</td> <td> <ul style="list-style-type: none"> <li>• Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX.</li> <li>• Inspect for shift solenoid mechanical stuck.</li> <li>— See K-14 Inspection of Operation</li> <li>• If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C.</li> </ul> </td> </tr> </table>	Yes	<ul style="list-style-type: none"> <li>• Overhaul control valve body and repair or replace any defective parts.</li> <li>— See ATX Workshop Manual GF4A-EL (1666-1A-99F)</li> <li>• If problem remains, replace or overhaul transaxle and repair or replace defective parts.</li> </ul>	No	<ul style="list-style-type: none"> <li>• Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX.</li> <li>• Inspect for shift solenoid mechanical stuck.</li> <li>— See K-14 Inspection of Operation</li> <li>• If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C.</li> </ul>
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4	<ul style="list-style-type: none"> <li>• Verify test results.                             <ul style="list-style-type: none"> <li>— If okay, return to diagnostic index to service any additional symptoms.</li> <li>— If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.</li> <li>— If vehicle is repaired, troubleshooting completed.</li> <li>— If vehicle is not repaired or additional diagnostic information is not available, replace or reprogram PCM.</li> </ul> </li> </ul>					

**Reference item(s)** for additional information to perform INSPECTION.

**INSPECTION** describes the method to quickly determine the failed part.

**ACTION** describes the appropriate action to take as a result (Yes/No) of INSPECTION.

**How to perform ACTION** is described in the relative material shown.

**Reference item(s)** to perform ACTION.

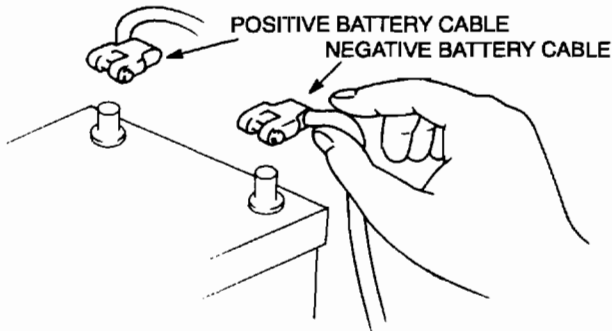
# ELECTRICAL SYSTEM, ABBREVIATIONS

## ELECTRICAL SYSTEM

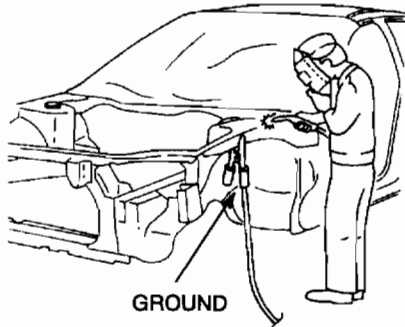
### PRECAUTIONS BEFORE WELDING

Vehicles have various electrical parts. To protect the parts from excessive current generated when welding, be sure to perform the following procedure.

1. Turn the ignition switch to the LOCK position.
2. Disconnect the battery cables.



3. Securely connect the welding machine ground near the welding area.



4. Cover the peripheral parts of the welding area to protect them from weld spatter.

## ABBREVIATIONS

ABDC	After bottom dead center
ABS	Anti-lock brake system
ACC	Accessories
ATDC	After top dead center
ATF	Automatic transaxle fluid
ATX	Automatic transaxle
BBDC	Before bottom dead center
BTDC	Before top dead center
CM	Control module
CPU	Central processing unit
DEF	Defroster
DOHC	Double over head camshaft
DI	Distributor ignition
DTC	Diagnostic trouble code
EBD	Electronic Brakeforce Distribution
EX	Exhaust
HI	High
HU	ABS hydraulic unit
IG	Ignition
IN	Intake
LED	Light emitting diode
L.H.D.	Left hand drive
MAX	Maximum
MTX	Manual transaxle
OFF	Switch off
ON	Switch on
PCM	Powertrain control module
P/W CM	Power window control module
REC	Recirculate
R.H.D.	Right hand drive
SAS	Sophisticated air bag sensor
SST	Special service tool
SW	Switch
TCS	Traction control system
TNS	Tail number side lights
1GR	First gear
2GR	Second gear
3GR	Third gear
4GR	Fourth gear
5HB	5 door hatchback

## SCHEDULED MAINTENANCE

### SCHEDULED MAINTENANCE

#### SCHEDULED MAINTENANCE TABLE

##### Chart symbols:

I : Inspect

Inspect and clean, repair, adjust, or replace if necessary. (Oil-permeated air cleaner elements cannot be cleaned using the air-blow method.)

R : Replace

T : Tighten

L : Lubricate

##### Remarks:

- To ensure efficient operation of the engine and all systems related to emission control, the ignition and fuel systems must be serviced regularly. It is strongly recommended that all servicing related to these systems be done by an authorized Mazda Dealer.
- After the described period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked\* in the maintenance chart.

\*1: Also inspect and adjust the power steering and air conditioner drive belts, if installed.

\*2: Replacement of the timing belt is required at every 90,000 km (54,000 miles). Failure to replace the timing belt may result in damage to the engine.

\*3: If the vehicle is operated under any of the following conditions, change the engine oil and oil filter every 10,000 km (6,000 miles) or shorter.

a. Driving in dusty conditions.

b. Extended periods of idling or low speed operation.

c. Driving for long period in cold temperatures or driving regularly at short distance only.

\*4: If the vehicle is operated in very dusty or sandy areas, inspect and if necessary, clean or replace the air cleaner element more often than the recommended intervals.

\*5: This is a full function check of electrical systems such as lights, wiper and washer systems (including wiper blades), and power windows.

\*6: If the brakes are used extensively (for example, continuous hard driving or mountain driving) or if the vehicle is operated in extremely humid climates, change the brake fluid annually.

Maintenance Item	Maintenance Interval (Number of months or km (miles), whichever comes first)												
	Months	12	24	36	48	60	72	84	96	108	120	132	144
	× 1000 Km	15	30	45	60	75	90	105	120	135	150	165	180
	(× 1000 Miles)	(9)	(18)	(27)	(36)	(45)	(54)	(63)	(72)	(81)	(90)	(99)	(108)

#### GASOLINE ENGINE

Engine valve clearance	Inspect every 90,000 km (54,000 miles).												
Idle speed	I		I		I		I		I		I		I
Fuel filter							R						R
Spark plugs (Except for platinum-tipped type)	Except for Sweden			I			I			I			I
	For Sweden	Inspect every 50,000 km (30,000 miles).											
Spark plugs (Platinum-tipped type)	Replace every 90,000 km (54,000 miles).												
Evaporative system	Except for Sweden				I				I				I
	For Sweden	Inspect every 80,000 km (48,000 miles).											
E.G.R. system	Except for Sweden				I				I				I
	For Sweden	Inspect every 80,000 km (48,000 miles).											

#### DIESEL ENGINE (RF Turbo)

Engine valve clearance		I		I		I		I		I		I	
Fuel filter			R			R			R			R	

## SCHEDULED MAINTENANCE

Maintenance Item	Maintenance Interval (Number of months or km (miles), whichever comes first)												
	Months	12	24	36	48	60	72	84	96	108	120	132	144
	× 1000 Km	15	30	45	60	75	90	105	120	135	150	165	180
	(× 1000 Miles)	(9)	(18)	(27)	(36)	(45)	(54)	(63)	(72)	(81)	(90)	(99)	(108)

### GASOLINE & DIESEL ENGINE

Drive belts	*1	I	I	I	I	I	I	I	I	I	I	I	I
Engine timing belt	*2	Replace every 90,000 km (54,000 miles).											
Engine oil	*3	R	R	R	R	R	R	R	R	R	R	R	R
Oil filter	*3	R	R	R	R	R	R	R	R	R	R	R	R
Cooling system (Including coolant level adjustment)			I		I		I		I		I		I
Engine coolant		Replace at first 4 years or 90,000 km (54,000 miles); after that, every 2 years.											
Air cleaner element	*4	I	I	R	I	I	R	I	I	R	I	I	R
Fuel lines & hoses			I		I		I		I		I		I
Battery electrolyte level & specific gravity		I	I	I	I	I	I	I	I	I	I	I	I
All electrical system	*5	I	I	I	I	I	I	I	I	I	I	I	I
Headlight alignment			I		I		I		I		I		I
Brake & clutch pedals		I	I	I	I	I	I	I	I	I	I	I	I
Clutch fluid		I	I	I	I	I	I	I	I	I	I	I	I
Brake lines, hoses & connections		I	I	I	I	I	I	I	I	I	I	I	I
Brake fluid	*6	I	R	I	R	I	R	I	R	I	R	I	R
Parking brake		I	I	I	I	I	I	I	I	I	I	I	I
Power brake unit & hoses		I	I	I	I	I	I	I	I	I	I	I	I
Disc brakes		I	I	I	I	I	I	I	I	I	I	I	I
Drum brakes		I	I	I	I	I	I	I	I	I	I	I	I
Power steering fluid & lines		I	I	I	I	I	I	I	I	I	I	I	I
Steering operation & gear housing			I		I		I		I		I		I
Steering linkage, tie rod ends & arms			I		I		I		I		I		I
Manual transaxle oil							R						R
Automatic transaxle fluid level			I		I		I		I		I		I
Front & rear suspension & ball joints				I		I		I		I		I	
Driveshaft dust boots			I		I		I		I		I		I
Exhaust system heat shields			I		I		I		I		I		I
Wheel nuts		T	T	T	T	T	T	T	T	T	T	T	T
Bolts & nuts on chassis & body		T	T	T	T	T	T	T	T	T	T	T	T
Body condition (for rust, corrosion & perforation)		Inspect annually.											
Tires (including spare tire) (with inflation pressure adjustment)		I	I	I	I	I	I	I	I	I	I	I	I
Hinges & catches		L	L	L	L	L	L	I	L	L	L	L	L
Underside of vehicle		I	I	I	I	I	I	I	I	I	I	I	I
Road test		I	I	I	I	I	I	I	I	I	I	I	I
Cabin air filter (if installed)		R	R	R	R	R	R	R	R	R	R	R	R

## SCHEDULED MAINTENANCE

### Scheduled Maintenance Service (Specific Work Required)

Maintenance Item	Specific Work Required
<b>ENGINE</b>	
Engine valve clearance	Measure clearance.
Drive belts	Inspect for wear, cracks and fraying, and check tension. Replace drive belt.
Engine timing belt	Replace engine timing belt.
Engine oil	Replace engine oil and inspect for leakage.
Oil filter	Replace oil filter and inspect for leakage.
Oil by-pass filter	Replace oil by-pass filter and inspect for leakage.
<b>COOLING SYSTEM</b>	
Cooling system (including coolant level adjustment)	Check coolant level and quality, and inspect for leakage.
Engine coolant	Replace coolant.
<b>FUEL SYSTEM</b>	
Idle speed	Check engine idle rpm.
Idle mixture (for CIS & carburetor leaded fuel)	Check the CO and HC concentrations (See W/M).
Choke system (for carburetor)	Check system operation.
Air cleaner element	Inspect for dirt, oil and damage. Clean air cleaner element (by blowing air). Replace air cleaner element.
Fuel filter	Replace fuel filter.
Fuel lines & hoses	Inspect for cracks, leakage and loose connection.
<b>IGNITION SYSTEM (FOR GASOLINE)</b>	
Initial ignition timing	Check initial ignition timing.
Spark plugs	Inspect for wear, damage, carbon, high-tension lead condition and measure plug gap. Replace spark plugs.
<b>EMISSION CONTROL SYSTEM (FOR GASOLINE)</b>	
Evaporative system	Check system operation (See W/M), vapor lines, vacuum fitting hoses and connection.
Throttle positioner system (if equipped)	Check the diaphragm and system operation, vacuum fitting hoses and connection.
Dash pot (for carburetor)	Check system operation.
E.G.R. system	Check system operation (See W/M), vacuum fitting hoses and connection.
<b>ELECTRICAL SYSTEM</b>	
Battery electrolyte level & specific gravity	Check level and specific gravity.
Battery condition	Check the battery for corroded or loose connections and cracks in the case (for maintenance free type).
All electrical system	Check function of lighting system, windshield wiper (including wiper blade condition) and washer and power windows.
Headlight alignment	Check headlight alignment
<b>CHASSIS &amp; BODY</b>	
Brake & clutch pedals	Check pedal height and free play.
Brake fluid	Check fluid level and inspect for leakage. Replace brake fluid.
Clutch fluid	Check fluid level and inspect for leakage.
Brake lines, hoses & connections	Inspect for cracks, damage, chafing, corrosion, scars, swelling and fluid leakage.
Parking brake	Check lever stroke.
Power brake unit & hoses	Check vacuum lines, connections and check valve for improper attachment, air tightness, cracks chafing and deterioration.



## SCHEDULED MAINTENANCE

Maintenance Item	Specific Work Required
Disc brakes	Test for judder and noise. Inspect caliper for correct operation and fluid leakage, brake pads for wear. Check disc plate condition and thickness.
Drum brakes	Test for judder and noise. Inspect brake drum for wear and scratches; brake lining for wear, peeling and cracks; and wheel cylinder for fluid leakage.
Manual steering gear oil	Check gear oil level.
Power steering fluid & lines	Check fluid level and lines for improper attachment, leakage, cracks, damage, loose connections, chafing and deterioration.
Power steering fluid	Check fluid level.
Power steering system & hoses	Check lines for improper attachment, leakage, cracks, damage, loose connections, chafing and deterioration.
Steering & front suspension	Check free play of steering system, inspect shock absorbers for correct damping force, oil leakage, damage and looseness, and inspect coil springs, arms, links and stabilizer for damage and looseness.
Steering operation & gear housing	Check that the steering wheel has the specified play. Be sure to check for changes, such as excessive play, hard steering or strange noises. Check gear housing and boots for looseness, damage and grease/gear oil leakage.
Steering linkages tie rod ends & arms	Check ball joint, dust cover and other components for looseness, wear, damage and grease leakage.
Front & rear suspension ball joints	Inspect for grease leakage, cracks, damage and looseness.
Manual transmission/transaxle oil	Check oil level and inspect for leakage. Replace manual transmission/transaxle oil.
Automatic transaxle oil level	Check oil level.
Automatic transmission/transaxle fluid level	Check fluid level.
Automatic transmission/transaxle fluid	Replace automatic transmission/transaxle fluid.
Front & rear differential oil	Check oil level and inspect for leakage. Replace front & rear differential oil.
Rear differential oil	Check oil level and inspect for leakage. Replace rear differential oil.
Transfer oil (for 4 × 4)	Check oil level and inspect for leakage. Replace transfer oil.
Upper arm shafts (for B-Series)	Lubricate the upper arm shafts for looseness or damage.
Front & rear wheel bearing grease	Remove wheel bearing and replace the grease.
Propeller shaft joints (with grease nipple)	Lubricate propeller shaft joints.
Driveshaft dust boots	Inspect for grease leakage, cracks, damage and looseness.
Wheel nuts	Tighten wheel nuts.
Bolts & nuts on chassis & body	Tighten bolts and nuts fastening suspension components, members and seat frames.
Body condition (for rust, corrosion & perforation)	Inspect body surface for paint damage, rust, corrosion and perforation.
Exhaust system heat shields	Inspect for damage, corrosion, looseness of connections and gas leakage.
Tires (including spare tire) (with inflation pressure adjustment)	Check air pressure and inspect tires for tread wear, damage and cracks; and wheels for damage and corrosion.
Hinges & catches	Lubricate hinges and catches of doors, trunk lid and hood.
Seat belts	Inspect seat belt webbing for scratches, tears and wear, and check anchor bolt tightness.
Rear suspension uni-ball & sliding rubber bushing (for RX-7)	Inspect for cracks, damage and looseness.
Underside of vehicle	Inspect underside of vehicle (floor pans, frames, fuel lines, around exhaust system, etc.) for damage and corrosion.

## SCHEDULED MAINTENANCE

Maintenance Item	Specific Work Required
Road test	Check brake operation/clutch operation/steering control/operation of meters and gauges/squeaks, rattles or unusual noises/engine general performance/emergency locking retractors.
<b>AIR CONDITIONER SYSTEM (IF EQUIPPED)</b>	
Refrigerant amount	Check refrigerant amount.
Compressor operation	Check compressor operation, and inspect for noise, oil leakage, cracks and refrigerant leakage.
Cabin air filter	Replace cabin air filter.
<b>4WS SYSTEM</b>	
Front & rear power steering system & hoses	Check lines for improper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.
4WS operation & linkages	Inspect for leakage, cracks, damage and looseness.
Rear wheel steering angle	Inspect for rear wheel steering angle.
Rear suspension outer ball joints	Inspect for grease leakage, cracks, damage and looseness.

# ENGINE (FP, FS, FS (Hi-power))

B1

## FEATURES

<b>OUTLINE</b> .....	<b>B1-2</b>
<b>OUTLINE OF CONSTRUCTION</b> .....	<b>B1-2</b>
<b>FEATURES</b> .....	<b>B1-2</b>
<b>SPECIFICATIONS</b> .....	<b>B1-2</b>
<b>ENGINE MECHANISM</b> .....	<b>B1-3</b>
<b>CYLINDER HEAD</b> .....	<b>B1-3</b>

## OUTLINE

### OUTLINE

#### OUTLINE OF CONSTRUCTION

- The construction and operation of the face-lifted FP, FS, FS (Hi-power) engine models are essentially carried over from those of the current 626 (GF), 626 Station Wagon (GW) (FP, FS, FS (Hi-power)) engine models, except for the following features. (See 626 Training Manual 3303-10-97D.)

#### FEATURES

##### Improved Engine Performance

- The shape of the intake port has been modified. (FP)
- The valve timing of exhaust valve has been changed from BBDC 48° to BBDC 44°, and ATDC 2° to ATDC 6°. (FP)
- The compression ratio has been increased from 9.6:1 to 9.7:1. (FP)

#### SPECIFICATIONS

Item			Specification		
			FP	FS	FS (Hi-power)
Type			Gasoline, 4-cycle		
Cylinder arrangement and number			In-line, 4-cylinder		
Combustion chamber			Pentroof		
Valve system			DOHC, timing belt driven, 16 valves		
Displacement		(ml {cc, cu in})	1,840 {1,840, 112.2}	1,991 {1,991, 121.5}	
Bore × stroke		(mm {in})	83.0 × 85.0 {3.27 × 3.35}	83.0 × 92.0 {3.27 × 3.62}	
Compression ratio			9.7:1	9.7:1	
Compression pressure			(kPa {kgf/cm <sup>2</sup> , psi} [rpm]) 1,471 {15.0, 213} [300]		
Valve timing	IN	Open BTDC (°)	0	2	5
		Close ABDC (°)	35	48	56
	EX	Open BBDC (°)	44	48	
		Close ATDC (°)	6	2	
Valve clearance [Engine cold]		IN (mm {in})	0.26 {0.010}		
		EX (mm {in})	0.26 {0.010}		

Indicates new specification