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This file was not scanned to deprive Mazda of any money – it was scanned due to the rareness of the original manuals and the overwhelming need of the RX-7 owner to have this information so that they can accurately troubleshoot problems. Perhaps if Mazda's dealerships could support the Rotary Engine it wouldn't be so necessary for the owners to do so.



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# 1989 Mazda RX-7 Factory Service Manual

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Some parts of the manual may be hard to read or see on the screen, but if you print the pages out it's perfect. Well except for the crookedness ☺.

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# PRE-DELIVERY INSPECTION AND SCHEDULED MAINTENANCE SERVICES

**PRE-DELIVERY INSPECTION ..... A- 2**  
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97U0AX-001

## PRE-DELIVERY INSPECTION TABLE

### EXTERIOR

**INSPECT** and **ADJUST**, if necessary, the following items to the specifications:

- Glass, exterior bright metal, and paint for damage
- Wheel lug nuts  
88—118 N·m (9—12 m·kg, 65—87 ft·lb)
- Tire pressures (Refer to Section Q)
- All weather strips for damage and detachment
- Operation of hood release and lock
- Operation of fuel lid and rear hatch opener
- Door operation and alignment
- Headlight aim

**INSTALL** the following parts

- Wheel caps (if equipped)
- Outside rearview mirror(s)
- Front air deflector (if equipped)
- Convertible top (if equipped)

### UNDER HOOD—ENGINE OFF

**INSPECT** and **ADJUST**, if necessary, the following items to the specifications:

- Fuel, coolant, and hydraulic lines, fittings, connections, and components for leaks
- Engine oil level
- Power steering fluid level
- Brake and clutch master cylinder fluid levels
- Windshield washer reservoir fluid level
- Radiator coolant level and specific gravity

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

- Tightness of water hose clamps (including heater hoses)
- Tightness of battery terminals
- Drive belt tensions
- Accelerator cable and linkage for free movement
- Sub-zero starting system and fluid level

**CLEAN** spark plugs

**NOTE:** Do not blast with sand or abrasive cleaning materials

### INTERIOR

**INSTALL** the following parts:

- Rubber stopper for inside rearview mirror
- Fuse for accessories

**CHECK** the operations of the following items:

- Seat controls (sliding and reclining) and headrest
- Door locks
- Seat belts and warning system
- Ignition switch and steering lock
- Shift-lock system and inhibitor switch (A/T only)
- Starter interlock switch (clutch pedal, M/T only)
- All lights including warning and indicator lights and retractable headlight mechanism
- IC audible warning system
- Horn, wipers, and washers (front and rear, if equipped)
- Radio and antenna (if equipped)
- Cigarette lighter and clock
- Remote control outside rearview mirror (if equipped)
- Power windows (if equipped)

- Heater, defroster, and air conditioner at all mode selections (if equipped)
- Sunroof (if equipped)
- Theft-deterrent system (if equipped)
- Convertible Top (if equipped)

**CHECK** the following items:

- Spare fuse
- Upholstery and interior finishes

**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)	Pedal free play mm (in)
Clutch pedal	183—193 (7.20—7.60) (With carpet)	0.6—3.0 (0.02—0.12)
Brake pedal	184—189 (7.24—7.44) (With carpet)	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** the following items:

- Bypass air control system
- Automatic transmission fluid level
- Initial ignition timing
- Idle speed
- Setting of throttle sensor (Engine must not be running when performing check.)

### ON HOIST

**CHECK** the following items:

- Manual transmission oil level
- Rear axle oil level
- Underside fuel, coolant, and hydraulic lines, fittings, connections, and components for leaks
- Tires for cuts and bruises
- Steering linkage, suspension, exhaust system, and all underside hardware for looseness or damage

### ROAD TEST

**CHECK** the following items:

- Brake operation
- Clutch operation
- Steering control
- Operation of meters and gauges
- Squeaks, rattles, or unusual noises
- Engine general performance (including turbo)
- 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
- REMOVE** identification color tape on directional tires

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## SCHEDULED MAINTENANCE SERVICES

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

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

### SCHEDULED 1 (NORMAL DRIVING CONDITION)

**Chart symbols:**

**I:** Inspect and if necessary correct, clean, or replace

**R:** Replace or change

**T:** Tighten

**L:** Lubricate

**Remarks:**

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

As for \* marked items in this maintenance chart, please pay attention to the following points.

- \*1 This maintenance operation is recommended by Mazda. However, it is not necessary for emission warranty coverage or manufacturer recall liability.
- \*2 This maintenance operation is required for Canada and all states except California. However, we recommend that it also be performed on California vehicles as well.

## SCHEDULE 1 (NORMAL DRIVING CONDITION)

MAINTENANCE INTERVALS	Number of months or miles (kilometers), whichever comes first							Service data and inspection point	Page	
	Months	7.5	15	22.5	30	37.5	45			52.5
MAINTENANCE OPERATION	Miles	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	
	(Km)	(12,000)	(24,000)	(36,000)	(48,000)	(60,000)	(72,000)	(84,000)	(96,000)	

### Engine

Drive belts (except air pump drive belt)					I					I	• Cracks or damage • Tension	C-5
Engine oil	Non-Turbo	R	R	R	R	R	R	R	R	R	• Oil pan capacity: 4.4 liters (4.7 US qt, 3.9 Imp qt)	D-6
	Turbo	Replace every 5,000 miles (8,000 km) or 5 months										
Oil filter	Non-Turbo	R	R	R	R	R	R	R	R	R	• Oil filter capacity: 0.17 liters (0.18 US qt, 0.15 Imp qt)	D-6
	Turbo	Replace every 5,000 miles (8,000 km) or 5 months										

### Air Conditioner System (If equipped)

Refrigerant	Inspect refrigerant amount annually										—	—
Compressor	Inspect operation annually										—	—

### Air Cleaner

Air cleaner element					R					R	—	F1-34 F2-34
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### Ignition System

Spark plugs			I*1								• Plug gap 1.4mm (0.056 in) • Recommended spark plugs	G-27
				R			I*1			R	Leading BUR7EQ	

### Cooling System

Cooling system			I								• Hoses for cracks or wear • Coolant level	E-5
Engine coolant					R						• Coolant capacity: Turbo: 8.7 liters (9.2 US qt, 7.7 Imp qt) Non-Turbo: 7.3 liters (7.7 US qt, 6.4 Imp qt)	E-6

### Fuel System

Idle speed			I*2								Idle speed: 750 ± 25 (A/T: N Range)	F1-15 F2-15
Fuel filter											—	F1-48 F2-44
Fuel lines											• Fittings, connections, and components for leaks	F1-48 F2-44

**SCHEDULE 1 (NORMAL DRIVING CONDITION) (Cont'd)**

MAINTENANCE INTERVALS	Number of months or miles (kilometers), whichever comes first						Service data and inspection point	Page	
	Months	7.5	15	22.5	30	37.5			45
MAINTENANCE OPERATION	Miles (Km)	7,500 (12,000)	15,000 (24,000)	22,500 (36,000)	30,000 (48,000)	37,500 (60,000)	45,000 (72,000)	52,500 (84,000)	60,000 (96,000)

**Electrical System**

Engine oil level warning system																		T-45
Engine coolant level warning system																		T-47
Sub-zero starting assist system	Inspect the operation seasonally (sub-zero weather use only).																F1-87 F2-85	

**Chassis and Body**

Item	7.5	15	22.5	30	37.5	45	52.5	60	Service Data and Inspection Point	Page
Brake lines, hoses, and connections									• Proper attachment and connections	P-8
Disc brakes									• Caliper operation • Thickness of disc plate: Front ... 20mm (0.79 in) Rear ... 8mm (0.31 in) (Solid disc) 18mm (0.71 in) (Ventilated disc) • Runout of disc plate: 0.1mm (0.004 in) • Thickness of disc pad: Front: 2mm (0.08 in) Rear: 1mm (0.04 in)	P-37, 41 P-45 P-37, 41, 45
Steering operation and linkage									• Free play: 5-20mm (0.20-0.79 in) • Operation and looseness • Fluid leakage	N-8 N-12 N-16
Front suspension ball joints									• Damage, looseness, and grease leakage	R-15
Driveshaft dust boots									• Cracks, damage, grease leakage, or band looseness	M-14
Exhaust system heat shield									• Clearance between body and exhaust system	F1-59 F2-55
Front wheel bearing grease										M-9
Manual transmission oil										J1-7, J2-8
Differential oil										M-18
Bolts and nuts on chassis and body										
Toe control hub and control link										R-24 M-12

## SCHEDULE 2 (UNIQUE DRIVING CONDITIONS)

### Chart symbols:

- I:** Inspect and if necessary correct, clean, or replace
- R:** Replace or change
- T:** Tighten
- L:** Lubricate

### Remarks:

After 60 months or 60,000 miles (96,000 km), continue to follow the prescribed maintenance items and intervals periodically. As for \* marked items in this maintenance chart, please pay attention to the following points.

- \*1 This maintenance operation is recommended by Mazda. However, it is not necessary for emission warranty coverage or manufacturer recall liability
- \*2 This maintenance operation is required for Canada and all states except California. However, we recommend that it also be performed on California vehicles as well.

## SCHEDULE 2 (UNIQUE DRIVING CONDITIONS)

MAINTENANCE INTERVALS	Number of months or miles (kilometers), whichever comes first												Service data and inspection point	Page
	Months	5	10	15	20	25	30	35	40	45	50	55		
MAINTENANCE OPERATION	5	10	15	20	25	30	35	40	45	50	55	60		
x1,000 Miles	5	10	15	20	25	30	35	40	45	50	55	60		
(x1,000 Km)	(8)	(16)	(24)	(32)	(40)	(48)	(56)	(64)	(72)	(80)	(88)	(96)		

### Engine

Drive belts (Except air pump drive belt)																• Check for damage • Tension	C-5
Engine oil	Non-Turbo	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Oil pan capacity: 4.4 liters (4.7 US qt, 3.9 Imp qt)	D-6
	Turbo	Replace every 3,000 miles (5,000 km) or 3 months															
Oil filter	Non-Turbo	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Oil filter capacity: 0.17 liters (0.18 US qt, 0.15 Imp qt)	D-6
	Turbo	Replace every 3,000 miles (5,000 km) or 3 months															

### Air Conditioner System (If equipped)

Refrigerant	Inspect refrigerant amount annually																
Compressor	Inspect operation annually																

### Air Cleaner

Air cleaner element																		F1-34 F2-34
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**SCHEDULE 2 (UNIQUE DRIVING CONDITIONS) (Cont'd)**

MAINTENANCE INTERVALS  MAINTENANCE OPERATION	Number of months or miles (kilometers), whichever comes first												Service data and inspection point	Page	
	Months	5	10	15	20	25	30	35	40	45	50	55			60
	x1,000 Miles (x1,000 Km)	(8)	(16)	(24)	(32)	(40)	(48)	(56)	(64)	(72)	(80)	(88)			(96)

**Ignition System**

Spark plugs			*1			R			*1			R			G-27				
<ul style="list-style-type: none"> <li>Plug gap 1.4mm (0.056 in)</li> <li>Recommended spark plugs</li> </ul> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="width: 50px;">Leading</td> <td style="width: 50px;">Trailing</td> </tr> <tr> <td style="text-align: center;">NGK</td> <td style="text-align: center;">BUR9EQ BUR9EQ</td> </tr> </table>																Leading	Trailing	NGK	BUR9EQ BUR9EQ
Leading	Trailing																		
NGK	BUR9EQ BUR9EQ																		

**Cooling System**

Cooling system															E-5
<ul style="list-style-type: none"> <li>Hoses for cracks or wear</li> <li>Coolant level</li> <li>Coolant capacity: Turbo: 8.7 liters (9.2 US qt, 7.7 Imp qt) Non-Turbo: 7.3 liters (7.7 US qt, 6.4 Imp qt)</li> </ul>															
Engine coolant						R						R			E-6

**Fuel System**

Idle speed		*2													F1-15 F2-15
Fuel filter													R		F1-48 F2-44
Fuel lines						*1									F1-48 F2-44

**Electrical System**

Engine oil level warning system															T-45
Engine coolant level warning system															T-47
Sub-zero starting assist system															F1-87 F2-85

# A SCHEDULED MAINTENANCE SERVICES

## SCHEDULE 2 (UNIQUE DRIVING CONDITIONS) (Cont'd)

MAINTENANCE INTERVALS	Number of months or miles (kilometers), whichever comes first														Service data and inspection point	Page		
	Months	5	10	15	20	25	30	35	40	45	50	55	60					
	x1,000 Miles (x1,000 Km)	(8)	(16)	(24)	(32)	(40)	(48)	(56)	(64)	(72)	(80)	(88)	(96)					
<b>Chassis and Body</b>																		
Brake lines, hoses, and connections							I										• Proper attachment and connections	P-8
Brake fluid							R										• Brake fluid	P-5
Disc brakes				I						I							• Caliper operation • Thickness of disc plate: Front ... 20mm (0.79 in) Rear ... 8mm (0.31 in) (Solid disc) 18mm (0.71 in) (Ventilated disc) • Runout of disc plate: 0.1mm (0.004 in) • Thickness of disc pad: Front: 2mm (0.08 in) Rear: 1mm (0.04 in)	P-37, 41 P-45 P-37, 41, 45
Steering operation and linkage							I										• Operation and looseness • Fluid leakage • Free play: 5-20mm (0.20-0.79 in)	N-8 N-12 N-16
Front suspension ball joints							I										• Damage, looseness, and grease leakage	R-15
Exhaust system heat shield							I										• Clearance between body and exhaust system	F1-59 F2-55
Driveshaft dust boots							I										• Cracks, damage, grease leakage, or band looseness	M-14
Front wheel bearing grease							L										• Clean and check for damage	M-9
Manual transmission oil							R											J1-7, J2-8
Differential oil							R											M-18
Bolts and nuts on chassis and body				T			T											—
Toe control hub and control link							I											R-24 M-12