1974-79 TUNE-UP PROCEDURES
Mazda Rotary

Cosmo, Pickup, RX3, RX3SP, RX4, RX7

ENGINE IDENTIFICATION

Engine code is stamped on rear rotor housing, just rear of oil filter. Engine serial number is stamped on front rotor housing, behind distributor.

ENGINE CODES

Application	Code
RX3 & RX3SP	12A
Cosmo, Pickup & RX4	13B
RX7	12A

MODEL IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle Identification Number is stamped on identification plate, located at left, lower inner corner of windshield and visible from outside of vehicle.

ENGINE COMPRESSION

COMPRESSION PRESSURE SPECIFICATIONS [1]

Application	Pressure
All Models	85 psi (6 kg/cm²)

[1] - Measured at 250 RPM. Maximum variation between cylinders is 21 psi (1.5 kg/cm²).

SPARK PLUGS

SPARK PLUG SPECIFICATIONS

Application	Specification
Gap	
1974-75 Models	.024-.028" (0.6-0.7 mm)
1976-79 Models	.039-.043" (1-1.1 mm)
Torque	9-13 ft. lbs. (12-18 N.m)

SPARK PLUG TYPE [1]

Application	Standard	Cold Type
1974-75 Models		
NGK	B-7EM, BR-7EM	B-8EM, BR-8EM
1976-79 Models		
NGK	B-7ET, BR-7ET	B-8ET, BR-8ET

[1] - Second plug listed is for use in areas requiring suppression of radio interference.

HIGH TENSION WIRE RESISTANCE

Carefully remove high tension wires from spark plugs and distributor cap. Using an ohmmeter, measure resistance of wires while gently twisting wires. If resistance is not to specifications, or fluctuates from infinity to any value, replace high tension wire(s).

HIGH TENSION WIRE RESISTANCE

Application	Resistance (Ohms)/Foot
All Models	4785

DISTRIBUTOR

All models use Mitsubishi dual-point or Mitsubishi three-point distributor.

DISTRIBUTOR SPECIFICATIONS

Application	Specification
Point Gap	.016-.020" (.4-.5 mm)
Dwell Angle	55-61°
Breaker Arm Spring Tension	17.6-22.4 ozs. (500-650 g)
Condenser Capacity	.24-.30 mfd.

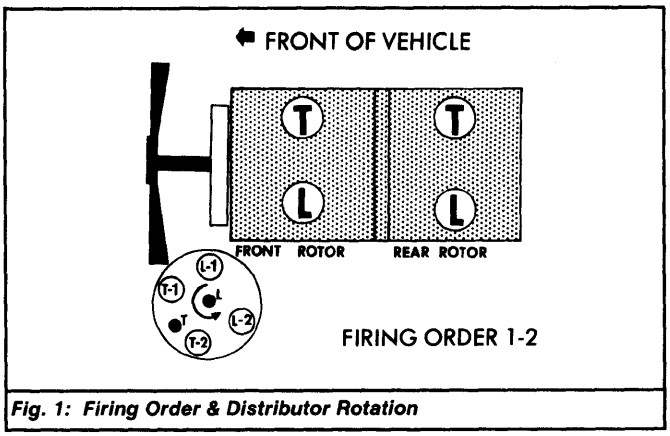

Fig. 1: Firing Order & Distributor Rotation

IGNITION TIMING

NOTE: On vehicles equipped with automatic transmission, place selector lever in Drive and block front wheels.

1975-76 Models (Leading & Trailing) - 1) Warm engine to normal operating temperature and set idle speed to specification. Connect tachometer to engine.

2) Connect timing light to leading (top) spark plug on front rotor housing. Start engine and check leading timing. If timing is incorrect, loosen distributor and rotate housing until leading timing is correct.

3) Connect timing light to trailing (lower) spark plug on front rotor housing. If timing is incorrect, stop engine. Remove distributor cap and rotor. Disconnect primary wire from leading retard side.

4) Remove screws attaching breaker base plate and external adjusting lever for leading retard side. Remove breaker points and breaker base plate assembly. Slightly loosen leading side breaker base plate screws, turn base plate as required, and tighten screws.

5) Install leading retard side breaker base plate assembly, rotor, and distributor cap. Check leading and trailing side timing. If timing is incorrect, repeat procedure until both readings are correct.

1975-76 Models (Retard) - 1) Connect timing light to trailing (lower) spark plug on front rotor housing. Connect jumper wires to primary lead wire terminals. *See Fig. 2.*

2) Start engine and check retard timing. If timing is incorrect, loosen external adjusting lever set screw. Move lever until correct specification is obtained and tighten set screw.

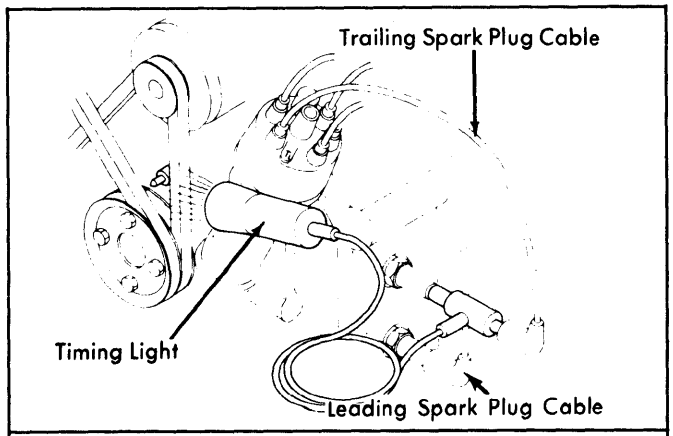

Fig. 2: 1975-76 Retard Side Timing Check

1974-79 TUNE-UP PROCEDURES
Mazda Rotary (Cont.)

1975 IGNITION TIMING SPECIFICATIONS

Application	Timing
Leading	TDC
Trailing	15°ATDC
Retard Side	
RX3 & RX4	20°ATDC

1976 IGNITION TIMING SPECIFICATIONS

Application	Timing
Leading	
RX3	TDC
All Others	5°ATDC
Trailing	15°ATDC
Retard	20°ATDC

1977-79 Models - 1) Ensure all point gaps are properly set. Warm engine to normal operating temperature and connect tachometer to engine. Connect timing light to leading (lower) spark plug on front rotor housing.

2) Start and run engine at idle speed. Check leading timing. If not to specifications, adjust timing by rotating distributor housing until correct. Tighten lock nut and recheck leading timing.

3) Connect timing light to trailing (top) spark plug on front housing. Start engine and check trailing timing. *See Fig. 3.* Use external adjusting lever, loosen vacuum unit attaching screws, or loosen leading side breaker base assembly to adjust trailing timing. *See Fig. 4.*

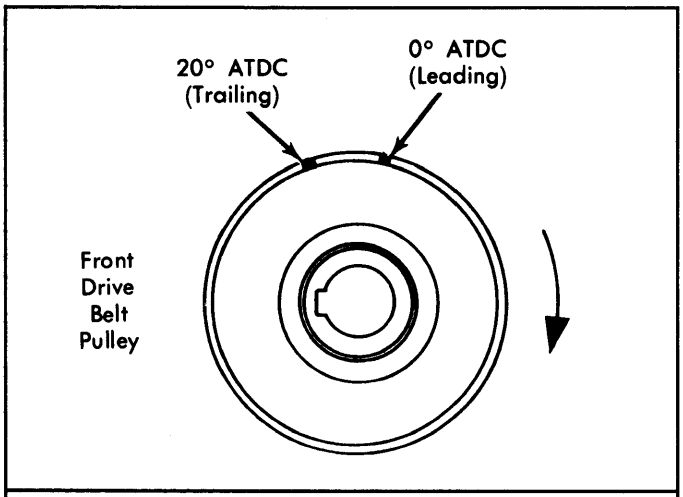

Fig. 3: Typical Ignition Timing Marks

1977 IGNITION TIMING SPECIFICATIONS

Application	Timing
Leading	
RX3SP	TDC
All Others	5°ATDC
Trailing	
Cosmo & RX4	25°ATDC
All Others	20°ATDC
Retard	20°ATDC

1978-79 IGNITION TIMING SPECIFICATIONS

Application	Timing
Cosmo & RX4	
Leading	4-6°ATDC
Trailing	23-27°ATDC
RX7	
Leading	TDC
Trailing	20°ATDC

IDLE SPEED & MIXTURE

1975-76 Models - 1) Disconnect and plug idle compensator hose. Adjust idle speed to 700 RPM using the air adjusting screw. Connect exhaust gas analyzer to exhaust pipe.

2) Turn mixture adjusting screw clockwise until engine runs erratically. Turn mixture screw counterclockwise until CO% level reaches 0.1 percent, then turn screw another 1/4 turn counterclockwise.

3) If idle speed changed during mixture adjustment, readjust idle speed with the air adjusting screw and then repeat procedure for CO% level adjustment.

1977-79 Models - 1) Warm engine to normal operating temperature. Run engine at 2000 RPM for 3 minutes. Turn off all accessories. Unhook and plug idle compensator hose. Remove fuel filler cap. Connect exhaust gas analyzer to exhaust pipe and tachometer to engine.

2) With manual transmission in Neutral or automatic transmission in Drive, turn air adjustment screw (located on carburetor body, above mixture screw) to obtain specified idle speed. If CO% level is within specifications and idle speed is stable, mixture adjustment is not required.

3) If CO% level is not within specifications, remove idle limiter cap from mixture adjusting screw. Turn screw clockwise until idle speed begins to fluctuate.

4) Slowly turn mixture adjusting screw counterclockwise until maximum specified CO% level is obtained, then turn mixture screw an additional 1/2 turn counterclockwise. Recheck idle speed and readjust if necessary. Replace idle mixture limiter cap and restore all components to original positions.

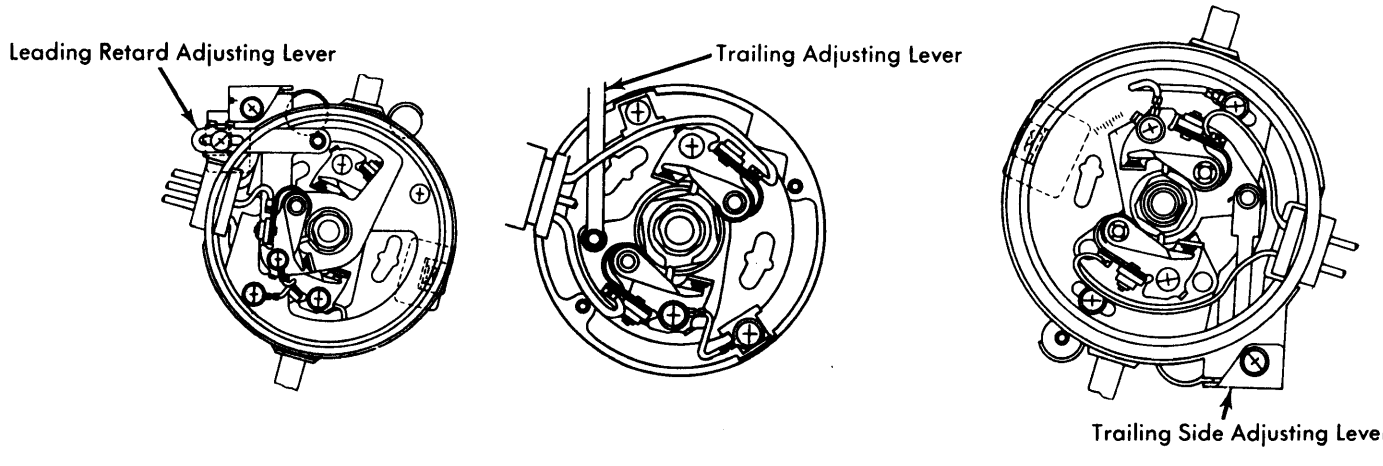

Fig. 4: Typical Ignition Timing Adjustment Points

1974-79 TUNE-UP PROCEDURES
Mazda Rotary (Cont.)

IDLE SPEED & CO% LEVEL SPECIFICATIONS

Application	RPM	CO%
1974-75 Models		
Man. Trans.	800-850	0.1 Max.
Auto. Trans.	750-800	0.1 Max.
1976-79 Models	700-750	0.1 Max.

COLD (FAST) IDLE RPM

1975 Models - Connect tachometer to engine. Warm engine until normal operating temperature is reached. Stop engine. Pull choke knob out fully and restart engine. Fast idle speed should be within specifications. If fast idle speed is not within specifications, bend choke rod.

NOTE: On 1975 pickup, unplug connector from coolant temperature switch and ground both terminals before checking or adjusting fast idle speed.

1975 FAST IDLE SPECIFICATIONS

Application	RPM
Pickup	3000-3500
RX3 & RX4	2800-3500

1976-79 Models - 1) Connect tachometer to engine. Warm engine until normal operating temperature is reached. Stop engine. Pull choke knob out fully and restart engine.
2) Engine speed should reach specified RPM within 10 seconds of starting. If fast idle speed is not within specifications, remove carburetor from engine. With carburetor removed, be sure choke valve is held fully closed.
3) Measure clearance between PRIMARY throttle valve and wall of throttle bore. If clearance is incorrect, bend fast idle rod until correct clearance is reached.

1976 FAST IDLE SPECIFICATIONS

Application	RPM	Clearance In. (mm)
RX3		.071-.087 (1.8-2.2)
Cosmo & RX4	3000-3500	.067-.079 (1.7-2.0)

1977-79 FAST IDLE SPECIFICATIONS

Application	RPM	Clearance In. (mm)
Cosmo & RX4		
Federal	3000-3500	.039-.047 (1.0-1.2)
Calif.	3000-3500	.051-.059 (1.3-1.5)
RX7		
Federal	3200-4000	.035-.045 (0.9-1.1)
Calif.	3200-4000	.051-.059 (1.3-1.5)

FUEL PUMP

FUEL PUMP SPECIFICATIONS

Application	Specification
Cosmo, Pickup & RX4	
Pressure	4.3-5.3 psi (.30-.38 kg/cm²)
Volume	1.3 qts. per min.
RX3, RX3SP & RX7	
Pressure	3.7-4.7 psi (.26-.33 kg/cm²)
Volume	1.16 qts. per min.

EXHAUST EMISSION SYSTEMS

See appropriate articles in EXHAUST EMISSION SYSTEMS section.

IGNITION SYSTEM

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Resistance (Ohms)
Primary	
Leading	1.35
Trailing	1.50
Secondary	
Leading	8700
Trailing	9500

DISTRIBUTOR

All models use Mitsubishi dual-point or Mitsubishi three-point distributor.
Other Data & Specifications - See appropriate Mitsubishi article in DISTRIBUTORS & IGNITION SYSTEMS section.

FUEL SYSTEMS

CARBURETOR

1975-76 CARBURETORS

Application	Model
All Models	Zenith-Stromberg 4-Bbl.

1977-79 CARBURETORS

Application	Model
All Models	Hitachi 4-Bbl.

Other Data & Specifications - See appropriate Hitachi or Zenith-Stromberg Carburetor article in FUEL SYSTEMS section.