N - REMOVE/INSTALL/OVERHAUL

1991 Mazda Miata

1991 ENGINE PERFORMANCE
Removal, Overhaul & Installation

B2200, B2600i, Miata, MPV, MX-6,
Navajo, Protege, RX7, 323, 626, 929

INTRODUCTION

Removal, overhaul and installation procedures are covered in this article. If component removal and installation is primarily an unbolt and bolt-on procedure, only a torque specification may be furnished. See TORQUE SPECIFICATIONS TABLE at end of article.

On Miata, obtain code number and deactivate anti-theft alarm before disconnecting battery cable.

DISTRIBUTOR IGNITION SYSTEM

NOTE: Miata, Navajo and RX7 are equipped with distributorless ignition system.

Refer to appropriate illustration when removing, overhauling or installing distributor. See Figs. 1-8.

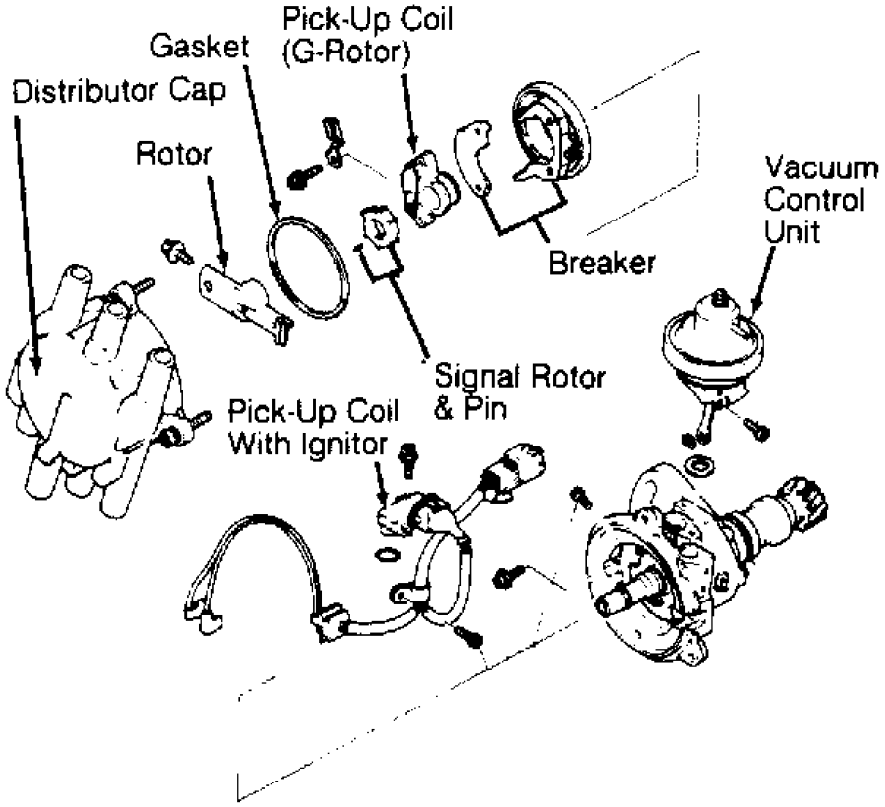


Fig. 1: Exploded View of Distributor (B2200 Carbureted)
Courtesy of Mazda Motors Corp.

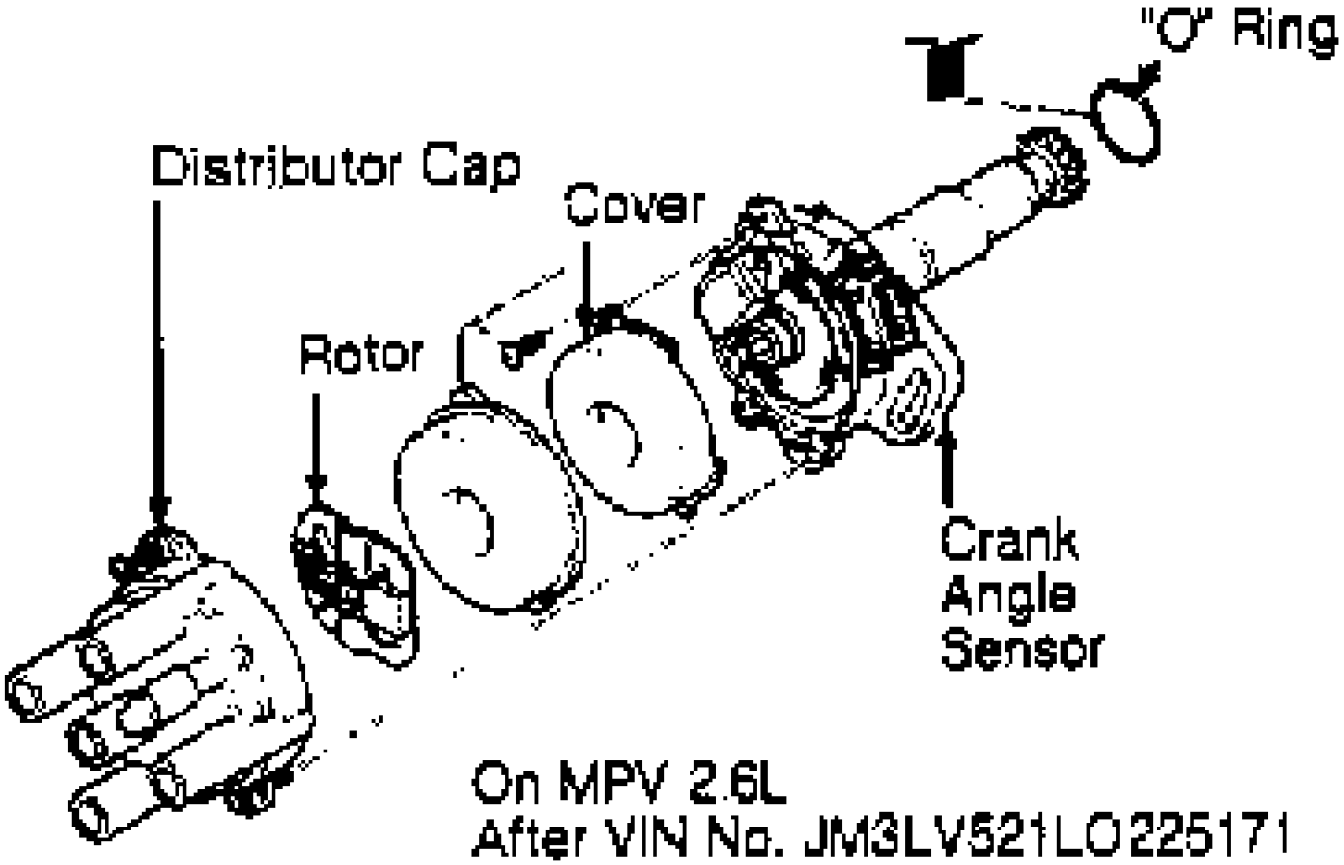


Fig. 2: Exploded View of Distributor (B2200 PFI, B2600i & MPV 2.6L)
Courtesy of Mazda Motors Corp.

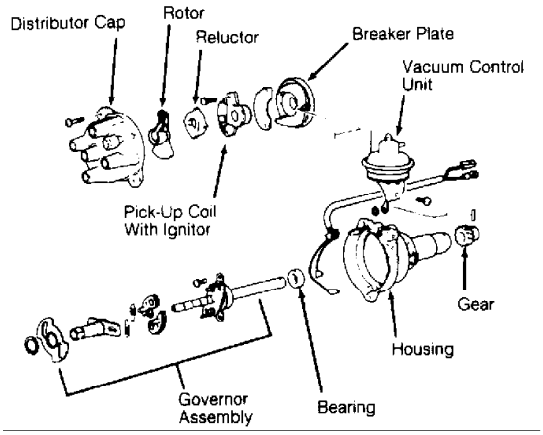


Fig. 3: Exploded View of Distributor (MPV 3.0L)
Courtesy of Mazda Motors Corp.

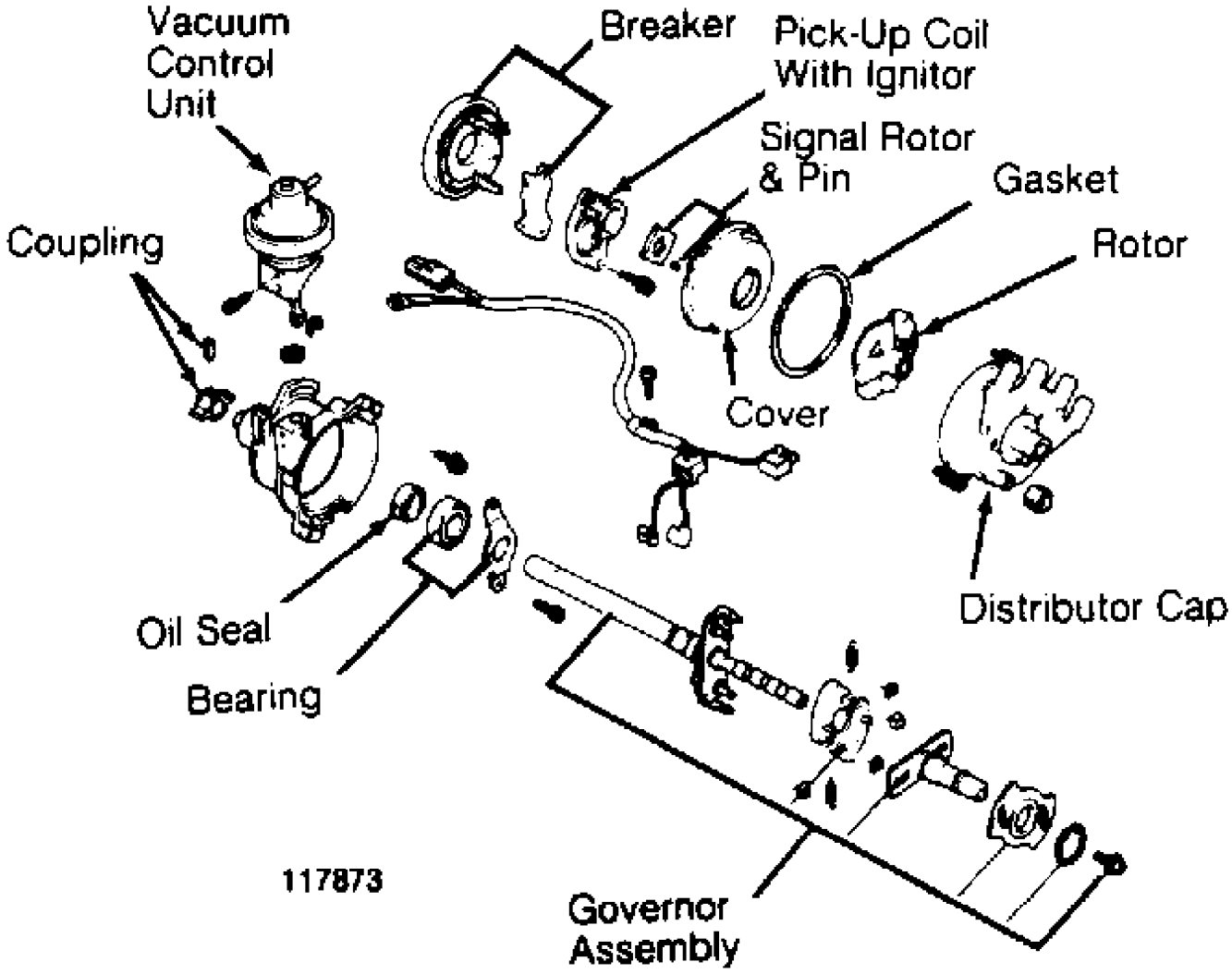


Fig. 4: Exploded View of Distributor (MX-6 & 626 Non-Turbo)
Courtesy of Mazda Motors Corp.

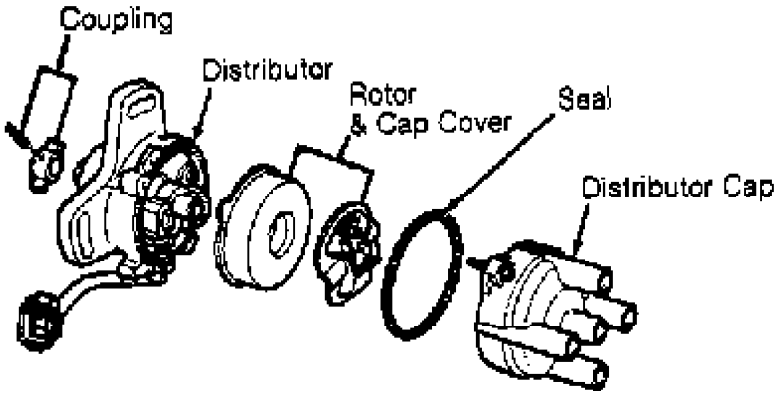


Fig. 5: Exploded View of Distributor (MX-6 & 626 Turbo)
Courtesy of Mazda Motors Corp.

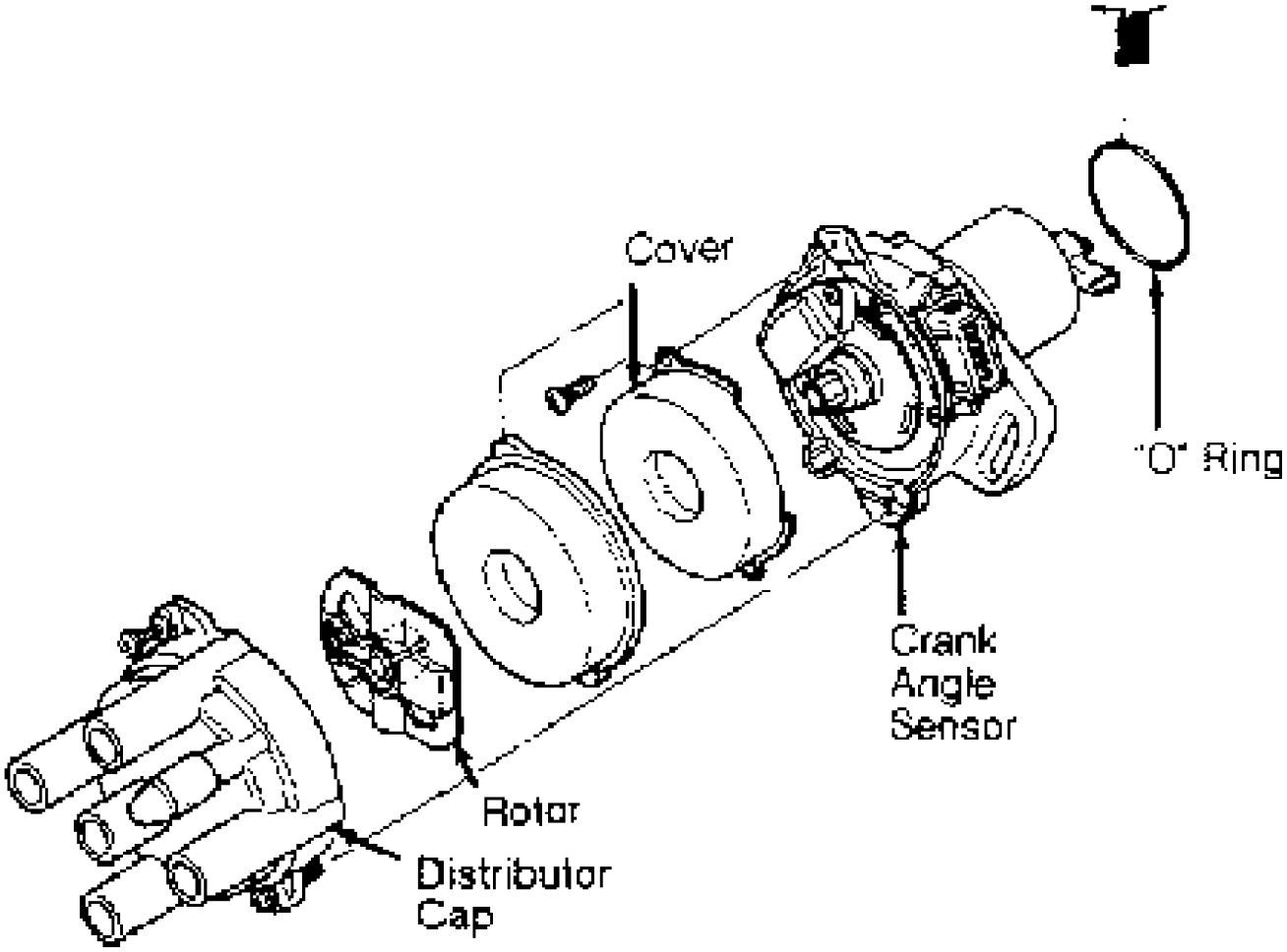


Fig. 6: Exploded View of Distributor (Protege & 323)
Courtesy of Mazda Motors Corp.

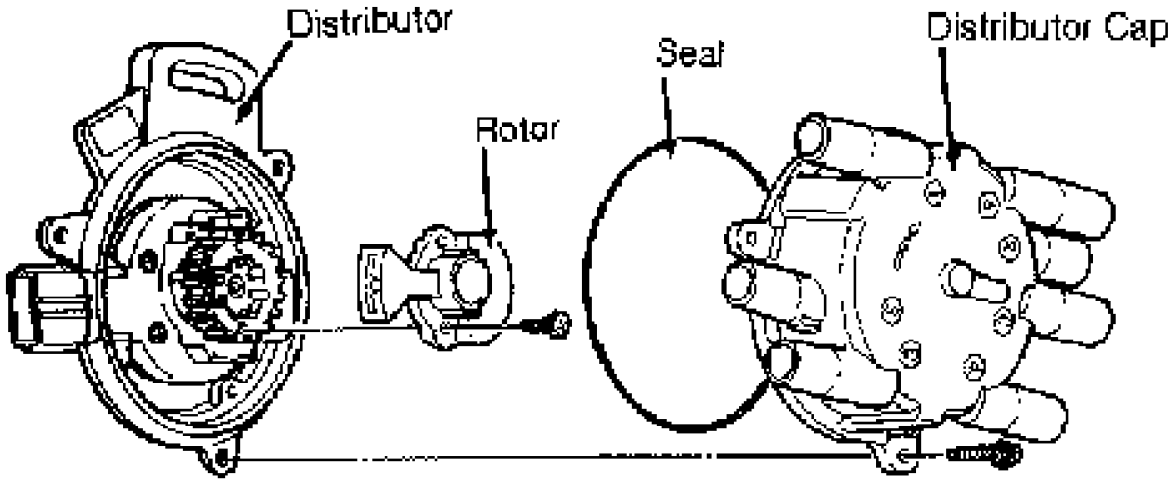


Fig. 7: Exploded View of Distributor (929 DOHC)
Courtesy of Mazda Motors Corp.

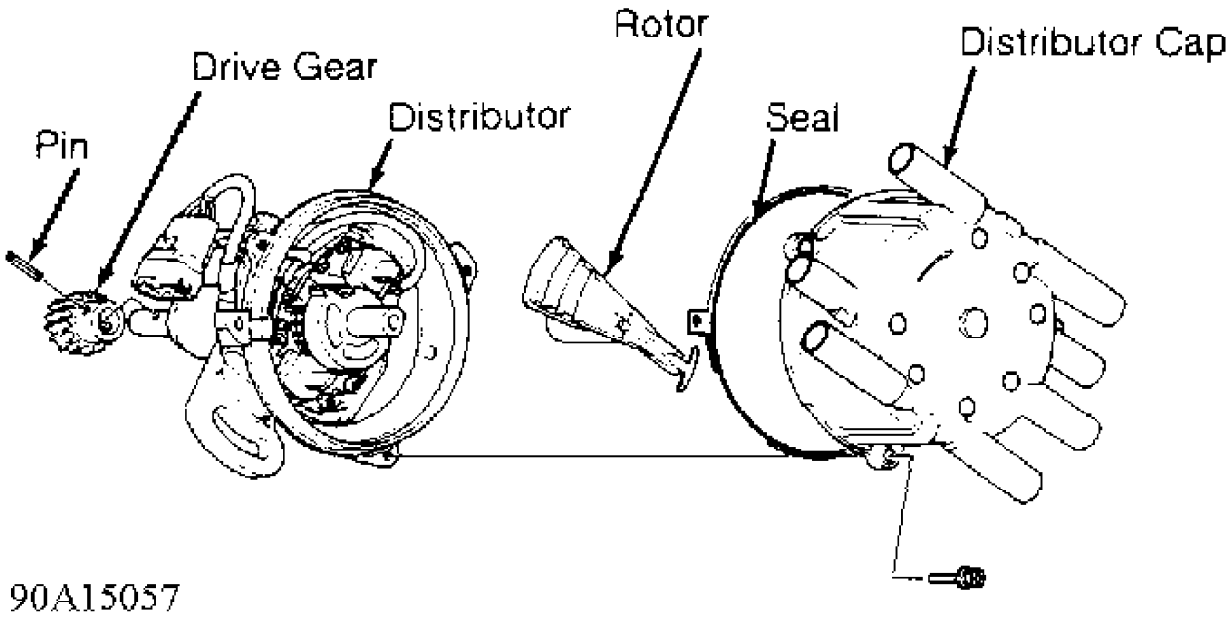


Fig. 8: Exploded View of Distributor (929 SOHC)
Courtesy of Mazda Motors Corp.

CRANK ANGLE SENSOR R & I

MIATA

Disconnect sensor connector. Remove hold-down bolt. Remove sensor. To install, reverse removal procedure. See TORQUE SPECIFICATIONS TABLE at end of article. Adjust ignition timing. See the appropriate D - ADJUSTMENTS article in the ENGINE PERFORMANCE section.

REMOVAL (RX7)

Align Yellow timing mark on pulley with indicator. Disconnect sensor connector. Remove hold-down bolt. Remove sensor.

INSTALLATION

Align mark on sensor drive gear with mark on sensor housing. Ensure Yellow timing mark on pulley is aligned with indicator. Install sensor and lock bolt. See TORQUE SPECIFICATIONS TABLE at end of article. Adjust ignition timing. See appropriate D - ADJUSTMENTS article in the ENGINE PERFORMANCE section.

CRANKSHAFT SENSOR R & I (NAVAJO)

Disconnect negative battery cable. Disconnect crankshaft (variable reluctance) sensor connector. See Fig. 9. Remove crankshaft sensor mounting screws and crankshaft sensor. To install, reverse removal procedure.

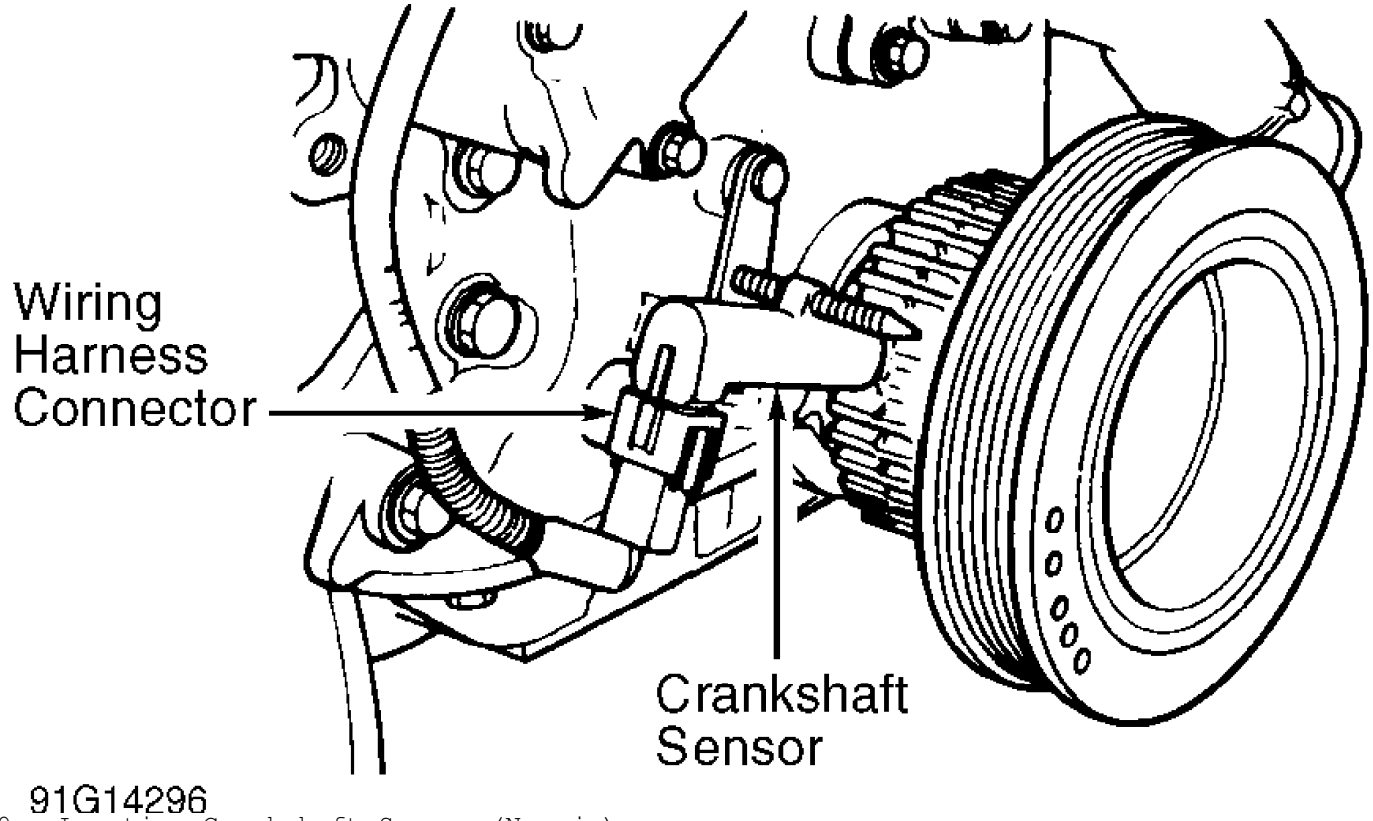


Fig. 9: Locating Crankshaft Sensor (Navajo)
Courtesy of Ford Motor Co.

FUEL SYSTEM PRESSURE RELEASE

WARNING: ALWAYS relieve fuel pressure before disconnecting any fuel injection-related component. DO NOT allow fuel to contact engine or electrical components.

NAVAJO

1) Disconnect negative battery cable. Remove snow/ice shield. Remove air intake tube between air cleaner and throttle body. Remove fuel filler cap to release fuel tank pressure. Connect Fuel Pressure Gauge (49UN01010) to relief valve (Schrader valve) on fuel supply manifold, near fuel pressure regulator. See Fig. 27.

2) As an alternate method, disconnect inertia switch connector, behind instrument panel, under radio. Start and operate engine until it stalls.

EXCEPT NAVAJO

1) Start engine. On B2200 PFI, B2600i, Miata, MX-6 & 626, disconnect circuit opening relay. See CIRCUIT OPENING RELAY LOCATION TABLE. On MPV 3.0L, disconnect airflow sensor connector.

2) On all other models, disconnect fuel pump connector near fuel tank (on MPV 2.6L, Protege and 323, fuel pump connector is accessible from under rear seat cushion; on RX7 and 929, connector is on right side of trunk).

3) On all models, allow engine to run until it stalls. Turn ignition off. Reconnect electrical connector.

CIRCUIT OPENING RELAY LOCATION TABLE

Application	Location
B2200 PFI & B2600i	Behind Left Kick Panel.
Miata	To Left Of Steering Column.
MX-6 & 626	Near Fuse Block, On Relay Panel.

FUEL LINE CONNECTORS (NAVAJO)

NOTE: Although push-connect fittings and spring lock couplers are similar in function, different procedures and tools are used to disconnect and connect these connectors. To identify type of connector, see Figs. 10 and 11.

PUSH-CONNECT FITTING (DISCONNECTING)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove locking (safety) clip (if equipped).
2) Position Push-Connect Fitting Releaser (49UN01053 for 5/16" line; 49UN01054 for 3/8" line) over fuel line. See Fig. 10. Slide releaser into fitting. Pull fuel lines apart.

PUSH-CONNECT FITTING (CONNECTING)

Press fuel lines together until a click is heard. Attempt to pull lines apart to ensure coupler is fully engaged. Install locking clip (if equipped).

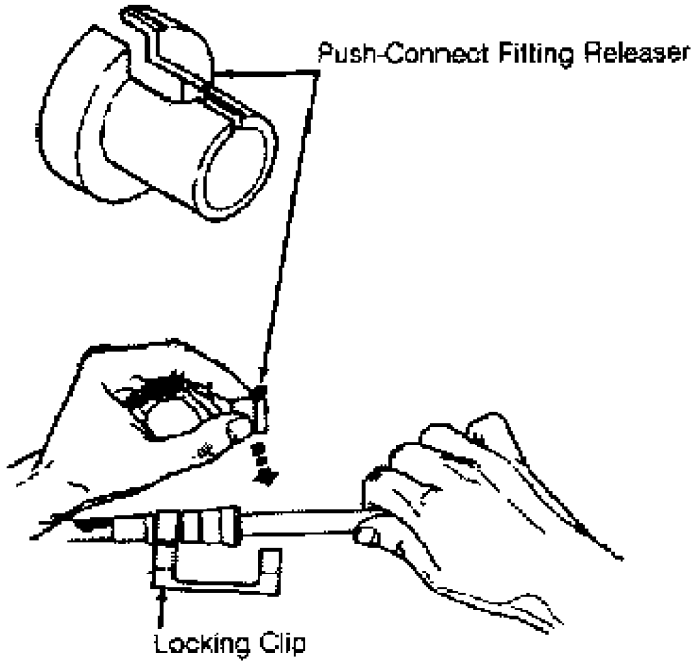


Fig. 10: Disconnecting Push-Connect Fitting (Navajo)
Courtesy of Ford Motor Co.

SPRING LOCK COUPLER (DISCONNECTING)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove locking (safety) clip (if equipped). Place Spring Lock Coupler Releaser (49UN01051 for 3/8" line; 49UN01052 for 1/2" line) over fuel line coupler. See Fig. 11.

2) Push spring lock coupler releaser to release female fitting from garter spring. Pull spring lock coupler apart. Remove releaser.

SPRING LOCK COUPLER (CONNECTING)

1) Check for damaged garter spring. If garter spring is damaged, remove with small hooked wire and replace. Wipe end of lines with clean cloth. Place new "O" rings onto tube. Lubricate ends of lines with clean refrigerant oil.

2) Push fitting together with a slight twisting motion. Ensure garter spring is over flared end of female fitting. Attempt to pull lines apart to ensure coupler is fully engaged. Install locking clip (if equipped).

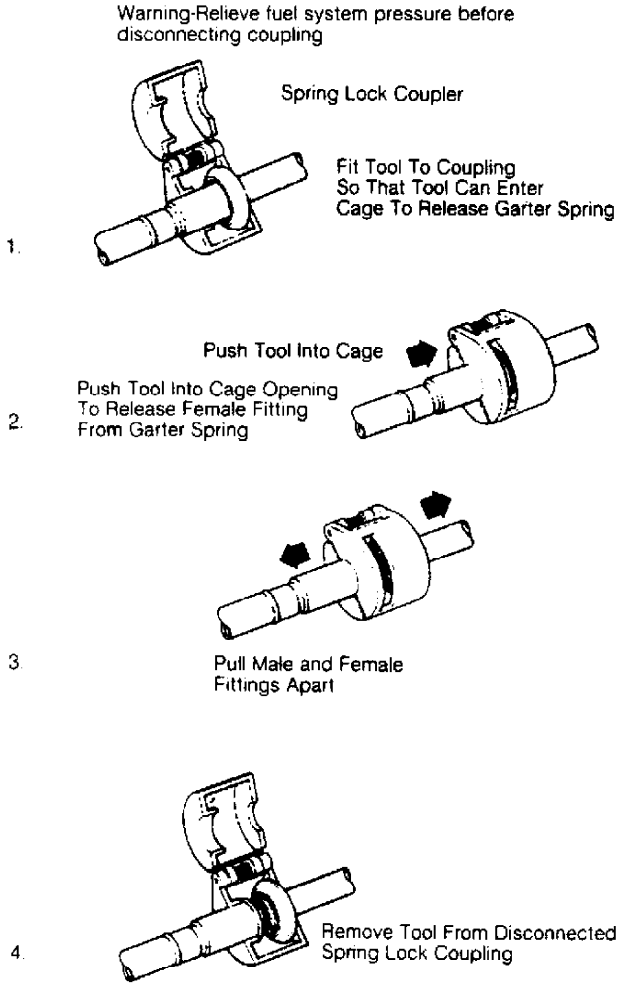


Fig. 11: Disconnecting Spring Lock Coupler (Navajo)
Courtesy of Ford Motor Co.

FUEL SYSTEM PRIMING

CAUTION: Before starting engine after performing fuel system repairs, use following procedure to prime fuel system. This prevents excessive engine cranking and allows system to be leak-tested.

NAVAJO

Without starting engine, turn ignition on and off 5-10 times.

Except Navajo 1) On B2200 PFI, B2600i, MPV, MX-6, RX7, 626 and 929, connect jumper wire between terminals of Yellow 2-pin connector. See FUEL PUMP TEST CONNECTOR LOCATION TABLE.

2) On Miata, Protege and 323, connect jumper wire between GRN and F/P terminals of diagnostic connector. See Fig. 12. On all models, turn ignition on for about 10 seconds, then turn ignition off. Disconnect jumper wire.

FUEL PUMP TEST CONNECTOR LOCATION TABLE

Application	Location
B2200 PFI & B2600i	In Right Rear Corner Of Engine Compartment.
MPV & 929	In Left Front Corner Of Engine Compartment.
MX-6 & 626	Near Left Strut Tower.
RX7	In Right Front Corner Of Engine Compartment.

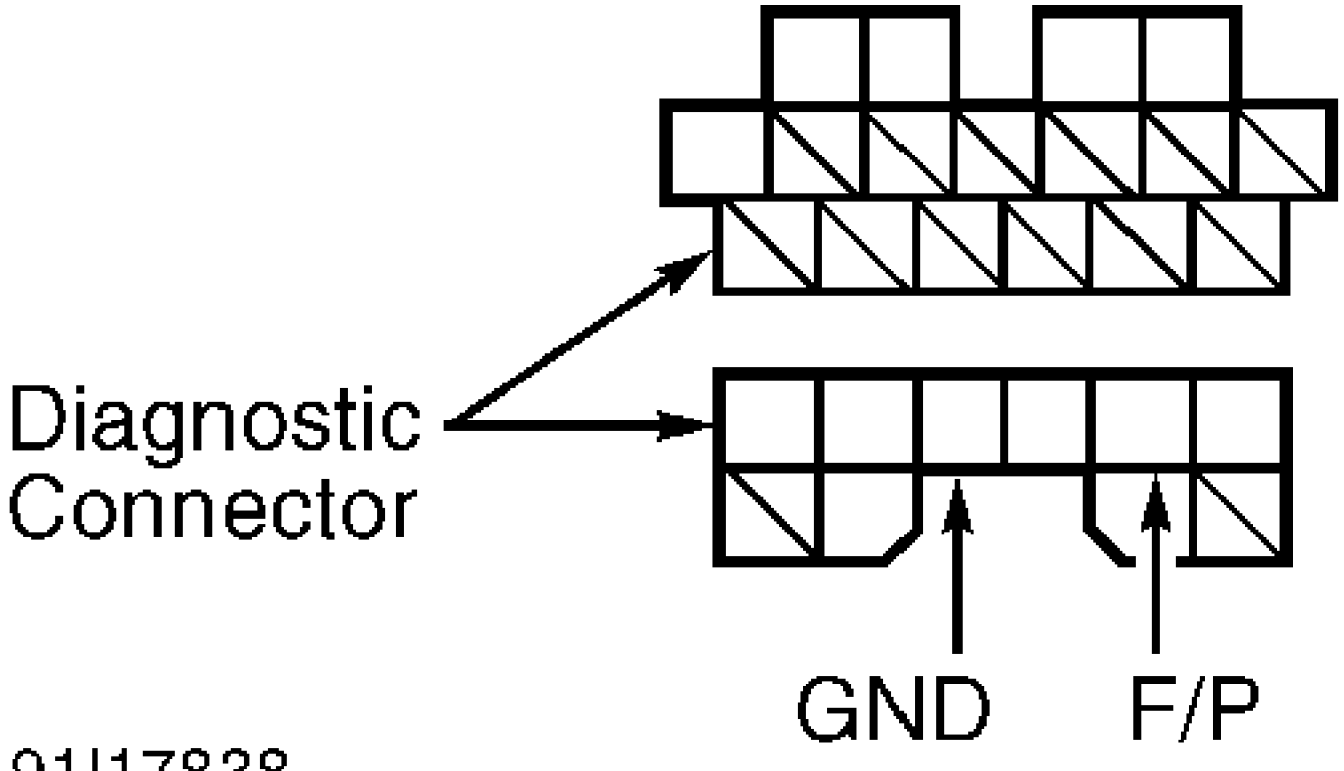


Fig. 12: Miata, Protege & 323 Diagnostic Connector Terminal ID
Courtesy of Mazda Motors Corp.

CARBURETOR R & I (B2200)

Disconnect negative battery cable. Remove air cleaner. Disconnect accelerator cable, cruise control cable (if equipped), all necessary vacuum hoses, fuel hoses and electrical connectors. Remove carburetor mounting nuts. Remove carburetor. To install, reverse removal procedure.

DISASSEMBLY (AIR HORN & CHOKE ASSEMBLY)

1) DO NOT remove choke valve and shaft from air horn. Disconnect vacuum hose from choke opener (pull-off) diaphragm. Remove accelerator pump connecting rod, spring and lever. See Fig. 17. Disconnect air vent solenoid valve wire from connector.

2) Disconnect choke rod. Remove air horn retaining bolts. Remove air horn and choke assembly from main body. Remove air vent solenoid valve, spring and gasket from air horn.

DISASSEMBLY (NEEDLE VALVE & FLOAT)

Remove float, pin and gasket. See Figs. 16 and 17. Remove needle valve assembly. Remove sight glass assembly from main body.

CAUTION: Note location and size of air bleeds and jets before removal. Components must be installed in correct location.

DISASSEMBLY (AIR BLEEDS & JETS)

1) Remove secondary slow jet, secondary slow bleed, secondary main bleed and secondary main jet from main body. See Figs. 13 and 17. Remove primary main bleed, slow jet and plug, primary slow bleed and primary main jet from main body.

2) Remove richer air bleed, primary slow bleed, coasting richer air bleed and coasting richer jet from air horn. See Figs. 14 and 17.

DISASSEMBLY (MAIN BODY)

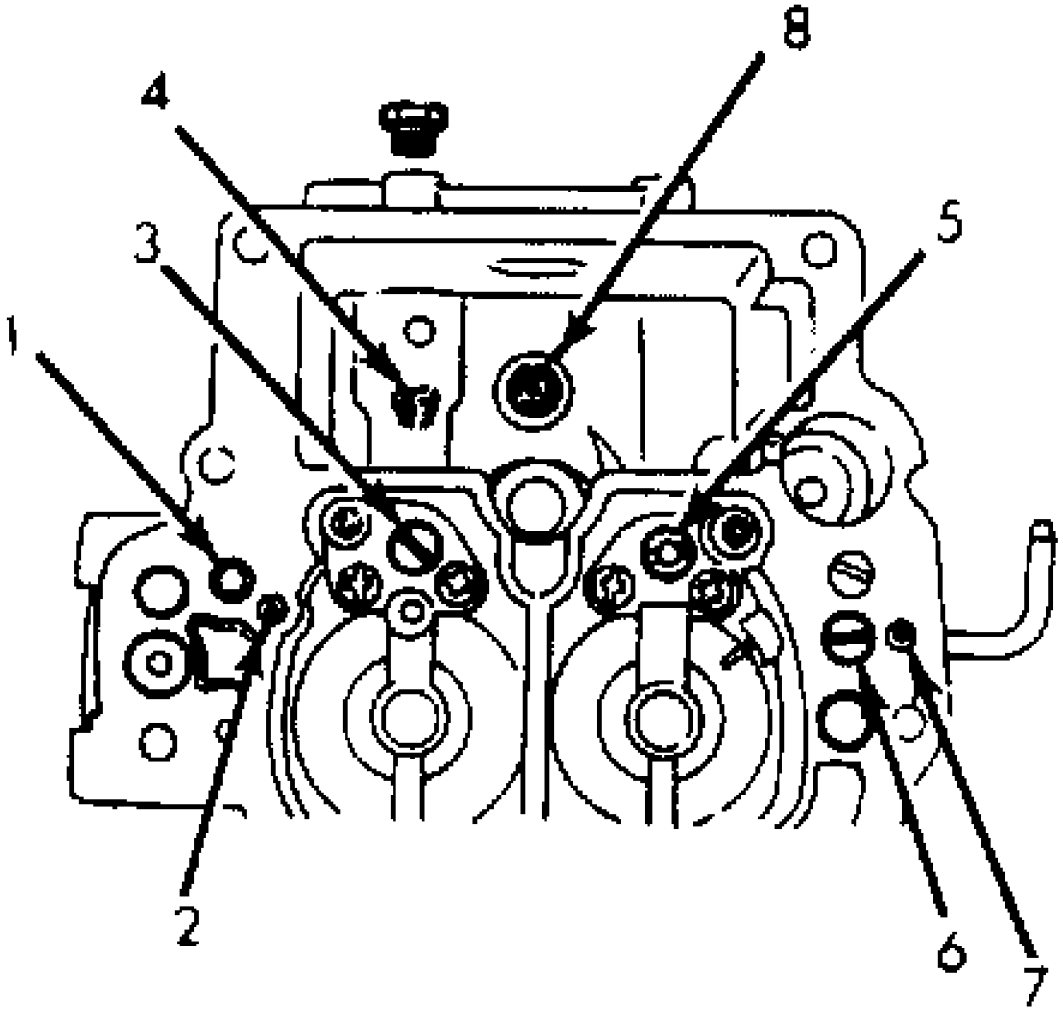
1) DO NOT remove venturis from main body. Remove coasting richer solenoid valve and "O" ring. See Fig. 17. Remove idle switch and spring. Remove slow fuel-cut solenoid valve, needle valve, spring and gasket. Remove dashpot (M/T).

2) Remove accelerator pump plunger and spring assembly. Remove retaining clip, strainer and inlet check ball. Remove outlet check ball plug, outlet check ball and spring.

3) Disconnect throttle link, vacuum diaphragm connecting rod and throttle return spring. Remove throttle body-to-main body retaining bolts (one bolt is located inside throttle body). Separate throttle body from main body.

DISASSEMBLY (THROTTLE BODY)

DO NOT remove throttle valve and shaft from throttle body. Remove vacuum (secondary) diaphragm assembly. Remove diaphragm cover screws. Remove cover, spring and diaphragm. Using small punch and hammer, remove spring pin located in front of mixture adjusting screw. Remove mixture adjusting screw.



1. Secondary Slow Jet
2. Secondary Slow Bleed
3. Secondary Main Bleed
4. Secondary Main Jet
5. Primary Main Bleed
6. Slow Jet & Plug
7. Primary Slow Bleed
8. Primary Main Jet

Fig. 13: Locating Air Bleeds & Jets (Main Body)
Courtesy of Mazda Motors Corp.

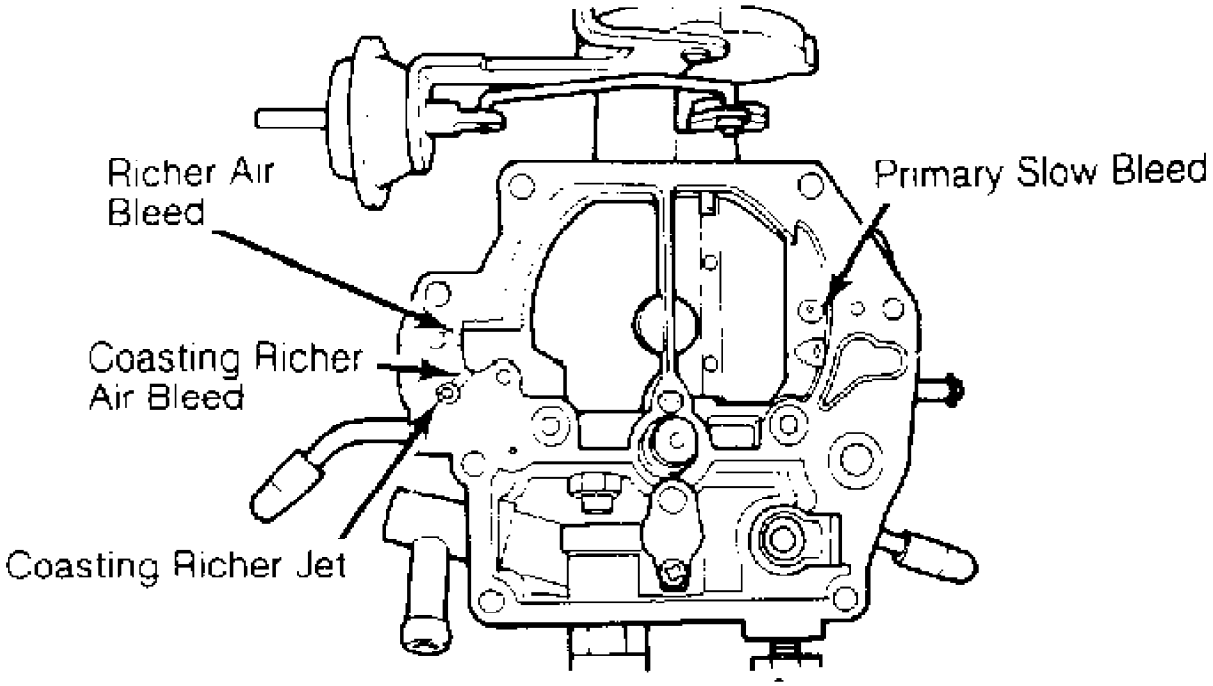


Fig. 14: Locating Air Bleeds & Jets (Air Horn)
Courtesy of Mazda Motors Corp.

NOTE: DO NOT immerse diaphragms, electrical components or synthetic parts in carburetor cleaner.

CLEANING & INSPECTION

1) Thoroughly clean parts in carburetor cleaner. Using compressed air, dry all components and blow out all passages. DO NOT use wire or pointed metal objects for cleaning. Inspect air horn, main body and throttle body for cracks.

2) Inspect choke shaft and throttle shaft for wear. Check all jets and air bleeds for open passages. Inspect needle and seat for wear. Inspect float and accelerator pump cup for damage. Replace all damaged components.

3) Inspect vacuum diaphragm for damage. Inspect idle mixture screw for wear or burrs. Apply battery voltage to solenoids to ensure solenoids operate (indicated by valve stem movement).

4) Check electric choke heater by connecting an ohmmeter to wire connector and heater ground. If there is no continuity, replace electric choke heater.

5) To check air/fuel (A/F) solenoid valve, apply battery voltage across solenoid using solenoid connector. See Fig. 15. From bottom of air horn, blow air through valve in direction indicated in illustration. If air does not flow through valve with solenoid energized, replace air horn assembly (air/fuel solenoid and air horn are replaced as an assembly).

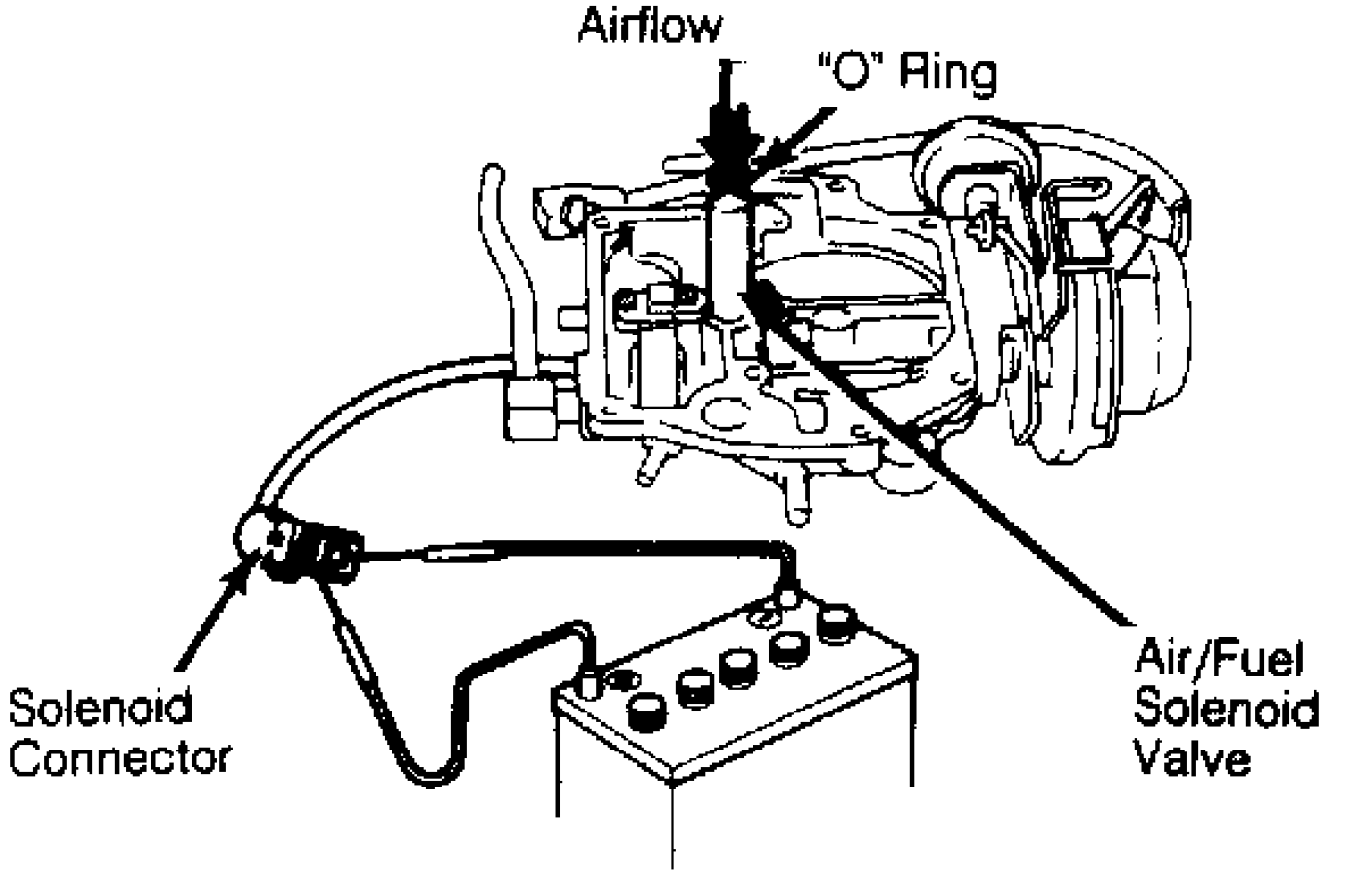


Fig. 15: Checking Air/Fuel (A/F) Solenoid Valve
Courtesy of Mazda Motors Corp.

REASSEMBLY

1) To reassemble, reverse disassembly procedure using new gaskets. DO NOT install spring pin in front of mixture screw until idle mixture has been adjusted with engine running. Before installing air horn on main body, adjust float level and float drop; install a new "O" ring on air/fuel solenoid valve and coat "O" ring with gasoline.

2) After reassembly and before installing carburetor, adjust choke pull-off diaphragm, fast idle cam (throttle opening angle), fast idle cam (choke opening angle), choke unloader, secondary throttle valve and accelerator cable.

3) After installing carburetor, adjust curb (hot) idle speed, fast (cold) idle speed and idle mixture. See appropriate D - ADJUSTMENTS article in the ENGINE PERFORMANCE section..

ADJUSTING FLOAT LEVEL

With air horn upside down and gasket removed, allow float to hang by its own weight. See Fig. 16. Measure distance between top of float and air horn gasket surface. If distance is not .42-.46" (10.7-11.7 mm) for vehicles with A/T, or .46-.50" (11.7-12.7 mm) for vehicles with M/T, bend float seat as necessary.

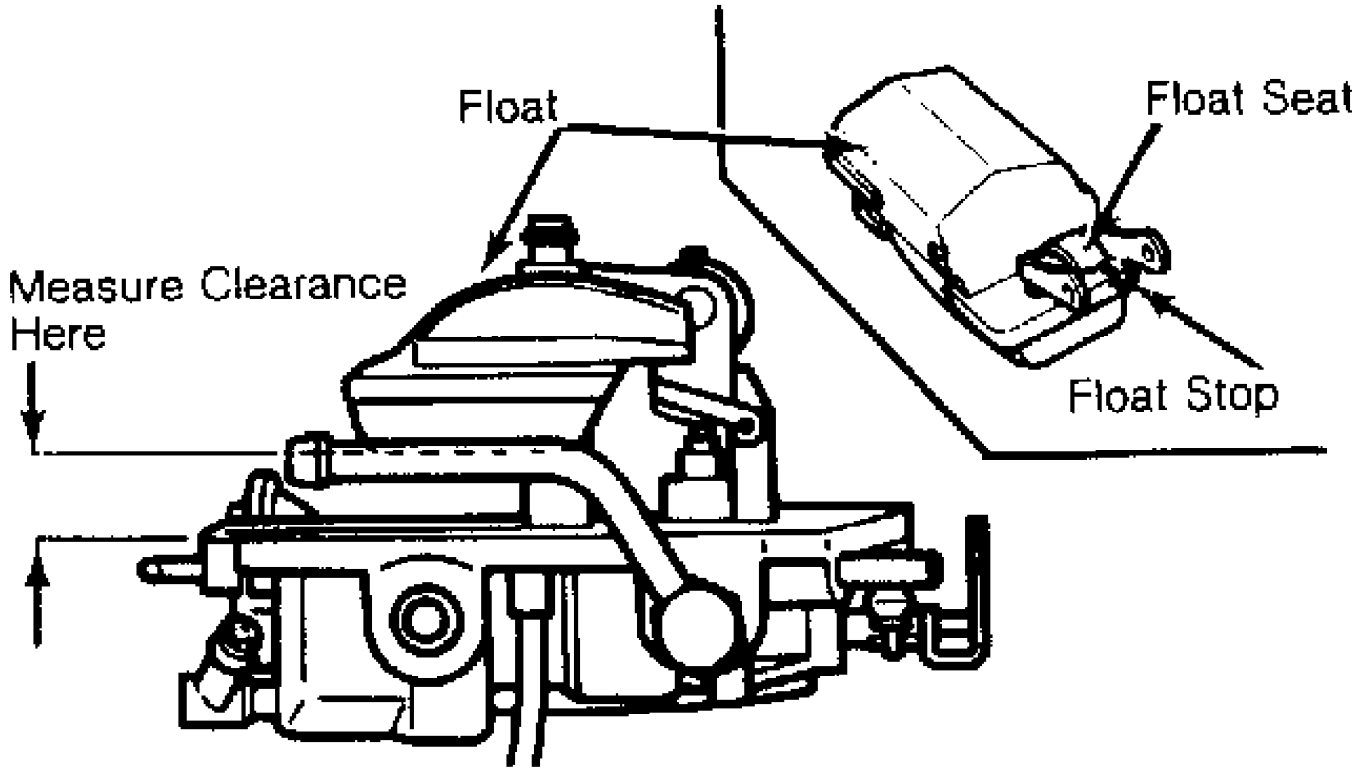
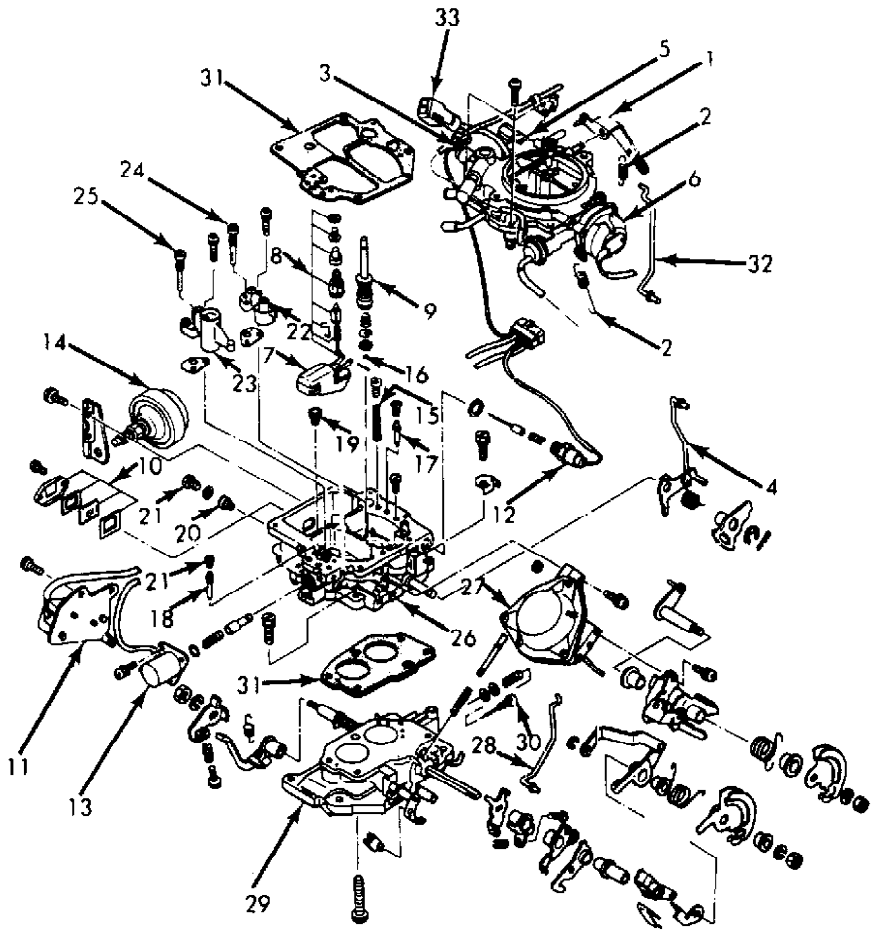


Fig. 16: Adjusting Float Level
Courtesy of Mazda Motors Corp.

ADJUSTING FLOAT DROP

With air horn upright and gasket removed, allow float to hang by its own weight. See Fig. 18. Measure distance between bottom of float and air horn gasket surface. If distance is not 1.81-1.85" (46.0-47.0 mm), bend float stop as necessary.



1. Accelerator Pump Connecting Rod
2. Spring
3. Air Vent Solenoid Valve
4. Choke Rod
5. Air Horn
6. Choke Assembly
7. Float
8. Needle Valve Assembly
9. Accelerator Pump Plunger
10. Sight Glass Assembly
11. Idle Switch
12. Slow Fuel-Cut Valve
13. Coasting Richer Solenoid Valve
14. Dashpot
15. Outlet Check Ball & Spring
16. Inlet Check Ball
17. Primary Slow Jet
18. Secondary Slow Jet
19. Primary Main Jet
20. Secondary Main Jet
21. Plug
22. Primary Venturi & Nozzle
23. Secondary Venturi & Nozzle
24. Primary Main Bleed
25. Secondary Main Bleed
26. Main Body
27. Vacuum Diaphragm Assembly
28. Throttle Link
29. Throttle Body
30. Mixture Adjust Screw
31. Gasket
32. Accelerator Pump Linkage
33. A/F Solenoid Valve Connector

Fig. 17: Exploded View of 2-Barrel Carburetor (B2200)
Courtesy of Mazda Motors Corp.

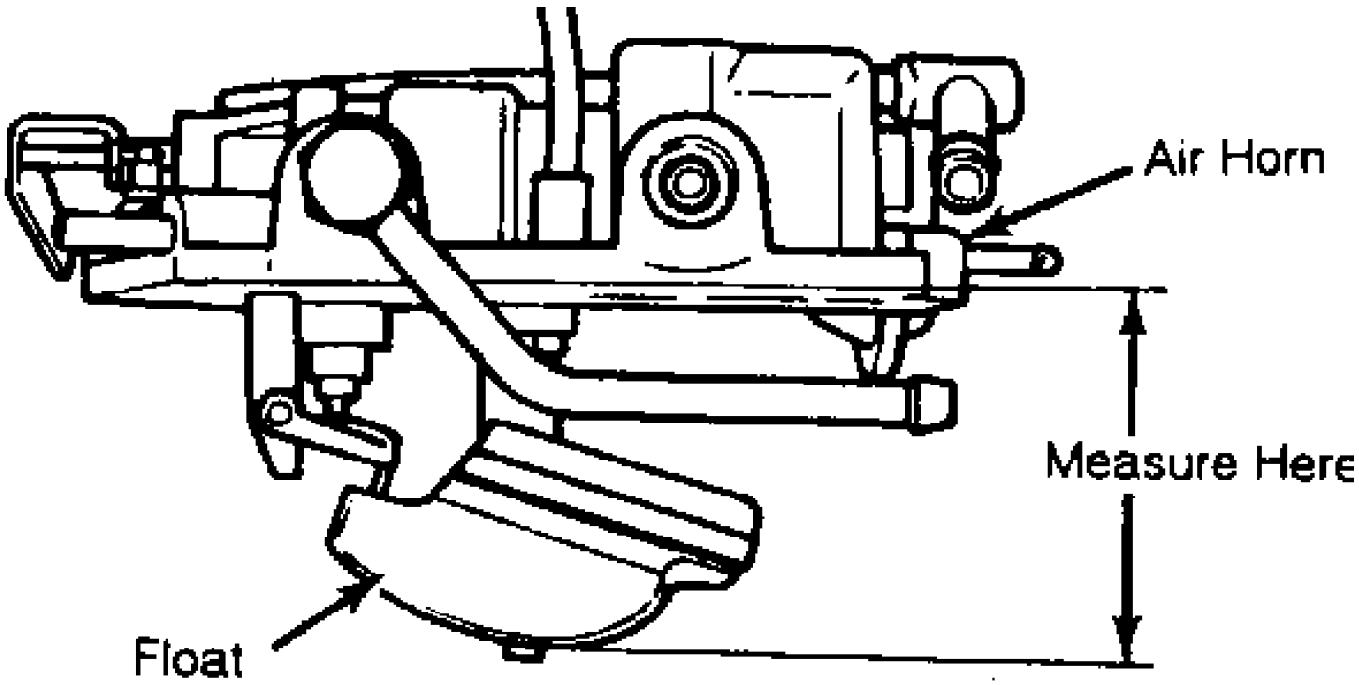


Fig. 18: Adjusting Float Drop
Courtesy of Mazda Motors Corp.

ADJUSTING CHOKE PULL-OFF DIAPHRAGM

Apply about 16 in. Hg vacuum to choke pull-off diaphragm. Lightly push choke plate toward closed position. Measure clearance between top of choke plate and air horn. See Fig. 19. If clearance is not .067-.085" (1.70-2.16 mm), bend choke tang until clearance is within specification.

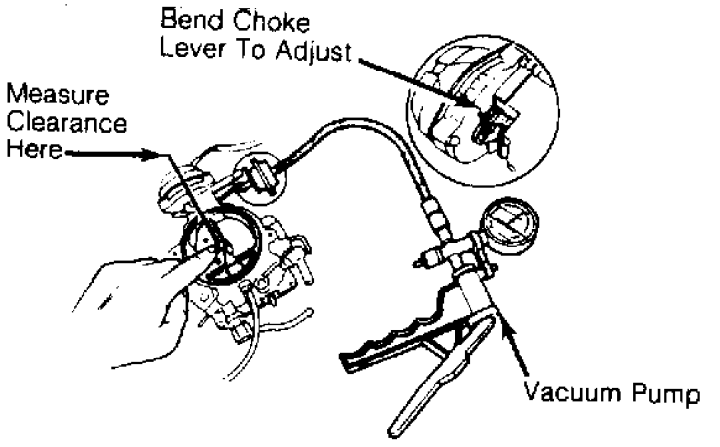


Fig. 19: Adjusting Choke Pull-Off Diaphragm
Courtesy of Mazda Motors Corp.

ADJUSTING FAST IDLE CAM - THROTTLE OPENING ANGLE

Set fast idle cam on second highest step. Measure clearance between primary throttle valve and throttle bore. See Fig. 20. If clearance is not .033-.041" (.84-1.04 mm), rotate fast idle adjusting screw as necessary.

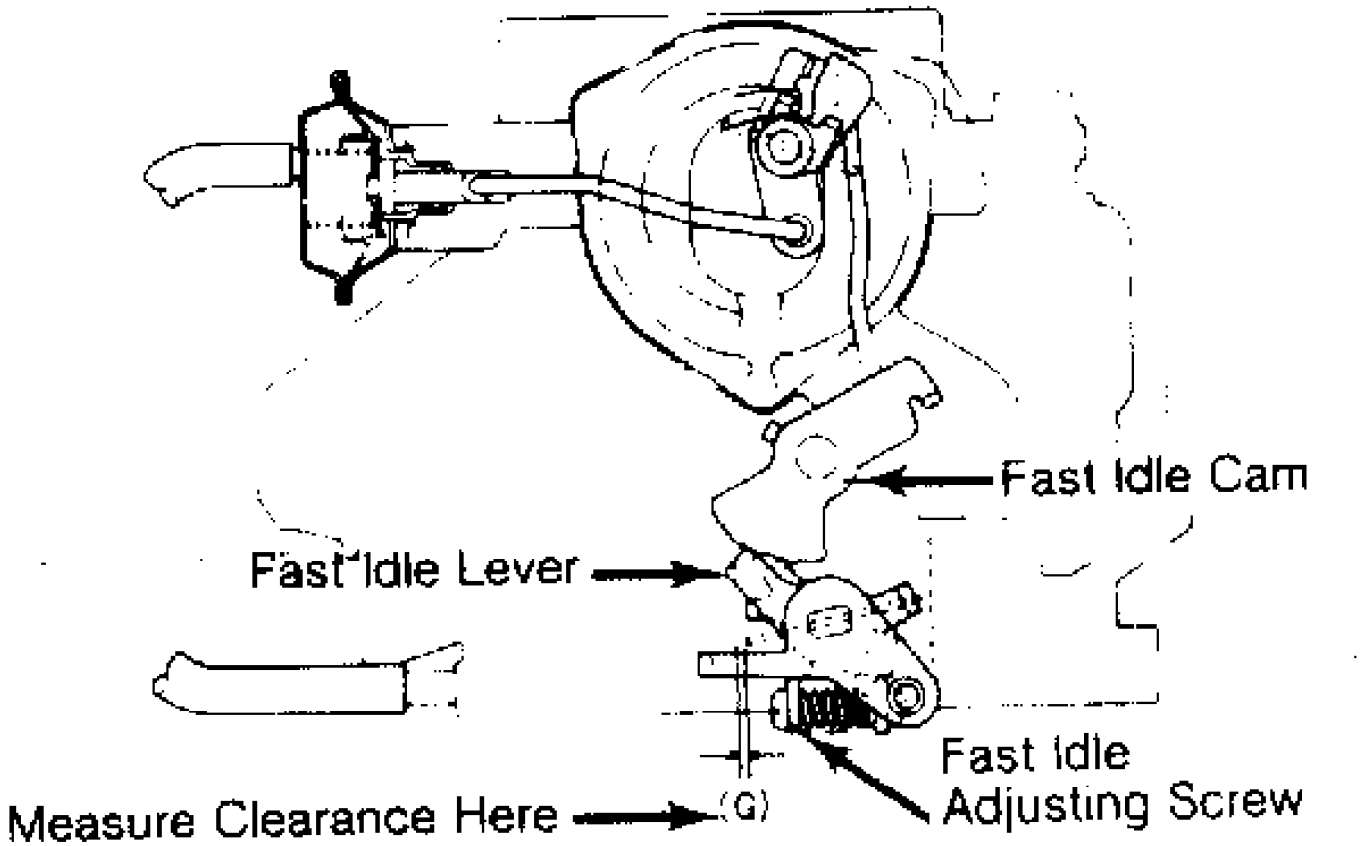


Fig. 20: Adjusting Fast Idle Cam (Throttle Opening Angle) Courtesy of Mazda Motors Corp.

ADJUSTING FAST IDLE CAM - CHOKE OPENING ANGLE

Set fast idle cam on second highest step. Measure clearance between top of choke plate and air horn. See Fig. 21. If clearance is not .024-.045 (.60-1.14), bend starting arm. If large adjustment is required, bend choke rod.

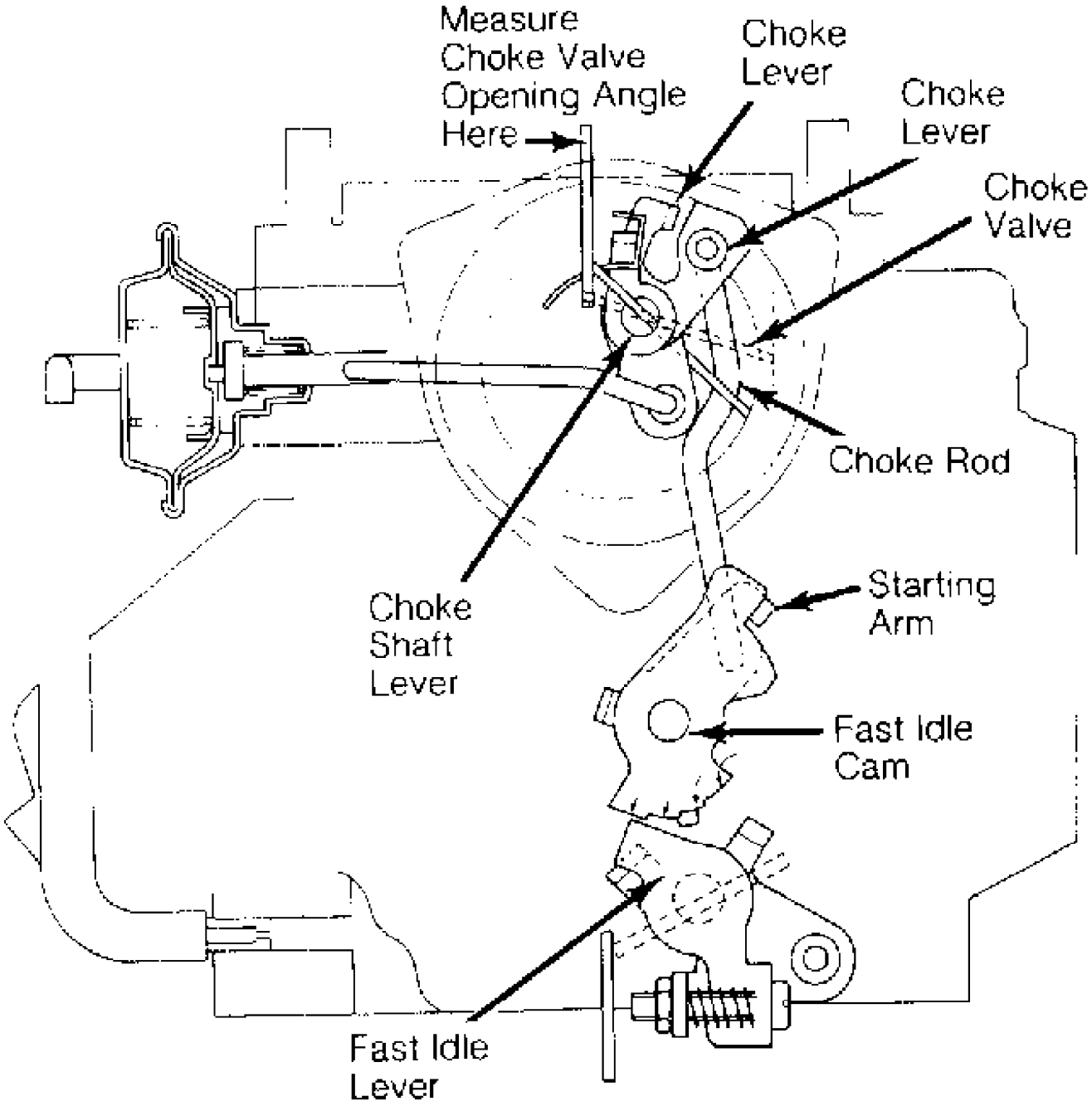


Fig. 21: Adjusting Fast Idle Cam (Choke Opening Angle)
Courtesy of Mazda Motors Corp.

ADJUSTING CHOKE UNLOADER

Fully open primary throttle valve. Measure clearance between top of choke plate and air horn. See Fig. 22. If clearance is not .110-.143" (2.80-3.62 mm), bend tab as necessary.

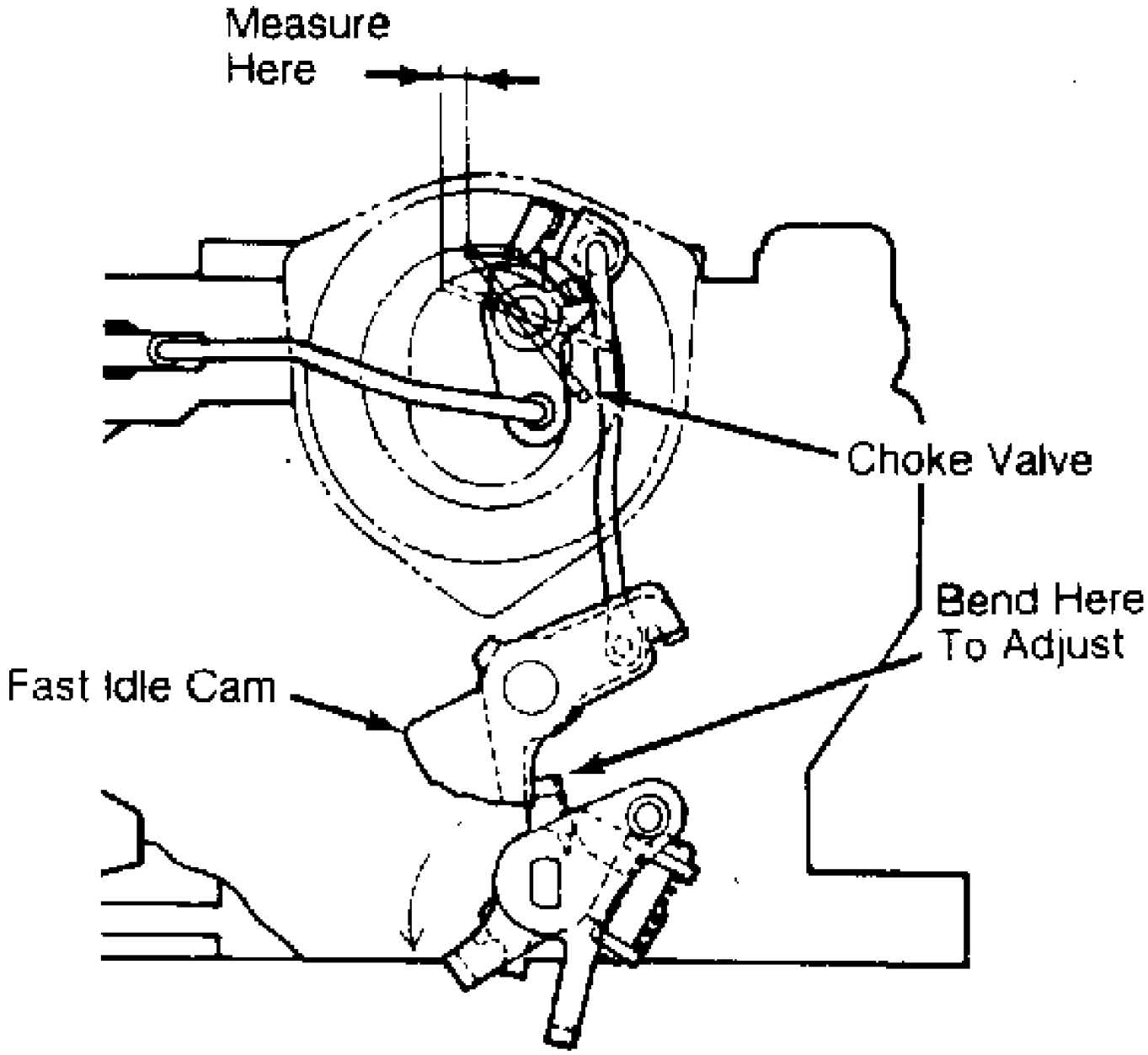


Fig. 22: Adjusting Choke Unloader
Courtesy of Mazda Motors Corp.

ADJUSTING SECONDARY THROTTLE VALVE

Secondary throttle valve should start to open when primary throttle valve opens 50-54 degrees and should be fully open when primary throttle valve is fully open. Measure clearance between primary throttle valve and throttle bore when secondary throttle valve starts to open. See Fig. 23. If clearance is not .289-.325" (7.35-8.25 mm), bend tab as necessary.

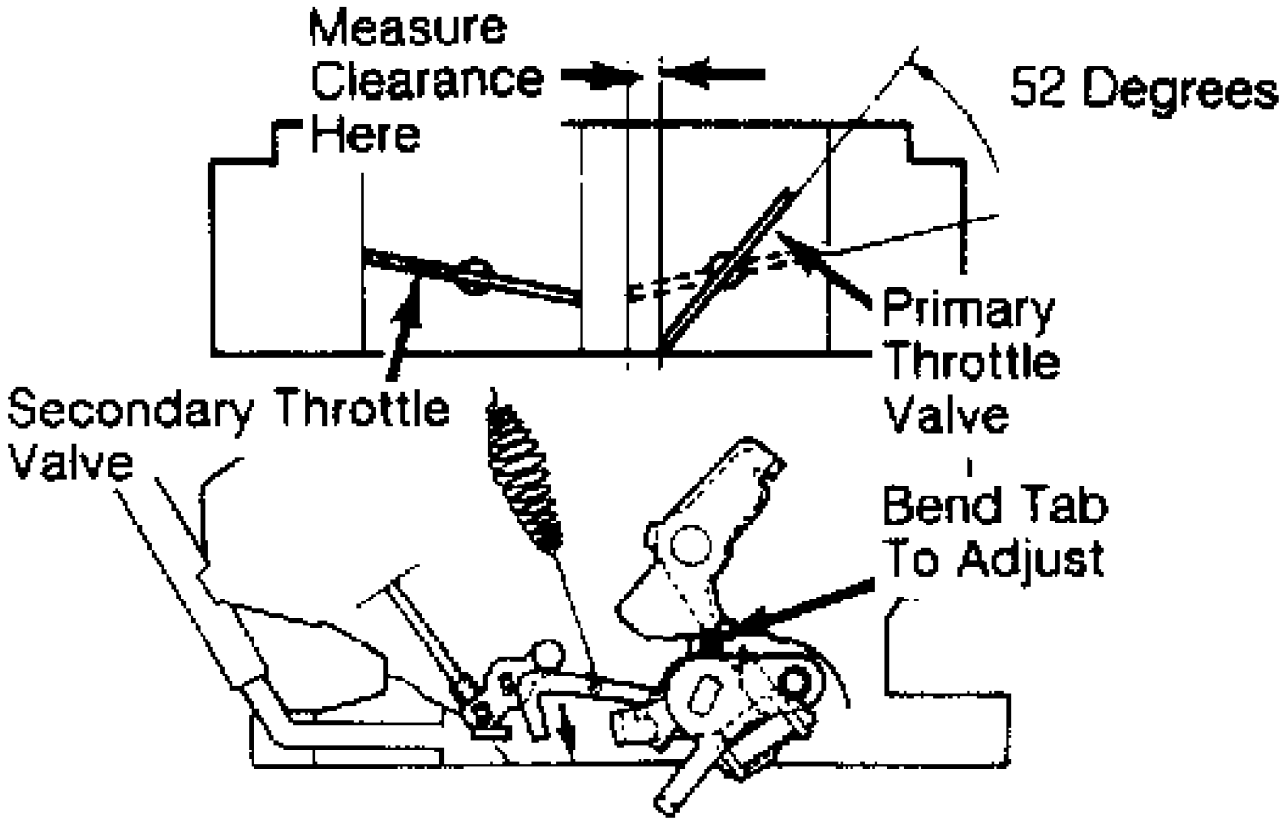


Fig. 23: Adjusting Secondary Throttle Valve
Courtesy of Mazda Motors Corp.

ADJUSTING ACCELERATOR CABLE

Check accelerator cable deflection (free play) at carburetor. If deflection is not .039-.118" (1.0-3.0 mm), turn cable adjusting nuts as necessary. Fully depress accelerator pedal. If primary throttle valve does not fully open, turn accelerator stop bolt (above accelerator pedal) as necessary to obtain full valve opening.

FUEL PUMP R & I

CAUTION: Before starting engine after performing fuel system repairs, prime fuel system. See FUEL SYSTEM PRIMING.

B2200 CARBURETED W/ ELECTRIC PUMP, B2200 PFI & B2600I

Release fuel system pressure (except B2200 Carbureted). See FUEL SYSTEM PRESSURE RELEASE. Remove fuel tank. Remove sending unit and pump assembly from tank. Remove fuel pump from assembly. To install, reverse removal procedure.

REMOVAL (MIATA, PROTEGE & 323)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE.
2) On Miata, remove rear package trim (behind seat). On Protege and 323, remove rear seat.
3) On all models, remove fuel tank access cover. Disconnect

fuel hoses and electrical connector. Remove fuel pump and sending unit assembly. Remove fuel pump from assembly.

INSTALLATION

Install fuel pump to assembly using new cap, "O" ring and spacer between fuel pump and outlet pipe (coat components with oil or gasoline before installing). See Fig. 24. After installing pump to assembly, blow through outlet pipe (at top of assembly) toward pump to confirm "O" ring seal. To install remaining components, reverse removal procedure.

REMOVAL (MPV)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove rear seat.
2) Remove fuel tank access cover. Disconnect fuel hoses and electrical connector. Remove fuel pump and sending unit assembly. Remove fuel pump from assembly.

INSTALLATION

1) Replace fuel hose between pump and outlet pipe (DO NOT apply excessive force when installing onto pump nipple). Install hose clamps so each clamp is located .10" (3 mm) from end of hose and hose clamp tabs are positioned around circumference of hose as specified in illustration. See Fig. 25.
2) Install pump with terminals positioned in relation to assembly frame as specified in illustration. To install remaining components, reverse removal procedure.

REMOVAL (MX-6, RX7, 626 & 929)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE.
2) On MX-6 and 626, remove rear seat. On RX7, lift floor mat in rear compartment. On 929, lift rear floor mat in trunk.
3) On all models, remove fuel tank access cover. Disconnect fuel hoses and electrical connector. Remove fuel pump and sending unit assembly. Remove fuel pump from assembly.

INSTALLATION

To install, reverse removal procedure.
Removal (Navajo) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE in this article. Remove fuel tank. Using Fuel Tank Lock Ring Wrench (T86T-9275-A), turn lock ring counterclockwise. Remove lock ring. Remove fuel sending unit and pump assembly from tank.

INSTALLATION

Clean seal area on tank and assembly flange. Lightly coat new "O" ring with molybdenum grease. Install seal in groove. Carefully install assembly into fuel tank, ensuring filter is not damaged and seal remains in groove. Install lock ring, and tighten to 40-45 ft. lbs. (54-61 N.m). Install fuel tank.

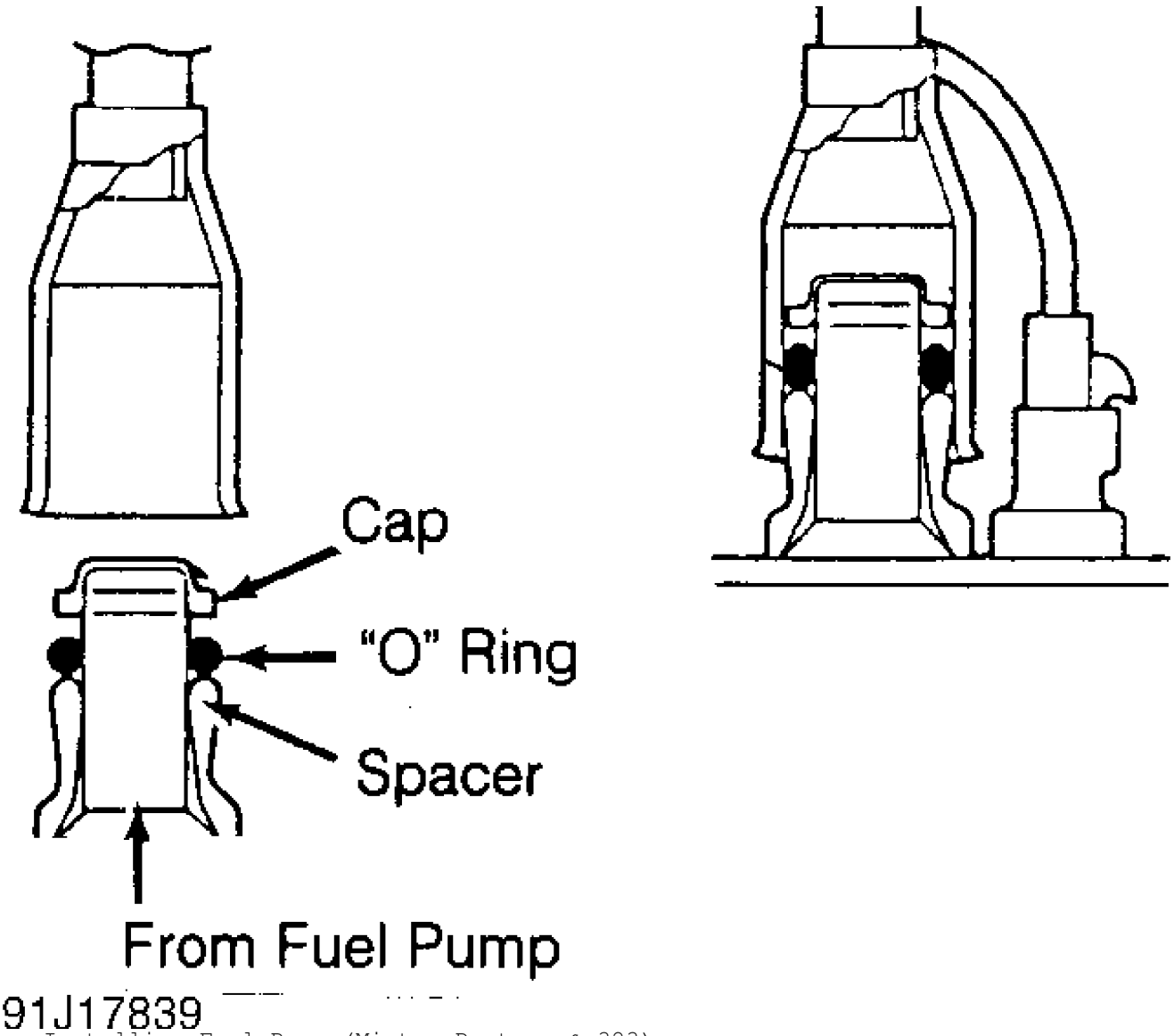


Fig. 24: Installing Fuel Pump (Miata, Protege & 323)
Courtesy of Mazda Motors Corp.

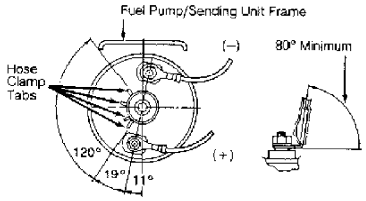


Fig. 25: Installing Fuel Pump (MPV)
Courtesy of Mazda Motors Corp.

FUEL PRESSURE REGULATOR R & I

CAUTION: Before starting engine after performing fuel system repairs, prime the fuel system. See FUEL SYSTEM PRIMING.

NAVAJO

1) Disconnect battery ground cable. Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Disconnect vacuum hose from regulator. Disconnect fuel line coupling at regulator. See FUEL LINE CONNECTORS (NAVAJO).

2) Remove regulator mounting bolts. Remove regulator, "O" ring and washer. To install, reverse removal procedure using new washer and "O" ring. Lubricate new "O" ring with light oil. DO NOT use silicone grease.

RX7

Fuel pressure regulator is part of secondary fuel rail. See FUEL RAILS & INJECTORS.

EXCEPT NAVAJO & RX7

1) Disconnect battery ground cable. Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. On MX-6 and 626, remove dynamic chamber. On all models, disconnect vacuum and fuel hose(s) from regulator. Remove regulator mounting bolts. Remove regulator, gasket and "O" ring (if equipped).

2) To install, reverse removal procedure. Install new gasket and "O" ring (if equipped). On MX-6 and 626, install dynamic chamber with new gasket, and tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

FUEL RAILS & INJECTORS R & I

CAUTION: Before starting engine after performing fuel system repairs, prime fuel system. See FUEL SYSTEM PRIMING.

B2200 PFI, B2600I & MPV 2.6L

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove throttle body. See THROTTLE BODY.

2) Remove support brackets and injector harness bracket from dynamic chamber. Disconnect vacuum hoses, PCV hose, intake air thermosensor connector and ground wire from dynamic chamber. Remove dynamic chamber.

3) Disconnect vacuum hose and fuel hoses from fuel rail. Disconnect injector electrical connectors. Pull fuel rail with injectors and pressure regulator upward to remove. Remove insulators, injectors and "O" rings from fuel rail.

4) To install, reverse removal procedure. Apply coat of engine oil to new "O" rings and install on injectors. Install new insulators. Tighten fuel rail mounting bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Install dynamic chamber with new gasket.

MIATA

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Disconnect negative battery cable. Remove air valve and PCV valve from intake manifold. Disconnect vacuum and fuel hoses from fuel rail. Disconnect injector electrical connectors. Remove insulators,

injectors and "O" rings from fuel rail.

2) To install, reverse removal procedure. Apply coat of engine oil to new "O" rings, and install rings on injectors. Install new insulators. Tighten fuel rail mounting bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

MPV 3.0L & 929 SOHC

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove air intake tube. See Fig. 26. Remove throttle body. See THROTTLE BODY.

2) Remove intake air pipe, extension manifolds and dynamic chamber. Disconnect fuel hoses from fuel rail. Disconnect injector electrical connectors. Remove fuel rail and injectors as an assembly. Remove insulators, injectors and "O" rings from fuel rail.

3) To install, reverse removal procedure. Apply coat of engine oil to new "O" rings and install on injectors. Install new insulators. Tighten fuel rail mounting nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Install new extension manifold and intake air pipe gaskets.

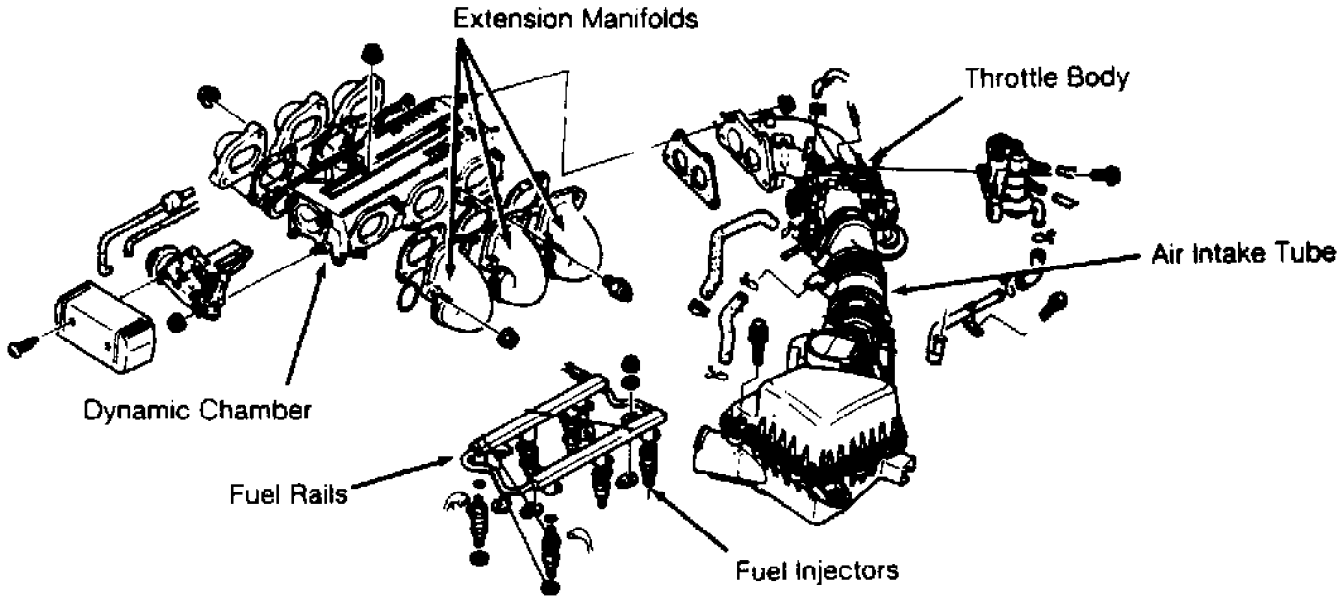


Fig. 26: View of Upper Intake Manifold Components & Fuel Rail (MPV 3.0L Shown; 929 SOHC Similar)

MX-6 & 626

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove dynamic chamber. Disconnect fuel return pipe from intake manifold. Disconnect injector electrical connectors. Remove fuel rail, injectors, pressure regulator and pulsation damper as an assembly.

2) Remove insulators, injectors and "O" rings from fuel rail. To install, reverse removal procedure. Apply coat of engine oil to new "O" rings, and install rings on injectors. Install new insulators. Tighten fuel rail mounting bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

REMOVAL (NAVAJO)

1) Thoroughly clean engine. Release fuel system pressure. See

FUEL SYSTEM PRESSURE RELEASE. Disconnect negative battery cable. Remove upper intake manifold and throttle body (as an assembly). See Fig. 27.

2) Disconnect fuel supply line from fuel supply manifold. See FUEL LINE CONNECTORS (NAVAJO). Disconnect fuel return line from fuel pressure regulator. Remove fuel supply manifold. Disconnect injector electrical connectors. Remove injectors from fuel supply manifold.

INSTALLATION

1) If injectors were removed, lubricate new injector "O" rings with light oil. DO NOT use silicone grease. Carefully install injectors into fuel supply manifolds. Carefully install fuel supply manifolds into lower manifold using new manifold gasket.

2) Clean and oil fuel supply manifold bolt threads. Install fuel supply manifold. Tighten bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. To complete installation, reverse removal procedure.

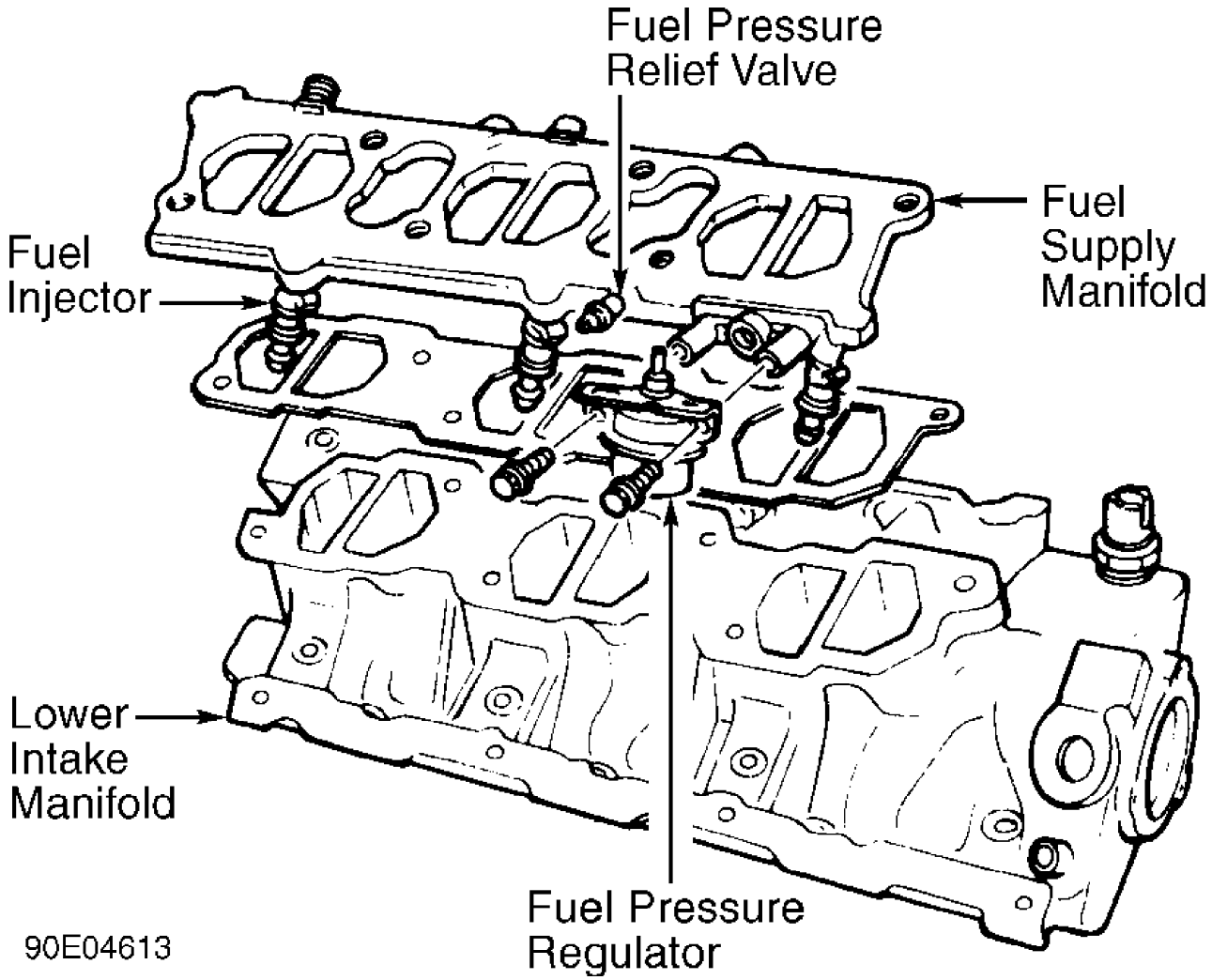


Fig. 27: Exploded View of Fuel Supply Manifold Assembly (Navajo) Courtesy of Ford Motor Co.

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Disconnect injector electrical connectors. Remove injector harness from fuel rail. Remove fuel rail mounting bolts. Remove fuel rail, injectors and pressure regulator as an assembly.

2) Remove insulators, injectors and "O" rings from fuel rail. To install, reverse removal procedure. Apply coat of engine oil to new "O" rings, and install rings on injectors. Install new insulators. Tighten fuel rail mounting bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

REMOVAL (RX7)

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove throttle body and dynamic chamber as an assembly. See THROTTLE BODY. See Figs. 28 & 29.

2) Disconnect vacuum and fuel hoses from secondary fuel rail. Disconnect injector electrical connectors. Remove secondary fuel rail and injectors as an assembly. Remove insulators, injectors and "O" rings from fuel rail. Remove air bleed socket. See Fig. 30.

3) On non-turbo, remove extension manifold. On all vehicles, disconnect fuel hoses from primary fuel rail. Disconnect primary injector electrical connectors. Remove primary fuel rail and injectors as an assembly. Remove insulators, injectors and "O" rings from fuel rail. Remove air bleed socket and mixing plate. See Fig. 31.

INSTALLATION

1) Apply coat of engine oil to new "O" rings. Install "O" rings on primary injectors and air bleed sockets. See Fig. 31. Install mixing plates, ensuring tab on plate is indexed with notch in housing.

2) Install primary injectors onto fuel rail, ensuring electrical connectors are positioned as illustrated. See Fig. 31. Install primary fuel rail and injector assembly. Tighten fuel rail mounting bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

3) On non-turbo models, install extension manifold using new gasket. On all vehicles, apply coat of engine oil to new "O" rings. Install "O" rings on secondary injectors and air bleed sockets. See Fig. 30. Install secondary air bleed sockets.

4) Install secondary injectors onto fuel rail, ensuring injector electrical connectors are positioned as illustrated. See Fig. 30. Install secondary fuel rail and injector assembly. To install remaining components, reverse removal procedure using new dynamic chamber gasket.

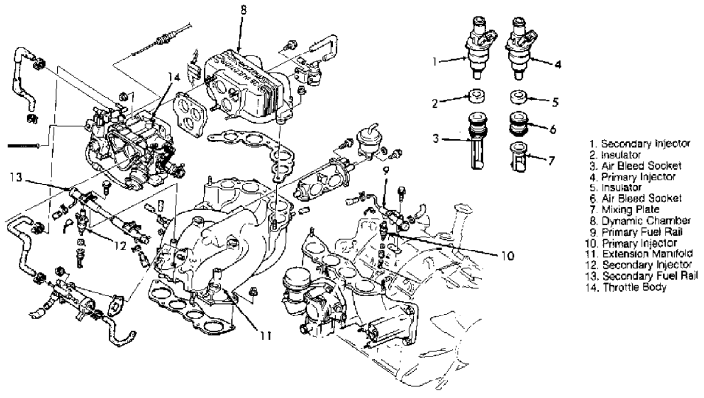
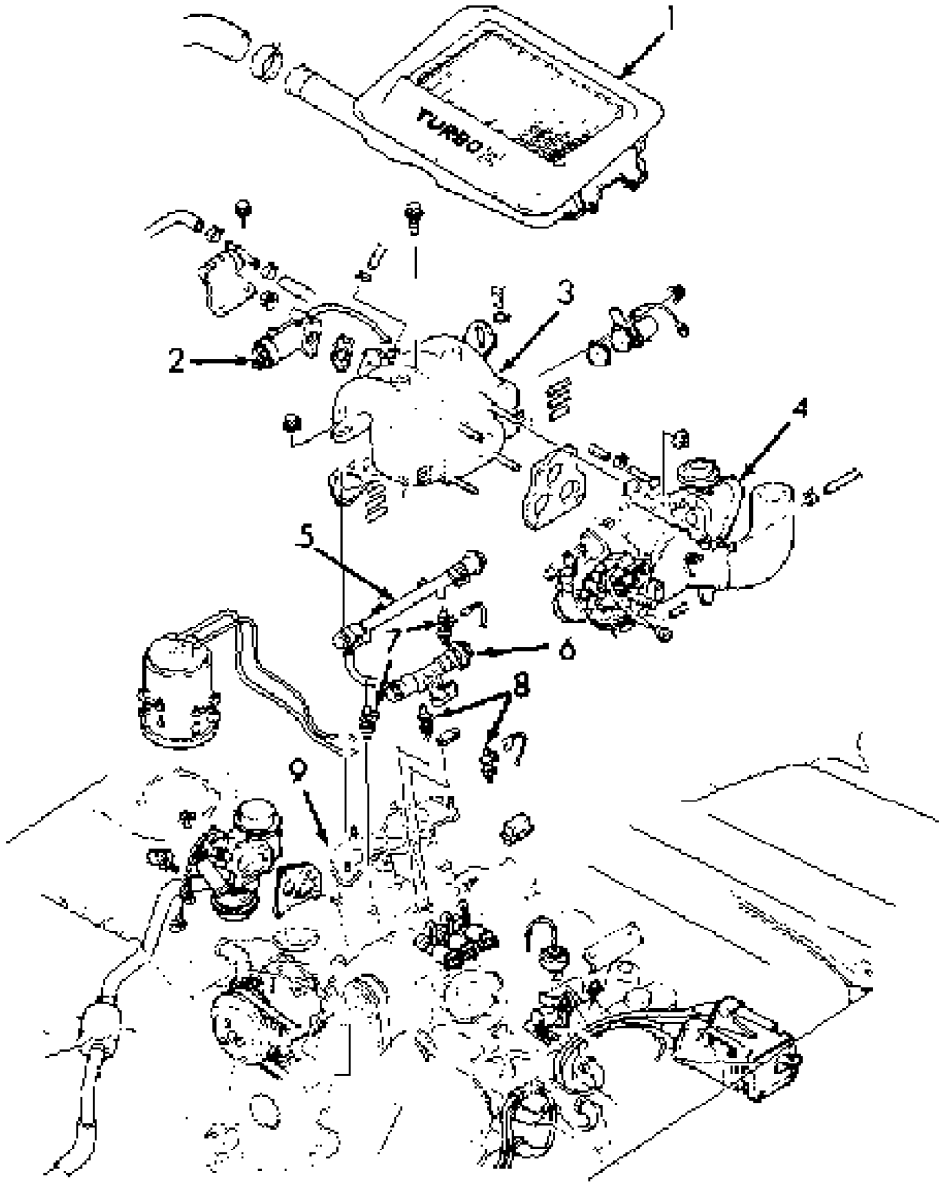
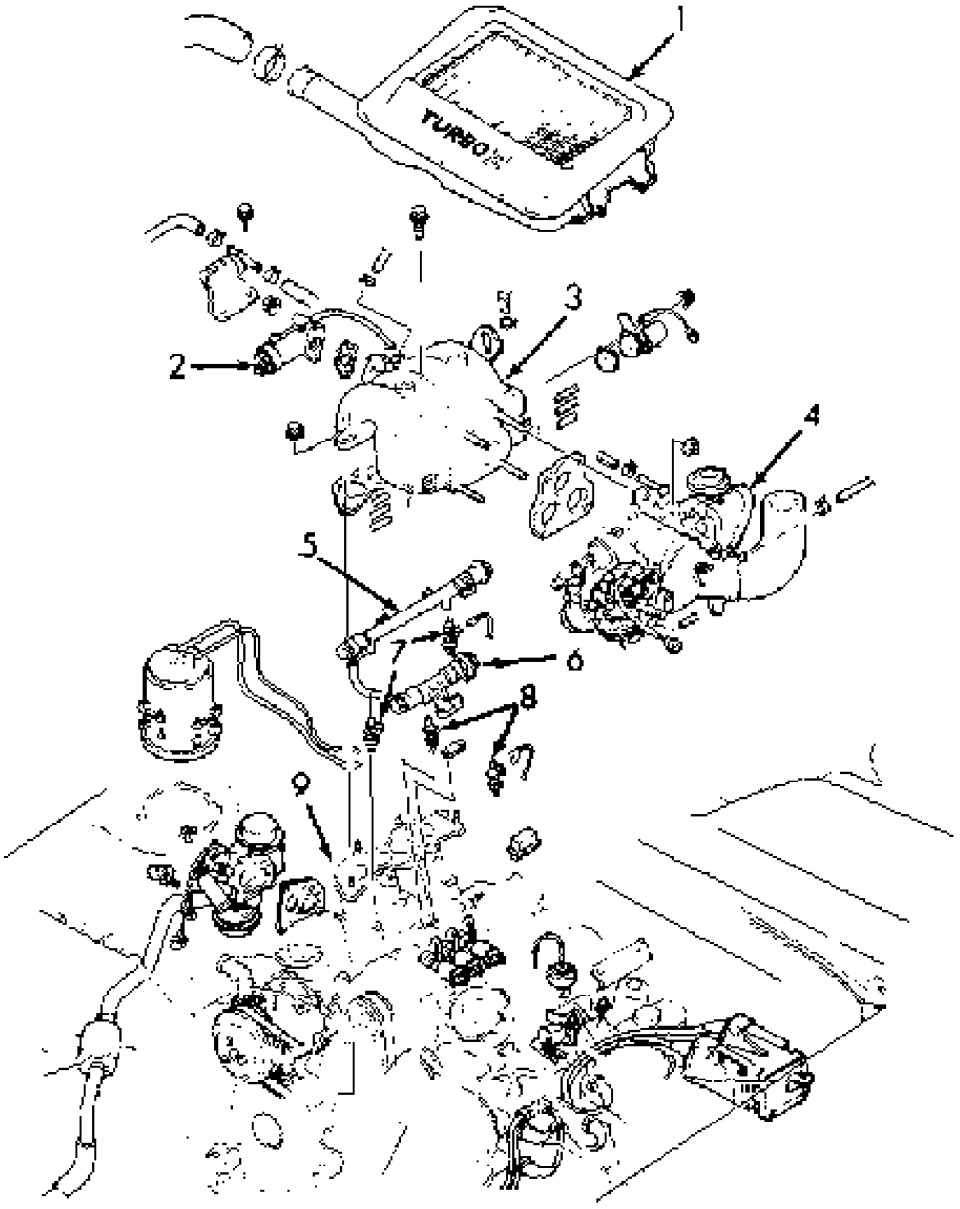


Fig. 28: Exploded View of Intake Air System (RX7 Non-Turbo) Courtesy of Mazda Motors Corp.



1. Intercooler
2. By-Pass Air Control Valve
3. Dynamic Chamber
4. Throttle Valve Assembly
5. Secondary Fuel Rail
6. Primary Fuel Rail
7. Secondary Injectors
8. Primary Injectors
9. Intake Manifold

Fig. 29: Exploded View of Intake Air System (RX7 Turbo)
Courtesy of Mazda Motors Corp.



1. Intercooler
2. By-Pass Air Control Valve
3. Dynamic Chamber
4. Throttle Valve Assembly
5. Secondary Fuel Rail
6. Primary Fuel Rail
7. Secondary Injectors
8. Primary Injectors
9. Intake Manifold

Fig. 30: Installing Secondary Fuel Injectors on Fuel Rails (RX7)
Courtesy of Mazda Motors Corp.

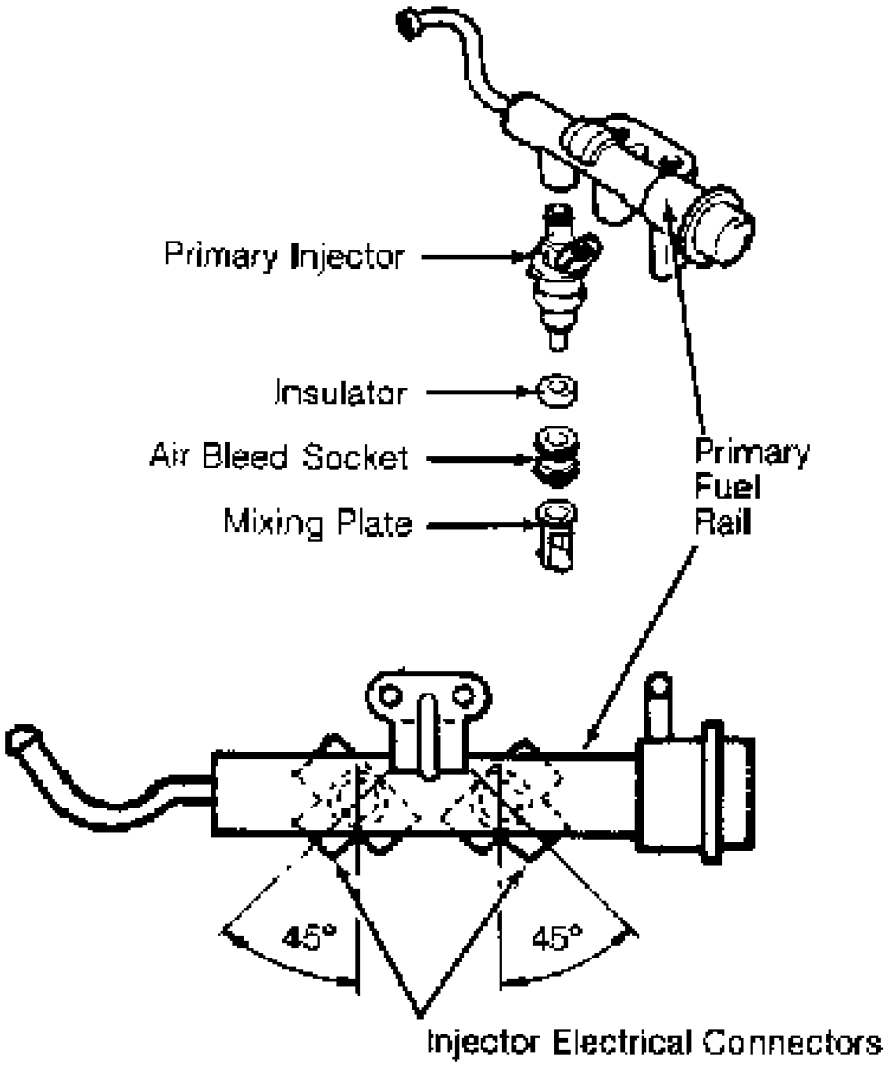


Fig. 31: Installing Primary Fuel Injectors on Fuel Rails (RX7)
Courtesy of Mazda Motors Corp.

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Remove dynamic chamber cover. Remove dynamic chamber and throttle body as an assembly. Disconnect injector electrical connectors. Disconnect vacuum and fuel hoses. Remove fuel rail, injectors and pressure regulator as an assembly.

2) Remove insulators, injectors and "O" rings from fuel rail. To install, reverse removal procedure. Apply coat of engine oil to new "O" rings, and install rings on injectors. Install new insulators. Tighten fuel rail mounting bolts to specification. See TORQUE

SPECIFICATIONS TABLE at end of article.

OXYGEN (O2) SENSOR R & I

REMOVAL

Disconnect oxygen sensor electrical connector. Sensor may be difficult to remove when engine temperature is less than 120°F (48°C). If sensor is difficult to remove, use rust penetrant to avoid damaging threads. Carefully remove sensor.

INSTALLATION

Apply anti-seize to sensor threads (if reusing old sensor or if new sensor is not coated with anti-seize). Install sensor. See TORQUE SPECIFICATIONS TABLE at end of article. Reconnect sensor electrical connector and negative battery cable.

THROTTLE BODY R & I

CAUTION: Before starting engine after performing fuel system repairs, prime the fuel system. See FUEL SYSTEM PRIMING.

RX7

1) Release fuel system pressure. See FUEL SYSTEM PRESSURE RELEASE. Drain cooling system. On Turbo models, remove intercooler, oil filler pipe and Accelerated Warm-Up Solenoid (AWS) valve. See Fig. 29.

2) On all models, remove throttle body air intake tube. Disconnect all necessary vacuum and coolant hoses, control cables and electrical connectors from throttle body.

3) Remove throttle body and dynamic chamber as an assembly. Remove throttle body from dynamic chamber. To install, reverse removal procedure using new gaskets. See TORQUE SPECIFICATIONS TABLE at end of article.

EXCEPT RX7

1) On MPV 3.0L, drain about 2 qts. (1.9 L) of coolant from cooling system. On all models, disconnect negative battery cable. Remove air intake tube.

2) Disconnect accelerator cable, coolant hoses and electrical connectors from throttle body as necessary. On 929, remove by-pass air control valve. On all models, remove throttle body. To install, reverse removal procedure using new throttle body gasket. See TORQUE SPECIFICATIONS TABLE at end of article.

TURBOCHARGER

REMOVAL (MX-6 & 626)

1) Drain coolant. Remove air hoses and air by-pass valve. Remove heat shields. Disconnect oil hoses from oil pipes. See Fig. 32. Remove coolant hoses, EGR pipe and oxygen sensor.

2) Disconnect exhaust downpipe. Remove bolts securing turbocharger to bracket. Remove turbocharger and exhaust manifold as an assembly. Disassemble turbocharger and exhaust manifold.

DISASSEMBLY

1) Remove exhaust pipe joint. See Fig. 32. Remove coolant pipe (inboard), inlet oil pipe and coolant pipe (outboard). Remove outlet oil pipe. Remove exhaust manifold. For reassembly reference, place turbocharger on a surface plate. See Fig. 33. Mark turbine plate and turbine housing in line with outlet oil pipe.

2) Mark wastegate actuator as illustrated. See Fig. 33. Measure and record distance from surface plate to mark. Remove wastegate actuator, compressor plate and compressor housing. Remove turbine plates and bearing assembly.

REASSEMBLY

1) To reassemble, reverse disassembly procedure. To prevent heat distortion, install turbine plates as illustrated. See Fig. 34. Install compressor plates with rounded edge toward compressor housing.

2) Remove old sealant from compressor housing (inward of sealing flange) and apply thin bead of new sealant. After reassembly, reach into compressor housing through inlet air opening. Rotate turbine wheel. If excessive load or noise exists, or if wheel touches housing, replace turbocharger.

INSTALLATION

1) Add .85 oz. (25 cc) of clean engine oil to oil inlet passage of turbocharger. Install turbocharger with new gasket between turbocharger and exhaust manifold.

2) Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. To install remaining components, reverse removal procedure. Prime the oil system.

PRIMING OIL SYSTEM

Disconnect igniter electrical connector. Crank engine for 20 seconds. Reconnect igniter electrical connector. Start engine and operate at idle for 30 seconds. Turn off engine. Disconnect negative battery cable. Depress and hold brake pedal for at least 5 seconds to clear fault code.

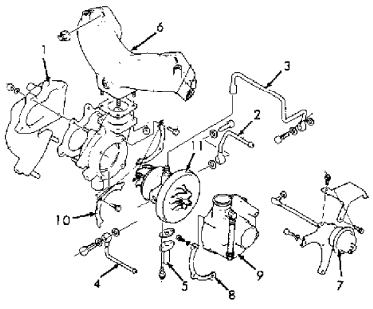


Fig. 32: Exploded View of Turbocharger (MX-6 & 626)
Courtesy of Mazda Motors Corp.

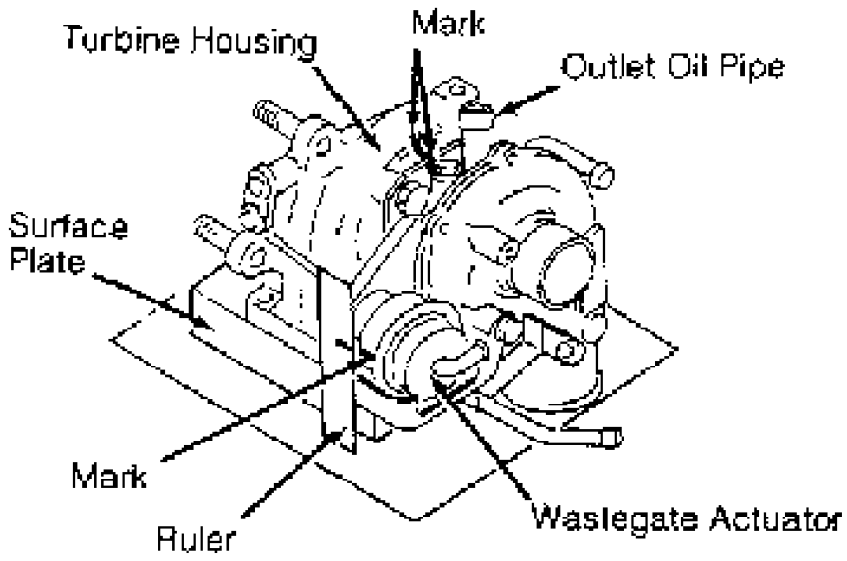


Fig. 33: Marking Turbocharger Before Disassembly (MX-6 & 626)
Courtesy of Mazda Motors Corp.

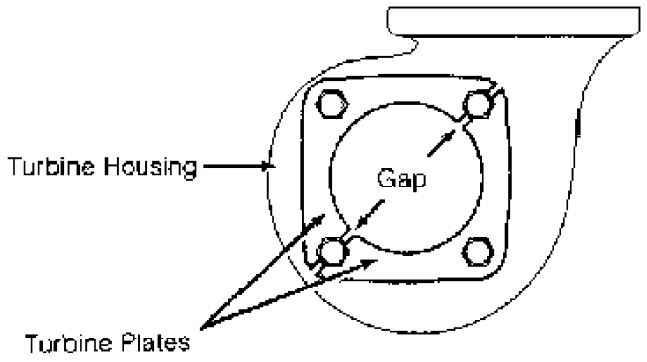


Fig. 34: Installing Turbine Plates to Prevent Heat Distortion (MX-6 & 626)
Courtesy of Mazda Motors Corp.

REMOVAL (RX7)

1) Drain coolant. Disconnect air inlet and outlet hoses from turbocharger. Remove airflow meter air hose. Remove air pump. Remove air control valve. Remove split air pipe. Disconnect water hose and water pipe. See Fig. 35.

2) Disconnect oil pipes. Remove insulator covers (heat shields). Disconnect front converter from turbocharger. Remove turbocharger and insulator covers. Remove exhaust manifold and actuator. Remove air by-pass valve.

DISASSEMBLY & REASSEMBLY

Information is not available from manufacturer. See Fig. 35 for exploded view of turbocharger and exhaust assembly.

Installation To install, reverse removal procedure. Replace all gaskets. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

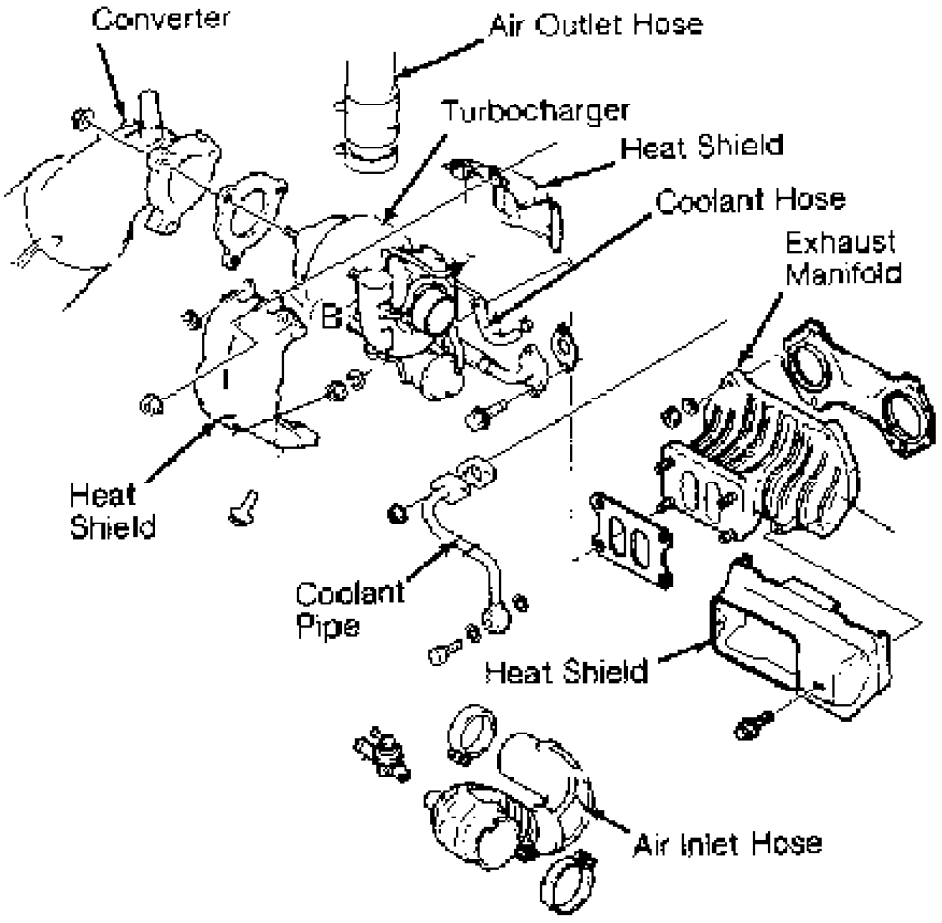


Fig. 35: Exploded View of Turbocharger & Exhaust Assembly (RX7) Courtesy of Mazda Motors Corp.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Component	Ft. Lbs (N.m)
Carburetor Mounting Nut	14-19 (19-25)
Crank Angle Sensor Mounting Bolt	
Miata	14-19 (19-25)
RX7	(S1)
Distributor Mounting Bolt	14-19 (19-25)
Dynamic Chamber Mounting Bolt/Nut	14-19 (19-25)
Extension Manifold Mounting	
Bolt/Nut (RX7)	14-19 (19-25)
Fuel Rail Mounting Bolt/Nut	14-19 (19-25)
Fuel Supply Manifold Bolt (Navajo)	7-10 (10-14)
Lower Intake Manifold Bolt (Navajo)	15-18 (20-25)
Oxygen Sensor	
B2200 Carbureted	(S2)
Navajo	30 (41)
Except B2200 Carb. & Navajo	22-36 (30-49)
Throttle Body-To-Manifold Bolt	
Except Navajo	14-19 (19-25)
Navajo	See INCH Lbs. (N.m)
Turbo	
MX-6 & 626	
Turbo-To-Exhaust Manifold Nut	25-34 (34-46)
Turbo-To-Exhaust Pipe Nut	27-46 (37-63)
Turbo-To-Turbo Bracket Nut	23-30 (31-41)
RX7	
Exhaust Manifold-To-Cylinder Head Bolt/Nut	23-34 (31-46)
Turbo-To-Exhaust Manifold Nut	33-40 (45-54)
Turbo-To-Front Converter	33-40 (45-54)
Upper Intake Manifold Bolt (Navajo)	15-18 (20-24)
	INCH Lbs. (N.m)
Crankshaft Sensor (Navajo)	75-106 (9-12)
Fuel Pressure Regulator	72-96 (8-11)
Throttle Body-To-Manifold Bolt	76-106 (8-12)

(1) - RX7 torque specification is 72-96 INCH lbs.
(2) - Information not available.