1974-79 FUEL SYSTEMS
Zenith (Stromberg) 4-Barrel Carburetors

Mazda: 1974-77 Cosmo, Pickup, RX-2, RX-3, RX-4

DESCRIPTION

Carburetor is of four barrel, two stage design. Primary stage includes idle system, slow speed circuit, accelerator pump system, and main metering system. In addition, fluid from sub-zero starting device, if equipped, and oil from metering oil pump is admitted into primary stage.

Secondary stage contains secondary vacuum diaphragm operating system, stepping circuit, and main metering system. Choking is accomplished by semi-automatic or fully automatic choke. Carburetor also contains fuel return circuit and electric idle switch.

SEMI-AUTOMATIC CHOKE

The semi-automatic choke differs from fully automatic choke in that choke is manually activated, but electrically deactivated. When choke knob is pulled out and engine temperature is below 159°F (°C), choke linkage will mechanically close choke valve and electrically activate electromagnetic switch.

Voltage to switch is supplied through engine temperature sensing switch. *See Fig. 1.* As engine temperature increases, less voltage is supplied to the electromagnetic switch and the force used to hold choke knob out is reduced.

At the same time, choke return spring is exerting a constant pull against electromagnetic force, which gradually decreases choke valve angle. When engine temperature reaches 159°F (°C), electromagnetic switch is deactivated and choke knob is pulled by return spring force to the off position.

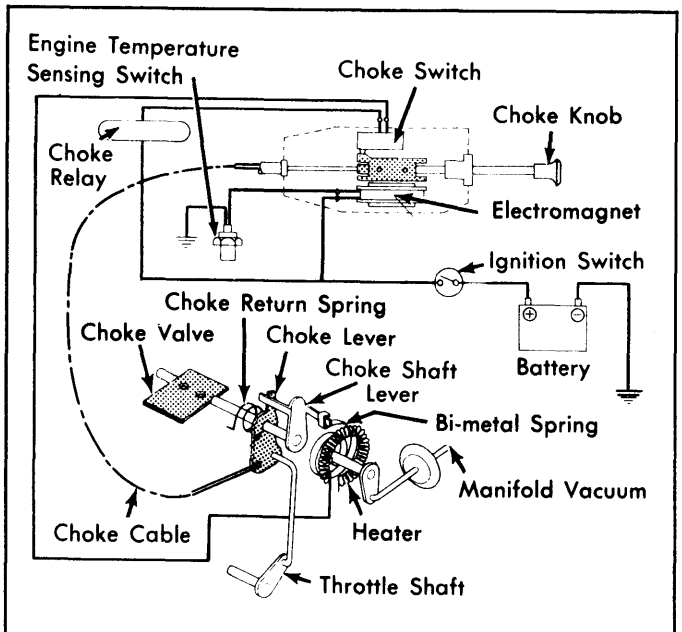

Fig. 1: Semi-Automatic Choke Wiring Schematic

ADJUSTMENTS

IDLE SPEED & MIXTURE

See appropriate TUNE-UP PROCEDURES article.

COLD (FAST) IDLE RPM

See appropriate TUNE-UP PROCEDURES article.

FLOAT LEVEL

With engine operating, check fuel level in float bowl sight glass. If fuel level is not within specifications, remove air horn. Invert air horn and allow float to lower by its own weight. Measure clearance from air horn gasket surface to top of float. If clearance is not to specifications, adjust by bending float level tab.

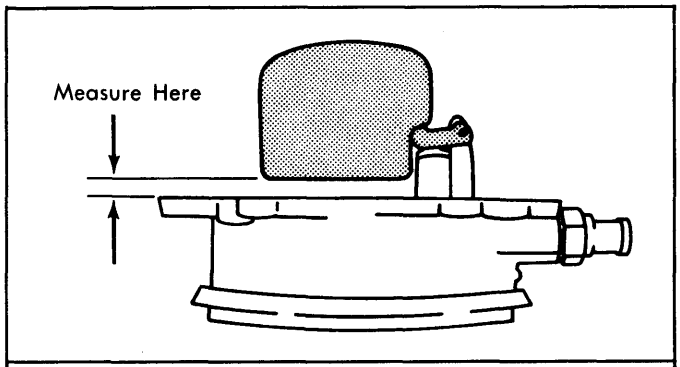

Fig. 2: Float Level Adjustment

FLOAT DROP

With air horn removed and held upright, measure clearance between air horn gasket surface and bottom of float. *See Fig. 3.* If clearance is not to specifications, adjust by bending float drop tang.

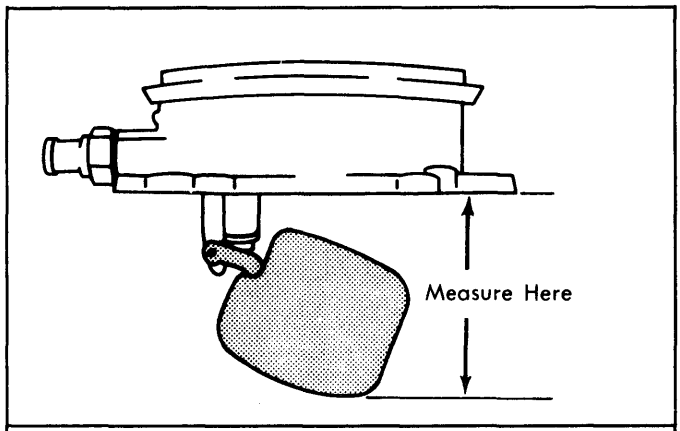

Fig. 3: Float Drop Adjustment

ACCELERATOR PUMP

1) Remove carburetor and position over drip pan. Fill a burette or other cubic centimeter measuring device with 10-22 cc of fuel. Attach and hold burette to carburetor.*See Fig. 4.*

2) Operate carburetor linkage to wide open throttle 10 times and check that correct amount of fuel has been drawn from burette. Check position actuating rod in pump arm and/or pump piston condition.

CHOKE VALVE OPENING

1974 RX-2 & RX-3 Semi-Automatic Choke - 1) If outside air temperature is below 86°F (°C), go to step **3)**. If outside air temperature is above 86°F (°C), go to next step.

2) Remove air cleaner and pull choke knob out fully. Measure ambient temperature surrounding choke. Check choke valve clearance between choke plate and air horn wall. To adjust choke valve clearance, turn choke set screw.

3) See CHOKE ADJUSTMENT BELOW 86°F (°C) table to determine specific number of notches (off center) where movable plate should be located. Adjust choke by loosening set screw and moving choke plate number of required notches.

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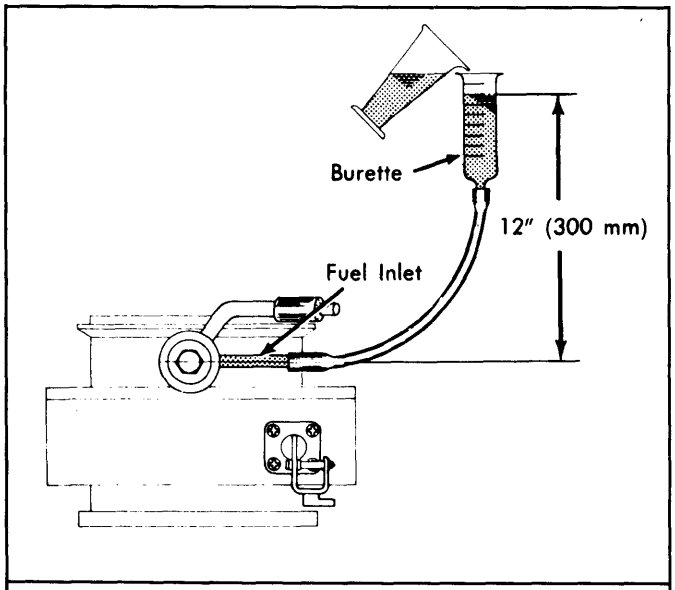

Fig. 4: Accelerator Pump Discharge Test

CHOKE ADJUSTMENT ABOVE 86°F (°C)

Temperature °F (°C)	Clearance In. (mm)
86 (30)	.007 (.22)
88 (31)	.014 (.37)
90 (32)	.019 (.50)
92 (33)	.028 (.65)
94 (34)	.035 (.80)

CHOKE ADJUSTMENT BELOW 86°F (°C)

Temperature °F (°C)	Notches Off Center
86 (30)	0
77 (25)	1
68 (20)	2
59 (15)	3
50 (10)	4
41 (5)	5
32 (0)	6

1974 RX-4 & Pickup - 1) Pull choke knob out fully. Warm engine to normal operating temperature, then turn engine off. Push in on vacuum break diaphragm stem and hold in this position.
2) Install angle gauge on choke valve operating lever and determine choke valve opening angle (from horizontal plane). See CHOKE VALVE OPENING ANGLE table to determine that choke valve angle is correct.

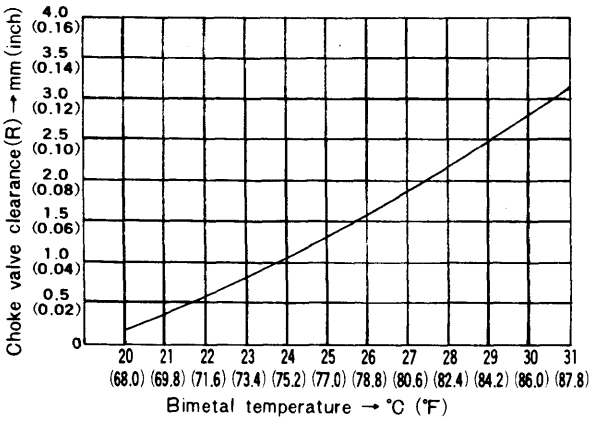

Fig. 5: 1974-77 Choke Valve Clearance Based On Ambient Temperature

CHOKE VALVE OPENING ANGLE

Outside Air Temperature °F (°C)	Man. Trans. Opening Angle	Auto. Trans. Opening Angle
41 (5)	0	3
50 (10)	5	13
59 (15)	15	13
68 (20)	25	33
77 (25)	35	43
86 (30)	45	53

1974-77 Automatic Choke - 1) Apply about 15.7 in. Hg (400 mm Hg) to vacuum diaphragm. Pull out choke lever link and hold in position. Check choke valve clearance between choke plate and air horn wall.
2) Measure ambient temperature surrounding choke bimetallic spring. *See Fig. 5.* If clearance is incorrect, turn adjusting screw. After adjustment, clearance between stopper and bimetallic spring lever should be about .169-.185" (4.3-4.7 mm).

VACUUM BREAK DIAPHRAGM

Push diaphragm stem in until seated, then measure distance of travel when stem is released. If amount of travel is not to specifications, adjust diaphragm-to-choke lever connecting rod.

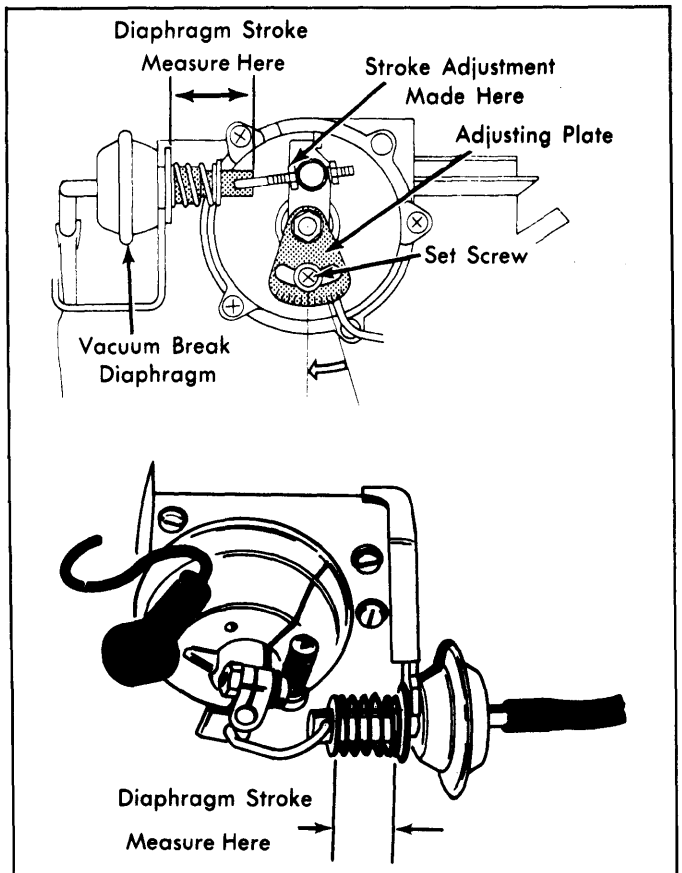

Fig. 6: Vacuum Break Diaphragm Adjustment

CHOKE LINKAGE

With carburetor removed and inverted, actuate choke lever link by pulling outward to its full travel. With choke lever link actuated (fully) measure gap between primary throttle valve and throttle bore. On 1974 RX-2 and RX-3 models, gap should be .046-.062" (1.17-1.57 mm); .069-.085" (1.75-2.15 mm) on all other models. If necessary, adjust by bending choke connecting rod.

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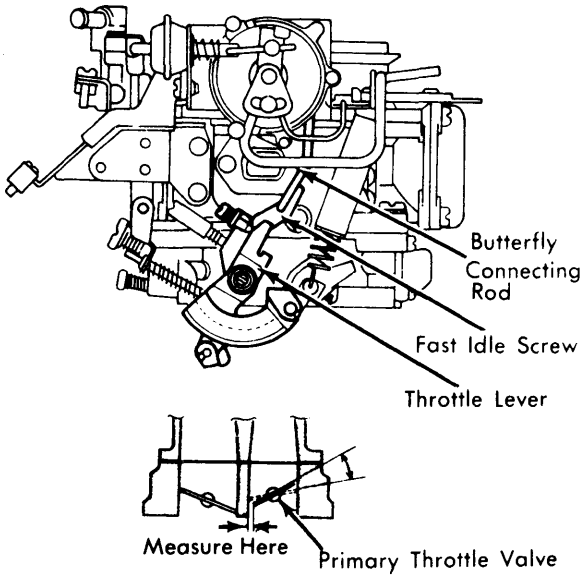

Fig. 7: Choke Linkage Adjustment

OVERHAUL

NOTE: Disassembly and reassembly procedures will vary slightly between carburetors. Some carburetors may not have all parts mentioned in the following procedures.

DISASSEMBLY

1) Remove semi-automatic choke and bracket (if installed). Disconnect vacuum sensing tube. Remove screws attaching choke thermostatic housing to carburetor. Disconnect throttle safety return spring by turning counter lever counterclockwise. Remove throttle return spring.

2) From air horn, disconnect choke connecting rod by removing cotter pin, washer, and spring. Remove accelerator pump connecting rod by removing cotter pin. *See Figs. 9 and 10.*

3) Remove bolt attaching fuel inlet fitting and remove fitting and filter. Remove screws which attach air horn to main body. Remove air horn being careful not to tear gasket.

4) From air horn, remove float retaining pin, float and needle assembly. Remove accelerator pump lever and piston. If equipped, remove starting assist fluid inlet fitting. Remove primary slow air bleeds.

5) From main body, remove accelerator pump spring, check ball and retainer plate. Remove idle switch, if installed, by removing attaching bolt and spring. Disconnect connecting rod from secondary operating diaphragm and remove diaphragm.

6) Remove screws attaching main body to throttle body. Remove accelerator pump injection nozzle, weight and check ball from main body. Remove all jets and air bleeds from main body. Remove power valve solenoid, if installed, by removing attaching screws.

7) From throttle body, remove mixture adjusting screw and throttle adjusting screw. Remove richer solenoid (if installed). Remove throttle lever attaching hardware.

NOTE: Before removing jets and air bleeds, write down position and number of each for reassembly reference.

CLEANING & INSPECTION

Wash parts in carburetor cleaner (solvent). DO NOT soak any components containing rubber, leather, or plastic. Soak components long enough to thoroughly clean all surfaces and passages of foreign matter. Remove any residue after cleaning components in solvent. Blow out all fuel passages dry with compressed air. Inspect all parts for wear or damage and replace as necessary.

REASSEMBLY

To reassemble, reverse disassembly procedure. DO NOT primary and secondary circuit parts mixed up during reassembly. *See Fig. 8.* When installing choke housing to carburetor body, fit choke shaft lever to bimetallic spring and pull on vacuum diaphragm shaft to make sure that choke will operate and close properly.

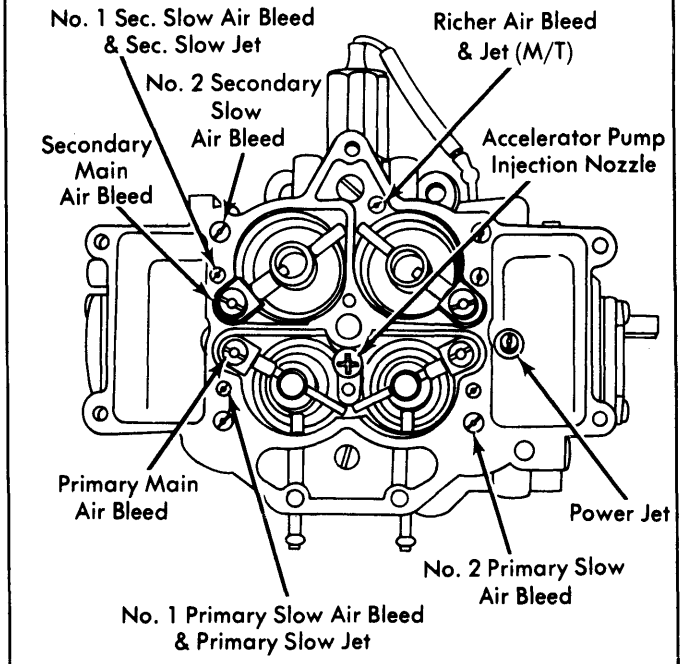

Fig. 8: Air Bleed & Jet Locations

1974 RX-2 & RX-3 CARBURETOR ADJUSTMENT SPECIFICATIONS

Carb. No.	Idle Speed (Engine RPM)		Float Level Setting	Float Drop Setting	Choke Linkage		Accelerator Pump Stroke	Vacuum Break Diaphragm
	Hot	Fast	In. (mm)	In. (mm)	On Car In. (mm)	Off Car		In. (mm)
Man. Trans.	.....	900	.197 (5)	2.1 (55)	.046-.061 (1.2-1.6)	15.5-18.5	② .7cc	.319 (8.1)
Auto. Trans.	①750	.....	.197 (5)	2.1 (55)	.048-.061 (1.2-1.6)	16-19°	② .7cc	.276 (7)

① — In Drive.

② — Specification is given in cc's per stroke.

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Zenith (Stromberg) 4-Barrel Carburetors (Cont.)

1974 RX-4 & PICKUP CARBURETOR ADJUSTMENT SPECIFICATIONS

Carb. No.	Idle Speed (Engine RPM)		Float Level Setting	Float Drop Setting	Choke Linkage		Accelerator Pump Stroke	Vacuum Break Diaphragm
	Hot	Fast	In.(mm)	In.(mm)	On Car In.(mm)	Off Car		In.(mm)
Man. Trans.	900	.....	.43 (11)	2.05 (52)	.05 (1.2)	15.5°	①.8cc	.280 (7.1)
Auto. Trans.	②750	.....	.43 (11)	2.05 (52)	.054 (1.4)	17.5°	①.8cc	.236 (6.0

① — Per Stroke.
② — In "D".

1975 CARBURETOR ADJUSTMENT SPECIFICATIONS

Carb. No.	Idle Speed (Engine RPM)		Float Level Setting	Float Drop Setting	Choke Linkage		Accelerator Pump Stroke	Vacuum Break Diaphragm
	Hot	Fast	In.(mm)	In.(mm)	On Car In.(mm)	Off Car		In.(mm)
RX-3								
Man. Trans.	800	3250	.39 (10.0)	2.05 (52.0)	.....	.069-.085 (1.75-2.16)	6.8-9.2	.130 (3.30)
Auto. Trans.	750	3250	.39 (10.0)	2.05 (52.0)	.....	.069-.085 (1.75-2.16)	6.8-9.2	.177 (4.50)
RX-4								
Man. Trans.	800	3250	.39 (10.0)	2.05 (52.0)	.....	.069-.085 (1.75-2.16)	6.8-9.2	.130 (3.30)
Auto. Trans.	750	3250	.39 (10.0)	2.05 (52.0)	.....	.069-.085 (1.75-2.16)	6.8-9.2	.154 (3.90)
Rotary Pickup								
Man. Trans.	800	3150	.41 (10.5)	2.05 (52.0)	.....	.057-.073 (1.45-1.85)	6.8-9.2	.177 (4.50)
Auto. Trans.	750	3150	.41 (10.5)	2.05 (52.0)	.....	.057-.073 (1.45-1.85)	6.8-9.2	.228 (5.80)

1976 CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Idle Speed (Engine RPM)		Float Level Setting	Float Drop Setting	Choke Linkage		Accelerator Pump Stroke ①	Vacuum Break Diaphragm In.(mm) ②
	Hot	Fast	In.(mm)	In.(mm)	On Car	Off Car In.(mm)		
All Models								
Man. Trans.	800	3000-3500	.34±.04 (8.7±1)	2.05 (52.0)	.....	.067-.079 (1.70-2.0)	6.8-9.2	.169-.185 (4.3-4.7)
Auto. Trans.	750	3000-3500	.34±.04 (8.7±1)	2.05 (52.0)	.....	.067-.079 (1.70-2.0)	6.8-9.2	.169-.185 (4.3-4.7)

① — Measured in cubic centimeters (cc). Amount of fuel that should have been drawn from container (burette) in 10 strokes.
② — Measured between stopper and bimetal spring lever.

1974-79 FUEL SYSTEMS
Zenith (Stromberg) 4-Barrel Carburetors (Cont.)

1977 CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Idle Speed (Engine RPM)		Float Level Setting	Float Drop Setting	Choke Linkage		Accelerator Pump Stroke ①	Vacuum Break Diaphragm In. (mm) ②
	Hot	Fast	In. (mm)	In. (mm)	On Car	Off Car In. (mm)		
All Models								
Man. Trans.	750± 25	3200-4000	.47± .02 (12± .5)	2.13± .02 (54± .5)	.....	.067-.079 (1.7-2.0)	6.8-9.2	.169-.185 (4.3-4.7)
Auto. Trans.	750± 25	3200-4000	.47± .02 (12± .5)	2.13± .02 (54± .5)	.....	.067-.079 (1.7-2.0)	6.8-9.2	.169-.185 (4.3-4.7)

① — Measured in cubic centimeters (cc). Amount of fuel that should have been drawn from container (burette) in 10 strokes.

② — Measured between stopper and bimetal spring lever.

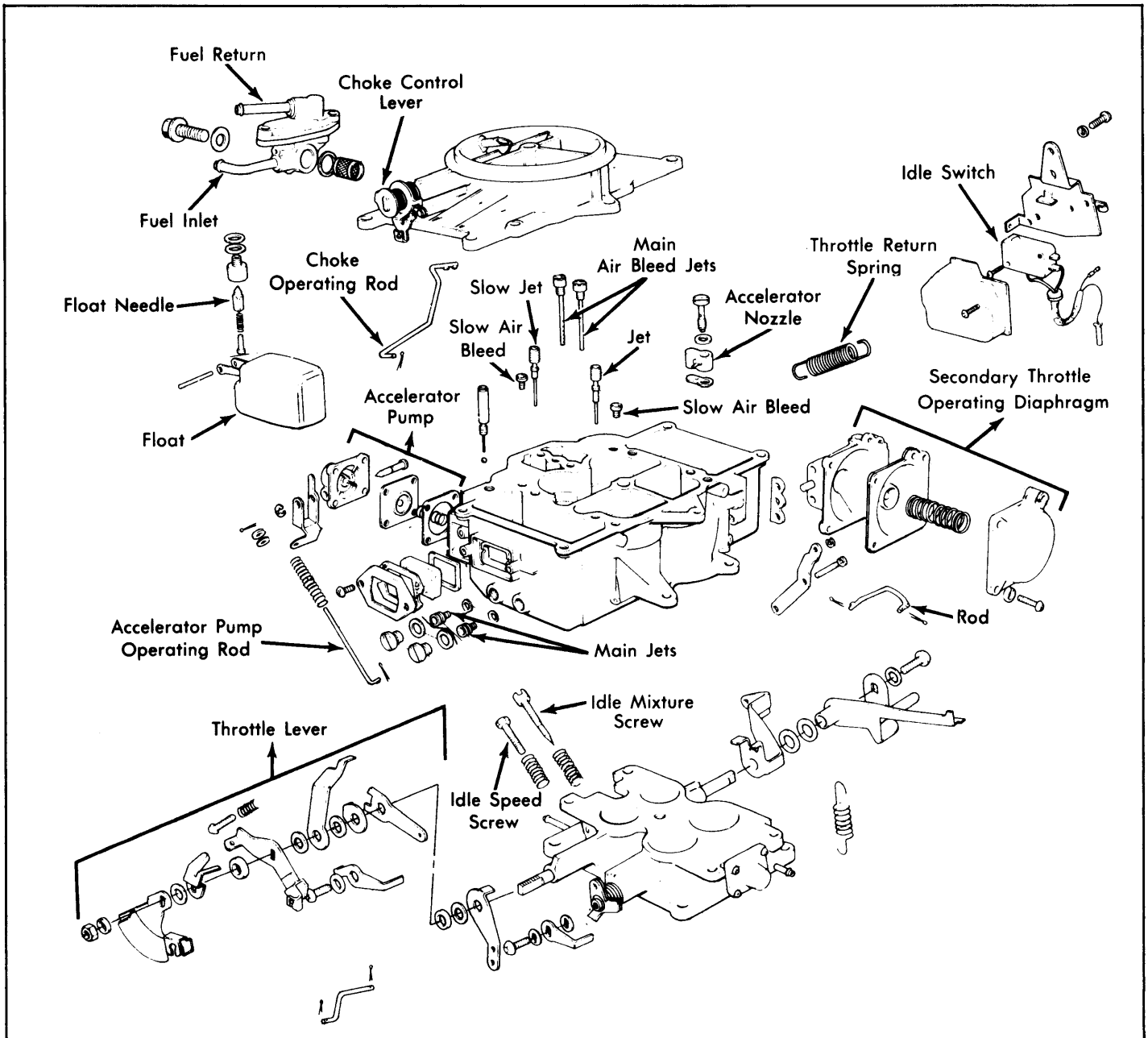

Fig. 9: Exploded View Of Zenith-Stromberg 4-Barrel Carburetor (RX-2 & RX-3)

1974-79 FUEL SYSTEMS
Zenith (Stromberg) 4-Barrel Carburetors (Cont.)

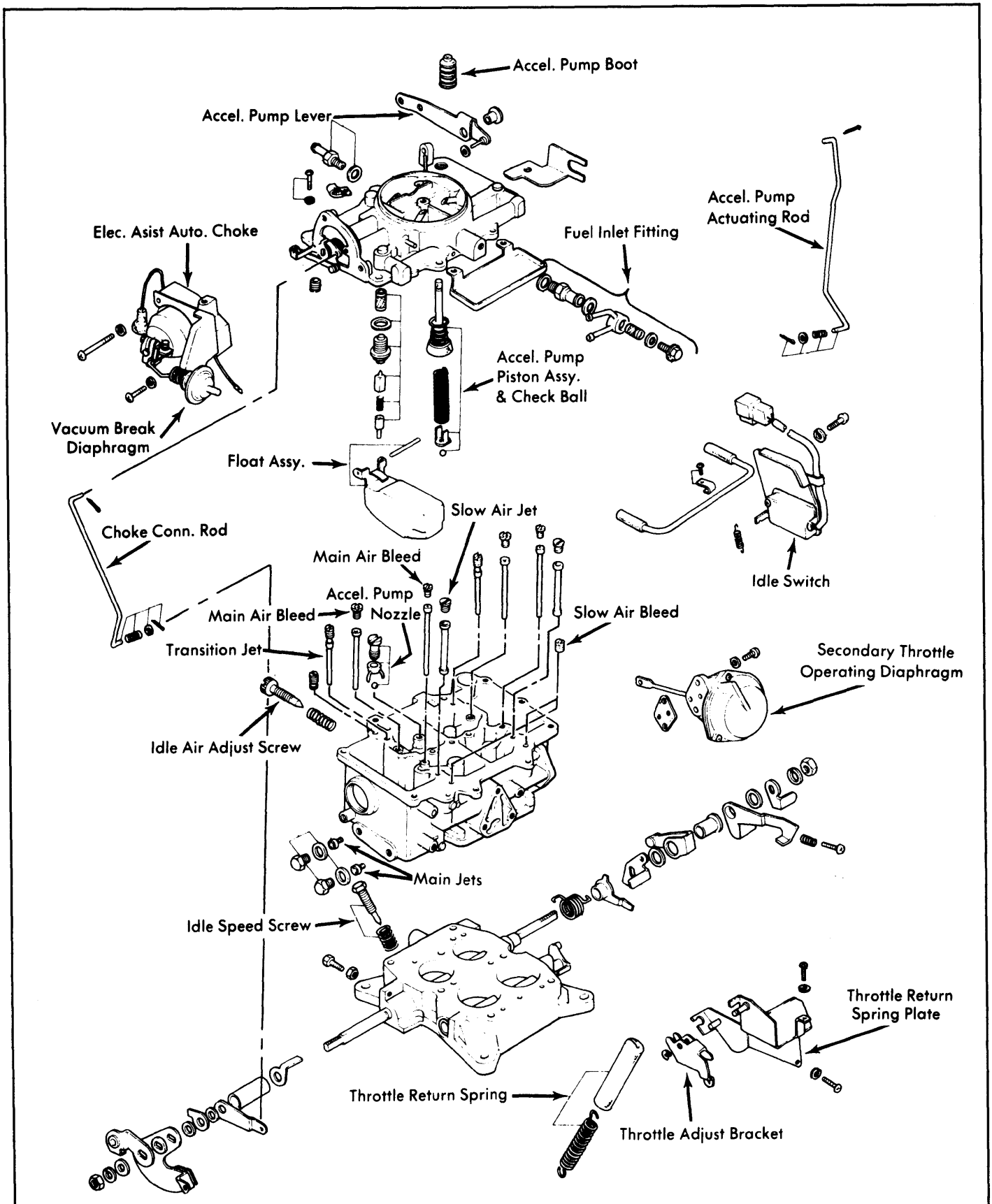

Fig. 10: Exploded View Of Zenith-Stromberg 4-Barrel Carburetor (All Other Models)