1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel

1979 General Motors CARBURETOR APPLICATION

NOTE: This article also includes information on 1980 Buick Skylark, Chevrolet Citation, Oldsmobile Omega and Pontiac Phoenix.

GENERAL MOTORS (1979 2SE) CARBURETOR NO.

Application	Man. Trans.	Auto. Trans.
2.5L 4-Cylinder		
Federal		
Without A/C	17059675	17069674
With A/C	17059677	17059676

GENERAL MOTORS (1980 2SE) CARBURETOR NO.

Application	Man. Trans.	Auto. Trans.
2.5L 4-Cylinder		
Federal		
Without A/C	17059615, 19	17069614, 18
With A/C	17059617, 21	17059616, 20
2.8L V6		
Federal		
Without A/C	17059651	17059714
With A/C	17059653	17059652

GENERAL MOTORS (1980 E2SE) CARBURETOR NO.

Application	Man. Trans.	Auto. Trans.
2.5L 4-Cylinder		
Calif.		
Without A/C	17059715	17059714
With A/C	17059717	17059716
2.8L V6		
Calif.		
Without A/C	17059763	17059760
With A/C	17059763	17059762

CARBURETOR IDENTIFICATION

The Rochester 2SE and E2SE carburetor numbers are stamped vertically on the float bowl next to vacuum tube. If float bowl is replaced, follow manufacturer's instructions contained in service package to transfer part number to new float bowl.

DESCRIPTION

The Rochester Varajet Carburetor models 2SE and E2SE are 2-stage, 2-barrel downdraft carburetors. The primary stage consists of a triple venturi with a 35 mm bore. The secondary stage has a 46 mm bore and is equipped with an air valve with a single tapered metering rod. Both are equipped with integral, electronically-activated chokes, a choke vacuum break diaphragm and an idle speed solenoid.

All E2SE models are equipped with an electrically operated mixture control solenoid. The mixture control solenoid is mounted on the air horn and extends into fuel bowl. Fuel metering is controlled by the mixture control solenoid plunger opening and closing the fuel passage to the main metering jet.

This solenoid is actuated by a signal from the Electronic Control Module (ECM). The ECM cycles the mixture solenoid rapidly up and down at a specific dwell or duty cycle. If the ECM detects a too rich mixture (by signals from the O_2 sensor), it will try to "drive the mixture lean" by increasing the dwell time. The duty or dwell time can be observed by connecting a dwell meter (set on 6-cylinder scale) to the ECM side of the mixture solenoid. There is usually a Green wire with a Black connector near the carburetor for this purpose.

The mixture solenoid operates a plunger above the float bowl mounted fuel jet. If the mixture solenoid is disconnected for any reason, the plunger will remain up and a richer mixture will result.

Some carburetors are equipped with a temperature regulated pump system with a thermostatically controlled by-pass valve. The by-pass valve is permanently pressed into the air horn. All carburetors are equipped with tamper-resistant features: Factory-adjusted rich mixture screws, factory-adjusted lean mixture screws, riveted choke coil housing and hardened steel pump lever (E2SE models only). All models are also equipped with idle mixture screw plugs.

CAUTION: NO ATTEMPT should be made to adjust screws except when required by a Computer Command Control System performance check, a major overhaul, or replacement of the air horn, float bowl or throttle body.

ADJUSTMENTS

NOTE: For all on-vehicle adjustments not covered in this article, see appropriate TUNE-UP PROCEDURES article. After overhauling E2SE carburetor or replacing carburetor components, the mixture solenoid must be adjusted. For adjustment information, see appropriate article in the TUNE-UP PROCEDURES section. If problems with the ECM control of the mixture solenoid operation are present, see GENERAL MOTORS COMPUTER-CONTROLLED CATALYTIC CONVERTER article in the COMPUTERIZED ENGINE CONTROLS section.

ANGLE GAUGE ADJUSTMENT TOOL

Manufacturer recommends that some carburetor adjustments be performed using a choke valve angle gauge (J-26701). While preparations and actual adjustments may vary with each individual adjustment, the procedure for using the angle gauge to check the choke valve angle remains the same. Use the following procedure to perform adjustments requiring the use of the choke angle gauge. *See Fig. 1.*

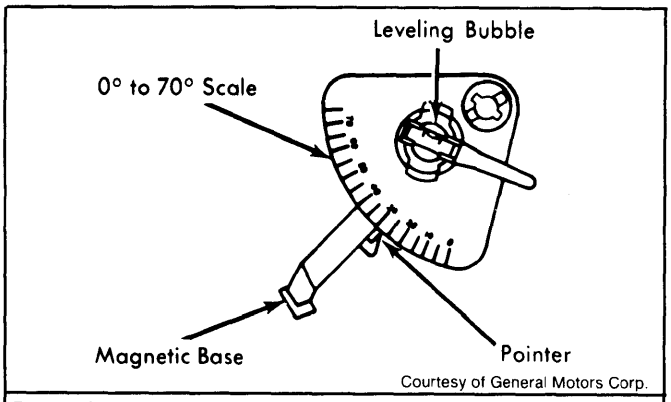


Fig. 1: Choke Valve Angle Gauge

1) Rotate degree scale on angle gauge so that 0° mark is opposite pointer.
2) With choke valve closed, place angle gauge magnet squarely on choke valve.
3) Rotate leveling bubble on angle gauge until it is centered.
4) Rotate degree scale until specified degree mark is opposite pointer.
5) Now perform individual adjustment preparation as outlined in the following carburetor adjustments requiring an angle gauge.
6) If bubble is centered, adjustment is correct. If not, adjust carburetor as outlined in adjustment procedure.

NOTE: If angle gauge is not used, measure clearance between choke valve and air horn wall. Both degree and decimal specifications are given in CARBURETOR ADJUSTMENT SPECIFICATION table.

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)

FLOAT LEVEL

1) Remove air horn and gasket from float bowl. Hold float retainer firmly down while lightly pushing float down against needle. *See Fig. 2.*

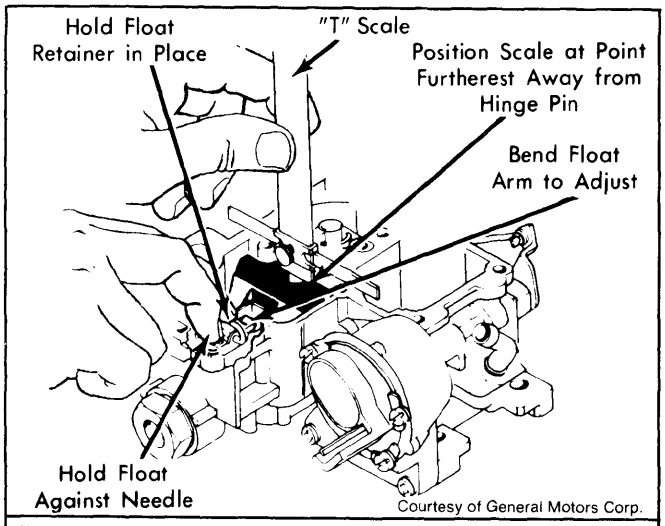


Fig. 2: Dry Float Level Adjustment

2) Position a "T" scale over large toe of float at point furthest away from float hinge pin. Measure distance from float bowl casting to float.

NOTE: A new set of external float gauges (J-9789-135) are available for 2SE and E2SE carburetors. By selecting proper gauge for specific carburetor being checked, a simple "On car" check can be made without removing air horn from float bowl. Just remove vent stack and air horn screw and insert gauge in air horn screw hole. Let it float freely.

3) To adjust, remove float and bend float arm. Use care in removing float as some models may be equipped with a float stabilizer spring. Check to make sure float is correctly aligned after adjustment.

ACCELERATOR PUMP

NOTE: If carburetor has a clip retaining pump rod in pump lever, no adjustment is required. If connection is "clipless", pump adjustment should not be changed from original factory setting. See Fig. 3. Adjustment should only be made if specified setting is changed. Pump lever is manufactured from hardened steel, making it difficult to bend. Pump arm should not be removed to make adjustment unless absolutely necessary.

1) Close throttle valves completely. Ensure fast idle speed screw is off fast idle cam.
2) Using a "T" scale, measure accelerator pump specified distance from cast surface of air horn to top of pump stem. *See Fig. 3.*
3) To adjust, remove pump lever screw and washer. Remove pump lever by rotating lever and removing from pump rod. Secure lever in a vise and bend end of lever at small segment.
4) Install pump lever washer and retaining screw. Recheck pump adjustment and, when correct, tighten retaining screw. Open and close throttle and check for free linkage movement and pump lever alignment.

FAST IDLE ADJUSTMENT (BENCH SETTING)

NOTE: This is a bench adjustment only. After installing carburetor on engine, perform Fast Idle Adjustment as outlined in appropriate TUNE-UP PROCECURES article.

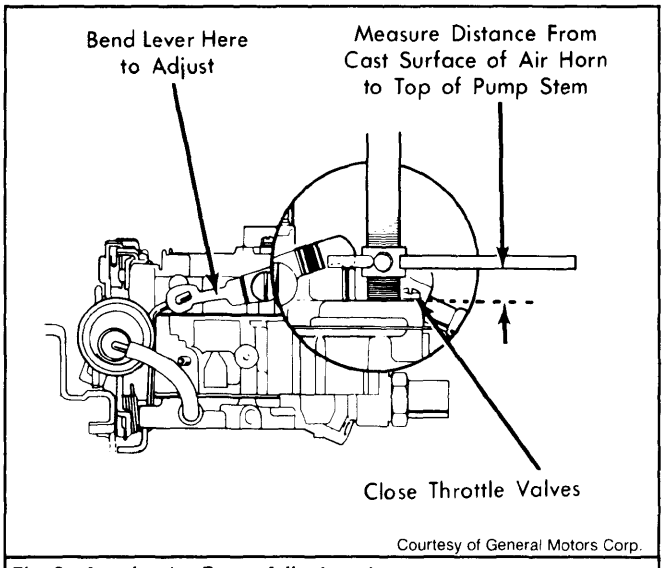


Fig. 3: Accelerator Pump Adjustment

Place fast idle speed screw on highest step of fast idle cam. Back off screw until throttle valves are completely closed. Turn fast idle speed screw in until it contacts cam. Turn an additional 3 turns.

CHOKE COIL LEVER

NOTE: Do not remove rivets and retainers holding choke cover and coil assembly in place unless necessary to check choke coil lever adjustment. If rivets and cover are removed, a new rivet service kit must be installed.

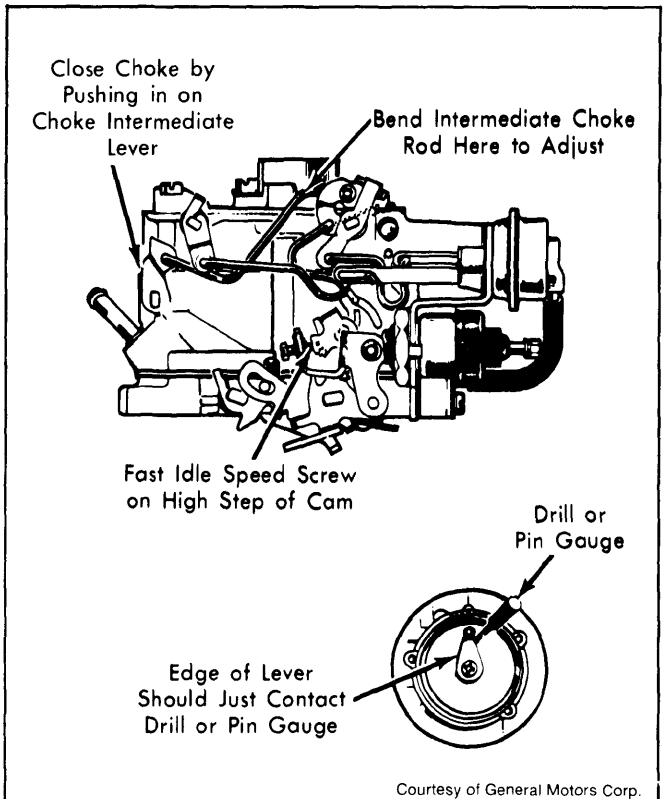


Fig. 4: Adjusting 4-Cylinder Engine Choke Coil Lever

1) Remove rivets and choke thermostatic cover from choke housing. Place fast idle screw on high step of fast idle cam. *See Fig. 4 or 5.*
2) Push on intermediate choke lever until choke valve is fully closed. Insert a specified drill or pin gauge in hole provided in choke housing. Edge of choke lever inside housing should just touch drill or pin gauge.
4) To adjust, support intermediate choke rod at bend and bend intermediate choke rod. *See Fig. 4 or 5.* Reinstall choke cover and adjust.

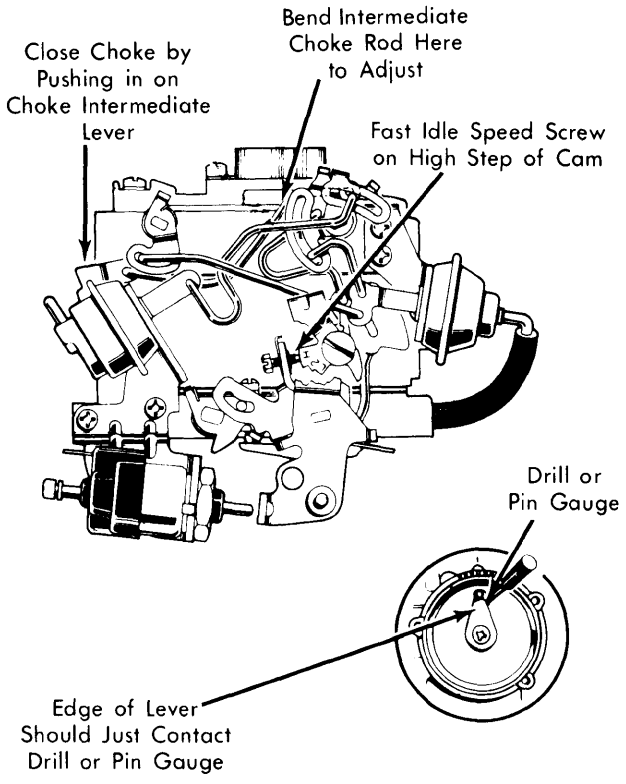


Fig. 5: Adjusting V6 Engine Choke Coil Lever

CHOKE ROD (FAST IDLE CAM)

NOTE: Choke coil lever adjustment must be correct before proceeding. This adjustment makes use of choke angle gauge. See procedure at beginning of ADJUSTMENTS.

1) Attach rubber band to intermediate choke lever. Open throttle to allow choke valve to close. Set up angle gauge.
2) Place fast idle speed screw on second step of fast idle cam against shoulder of highest step. *See Fig. 6 or 7.* Close choke valve by pushing on choke shaft lever to open choke valve and to make contact with closing tang.
3) Bubble on choke angle gauge should be centered with specified degree mark opposite pointer.
4) To adjust, support fast idle cam rod at area on rod and bend fast idle cam rod until bubble of choke valve angle gauge is centered. *See Fig. 6 or 7.*

AIR VALVE ROD

1) Using an outside vacuum source of at least 18 in. Hg, seat primary choke vacuum break diaphragm plunger. Close air valve completely. *See Fig. 8 or 9.*

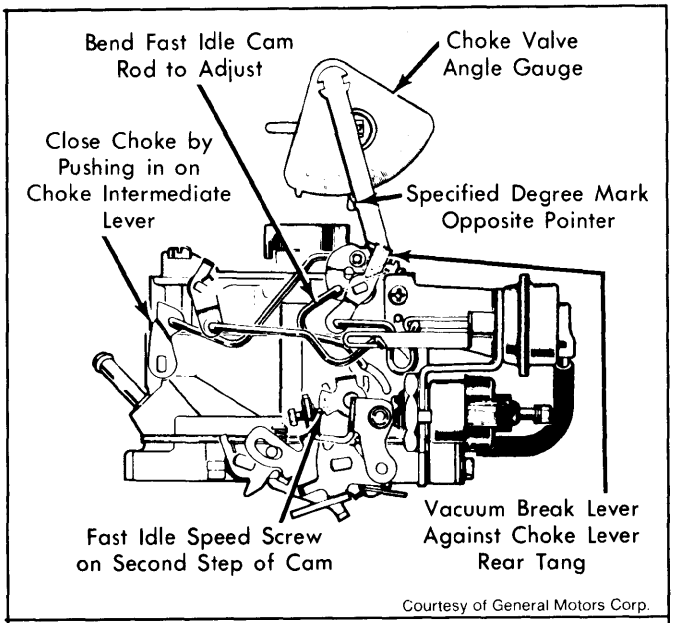


Fig. 6: Adjusting 4-Cylinder Engine Choke Rod (Fast Idle Cam)

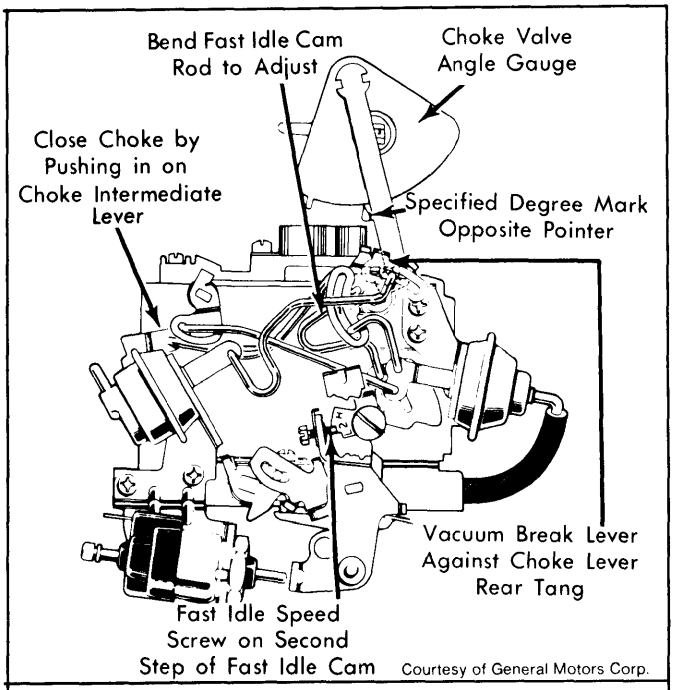


Fig. 7: Adjusting V6 Engine Choke Rod (Fast Idle Cam)

2) Apply light opening pressure to air valve lever. Measure air valve rod specified clearance between rod and end of slot in air valve lever.
3) To adjust, support air valve rod and bend air valve rod at a point near its connection to primary vacuum break (models equipped with primary vacuum break only) or at a point near its connection to air valve lever (models equipped with primary and secondary vacuum breaks).

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)

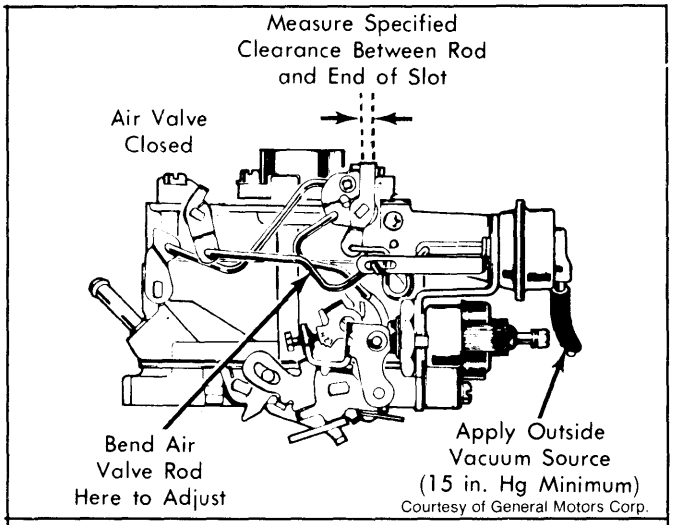


Fig. 8: Adjusting 4-Cylinder Engine Air Valve Rod

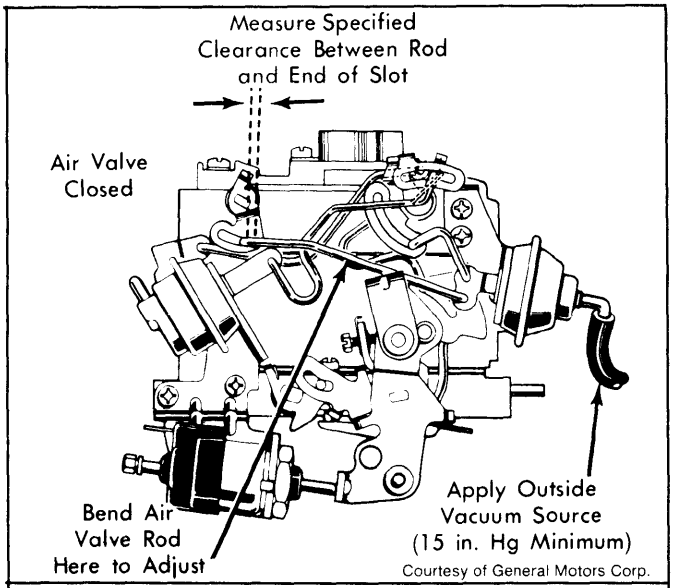


Fig. 9: Adjusting V6 Engine Air Valve Rod

PRIMARY VACUUM BREAK

NOTE: This adjustment is performed using the choke valve angle gauge. See procedure at beginning of ADJUSTMENTS.

1) Attach rubber band to intermediate choke lever. Open throttle to allow choke valve to close.
2) Set up angle gauge and set angle to specification. Using an outside vacuum source of at least 18 in. Hg, retract vacuum break plunger. Plug air bleed hole with tape or pump plunger cup, if equipped. *See Fig. 10 or 11.* Air valve rod should not prevent seating of vacuum break diaphragm.

NOTE: Be sure plunger bucking spring is compressed and seated (plunger fully extended), if equipped.

3) Bubble on choke valve gauge should be centered with specified degree mark. To adjust, bend primary vacuum break rod until bubble is aligned with mark.
4) If angle valve gauge is not used, measure specified clearance between upper edge of choke valve and air horn wall. To adjust, bend primary vacuum break rod.

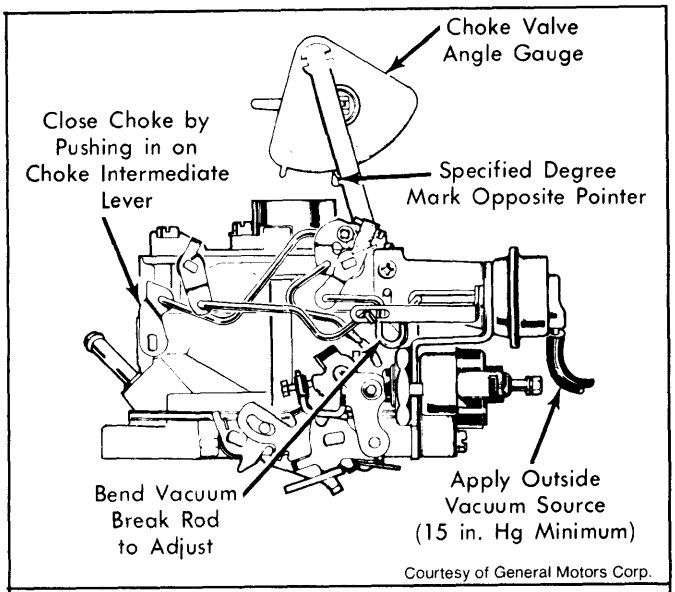


Fig. 10: Adjusting 4-Cylinder Engine Primary Vacuum Break

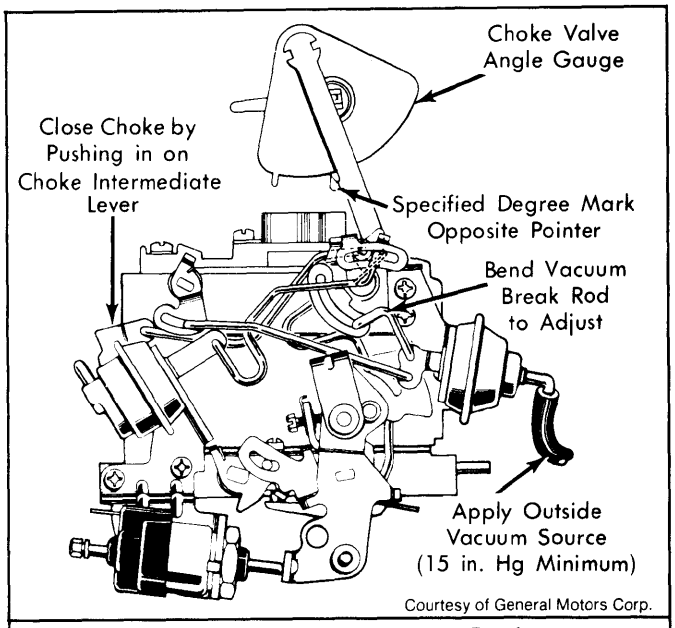


Fig. 11: Adjusting V6 Engine Primary Vacuum Break

SECONDARY VACUUM BREAK

NOTE: This adjustment is performed using the choke valve angle gauge. See procedure at beginning of ADJUSTMENTS.

V6 Engine Only - 1) Attach rubber band to intermediate choke lever. Open throttle to allow choke valve to close.
2) Set up angle gauge and set angle to specification. Using an outside vacuum source of at least 18 in. Hg, retract vacuum break plunger. *See Fig. 12.*
3) Where applicable, plug air bleed holes and ensure plunger stem is fully extended to compress plunger bucking spring.

NOTE: Be sure plunger bucking spring is compressed and seated (plunger fully extended), if equipped.

3) Bubble on choke valve gauge should be centered with specified degree mark. To adjust, bend secondary vacuum break rod until bubble is aligned with mark.

4) If angle valve gauge is not used, measure specified clearance between upper edge of choke valve and air horn wall. To adjust, bend secondary vacuum break rod. *See Fig. 12.*

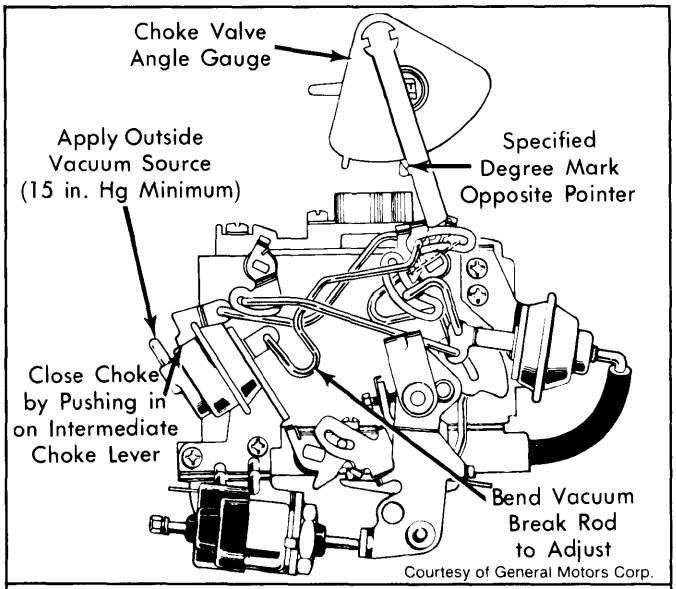


Fig. 12: Adjusting Secondary Vacuum Break

AUTOMATIC CHOKE

1) Choke coil cover is retained on housing with rivets to prevent tampering with factory adjustment. If necessary to remove cover, index mark cover to choke housing. Drill out rivits.

2) Position fast idle speed screw on high step of fast idle cam. Rotate cover to align marks. Install new cover screws if necessary.

CHOKE UNLOADER

NOTE: This adjustment is performed using the choke valve angle gauge. See procedure at beginning of ADJUSTMENTS.

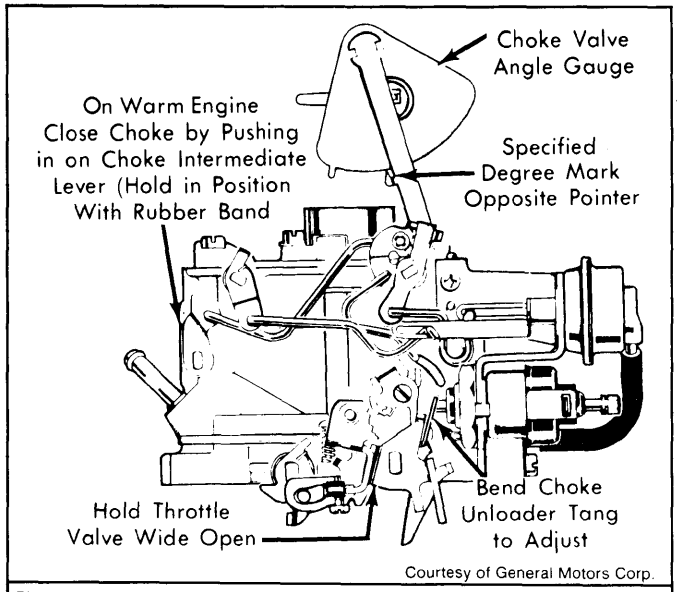


Fig. 13: Adjusting 4-Cylinder Engine Choke Unloader

1) Attach rubber band to intermediate choke lever. Open throttle to allow choke valve to close. *See Fig. 13 or 14.*

2) Set up angle gauge and set angle to specifications. Hold throttle lever in wide open position.

3) Push on choke shaft lever to open choke valve and to make contact with closing tang. To adjust, bend tang on throttle lever until bubble is centered.

4) If choke angle gauge is not used, bend tang on throttle lever until specified clearance is between upper edge of choke plate and air horn.

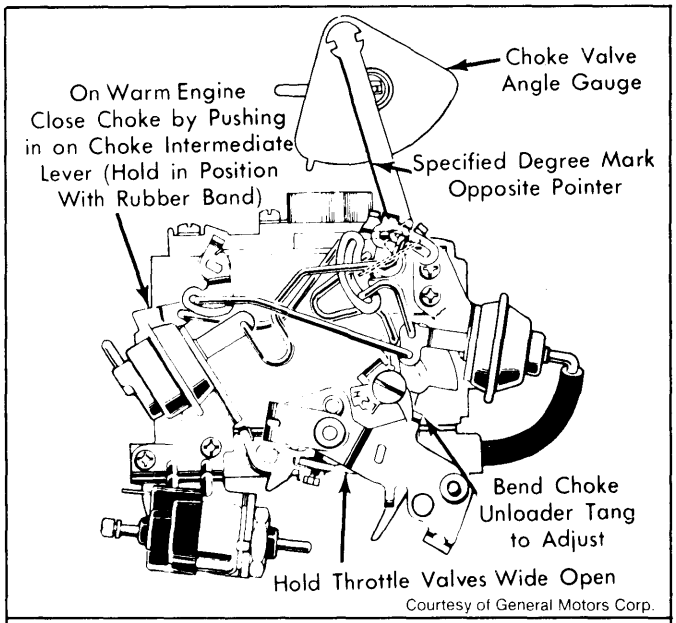


Fig. 14: Adjusting V6 Engine Choke Unloader

SECONDARY LOCK-OUT

1) Hold choke valve wide open by pushing down on intermediate choke lever. *See Fig. 15 or 16.*

2) Open throttle lever until end of secondary actuating lever is opposite toe of lock-out lever.

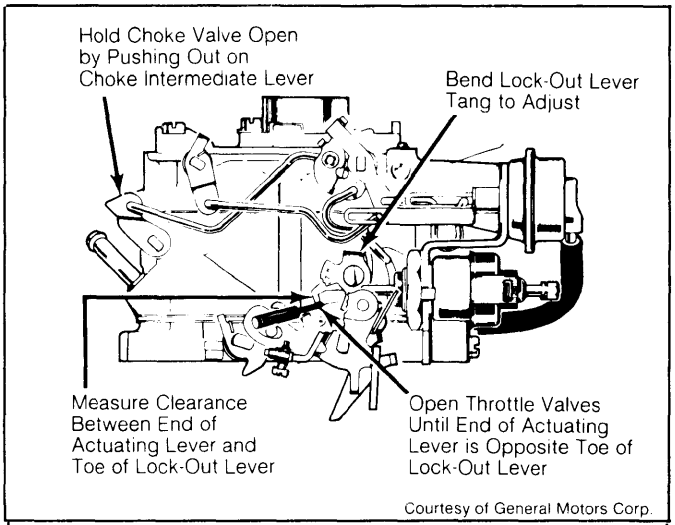


Fig. 15: Adjusting 4-Cylinder Engine Secondary Throttle Lock-Out Adjustment

3) Measure specified clearance between end of actuating lever and toe of lock-out lever. Measurement can be checked using a drill or pin gauge of specified size. To adjust, bend lock-out lever tang contacting fast idle cam.

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)

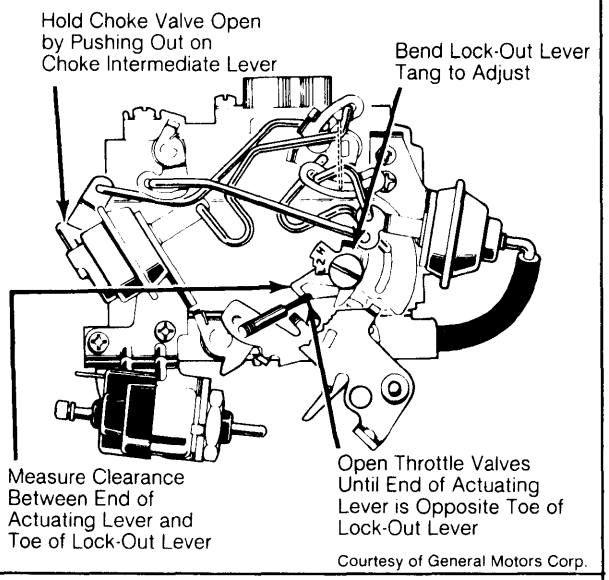


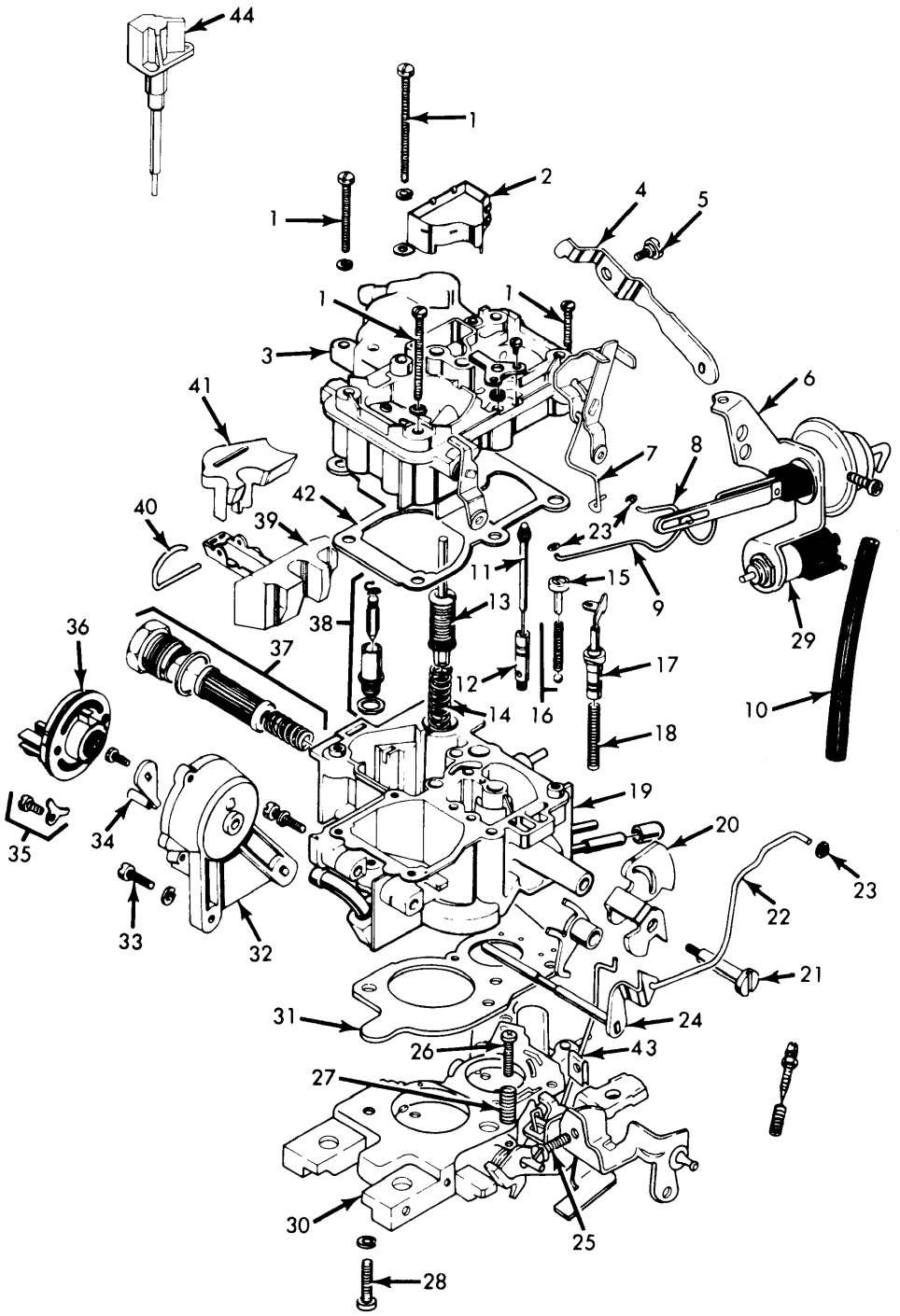
Fig. 16: Adjusting V6 Engine Secondary Throttle Lock-Out Adjustment

OVERHAUL

CARBURETOR

Refer to *Figs. 17 and 18.* for disassembly and reassembly. Ensure all carburetor passages air clean. Use new gaskets on reassembly.

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)

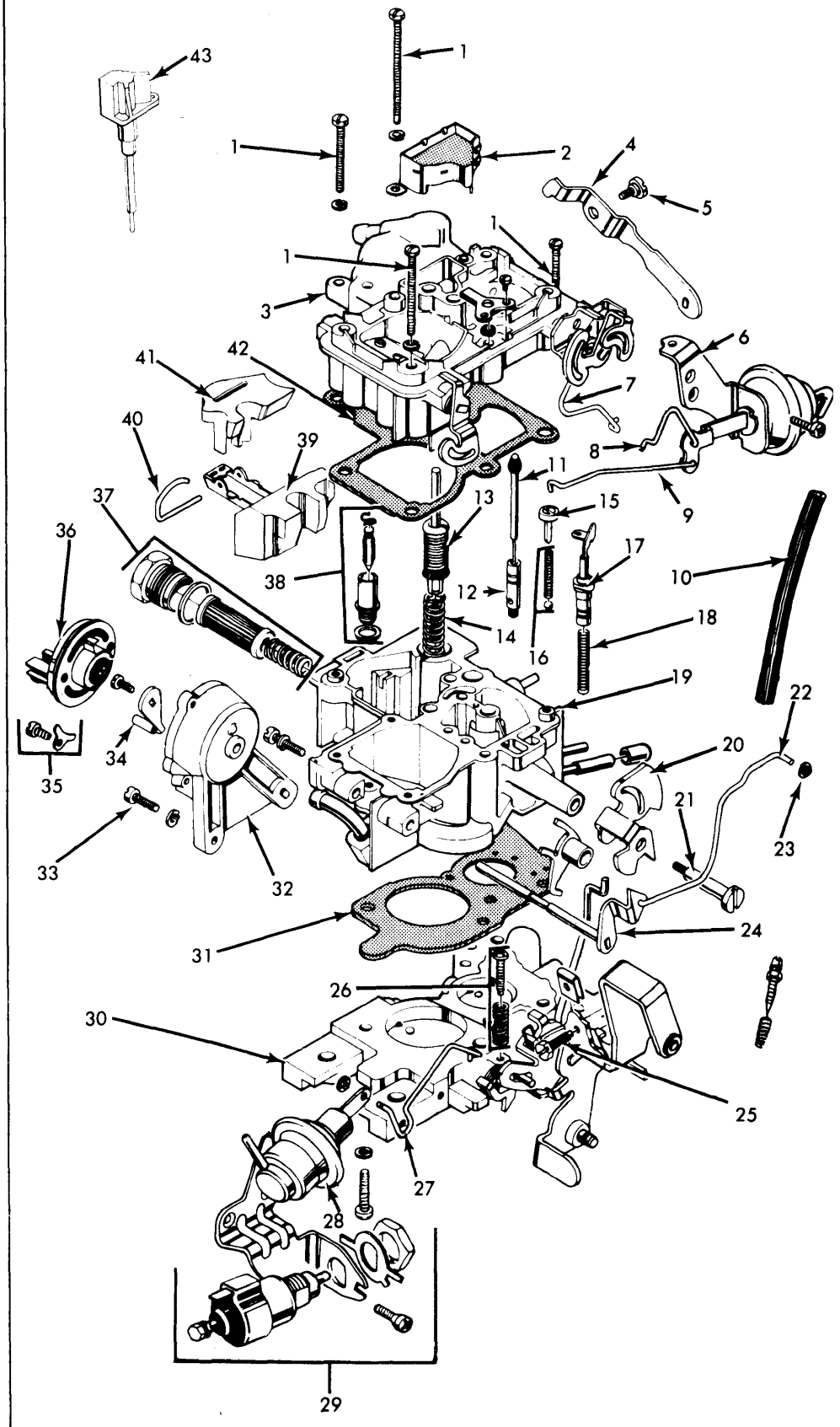


1. Air Horn Screw
2. Vent Stack
3. Air Horn
4. Accel. Pump Lever
5. Accel. Pump Lever Screw
6. Primary (Front) Vacuum Break Diaphragm
7. Fast Idle Cam Rod
8. Vacuum Break Rod
9. Air Valve Rod
10. Vacuum Break Hose
11. Primary Metering Rod
12. Primary Metering Jet
13. Accel. Pump
14. Accel. Pump Spring
15. Accel. Pump Discharge Guide
16. Accel. Pump Discharge Ball and Spring
17. Power Piston
18. Power Piston Spring
19. Float Bowl
20. Fast Idle Cam
21. Fast Idle Cam Screw
22. Intermediate Choke Rod
23. Rod Clip
24. Intermediate Choke Rod
25. Fast Idle Cam Screw
26. Idle Speed Screw
27. Idle Speed Screw Spring
28. Throttle Body Screw
29. Idle Speed Solenoid
30. Throttle Body
31. Throttle Body Gasket
32. Choke Housing
33. Choke Housing Screws
34. Choke Coil Lever Tang
35. Choke Coil Screw and Retainer
36. Choke Coil
37. Fuel Inlet Fitting and Filter
38. Float Needle and Seat Assy.
39. Float
40. Float Retainer
41. Float Bowl Insert
42. Air Horn Gasket
43. Accel. Pump Rod
44. Mixture Control Solenoid (E2SE Only)

Courtesy of General Motors Corp.

Fig. 17: Exploded View of Rochester Model 2SE & E2SE 2-Barrel Carburetor (4-Cylinder Engine)

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)



1. Air Horn Screw
2. Vent Stack
3. Air Horn
4. Accel. Pump Lever
5. Accel. Pump Lever Screw
6. Primary (Front) Vacuum Break Diaphragm
7. Fast Idle Cam Rod
8. Vacuum Break Rod
9. Air Valve Rod
10. Vacuum Break Hose
11. Primary Metering Rod
12. Primary Metering Jet
13. Accel. Pump
14. Accel. Pump Spring
15. Accel. Pump Discharge Guide
16. Accel. Pump Discharge Ball & Spring
17. Power Piston
18. Power Piston Spring
19. Float Bowl
20. Fast Idle Cam
21. Fast Idle Cam Screw
22. Intermediate Choke Rod
23. Rod Clip
24. Intermediate Choke Shaft
25. Fast Idle Cam Screw
26. Idle Speed Screw & Spring
27. Vacuum Break Rod
28. Secondary (Rear) Vacuum Break Diaphragm
29. Idle Solenoid & Bracket
30. Throttle Body
31. Throttle Body Gasket
32. Choke Housing
33. Choke Housing Screws
34. Choke Coil Lever Tang
35. Choke Coil Screw & Retainer
36. Choke Coil
37. Fuel Inlet Fitting & Filter
38. Float Needle & Seat Assy.
39. Float
40. Float Retainer
41. Float Bowl Insert
42. Air Horn Gasket
43. Mixture Control Solenoid E2SE Only)

Courtesy of General Motors Corp.

Fig. 18: Exploded View of Rochester Model 2SE & E2SE 2-Barrel Carburetor (V6 Engine)

1975-79 FUEL SYSTEMS
Rochester 2SE & E2SE 2-Barrel (Cont.)

1979 CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Float Level Setting	Accel. Pump Setting	Choke Coil Lever Setting	Choke Rod Setting①	Air Valve Rod Setting	Vacuum Break		Auto. Choke Setting	Choke Unloader Setting①	Secondary Lockout Setting
						Primary Setting①	Secondary Setting①			
17059614	3/16"	1/2"	.085"	18°	②	17°	.....	③	36°	②
17059615	3/16"	5/32"	.085"	18°	②	19°	.....	③	36°	②
17059616	3/16"	1/2"	.085"	18°	②	17°	.....	③	36°	②
17059617	3/16"	5/32"	.085"	18°	②	19°	.....	③	36°	②
17059618	3/16"	1/2"	.085"	18°	②	17°	.....	③	36°	②
17059619	3/16"	5/32"	.085"	18°	②	19°	.....	③	36°	②
17059620	3/16"	1/2"	.085"	18°	②	17°	.....	③	36°	②
17059621	3/16"	5/32"	.085"	18°	②	19°	.....	③	36°	②
17059650	3/16"	3/32"	.085"	27°	.025"	30°	38°	③	30°	②
17059651	3/16"	3/32"	.085"	27°	.025"	30°	37°	③	30°	②
17050652	3/16"	3/32"	.085"	27°	.025"	30°	38°	③	30°	②
17059653	3/16"	3/32"	.085"	27°	.025"	30°	37°	③	30°	②
17059674	13/64"	1/2"	.120"	18°	.025"	19°	.....	2 Lean	32°	.030"
17059675	13/64"	17/32"	.120"	18°	.025"	21°	.....	1 Lean	32°	.030"
17059676	13/64"	1/2"	.120"	18°	.025"	19°	.....	2 Lean	32°	.030"
17059677	13/64"	17/32"	.120"	18°	.025"	21°	.....	1 Lean	32°	.030"
17059714	11/16"	5/32"	.085"	18°	②	19°	.....	③	32°	②
17059715	11/16"	5/32"	.085"	18°	②	25°	.....	③	32°	②
17059716	11/16"	5/32"	.085"	18°	②	19°	.....	③	32°	②
17059717	11/16"	3/32"	.085"	18°	②	25°	.....	③	32°	②
17059760	1/8"	5/64"	.085"	17.5°	.025"	20°	33°	③	35°	.120"
17059762	1/8"	5/64"	.085"	17.5°	.025"	24°	33°	③	35°	.120"
17059763	1/8"	5/64"	.085"	17.5°	.025"	20°	33°	③	35°	.120"

① – 17° = .090"; 17.5° = .093"; 18° = .096"; 19° = .103"; 20° = .110"; 21° = .117"; 24° = .136"; 25° = .142"; 27° = .157"; 30° = .179"; 32° = .195"; 33° = .203"; 35° = .220"; 36° = .227"; 37° = .234"; 38° = .243".

② – Information not available from manufacturer at time of publication.

③ – Not adjustable on 1980 models.