

FUEL SYSTEM

SERVICE INSTRUCTION WORKSHEET

TO REPAIR

GF3685-12

HOLLEY CARBURETOR

4 Barrel Models 3160, 4150, 4160

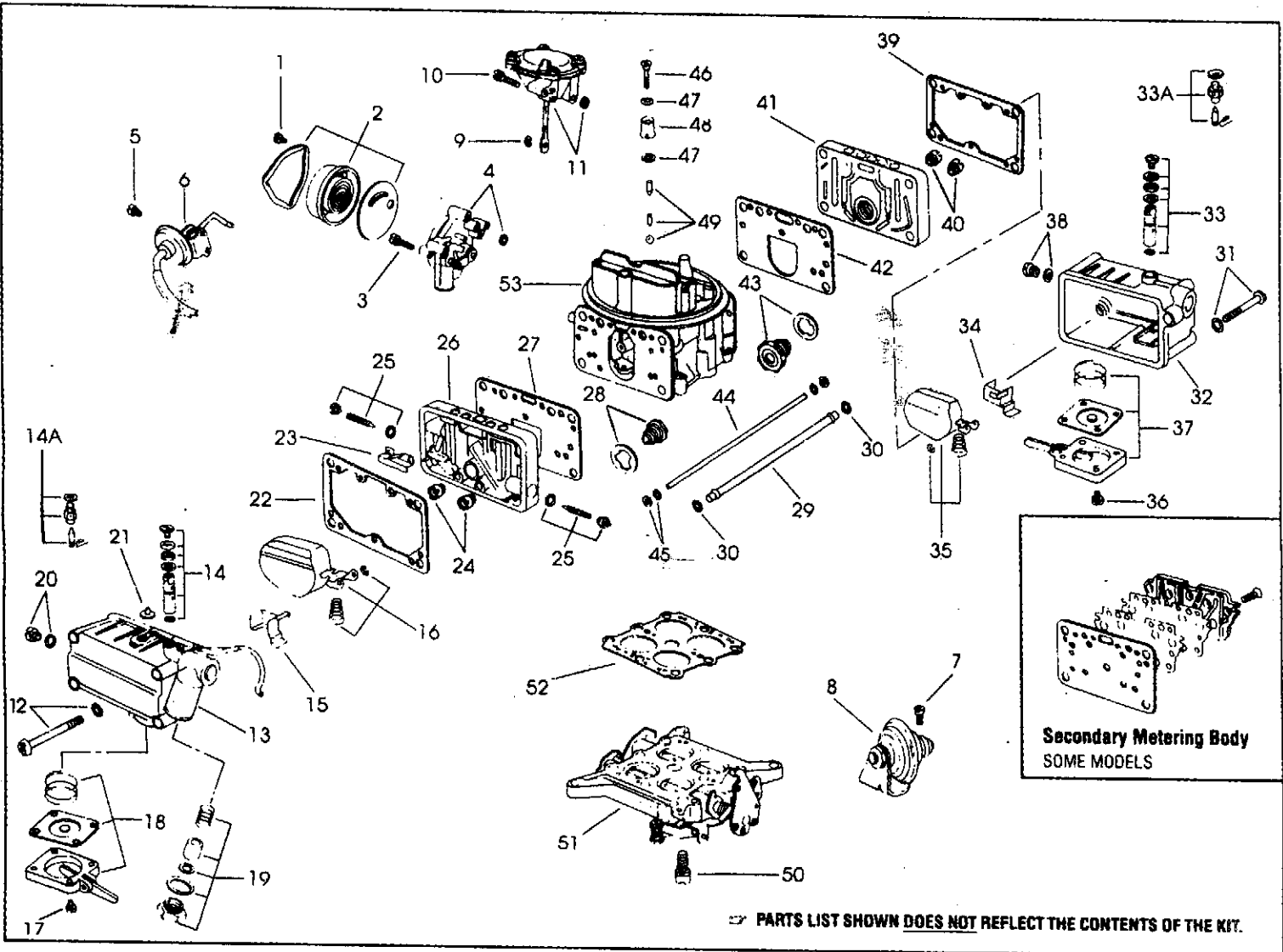
1. Carefully read the text in the following pages to become familiar with the contents of this worksheet before performing carburetor overhaul.

2. The exploded view is typical of the model carburetor this kit will service. The view may differ slightly from the actual carburetor being overhauled.

3. Use the exploded view as a guide. The numerical sequence of the parts list may generally be followed to disassemble the carburetor far enough to permit cleaning and inspection.

4. Parts list shown **DOES NOT** reflect the contents of the kit.

5. Kit may contain extra parts intended for other carburetors within this group. Substitute identical replacement parts for original worn parts found in carburetor.



PARTS LIST SHOWN DOES NOT REFLECT THE CONTENTS OF THE KIT.

PARTS LIST

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> 1. Screw, retainer (3) * 2. Thermostatic coil & cover assembly * 3. Screw, choke housing (3) * 4. Choke housing & washer assembly * 5. Screw, choke diaphragm (2) 6. Choke diaphragm assembly 7. Screw, dashpot * 8. Dashpot assembly * 9. Retainer, sec. diaphragm stem 10. Screw, diaphragm housing (3) 11. Sec. throttle diaphragm assembly 12. Screw, primary fuel bowl (4) 13. Primary fuel bowl assembly 14. Adjustable needle & seat assembly, primary * 14A. Non-adjustable needle & seat, primary * 15. Baffle plate 16. Float & spring assembly 17. Screw, pump cover (4) 18. Pump diaphragm & cover assembly | <ul style="list-style-type: none"> 19. Fitting & filter assembly, fuel inlet 20. Plug & washer, fuel level sight 21. Air vent valve or cap 22. Gasket, primary fuel bowl 23. Vent baffle, metering body 24. Main jets, primary 25. Idle mixture needle, cap & washer 26. Metering body, primary 27. Gasket, primary metering body 28. Economizer assembly, primary 29. Tube, fuel line 30. O-ring, tube (2) 31. Screw, sec. fuel bowl (4) 32. Sec. fuel bowl assembly 33. Adjustable needle & seat assembly, sec. * 33A. Non-adjustable needle & seat, sec. * 34. Baffle plate 35. Float & spring assembly 36. Screw, pump cover (4) * | <ul style="list-style-type: none"> 37. Pump diaphragm & cover assembly (Hi-perf. carb.) * 38. Plug & washer, fuel level sight 39. Gasket, sec. fuel bowl 40. Main jets, secondary 41. Metering body, secondary 42. Gasket, sec. metering body 43. Economizer assembly, secondary * 44. Balance tube * 45. Washer & o-ring, tube (2 ea.) * 46. Screw, pump discharge nozzle 47. Washer, nozzle (2) 48. Nozzle, pump discharge 49. Needle valve or ball & weight 50. Screw, throttle body (8) 51. Throttle body assembly 52. Gasket, throttle body 53. Main body assembly |
|---|---|--|

* Some Models

REMOVAL & INSTALLATIONS NOTES

1. Cover opening on intake manifold after carburetor is removed.
2. Do not mix parts and components from primary and secondary sides. They are not always interchangeable. Be sure to mark part when similarity exists.
3. Exercise care when disassembling and assembling secondary throttle diaphragm assembly (11). Do not damage diaphragm with cover screws.
4. Before removing idle mixture needle (25), turn in until lightly seated, counting number of turns. Record for proper installation.
5. Install parts and components in reverse order of removal.
6. When installing throttle body gasket (52), be sure holes are matched correctly.

TORQUE TABLE

Economizer assembly (23, 43) - 100 in.-lbs.
 Throttle body screws (50) - 50 in.-lbs.
 Fuel bowl screws (12, 31) - 25-30 in.-lbs.

7. When installing idle mixture needle (25), turn in until lightly seated, then back out number of turns recorded earlier.
NOTE: Some late models have a "backwards" idle adjustment. Turn in for rich mixture, turn out for lean mixture.
NOTE: 1968 & 69 models do not have idle mixture needles (52) on primary metering body. They were replaced by idle limiter screws, adjusted and sealed by the factory. Do not remove or adjust. A single idle adjusting screw is located inside the air cleaner ring on air horn, directly above primary metering body. This screw has a left hand thread.
8. Before installing o-rings, lubricate lightly with clean oil.
9. Before installing "umbrella" check valve, coat stem with grease, then carefully insert through hole until fully seated.

CLEANING

Cleaning must be done with carburetor disassembled. Use spray cleaner and a stiff bristle brush to remove dirt and carbon deposits. Do not use abrasives and wires to clean parts and passageways. Wash off in suitable solvent, and clear all passageways with compressed air.

Caution: When cleaning with solvent do not soak or spray parts containing rubber, leather, plastic and electrical components.

ADJUSTMENT DATA

FIG. 1
BALANCE TUBE POSITION

Cars— Install balance tube so it projects 1 inch from secondary metering body as shown.
Trucks— Install balance tube so it projects equally from both primary and secondary sides.

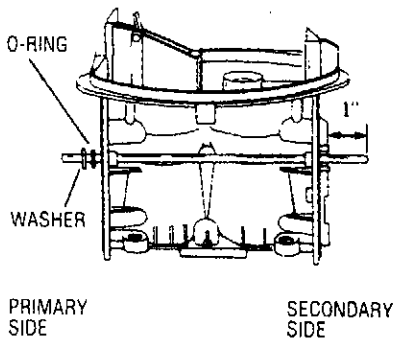


FIG. 2
DRY FLOAT LEVEL ADJUSTMENT

1. With fuel bowl inverted, surface of float should be parallel to top surface of fuel bowl.
2. To adjust, open lock-screw and turn adjusting nut. Re-tighten lock-screw while holding adjusting nut.

SIDE HUNG FLOAT

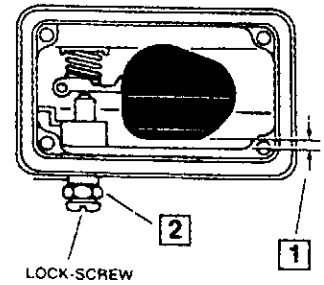


FIG. 3
DRY FLOAT LEVEL ADJUSTMENT

1. With fuel bowl inverted, surface of float should be parallel to top surface of fuel bowl.
2. To adjust, open lock-screw and turn adjusting nut. Re-tighten lock-screw while holding adjusting nut.

CENTER HUNG FLOAT

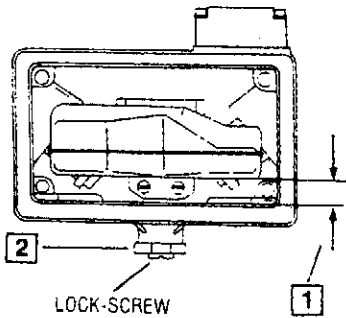


FIG. 4
DRY FLOAT LEVEL ADJUSTMENT (with non-adjustable Needle Valve)

1. Invert fuel bowl and allow float tab to rest on seated needle.
Caution: Do not exert pressure on resilient needle valve.
2. Measure distance between toe end of float and surface of fuel bowl on primary side, and heel end of float and surface of fuel bowl on secondary side.
3. To adjust, bend float tab.

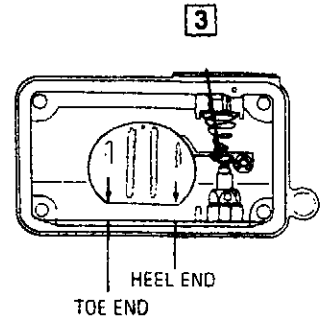


FIG. 5
WET FLOAT LEVEL ADJUSTMENT

1. With car on flat surface, bring engine to normal operating temperature and then shut it off.
2. Remove sight plug from fuel bowl. Fuel level should be at lower edge of sight plug hole.
Caution: Place a suitable container or rag to collect spillover of fuel.
3. To adjust, open lock-screw and turn adjusting nut. Re-tighten lock-screw while holding adjusting nut.
Important: Do not open sight plug while engine is running.

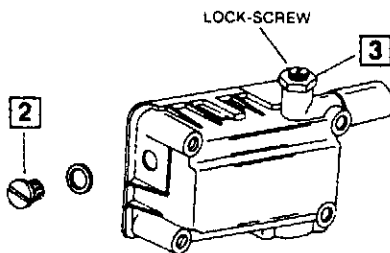
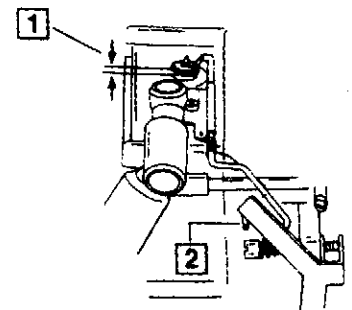


FIG. 6
BOWL VENT ADJUSTMENT

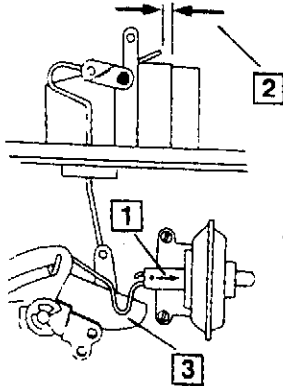
- NOTE:** Make this adjustment after curb idle was adjusted.
1. With throttle valves fully closed, measure clearance between vent valve and seat. It should be as specified.
 2. To adjust, bend rod as necessary.



ADJUSTMENT DATA (Cont'd)

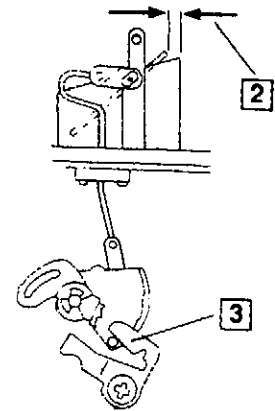
**FIG. 7
VACUUM BREAK
ADJUSTMENT**

1. Open throttle valve to clear fast idle cam then push diaphragm plunger upward to fully seat diaphragm. An outside vacuum source can be applied to diaphragm assy. as an alternate method.
2. Apply lightly closing pressure to choke valve without pulling diaphragm. Measure distance between upper edge of choke valve and air horn wall.
3. To adjust, bend 'U' shaped link as necessary.



**FIG. 8
UNLOADER
ADJUSTMENT**

1. Hold throttle valves in wide open position.
2. Apply lightly closing pressure to choke valve and measure distance between upper edge of choke valve and air horn wall.
3. To adjust, bend unloader tang or link if applicable.

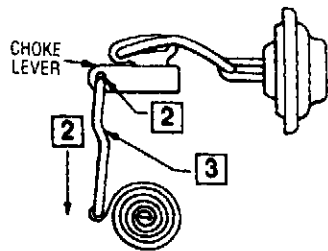


**FIG. 9
CHOKE ROD OR LEVER
ADJUSTMENT**

Type I

1. Hold choke valve fully closed.
2. Push down on choke rod to stop. While in this position, check that clearance between top of rod and top of hole in choke lever is 1/2 to 1 rod diameter.
3. To adjust, bend rod.

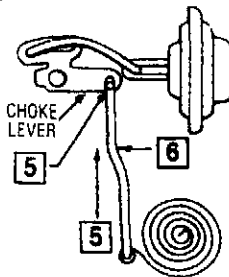
Type I



Type II

4. Hold choke valve fully closed.
5. Push choke rod up to stop. While in this position, check that clearance between top of rod and top of hole in choke lever is 1/2 to 1 rod diameter.
3. To adjust, bend rod.

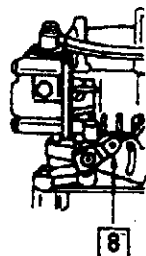
Type II



Type III

7. Disconnect choke rod at choke lever. Hold choke valve closed.
8. Center line of hole in choke lever should be parallel to bottom surface of throttle body or 1/32" distant from this surface.

Type III



**FIG. 10
PRIMARY AND SECONDARY
PUMP ADJUSTMENT**

1. Pump cam positioned in hole 1 as shown unless otherwise specified. Throttle valves held in wide open position.
2. Hold pump operating lever in a fully compressed position. Push down in direction of arrow.
3. Measure clearance of 1/64" between end of pump lever and adjusting nut.
4. To adjust, turn screw as necessary.

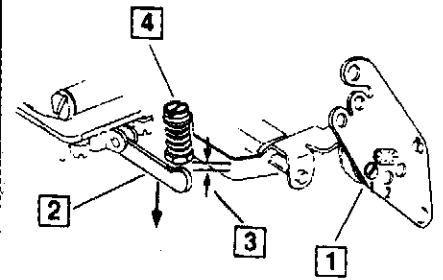
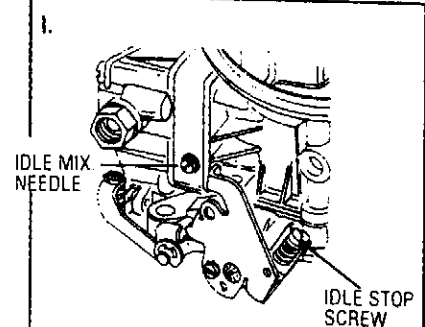


FIG. 11

I. SLOW IDLE ADJUSTMENT

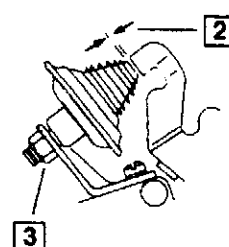
1. With engine at normal operating temperature and choke valve wide open, adjust idle mixture needles to a smooth idle. Then, adjust idle stop screw to the proper R.P.M. as indicated on engine decal.



II. DASHPOT ADJUSTMENT

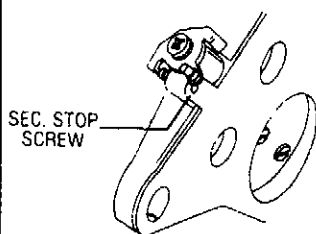
NOTE: Step one should be performed before this adjustment.

2. Push plunger inward and measure distance between end of plunger and throttle arm.
3. To adjust, loosen locknut and turn dashpot assembly as necessary. Retighten locknut.



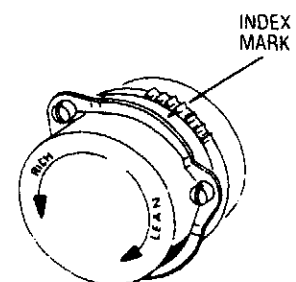
**FIG. 12
SECONDARY
THROTTLE STOP
ADJUSTMENT (if applicable)**

1. Back out secondary throttle stop screw until throttle valves are closed.
2. Turn screw inward until it contacts stop, then turn in 1/2 to 3/4 turns more.



**FIG. 13
AUTO CHOKE ADJUSTMENT**

1. Align mark on thermostatic coil with appropriate mark on choke housing as indicated in specification chart.



SPECIFICATION CHART

Year	Application	Float Adjust. (Dry) Fig. 2&3	Float Adjust. (Dry) Primary Fig. 4	Float Adjust. (Dry) Secondary Fig. 4	Bowl Vent Adjust. Fig. 6	Vacuum Break Adjust. Fig. 7	Unloader Adjust. Fig. 8	Dashpot Adjust. Fig. 11	Auto Choke Fig. 13
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CHEVROLET — SPECIFICATION I.D.-A

1966-65	327, 396, 427 Eng. - Exc. Carb. Nos. R3139; R3140 Carb. Nos. R3367 ² ; R3609	1	—	—	5/64 1/16 5/64	11/64 — 3/16	17/64 — 17/64	— — —	— — —
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CHEVROLET — SPECIFICATION I.D.-B

1971	350, 454 Eng.	1	—	—	—	11/32	11/32	—	—
1970	302, 396 Eng.—Exc.	1	—	—	1/64	19/64 ³	11/32	—	—
	Carb. Nos. R4490; R4554, 55 Carb. Nos. R4492; R4557	1	—	—	— 1/16	19/64 19/64	11/32 11/32	— —	— —
1969-68	302, 340, 396, 427 Eng.	1	—	—	—	19/64	11/32	—	—
1967	302, 396 Eng.	1	—	—	—	11/32	11/32	—	—
1967-66	327 Eng.	1	—	—	5/64	3/16	17/64	—	—
1966	396, 427 Eng.	—	11/32	15/32	5/64	11/32	11/32	—	—
1965½-65	396, 427 Eng.	—	3/8	1/2	—	—	—	—	Index
1965-64	327 Eng.	1	—	—	— ⁵	—	—	—	Index ⁶

CHRYSLER MOTORS

65-68	426 Eng.—Hi-Perf.	1	—	—	—	—	—	—	—
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FORD, MERCURY

1971-70	429 Eng. ² —Exc. Carb. No. R4647 ²	1	—	—	—	19/64	19/64	— ⁷	2NR
1969-66	390 Eng.—Carb. No. R4742 ²	1	—	—	5/64	11/64	11/32	1/8	Index
1966	390 Eng.—Carb. No. R3530, 57	—	11/32	15/32	5/64	—	—	5/64	Index ⁸
1965-63	427 Eng.—Exc. Carb. Nos. R2927; R3411	1	—	—	—	—	—	—	Index ⁶

FORD MARINE

1971	460 Eng. ²	1	—	—	—	9/64	19/64	—	Index
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KIEKHAEFER MARINE

1973-72	460 Eng. ²	1	—	—	—	9/64	19/64	—	Index
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PONTIAC

1970	400 Eng. ²	1	—	—	—	—	—	—	—
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CHEVROLET — SPECIFICATION I.D.-C

1970	454 Eng. ²	1	—	—	—	—	—	—	—
1969	327, 396, 427 Eng.—Exc. Carb. No. R4296 ²	1	—	—	—	11/32	—	—	—

CHRYSLER MOTORS

1968	426 Hemi-Racing Eng.	1	—	—	—	—	—	—	—
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AMERICAN MOTORS — SPECIFICATION I.D.-D

1970	390 Eng.—Hi-Perf. ²	1	—	—	—	—	—	—	—
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CHEVROLET

1969-68	302 Eng. ²	1	—	—	—	—	—	—	—
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FORD, MERCURY

1971	302, 429 Eng. ² —Exc. Carb. No. R6129 ²	1	—	—	—	19/64	19/64	7/64	2NR
1970	302, 428 Eng. ² —Exc.	1	—	—	—	—	21/64	— ⁹	—
	Carb. Nos. R4513 ² , 14 ²	1	—	—	—	19/64	—	3/32	3NR ¹⁰
	Carb. No. R4653 ²	1	—	—	—	—	5/16	—	—
	Carb. Nos. R4515 ² , 16 ² Carb. Nos. R4511 ²	1	—	—	—	5/64	19/64	—	3NR ¹⁰
1969-68½	428 Eng.—Exc. Carb. Nos. R4174 ² ; R4280 ²	1	—	—	5/64 5/64	19/64 19/64	—	3/32	1NR ¹¹ 1NR
1968-67	302, 351, 390, 427 Eng.—Exc. Carb. Nos. R4069; R4234	1	—	—	5/64 5/64	—	3/16	— ¹²	Index ¹³ Index
1968-67	390 Eng.—Carb. Nos. R3793 ² ; 95-1 ²	1	—	—	5/64	—	—	—	Index

SPECIFICATION CHART (Cont'd)

Year	Application	Float Adjust. (Dry) Fig. 2&3	Float Adjust. (Dry) Primary Fig. 4	Float Adjust. (Dry) Secondary Fig. 4	Bowl Vent Adjust. Fig. 6	Vacuum Break Adjust. Fig. 7	Unloader Adjust. Fig. 8	Dashpot Adjust. Fig. 11	Auto Choke Fig. 13
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IHC TRUCKS — SPECIFICATION I.D.-D

1973-69	392 Eng. Carb. Nos. R4312, -1, -2; R4313, -1, -2, -3 Carb. Nos. R4318, -1; R4320, -1 Carb. Nos. R4319, -1; R4321, -1	1	—	—	—	13/64	15/64	— ¹²	2NL
		1	—	—	—	13/64	15/64	— ¹²	—
		1	—	—	—	13/64	15/64	— ¹²	3NL

FORD TRUCKS — SPECIFICATION I.D.-F

1976-74	390 Eng.	1	—	—	—	3/16	5/16	—	Index
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FORD TRUCKS — SPECIFICATION I.D.-G

1976-74	390 Eng.	1	—	—	—	3/16	5/16	—	Index
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IHC TRUCKS — SPECIFICATION I.D.-H

1977-75	MV404 ² , MV446 ² , 537 ² Eng.	1	—	—	—	—	—	—	—
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FORD, LINCOLN, MERCURY — SPECIFICATION I.D.-I

1976-68	351, 429, 460 Eng. Carb. Nos. R8408, 09; R8589 Carb. Nos. R8410, 11, 12, 14, 16	1	—	—	1/64 3/16	7/32 7/32	11/32 11/32	—	Index 2NR ¹⁴
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FORD, LINCOLN, MERCURY — SPECIFICATION I.D.-K

1977	460 Eng.—Exc. Carb. No. R8420	1	—	—	3/16 3/16	7/32 7/32	11/32 11/32	—	Index 2NR
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FORD TRUCKS

1974-73	460 Eng.	1	—	—	3/16	7/32	11/32	—	2NR
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FORD, MERCURY — SPECIFICATION I.D.-L

1978	460 Eng.—Carb. No. R9050 ² Carb. No. R9051 ²	1	—	—	1/64 1/64	3/16 3/16	11/32 11/32	—	2NR 1NR
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FORD TRUCKS

1977-73	460 Eng.	1	—	—	3/16	7/32	11/32	—	2NR
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FOOTNOTES:

- ¹ Float parallel with fuel bowl surface.
- ² For this application, position pump cam in hole no. 2.
- ³ Carb. No. R4556-1 set 11/32.
- ⁴ Carb. No. R4346 set 1/16.
- ⁵ Carb. No. R3043 set 3/64.
- ⁶ Carb. No. R2818, R3410 set 3NL.
- ⁷ Carb. No. R6127 set 3/32.
- ⁸ Carb. No. R3557 set 1NR.
- ⁹ Carb. No. R4513-1 set 9/64; Carb. No. R4514-1 set 13/64.
- ¹⁰ Carb. No. R4513, 15 set 4NR.
- ¹¹ Carb. No. R4279 set 2NR.
- ¹² Carb. No. R3795; R4313, -1, -2, -3; R4320, -1; R4321, -1 set 5/64.
- ¹³ Carb. No. R4088 set 1NL.
- ¹⁴ Carb. No. R8416 set Index.

ABBREVIATIONS:

- Exc. - Except
 Hi-Perf. - High Performance
 N.L. - Notch Lean
 N.R. - Notch Rich