

Ford Carburetors

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL

FORD MOTOR CO.

1970

① Ford Carburetor No.

Application ^②	Man. Trans.	Auto. Trans.
351" C.....	DOOF-Z, AB.....	DOOF-Y, AC
With A/C.....		DOOF-AA, AD
428".....		DOAF-M, AD, AJ
With A/C.....		DOAF-R, AE, AK
429".....	DOAF-L, AB, AL.....	DOAF-AG, AM
		DOSF-A, D, E
460".....		DOVF-A, B, C

① — Carburetor number prefix and suffix with basic part number (9510) omitted.

② — Ford engines used as follows:

- 351" C — Fairlane, Montego, Mustang, Cougar.
- 428" — Ford & Mercury Police.
- 429" — Ford, Mercury, Fairlane, Montego, Thunderbird.
- 460" — Lincoln Continental & Mark III.

1971

① Ford Carburetor No.

Application ^②	Man. Trans.	Auto. Trans.
351" C.....	D10F-EA.....	D10F-AAA
429".....		D1AF-MA
		D1SF-AA
460".....		D1VF-AA

① — Ford carburetor number prefix and suffix with basic part number (9510) omitted.

② — Ford engines used as follows:

- 351" C — Torino, Mustang, Montego, Cougar.
- 429" — Ford, Mercury, Thunderbird.
- 460" — Lincoln Continental & Mark III.

1972

① Ford Carburetor No.

Application ^②	Man. Trans.	Auto. Trans.
351" BOSS.....	D2ZF-GA.....	.....
351" COBRA JET.....	D2ZF-AA.....	D2ZF-BB
California Only.....		D2ZF-DA
429" (49 States).....		D2AF-AA, AB
		D2SF-AA, AB, AC
(50 States).....		D2SF-BA, BB
429" COBRA JET.....		D2AF-LA
460" (Except Calif.).....		D2VF-AA
(Calif. Only & All W/3.0 Axle).....		D2VF-BA, BB

① — Ford carburetor number prefix and suffix with basic number (9510) omitted.

② — Ford engines used as follows:

- 351" BOSS — Mustang.
- 351" COBRA JET — Mustang, Cougar, Torino, Montego.
- 429" — Ford, Torino, Mercury, Montego, Thunderbird.
- 460" — Lincoln Continental & Mark IV.

AMERICAN MOTORS

1970

American Motors Code No.

Application	Man. Trans.	Auto. Trans.
360", 390".....	OWM4.....	OWA4
	1971	
360", 401".....	1TM4.....	1TA4
	1972	
360".....	2TM4.....	2RA4
401".....	2TM4.....	2TA4

► CHANGES, CAUTIONS, CORRECTIONS

► **1972 FORD MOTOR CO. ROUGH IDLE CORRECTION** — Condition may be caused by microscopic metallic deposits from fuel, holding the supplementary fuel inlet needle off its seat and raising fuel level above specification.

Correct this condition by replacing steel needle with one having a Viton tip. New needle and seat assembly is Part No. D2AZ-9564-B. When installing new assembly remove any deposits on floor of fuel bowl with a magnet.

► **1971 AMERICAN MOTORS IMPROVED WARM-UP** — To improve engine warm-up performance, a new choke coil assembly has been released. Part No. is 4488461 and can be identified by the code No. "4TY" stenciled with white paint on face of the choke cover. Choke setting specification remains the same.

► **1971 AMERICAN MOTORS DASHPOT DISCONTINUED**
NOTE — Effective with engine codes 404 (P or Z) 07, the dashpot assembly usage has been discontinued on vehicles with Auto. Trans. The specified curb idle engine RPM eliminates need for a dashpot.

► **1971 AMERICAN MOTORS CONSTANT THROTTLE SURGE AT 50-60 MPH CORRECTION** — Correction involves removing air horn assembly to enlarge low speed tube restrictions from .028" (original size) to .031" on vehicles using carburetor 1TA4 and Auto. Trans.

After air horn removal, invert assembly and use a No. 68 drill in a pin vise to enlarge the low speed tube restrictions. Remove drill shavings by blowing through the low speed and main well tubes with compressed air. Remove air horn gasket and adjust float level to 13/16".

Adjust idle speed and mixture screws to obtain a "lean best" mixture at 650 RPM with Auto. Trans. in "D".

► **1972 AMERICAN MOTORS MAIN WELL TUBES DELETED**
NOTE — At the start of production of 1972 model vehicles, a constant fuel feed passage was incorporated in all Model 4300 carburetors to provide "wet" secondary main wells. This passage, located at the rear of the fuel bowl just above secondary main jet fuel passage, eliminates need for secondary main well tubes. Disregard any reference to secondary main well tubes on carburetor Nos. 2TM4, 2RA4 and 2TA4.

CARBURETOR IDENTIFICATION

Carburetor model designation and suffix stamped on tag attached to carburetor by one air horn screw. First letter on second line of tag indicates design changes which may affect parts replacement. Ford Carburetors may have Ford, Autolite, or Motorcraft stamped on the identification tag.

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

DESCRIPTION

Four barrel downdraft carburetor of same basic design as previous models. Note the following design changes and the year-model in which they were incorporated.

Fuel Bowl Vent Valve — External bowl vent was eliminated on 1970 and subsequent models. Internal bowl vents are employed and no adjustment is necessary.

Secondary Air Valve Torsion Spring — Spring has been deleted on 1970 and subsequent models and replaced by a spring located in secondary valve dashpot cylinder.

Idle Speed Adjustment — Carburetors have throttle lever stopscrew for idle speed adjustment, and may have either a dashpot or throttle positioner solenoid incorporated. Where a solenoid is used, the solenoid plunger determines and sets curb idle speed. The throttle stop screw adjusts slow idle speed which is set by de-energizing the solenoid and adjusting the stop screw to specified RPM. After re-energizing the solenoid, curb idle speed may be adjusted.

Idle Limiter Caps — 1970 and subsequent models have plastic limiter caps installed on the idle mixture screws. Caps limit the range of adjustment available. *NOTE* — Do not attempt to adjust or tamper with idle mixture screws locked in position with plastic limiter caps. If limiter caps and idle mixture screws are removed for carburetor overhaul or parts replacement, special procedure is required to correctly readjust the idle mixture screws.

Hot Idle Compensator Valve — Used on 1971 Lincoln, Mark III and Thunderbird. Used on 1972 Lincoln, Mark IV, Thunderbird and California Ford and Mercury Models.

Bi-metal valve admits metered flow of air below the throttle at idle to overcome an overrich condition caused by excessive underhood temperatures which may occur during prolonged periods of idling.

Air Valve Plates (1972) — On model 4300-A carburetors, air valve plates are located above secondary main venturis, and an integral hydraulic dashpot damps sudden movement of air valve plates to aid in preventing flutter and erratic engine operation. On model 4300-D carburetors, secondary air valve plates are located above secondary bore, and secondary fuel supply is controlled by metering rods attached to air valve plates.

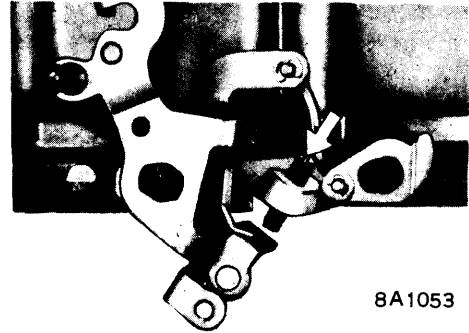
Staged Choke (1972) — A Staged choke system is used in conjunction with the standard bi-metal thermostatic choke coil. The staged choke release is used to open the choke plate within 15-60 seconds when underhood temperatures are above 60°F.

ADJUSTMENT

Idle Speed & Mixture

American Motors — *NOTE* — Do not idle engine for over 3 minutes at a time, if idle mixture adjustment not completed within 3 minutes, run engine at 2000 RPM for 1 minute. Recheck idle mixture adjustment at the specified RPM and adjust as required. Repeat the above step as often as necessary to compensate for fuel and temperature variations while performing this adjustment. Warm engine to normal operating temperature. If equipped with "Air Guard", stop engine and disconnect bypass valve air inlet hose. Adjust idle speed to specified RPM (see Specifications). On 360" 2-Bbl. auto. trans. vehicles, adjust idle speed by turning throttle stop solenoid. On 360"

4-Bbl. Auto. trans. vehicles, adjust idle speed by turning the hex head of the throttle stop solenoid. Then, starting from full rich stops, turn mixture screws clockwise (leaner) until a loss of engine RPM is indicated. Then turn mixture screws counterclockwise (richer) until the highest RPM reading is obtained at the "lean best idle". Both mixture screw must be turned equally, unless engine demands otherwise. If idle speed changed more than 30 RPM during mixture adjustment, reset to the specified RPM and repeat adjustment. Adjust to final idle speed and reconnect by-pass valve air inlet hose.



IDLE SPEED SCREW

NOTE — If rough idle or stalls occur and all tune-up conditions are correct, or in the case of major carburetor overhaul or throttle body rework, special procedures are required for mixture adjustment.

Ford Motor Co. — Obtain the following conditions: Headlights on High Beam, air conditioning OFF, automatic transmission in Drive, synchro-mesh in Neutral. *CAUTION:* On vehicles with vacuum release parking brake, plug vacuum line and set brake before placing transmission in Drive. This will permit the parking brake to remain engaged while engine is running and the transmission in Drive. On carburetors with hot idle compensator, make certain that compensator valve is fully seated. With engine at normal operating temperature, adjust idle speed and mixture as follows:

1) Disconnect solenoid wire from wiring harness and place automatic transmission in Neutral, set RPM to the lower speed listed (see Specifications), using the curb idle adjusting screw. Return automatic transmission to Drive position and reconnect solenoid wire.

2) Set idle speed to the higher RPM listed (see Specifications), using the adjusting screw located in the solenoid mounting bracket. *NOTE* — The solenoid is not strong enough to push the throttle lever open, therefore, it will be necessary to open the throttle lever by hand before setting to the higher RPM. Now, turn the idle mixture adjusting screws inward to obtain the smoothest possible idle within the range of the idle limiters (being sure mixture screws are turned equally). Check for idle smoothness with air cleaner installed.

NOTE — If rough idle or stalls occur and all tune-up conditions are correct, or in the case of major carburetor overhaul or throttle body rework, special procedures are required for mixture adjustment.

Ford Carburetors

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

CARBURETOR ADJUSTMENT SPECIFICATIONS									
Ford Carb. Number	Idle Speed (Engine RPM)		Float Level		Choke Valve Pull-Down	Fast Idle Cam Clearance	Accel. Pump Setting	Unloader Setting	Auto. Choke Setting
	Hot ①	Fast	Primary Valve	Auxiliary Valve					
D0AF-AG,AM	600	1300	25/32"	1/16"	.220"	.170"	#2	.300"	Index
D0AF-L,AB,AL	700	1400	25/32"	1/16"	.250"	.220"	#2	.....	.....
D0AF-M,AD,AJ	600	1600	1.00"	1/32"	.160"	.120"	#3	.300"	2-Rich
D0AF-R, AE,AK	600/500	1600	1.00"	1/32"	.160"	.120"	#3	.300"	2-Rich
D00F-Y,AC	600	1400	.082"	1/16"	.200"	.120"	#2	.300"	Index
D00F-Z,AB	800/500	1250	.082"	1/16"	.180"	.160"	#2	.300"	Index
D00F-AA,AD	600/500	1400	.082"	1/16"	.200"	.180"	#2	.300"	Index
D0SF-A,D,E	600	1300	25/32"	1/16"	.220"	.170"	#2	.300"	Index
D0VF-A,B,C	600	1250	25/32"	1/16"	.230"	.170"	#2	.300"	1-Rich
D1AF-MA	600	1350	49/64"	1/16"	.220"	.200"	#2	.....	Index
D10F-AAA	625/500	1400	13/16"	1/16"	.200"	.180"	#2	.....	1-Rich
D10F-EA	825/500	1250	13/16"	1/16"	.180"	.160"	#2	.....	Index
D1SF-AA	600	1350	49/64"	1/16"	.220"	.200"	#2	.....	Index
D1VF-AA	600	1250	49/64"	1/16"	.220"	.170"	#2	.....	1-Rich
D2AF-AA,AB	600/500	1350	49/64"	.....	.220"	.200"	#1	.....	2-Rich
D2AF-LA	650/500	1900	13/16"	.030"	.215"	.190"	#1	.....	Index
D2SF-AA	600/500	1350	49/64"	.....	.220"	.200"	#1	.....	2-Rich
D2SF-AB	600/500	1350	49/64"	.....	.220"	.200"	#1	.....	1-Rich
D2SF-AC	600/500	1350	49/64"	.....	.200"	.200"	#1	.....	1-Rich
D2SF-BA,BB	600/500	1350	49/64"	.....	.220"	.200"	#1	.....	2-Rich
D2VF-AA, BA,BB	625/500	1250	49/64"	.....	.230"	.200"	#1	.....	Index
D2ZF-AA	1000/500	1200	13/16"	.030"	.200"	.180"	#1	.....	Index
D2ZF-BB,DA	700/500②	1200	13/16"	.030"	.200"	.200"	#1	.....	Index
D2ZF-GA	1000/500	1200	13/16"	.030"	.200"	.180"	#1	.....	Index
Amer.Mtrs. Code No.									
OWA4	②	1600	13/16"	.....	.170"	.190"	#2	.300"	2-Rich
OWM4	②	1600	13/16"	.....	.190"	.200"	#2	.300"	2-Rich
ITA4	650	1600	13/16"	.....	.170"③	.190"④	#2	19/64"	Index
ITM4	750	1600	13/16"	.....	.190"④	.200"⑤	#2	19/64"	Index
2RA4	700⑦	1600	13/16"	.....	.190"	.190"	#2	19/64"	1-Rich
2TA4	650⑧	1600	13/16"	.....	.190"	.190"	#2	19/64"	1-Rich
2TM4	750	1600	13/16"	.....	.190"	.190"	#2	19/64"	1-Rich

① — Auto. Trans. in "D", Headlights ON Hi-Beam (Ford), A/C OFF.

② — Auto. Trans. — 600 in "D", Man. Trans. — 650.

③ — 11/64" gauge. ④ 3/16" gauge. ⑤ 13/64" gauge.

⑥ — California 800/500.

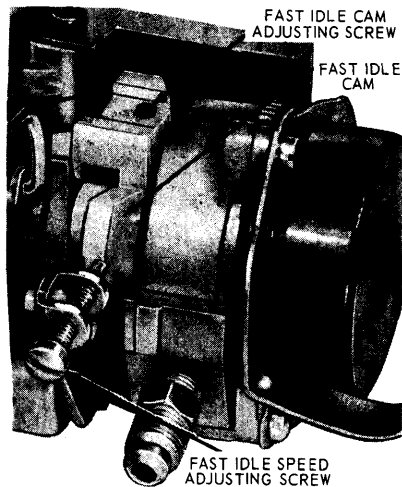
⑦ — Man. Trans. — 750.

⑧ — California 700.

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

Fast Idle Speed

Rotate fast idle cam so that fast idle screw contacts kick-down (middle) step of fast idle cam. With engine at normal operating temperature, adjust fast idle screw by turning screw in or out for correct fast idle speed. See *Specifications*.



FAST IDLE SPEED ADJUSTMENT

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Accelerating Pump

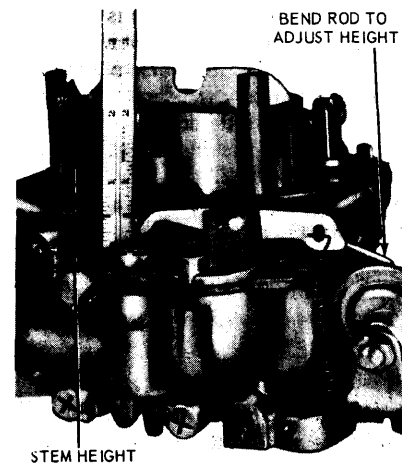
The accelerator pump stroke has been set to help maintain the exhaust emission level of the engine within specified limits and normally the accelerator pump stroke should not be changed from the specified setting. However, three holes are provided in pump link or operating arm and bracket, and pump may be adjusted, if necessary.

Pump Stem Height (Ford Motor Co.) – Before adjusting accelerator pump stroke, measure height of pump piston stem (as shown in illustration). Bend pump control rod to adjust to correct height (see below).

Pump Stem Height

Engine (1970)	Specification
351" & 460" .....	.425" ± .020"
428" .....	.560" ± .020"
429" .....	.480" ± .020"
Engine (1971)	
All Engines.....	.425" ± .020"
Engine (1972)	
429" & 460" (Standard Engines).....	.430" ± .020"
351" & 429" (BOSS & COBRA JET).....	.380" ± .020"

Pump Adjustment (All) – Disconnect pump rod from pump link before removing pump pivot pin. Line up holes in pump link and pivot hole in main body casting before attempting to reinstall pivot pin in correct hole (see *Specifications*). Make certain that split end of pivot pin is spread, so it will be retained in place.



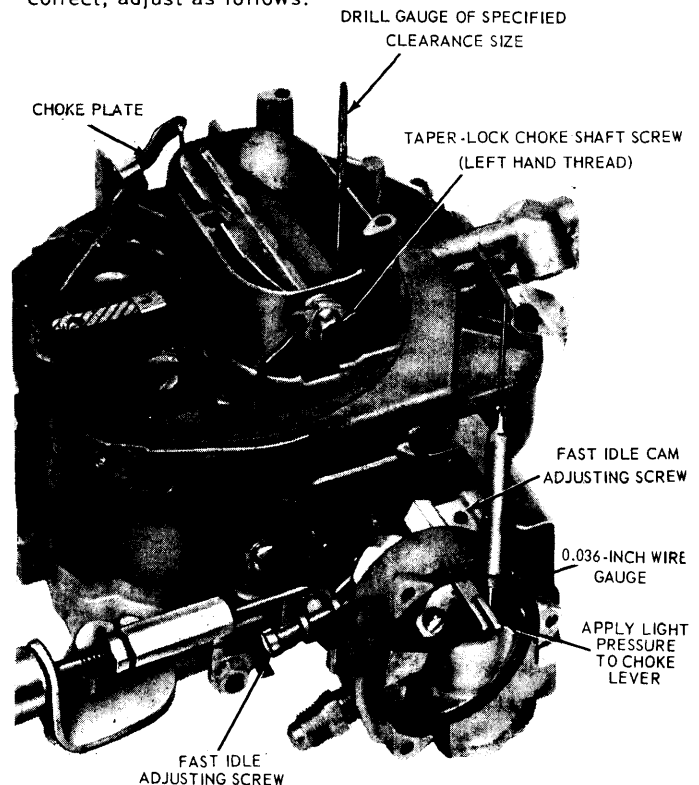
ACCELERATING PUMP HEIGHT

851008

Choke Valve Pull-down & Fast Idle Cam Linkage

Adjust in the following order:

Choke Valve Pull-down – Remove choke cover screws and retainer, remove choke cover and thermostatic coil. Bend a .036" wire gauge at a 90° angle approximately 1/8" from end. Insert bent end of gauge between piston slot and upper edge of right hand slot in choke housing. Rotate choke lever counterclockwise until gauge is held snugly in piston slot. Maintain slight pressure on choke lever to hold gauge in place. Use gauge or drill of correct size (See *Specifications*) to check clearance between lower edge of choke valve and air horn wall. If clearance not correct, adjust as follows:



CHOKE VALVE PULL-DOWN & FAST IDLE CAM ADJUSTMENT

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

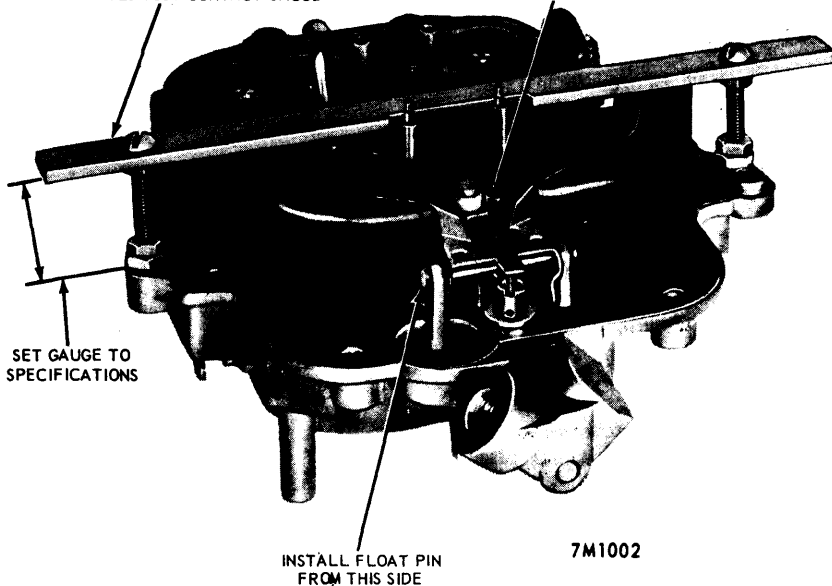
- 1) Loosen hex head screw (left hand thread) on choke valve shaft and pry link away from tapered choke shaft.
- 2) With a drill gauge .010" under the specified clearance between the lower edge of choke plate and air horn wall, hold the choke valve against the gauge with a light pressure on the choke lever.
- 3) With the choke piston firmly against the .036" wire gauge and the choke valve against the drill gauge, tighten the hex head screw on the choke valve shaft. *NOTE - Adjustment is made with choke valve drill gauge .010" under specified clearance to allow for tolerances in linkage.*
- 4) Recheck choke valve pull-down using choke valve drill gauge of size specified in adjustment specifications (.010" larger than adjusting gauge).

Fast Idle Cam Linkage - Install choke cover and thermo-static coil loosely (make certain coil end engages choke lever slot). Rotate cover to 90° rich position, then place fast idle speed screw on kickdown (center) step of the fast idle cam, against shoulder of the high step of the cam, and hold it in this position. Using a drill or gauge of correct size (see Specifications), check clearance between lower edge of choke valve and air horn wall. If fast idle cam clearance not correct, adjust by turning fast idle cam adjusting screw in or out as necessary. *NOTE - This is not the fast idle speed adjusting screw, but the cam adjusting screw*

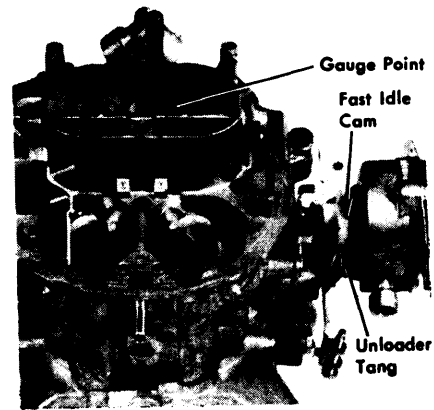
Unloader

Hold throttle valves in wide open position, rotate choke valve toward closed position until pawl on fast idle lever contacts fast idle cam. Use gauge or drill of specified size to check clearance between lower edge of choke valve and air horn wall. If this clearance not correct (see Specifications), adjust by bending pawl on fast idle speed lever forward or backward as required.

FLOATS SHOULD JUST CONTACT GAUGE BEND TAB TO RAISE OR LOWER FLOAT



FLOAT LEVEL ADJUSTMENT



8A1054

UNLOADER ADJUSTMENT

Automatic Choke

Loosen choke cover retainer screws, rotate cover to align index mark on cover flange with correct graduation of scale on housing (see Specifications). Tighten retainer screws after adjustment completed.

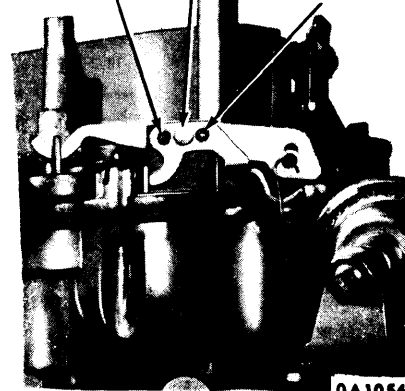
Staged Choke Control

With choke plate fully closed, back off the adjusting sleeve locknut until it is clear of the adjusting sleeve. Turn adjusting sleeve inward until the choke plate just begins to move. Scribe a mark on the upper flat of the sleeve, then back off the sleeve one complete turn and tighten locknut firmly against sleeve. *NOTE - Do not turn the diaphragm stem.*

Float Level

NOTE - It is recommended that a Float Gauge tool be made up for this purpose. Dimensions of tool are shown in illustration.

NO. 1 HOLE-DECREASE FUEL
NO. 2 HOLE-NORMAL
NO. 3 HOLE-INCREASE FUEL

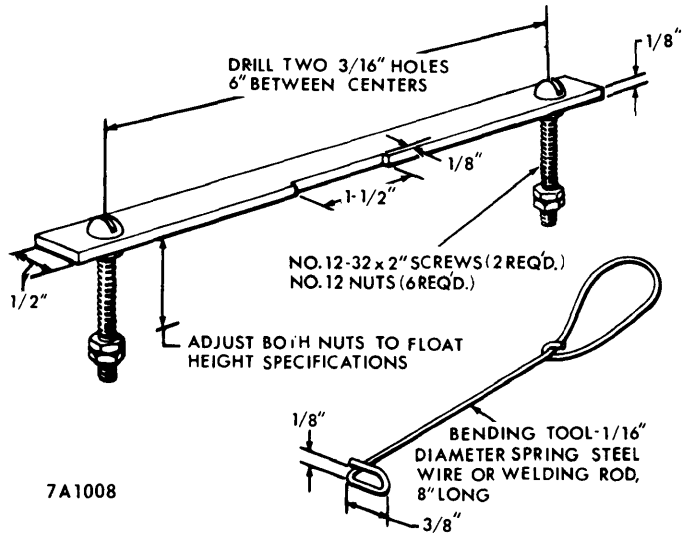


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ACCELERATOR PUMP STROKE ADJUSTMENT

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

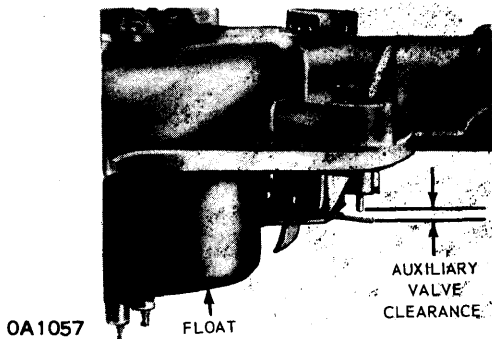
Float Level (Primary Fuel Valve) – Adjust nuts on float gauge tool for correct float level setting (See *Specifications*). With air horn and float assembly removed and inverted, install float gauge over floats with locating bolts installed in outboard holes of air horn. Both floats should just touch underside of float gauge bar. Align floats by slightly twisting float arms, adjust float height by bending primary needle tab (inner tab on float arm) up or down as required. **NOTE** – Raise floats so that tab clears primary needle.



7A1008

FLOAT LEVEL GAUGE

Auxiliary Fuel Valve – After adjusting primary fuel valve, check clearance between auxiliary fuel valve pin and tab on rear of float arm. If clearance not correct (See *Specifications*) adjust by bending this tab up or down as required.



AUXILIARY FLOAT VALVE SETTING

Dashpot

With throttle valves closed at curb idle position, depress dashpot plunger fully and check clearance between dashpot plunger stem and throttle lever. If clearance not in accordance with specifications in following table adjust by loosening locknut and turning dashpot in or out of mounting bracket as required.

Dashpot Setting

1970

Carburetor

Specification

DOAF-L, AB, AL.....	.080"
DOAF-M, AD, AJ.....	.080"
DOAF-AG, AM.....	.070"
DOOF-Y, AC.....	.080"
DOSF-A, D, C.....	.070"
DOVF-A, B, C.....	1.00"

1971

Ford Motor Co.

D1AF-MA, D1SF-AA.....	1/16"
D1VF-AA.....	7/64"

American Motors

1TA4.....	1/8"
1TM4.....	1/16"

1972

American Motors

2TA4, 2TM4.....	9/64"
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OVERHAUL

NOTE - Carburetor consists of three main castings: Air Horn, Main Body, and Throttle Body, which are separated and then disassembled separately as follows:

Disassembly

Air Horn - 1) Disconnect choke control rod from automatic choke lever and accelerating pump rod from throttle lever. Remove all air horn-to-main body retaining screws and carefully lift air horn off main body.

2) Remove float pivot pin and lift out float assembly, use correct size screwdriver (or jet removal tool) to remove main and auxiliary fuel inlet seat assemblies and gaskets.

3) Disconnect secondary air valve lever rods from dampener piston assembly and air valve, remove dampener piston and rod assembly.

4) If necessary to remove secondary air valves or shaft, scribe index mark on air valve housing and body casting, remove valve retaining screws and valves, then slide shaft out of air horn.

5) If necessary to remove choke valve or shaft, remove staking marks on choke valve retaining screws or file off flared portion of screws, remove retaining screws and valve, then slide shaft out of air horn.

6) Take out attaching screws and remove hot idle compensator valve assembly. **Do not remove power valve vacuum valve assembly unless it is to be replaced.** Remove staked areas and remove valve assembly carefully to avoid damage to air horn casting.

Main Body - 1) Invert main body assembly and catch accelerating pump discharge needle which will fall out.

1970-72 FORD (MOTORCRAFT) 4300 4-BARREL (Cont.)

2) Use 3/8" deep socket to remove power valve and jet tool to remove main metering jets from within fuel bowl.

3) Remove check ball retainer from bottom of accelerating pump cylinder with long nosed pliers, then invert main body and catch pump inlet ball check which will drop out.

4) Remove throttle body-to-main retaining screws from bottom of throttle body and separate the two castings.

Throttle Body - 1) CAUTION - Do not remove idle mixture limiter caps, screws, and springs. Remove automatic choke housing cover screws, remove retainer, cover, gasket, and thermostatic spring assembly. Remove choke piston lever retaining screw, then remove piston assembly.

2) Remove secondary throttle-to-primary throttle lever connecting link. If necessary to remove primary or secondary throttle valves or shafts, remove staking marks on throttle valve attaching screws, remove screws and valves.

3) After valves removed, remove nut from secondary throttle shaft, slide shaft and return spring out of throttle body.

4) After valves removed, remove nut from primary throttle shaft and remove fast idle lever and adjusting screw, then slide primary throttle shaft and lever assembly out of throttle body. Remove throttle lever assembly retainer, slide lever and springs off shaft.

5) If necessary to remove fast idle cam or bushings, press bushing out of choke housing and bushing column. **CAUTION - Housing and column must be properly supported during bushing removal and installation to prevent bending or breaking of the column.**

Cleaning & Inspection

Clean all castings and metal parts in cleaning solution (plastic fast idle cam and air valve spring cover can be cleaned in the solution but floats and gaskets should not be immersed in the solution). Rinse parts in hot water, soak in gasoline, and dry with air. Blow out all passages, jets, and tubes with air. Inspect all parts for wear, dis-

ortion or damage. Make certain power valve piston and rod move freely. **CAUTION - Do not remove calibrating shims from power valve piston rod for cleaning and use care not to distort rod.**

Reassembly

Use all new gaskets. Reassemble carburetor by reversing disassembly procedure with particular attention to the following points:

Primary Throttle Valve Installation - Install return spring (coiled clockwise) on primary throttle shaft and insert shaft in throttle body. Position throttle valves on shaft with ground flat edge of valves facing upwards and toward idle mixture needles, install valve screws just snug. Rotate shaft to closed position, tap valves lightly to properly seat them in throttle bore (when viewed against a light, little or no light should be visible around valves), then tighten valve screws securely.

Fast Idle Cam & Bushing Installation - Start bushing through choke housing, position fast idle cam between housing and bushing column and slide bushing through fast idle cam, then support bushing column and press bushing into position in column. Clean bushing with 1/4" reamer before installing choke shaft and lever.

Choke Valve Installation - Insert choke shaft in air horn with lever end on automatic choke side, install choke valve and tighten attaching screws just snug, then close valve and tap lightly to position it in air horn, tighten attaching screws and stake screws to prevent loosening. Install a new seal on choke control rod, press seal into air horn and attach control rod to choke shaft lever (**CAUTION - Seal must grip ledge in air horn at all four points to prevent unfiltered air entering carburetor.**)

Air Valve Installation - Slide air valve shaft in air horn with slotted end of shaft in air valve spring chamber. Position plain air valve in air horn opening adjacent to spring chamber and tighten attaching screws just snug, install air valve in other air horn opening with control rod eye facing upward, install attaching screws just snug. Close air valves and tap valves lightly to position them in air horn, then tighten attaching screws and stake the screws to prevent loosening.