

SHOP TIPS

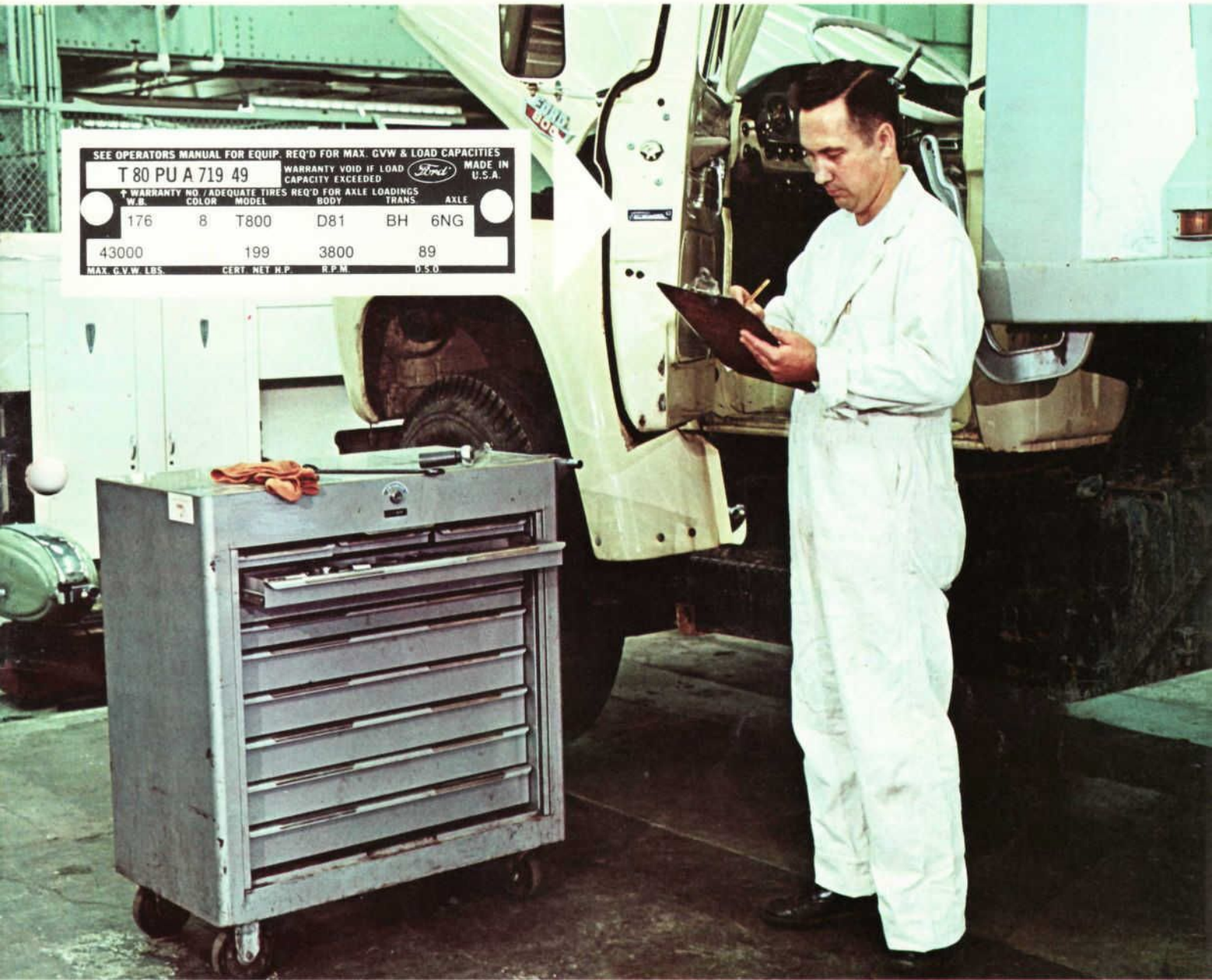
FROM

Autolite



VOL. 7, NO. 2

OCTOBER, 1968



SEE OPERATORS MANUAL FOR EQUIP. REQ'D FOR MAX. GVW & LOAD CAPACITIES
WARRANTY VOID IF LOAD CAPACITY EXCEEDED

WARRANTY NO. / ADEQUATE TIRES REQ'D FOR AXLE LOADINGS	WARRANTY VOID IF LOAD CAPACITY EXCEEDED	MADE IN U.S.A.
W.B. COLOR MODEL	REQ'D FOR AXLE LOADINGS	
	TRANS.	AXLE
176 8 T800	D81	BH 6NG
43000	199 3800	89
MAX. G.V.W. LBS.	CERT. NET H.P.	R.P.M. D.S.O.

Technical parts and service information published by the Autolite-Ford Parts Division and distributed by Ford and Lincoln-Mercury dealers to assist servicemen in Service Stations, Independent Garages and Fleets.

How To Get Better, Faster Service On SPECIAL ORDER (DSO) PARTS (Pages 2-7)

HOW TO IDENTIFY AND ORDER D.S.O.

EMISSION CONTROLS and HIGH PERFORMANCE MODIFICATIONS

The June 1968 "Shop Tips" featured an edited reprint of Ak Miller's "Horsing Around With The Mustang Six" — an article that appeared in the June-July 1967 issues of "Hot Rod." On page 3 of "Shop Tips", Ak specifically noted that anti smog devices do not seriously affect horsepower output, and said, "... where they are required by law, I would certainly recommend you leave them as is, and be certain they are operating properly."

Nevertheless, to avoid any misunderstanding about the effect engine modifications have on emission control requirements, "Shop Tips" advises readers that:

Federal law prohibits the removal or rendering inoperable, prior to the transfer of title to persons who purchase new motor vehicles or engines for purposes other than resale, of smog devices or elements of design. In addition, the laws of at least one state (California) provide that no person shall operate a vehicle unless ... it is equipped with a certified device that is "correctly installed and in operating condition", and expressly prohibits the altering or modifying of such devices, systems or engine modifications. Therefore, changes should not be made if they decrease the "efficiency or effectiveness" of factory installed smog systems. Certain modifications, naturally, may affect the car warranty. If you plan to modify, be sure and discuss it with your Ford or Lincoln-Mercury Dealer. And of course, the warranty does not apply to any engine that is used in a "competitive" event. Competitive events are defined in the warranty as "... formal or informal time trials, competition with any other vehicle, or any abnormal application of stress to the vehicle or components thereof in a competitive situation."

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Be sure and file this and future bulletins for ready reference. If you have any suggestions for additional information that you would like to see included in this publication, please write to: Autolite-Ford Parts Division of Ford Motor Company, Merchandising Services Dept., P.O. Box 3000, Livonia, Michigan 48151.

The description and specifications contained in this book were in effect at the time the publication was approved for printing. The Ford Motor Company, whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change specifications or design without notice and without incurring obligation.

Autolite 

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DEARBORN, MICHIGAN

VOL. 69 MSD 7 LITHO IN U.S.A.

INTRODUCTION

Ever increasing numbers of Ford Trucks ... and Passenger Cars used for commercial purposes such as taxicabs, police cars, emergency vehicles, etc... have special equipment installed to meet the requirements of special operating conditions. This equipment is available in three categories — R.P.O. (Regular Production Option), L.P.O. (Limited Production Option), and D.S.O. (DOMESTIC SPECIAL ORDER).

Service replacement parts for R.P.O. and L.P.O. items are usually easily identified, ordered, and quickly obtained. However, because of the highly specialized nature of many D.S.O. parts, special ordering and handling procedures are necessary.

The first, and most important step is correct identification of the part to help your Ford or Lincoln-Mercury Dealer promptly process the order. This is especially important with D.S.O. vehicles, since these vehicles are usually "business vehicles" and their continuous operation is a matter of profit or loss to their owners. "Down time" for repairs can be very costly to the owners of such vehicles.



(Domestic Special Order) Parts



IDENTIFYING D.S.O. VEHICLES

Trucks and any passenger cars that are, or have been, used for commercial purposes should be considered as possibly being equipped with special order parts. Positive identification of factory-installed D.S.O. parts can be made as follows: A D.S.O. code number has been stamped into the *truck* rating plate (Figure 1) since 1957, and into *passenger car* warranty (patent) plates beginning in 1962. The identification plate is located as follows:

- **Passenger Cars, Falcon Club Wagons, Econolines**—Located on the lock-face of the left front door, or on the left front body pillar.
- **Trucks**—Located on the lock-face of the left front door, or the upper cowl panel in the engine compartment, or the inner side of the glove box door, or the right hand side of the radiator support.
- **Bronco**—Located on the inner left side cowl panel near the clutch pedal.

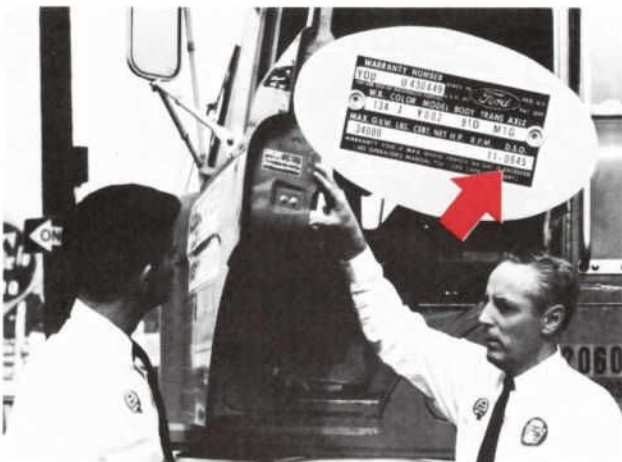


Figure 1—D.S.O. Number Stamped Into Warranty Plate

As an example, a typical D.S.O. number might be 11-0645. The 11 indicates the district (in this case Boston) in which the vehicle was delivered. The 0645 means this vehicle was the 645th special vehicle order delivered in the district that year and it has a special equipment parts list available with the same number. NOTE: On some vehicles you may find a plate with a D.S.O. number such as 11-, without a second set of numbers. This is a standard vehicle without special order parts. The number (11) refers only to the district (Boston) in which a standard vehicle was delivered.

Truck Specification List

Heavy duty trucks produced after August 14, 1967 at the Louisville truck plant come with a Truck Specification List (T.S.L.) in the glove box. The T.S.L. (Figure 3) identifies 36 major components used in the manufacture of each truck. The "engineering numbers" on the list must be converted to the latest service replacement part numbers when ordering replacement parts. Your Ford Dealer's Truck Parts Master Catalog contains an easy to use cross-reference guide to provide immediate accurate component identification of part numbers, to expedite ordering and delivering replacements.

The list also can be used by the owner to accurately record any modifications he makes to the truck after delivery. So always check the T.S.L., both front and back (which is blank so such additional information may be added) before ordering parts.

FORD MOTOR COMPANY TRUCK SPECIFICATION LIST			
VEHICLE MAKE	VEHICLE MODEL	VEHICLE YEAR	VEHICLE TYPE
BRAKE SYSTEM	SUSPENSION	POWER TRAIN	WHEELS TIRES DRUMS
BRAKE ASST FRONT AIR	FRONT SPRING	AUXILIARY TRANSMISSION	FLY OR SPIDER & DRUM FRONT
2011	0310	0310	0310
BRAKE ASST FRONT LH	REAR SPRING SINGLE AXLE	DRIVESHAFT # 1	FLY OR SPIDER TIRE RIM WHEEL ASST OR WHEELS 4 TUBES
2011	0310	0310	0310
BRAKE ASST REAR RA	TANDUM SUSPENSION ASST	DRIVESHAFT # 2	FLY OR SPIDER TIRE TUBES RIM W WHEELS
2011	0310	0310	0310
BRAKE ASST REAR LH	FRONT AXLE & STEERING	DRIVESHAFT # 3	DISC WHEELS OR RANG FRONT
2011	0310	0310	0310
BRAKE CHAMBER ASST FRONT	FRONT AXLE ASST	DRIVESHAFT # 4	DISC WHEELS OR RANG REAR
2011	0310	0310	0310
REAR CHAMBER ASST REAR	TO RIGID	REAR AXLE ASST DRIVE SHFT OR WHEELS	RETAIN ONE COPY OF THIS LIST IN TRUCK AT ALL TIMES IF CONTAINS THE INFORMATION NECESSARY TO CORRECTLY IDENTIFY THE COMPONENTS SHOWN ADDITIONAL COPIES AVAILABLE ON REQUEST FROM: AUTOMOTIVE PARTS DIVISION SPECIAL ORDER SECTION P. O. BOX 3838 EVANSTON, ILLINOIS 60121 ENCLOSE \$4.00 FOR EACH COPY. IDENTIFY THE VEHICLE BY SERIAL NUMBER SHOWN ABOVE.
REAR CHAMBER ASST REAR	TO RIGID	REAR AXLE ASST DRIVE SHFT OR WHEELS	
2011	0310	0310	
REAR CHAMBER ASST REAR	STEERING GEAR	REAR SHFT ASST TORQUE SHIFTER	
2011	0310	0310	
REAR WHEELS ASST FRONT	MISCELLANEOUS	REAR SHFT TOWER ASST	
2011	0310	0310	
REAR WHEELS ASST REAR	SPEEDOMETER GEAR DRIVEN	AUXILIARY REAR SHFT ASST	
2011	0310	0310	
REAR WHEELS ASST REAR	TRANSMISSION CASE	TRANSMISSION CASE	
2011	0310	0310	
ELECTRICAL	(7722)	ENGINE	INSPECTOR
WIRING BASH PANEL TO ENGINE	0310	0310	
1438	0310	0310	
WIRING COIL	0310	0310	
1401	0310	0310	

Figure 3—Truck Specification List

Special Order Components

An "X" or "✓" mark in the D.S.O. box for any of the 36 components indicates it has been "Special Ordered" for the truck. Special Order parts fall into two classifications.

HOW TO IDENTIFY AND ORDER D.S.O.

- Items available in the Ford Truck *line*, but not offered on the *model* ordered.
- Items not offered on any Ford Truck models. These are called "unique" D.S.O.'s.

Cross reference guides in your Ford Dealer's parts book will enable him to determine the type of D.S.O. part, and the correct part number. Even unique D.S.O. parts may be ordered through your Ford Dealer, by giving him the part numbers found on the T.S.L. plus the manufacturer's part number that may be stamped or stenciled on the part or assembly.

D.S.O. Special Equipment Parts List

In addition to the D.S.O. code number stamped into the warranty plate, all D.S.O. vehicles delivered since January, 1962, have a *blue* envelope (Figure 4) in the glove box, which contains a copy of the Special Equipment Parts List for that individual vehicle. The selling dealer also has a copy of the Special Equipment Parts List in a *yellow* envelope. The yellow envelope is filed in the selling dealer's parts department as a permanent record of the special parts and assemblies used on that vehicle.



Figure 4—Blue Envelope Containing Special Equipment Parts List

QTY	PART NUMBER	NAME	REMARKS
02	1242A	WHEEL	FRONT
04	1242B	WHEEL	REAR
04	1242C	WHEEL	REAR
04	1242D	WHEEL	REAR
04	1242E	WHEEL	REAR
04	1242F	WHEEL	REAR
04	1242G	WHEEL	REAR
04	1242H	WHEEL	REAR
04	1242I	WHEEL	REAR
04	1242J	WHEEL	REAR
04	1242K	WHEEL	REAR
04	1242L	WHEEL	REAR
04	1242M	WHEEL	REAR
04	1242N	WHEEL	REAR
04	1242O	WHEEL	REAR
04	1242P	WHEEL	REAR
04	1242Q	WHEEL	REAR
04	1242R	WHEEL	REAR
04	1242S	WHEEL	REAR
04	1242T	WHEEL	REAR
04	1242U	WHEEL	REAR
04	1242V	WHEEL	REAR
04	1242W	WHEEL	REAR
04	1242X	WHEEL	REAR
04	1242Y	WHEEL	REAR
04	1242Z	WHEEL	REAR

Figure 5—Special Equipment Parts List

The Special Equipment Parts List (Figure 5) is headed by the Special Order Number, which is also the D.S.O. number for that particular vehicle. As with the D.S.O. number on the warranty plate, the first part of the number designates the District, and the second part the order number. Figure 5 shows a vehicle that was the 806th D.S.O. vehicle order processed for the Boston District.

By using the Special Equipment Parts List, which gives the part number of every special part installed on that particular vehicle, it should be possible to quickly identify and order parts from your Ford or Lincoln-Mercury Dealer, for any vehicle delivered after January, 1962.

However, what do you do if the Special Equipment Parts List is missing, or there is no D.S.O. number? In that case, individual parts or assemblies must be inspected, and any identifying marks given to your Ford Dealer. The parts man can then cross-reference the part in his master parts catalog.

IDENTIFYING D.S.O. PARTS

If the D.S.O. number is not available, most parts and assemblies can be identified by individual numbers. For instance, since 1957, identification tags have been attached to all WIRING LOOMS at the factory to indicate the production or engineering number. Note the tag in Figure 6 bears the identifying number C3AB-14A032-V.

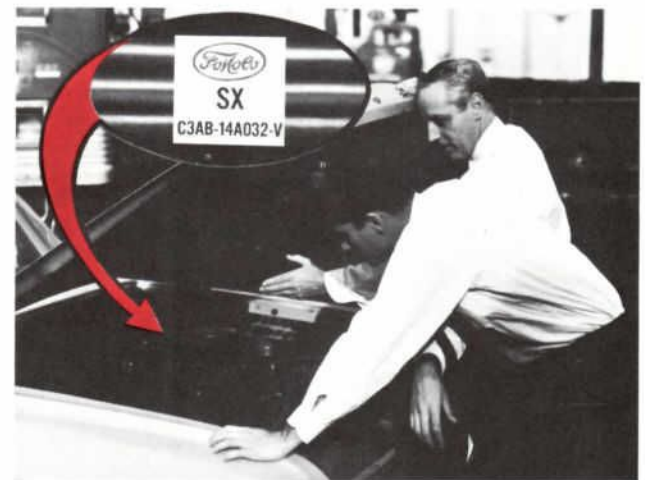


Figure 6—Identifying Wiring Looms

With the wiring loom tag number, your Ford Dealer can cross-reference this part in his master parts catalog (Figure 7) to obtain the correct service replacement part number, C3AZ-14401-V.



Figure 7—Wiring Loom Service Part Number

(Domestic Special Order) Parts

REAR AXLE IDENTIFICATION CHART

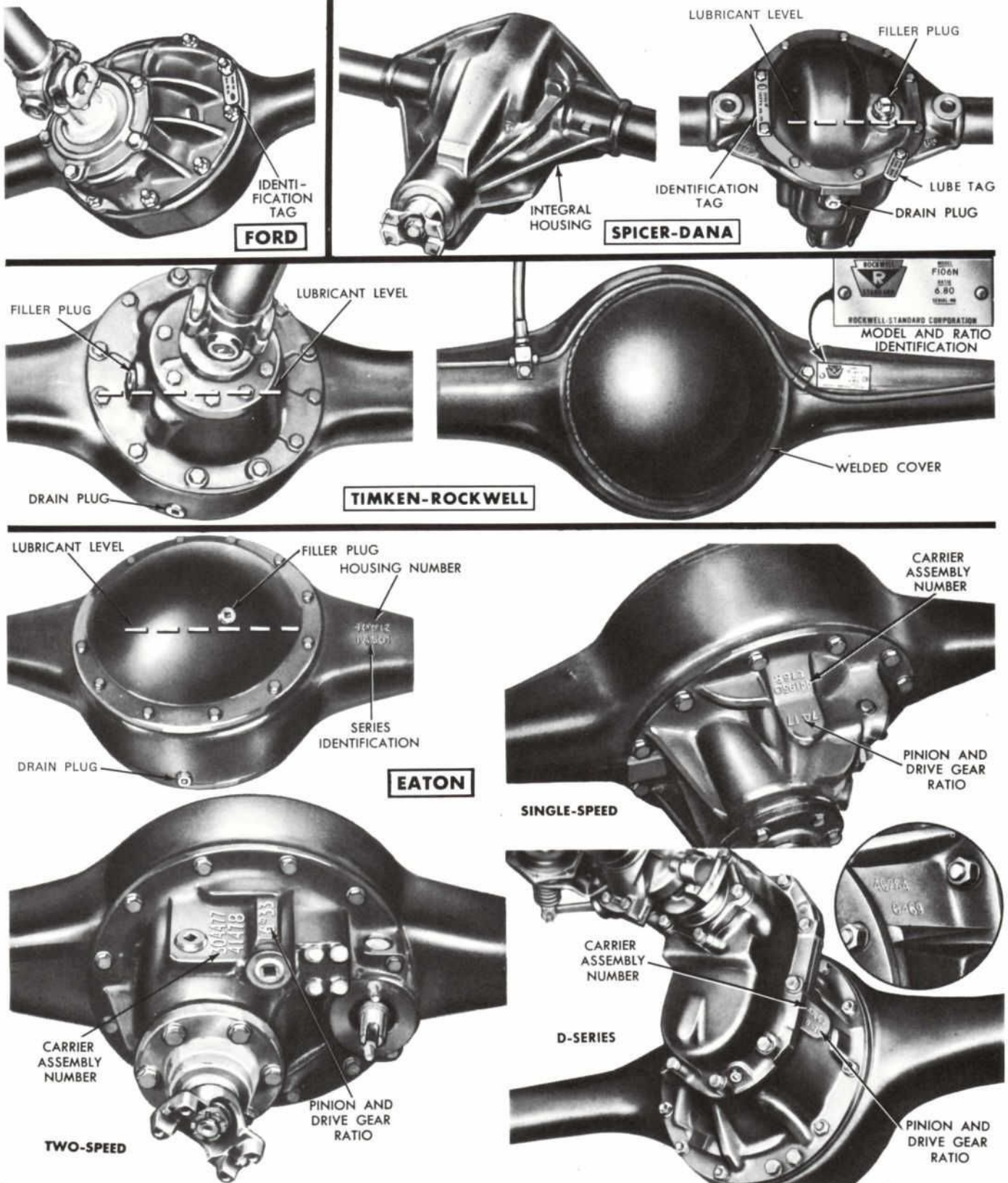


Figure 8—Rear Axle Identification Locations

HOW TO IDENTIFY AND ORDER D.S.O.



Figure 9—Identifying D.S.O. Parts

Alternators, Batteries and Carburetors (Figure 9) are either tagged, stenciled or have a manufacturer's production number stamped on the assembly for cross-reference in the Ford master parts catalog.

Internal Parts

Internal parts of major assemblies can also be identified by marks or other means. Figure 8 shows a number of ways manufacturers identify rear axles. This type of identification has been placed on Ford Trucks since 1957.

If the external markings cannot be read, or have been lost, look for markings on the individual parts. Most parts bear individual parts numbers such as that shown on the ring gear in Figure 10. This number can be cross-referenced in the Ford master parts catalog to the correct service part number.



Figure 10—Identification Marks on Internal Parts

Rear Axle Identification Chart

Many parts and assemblies that were originally released as Regular Production Options, have become Domestic Special Order ONLY because they are used in a special, or non-standard, application. As an example, a standard rear axle for an F-700 might be installed in an F-600 (Figure 11). This would make it a D.S.O. part in the F-600. This axle will be identified by its stamping or tag number. If you have a part that is an R.P.O. item which is used for a D.S.O. application, order the assembly or any of its parts under the standard service part number. Otherwise, order it by its stamping or tag number.

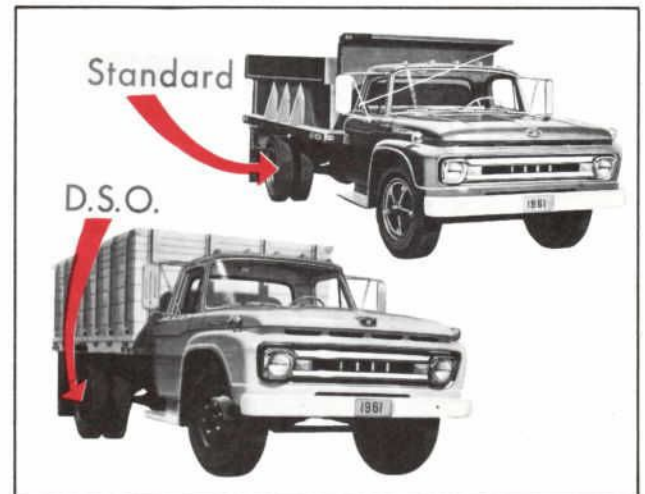


Figure 11—Standard Parts Used as Special Order Parts

(Domestic Special Order) Parts

Identifying Transmission Parts

Vendors' or manufacturers' trade names and production numbers are generally used to identify special assemblies such as transmissions (Figure 13). Again, these names are cross-referenced in the Ford Dealers' master parts catalog.



As an example, a transmission might be identified as a 6D3K (Figure 12). On this 6D3K special transmission, the plate attached to the assembly bears the marking 300449-8, and 6352-B (Figure 14).

Figure 12—Transmission Identification Number

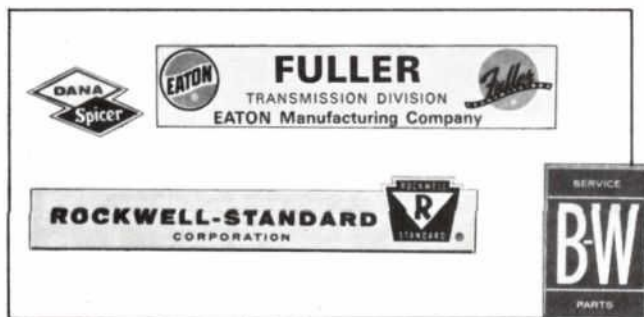


Figure 13—Typical Transmission Manufacturers' Identification Marks

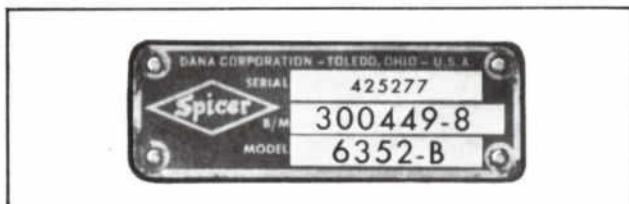


Figure 14—Transmission Identification Plate

The numbers 6D3K, 300449-8, and 6352-B can be cross-referenced in the Ford master parts catalog to determine that this transmission is serviced under Ford Part No. C6TA-7003-K, and that its individual part numbers may be obtained from Transmission Parts List No. 11V (Figure 15).

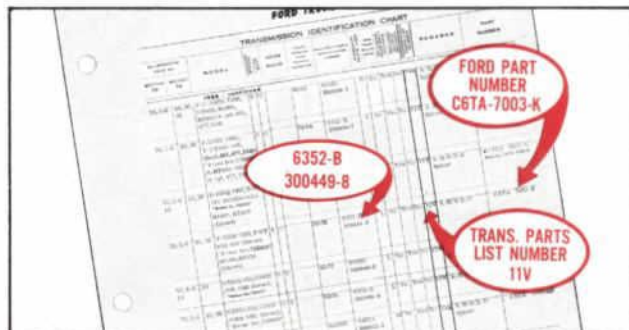


Figure 15—Transmission Service Parts List

D.S.O. SPECIAL PAINT AND TRIM

Special Paint Colors

Many fleets employ unique fleet colors on their vehicles (Figure 16). Ford recognizes that maintaining the distinctive appearance of the fleet is of utmost importance. To make these special fleet colors readily available, Ford Motor Company furnishes color panel samples (Special Order Paint Selector Book) and reference part numbers to paint manufacturers. In turn, these paint manufacturers generally can quickly provide special fleet paints on demand.

To order a special fleet color, contact your Ford or Lincoln-Mercury Dealer. He also has a Special Order Paint Selector. The special fleet color on the vehicle can be matched to the appropriate paint chip color in the selector. Verification of the correct paint can be made by supplying the vehicle identification number and other pertinent information from the Special Equipment Parts List to the dealer. The dealer can then contact the local District Office and obtain the proper "WT" or "MX" paint number from the fleet Form 107 filed at the district office. By using the Special Order Paint Selector, the dealer can determine the appropriate vendor and vendor part number for the paint you desire.



Figure 16—Special Fleet Colors



Trim Materials

To order trim materials to service taxicabs, police cars, fleet cars and truck seats and upholstery, give your Ford Dealer the model and year of vehicle, and he can find the correct part number in the Special Soft Trim Identification Chart in the master parts catalog.

ENTER NOW...WIN BIG IN AUTOLITE'S

110 KNOCKOUT PRIZES FOR "CONTENDERS" IN THE "ALL-TIME MIDDLEWEIGHT TOURNAMENT AND CHAMPIONSHIP FIGHT" 15 WEEK RADIO SERIES

More than 16 million listeners tuned in their radios every Monday night last fall to hear the dream elimination tournament for the All-Time Heavyweight Championship of the World. This fall those same fans plus millions more will tune in to the biggest event yet—The All-Time Middleweight Tournament and Championship Fight sponsored by Autolite!

The new Autolite-sponsored radio series is a fifteen week elimination tournament with a blow by blow description by one of the nation's leading fight announcers... with all the thrills of the greatest crowd pleasers in the greatest weight class. It's a sure bet to attract big audiences of prime Autolite prospects who will listen with steadily increasing interest as the series moves toward the climactic All-Time Middleweight Championship Fight on January 6th, 1969.

The Tournament matches greats like Harry Greb, Sugar Ray Robinson, Tony Zale, Jake LaMotta, Stanley Ketchell... the sixteen top middleweights of all time selected by a poll of more than 500 sports writers and broadcasters. The simulated matches are made possible through the electronic magic of modern computers. Hundreds of thousands of variable factors have been fed into highly advanced computers... the rating of experts on such things as speed of hands, ability to take a punch, killer instinct and agility, plus blow-by-blow records of all fights by each contestant.

Each fighter is calculated at his prime and the computer, making more than four million calculations for each round, reads out a round by round elimination tournament ending in the All-Time Middleweight Championship Fight. Among the things the computer provides for the colorful blow-by-blow description are how many punches each man throws, type of punch and how hard, point score, injury rating, knockdowns, TKO's and knockouts.

To protect the character and excitement of the tournament, a tight security lock is kept on the results of the matches. Your local radio station will receive its recording of the week's match by bonded messenger just two hours before air time. The station is bound by contract not to release results prior to official fight time.

Computerized Fights Are A Smash Success! Here are typical comments from broadcasters across the country. Florida—"One of the biggest, if not the biggest winner in the history of radio." Los Angeles—"One of the most exciting broadcasts I've heard in many a moon." Oregon—"The whole town is talking about last night's fight." Miami—"The greatest thing that has happened to night time radio since Burns and Allen." New York—"We've never had a sports feature in all the thirty years we've been in radio that has created as much attention." *All-Time Middleweight Tournament and Championship Fight—Preselling Autolite Every Monday This Fall!*

DREAM FIGHT SERIES

**Starts September 30th
on 600 Radio Stations**

The first fight (Basilio vs. Cerdan) in the All-Time Middleweight Tournament was broadcast over 600 radio stations on Monday night, September 30th, 1968... marking the start of *fifteen Mondays in a row that Autolite sales power will blanket the country.*

ALL-TIME MIDDLEWEIGHT TOURNAMENT SCHEDULE

Broadcast time for each fight is 9:00 P.M. Eastern Standard, 8:00 P.M. Central, 7:00 P.M. Mountain and 6:00 P.M. Pacific. Check with your local station for the time they will be broadcasting the fights in your area.

1. September 30, 1968 Carmen Basilio vs Marcel Cerdan
2. October 7, 1968 Emil Griffith vs Kid McCoy
3. October 14, 1968 Gene Fullmer vs Stan Ketchell
4. October 21, 1968 Tiger Flowers vs Rocky Graziano
5. October 28, 1968 "Nonpareil" Jack Dempsey vs Sugar Ray Robinson
6. November 4, 1968 Bob Fitzsimmons vs Jake LaMotta
7. November 11, 1968 Mickey Walker vs Dick Tiger
8. November 18, 1968 Harry Greb vs Tony Zale
9. November 25, 1968 Winner of 1 vs Winner of 2
10. December 2, 1968 Winner of 3 vs Winner of 4
11. December 9, 1968 Winner of 5 vs Winner of 6
12. December 16, 1968 Winner of 7 vs Winner of 8
13. December 23, 1968 Winner of 9 vs Winner of 10
14. December 30, 1968 Winner of 11 vs Winner of 12
15. January 6, 1968 **Championship Fight** Winner of 13 vs Winner of 14



"PICK THE WINNER" CONTEST!

"PICK THE WINNER" CONTEST!

A fabulous "Pick The Winner" Contest with sensational prizes offers you a dual opportunity to capitalize on the All-Time Middleweight Tournament and Championship Fight: (1) By entering the contest yourself. (2) By promoting Autolite products to your customers.

110 PRIZES

FIRST PRIZE

- 1969 Ford Mustang Grande

PLUS

- A vacation for two to the Club Mediterranée, the Polynesian paradise near Tahiti.

PLUS

- A Mini Golf Franchise, \$4,400 miniature golf course for a family business or personal backyard pleasure.

SECOND PRIZE . . . 1969 Ford 2+2 Mustang

THIRD PRIZE . . . General Electric Color TV Deluxe Console

FOURTH PRIZE . . . General Electric 23" Color TV Console

FIFTH, SIXTH, and SEVENTH PRIZES . . . General Electric Color TV Portables

EIGHT, NINTH, and TENTH PRIZES . . . General Electric Black and White TV Portables

AND ONE-HUNDRED RUNNER-UP PRIZES . . . All-Time Heavyweight Tournament Record Albums

CONTEST RULES

1. No purchase necessary.
2. Submit as many entries as you wish.
3. Use official entry form or postcard.
4. Entries must be postmarked before midnight, December 22nd, 1968.
5. Employees of Woroner Productions, Great Fights Inc., S.P.S., Ring Magazine, Sponsors and associated advertising agencies and their families are ineligible.
6. In case of ties, winners will be tested with the Tie-Breaking question to determine the ultimate winner.
7. The decision of the judges will be final and incontestable.

YOU'RE ELIGIBLE!

You can win the great prizes in this contest. Ford and Lincoln-Mercury Dealers, Autolite Distributors, wholesalers, retailers and their customers are all eligible to enter the "Pick the Winners" Contest. (Employees of Woroner Productions, Ben-Scott Recording, Great Fights Inc., radio stations broadcasting the Tournament, advertisers and their agencies are ineligible.) Enter as often as you like. Use the Entry Blank attached as a "starter."



NEW FUEL SYSTEM

428 COBRA JET ENGINES

External Idle Limiters

The model 4150-C 4-bbl. carburetor used on the 428 Cobra Jet engine in 1969 cars comes with *external* idle fuel mixture limiters. The plastic limiter cap (Fig. 1) restricts the idle fuel mixture adjustment screws to about one full turn. *A satisfactory idle should be obtained within the range of the adjusting limiters.* Adjust as follows:

Normal Idle Fuel Settings—Engine Off

1. Turn the idle fuel mixture limiter cap screws to the full counterclockwise position.
2. Back off the idle speed adjustment screw until the throttle plates seat in the throttle bores.
3. Be sure the dashpot does not interfere with the throttle lever.

NOTE: It may be necessary to loosen the dashpot to allow the throttle plate to seat in the throttle bore.

4. Turn the idle speed adjusting screw inward until it just makes contact with the screw stop on the throttle shaft and lever assembly. Then, turn the screw inward 1½ turns to establish a preliminary idle speed adjustment.

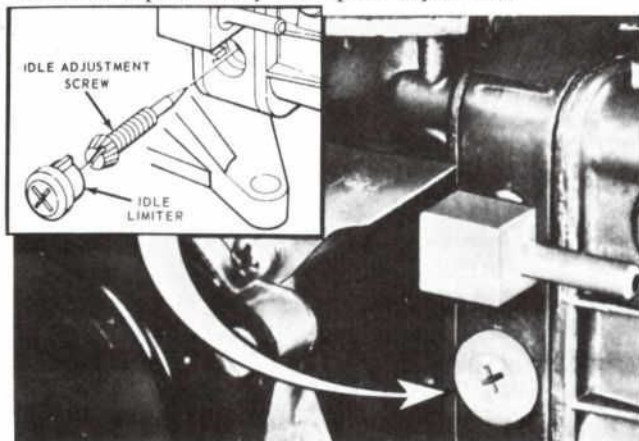


Figure 1—Model 4150-C Carburetor Idle Limiter

Normal Idle Fuel Setting—Engine On

1. Set the parking brake before starting engine and making idle mixture and speed adjustments.
2. Run the engine a minimum of 20 minutes at 1500 rpm to stabilize under-the-hood temperatures, by positioning the fast idle screw on the intermediate step of the fast idle cam.
3. Check to verify that initial ignition timing and the distributor advance and retard are operating to specifications. Be sure and use an accurate tachometer when checking the idle speed. Idle speed must be to specification to set ignition timing.
4. On cars equipped with manual shift transmissions, the idle setting must only be made with the transmission in neutral. With automatic transmissions, make the idle setting with the parking brake applied and the transmission selector lever in Drive.

5. Be sure the choke plate is in the full open position.

6. Turn the headlights on high beam. This places a load on the alternator which is necessary to properly adjust the engine to the specified idle speed.

7. If the car is equipped with an air conditioner, make the final adjustment with the A/C turned ON.

8. Adjust the engine curb idle to specifications: 650 rpm for automatic transmissions and 700 rpm for manual transmissions. The tachometer (rpm) reading must be taken with the air cleaner installed. If the vehicle has less than 50 miles on it, set the idle speed approximately 25 rpm below specifications to allow for an idle rpm increase as the engine loosens up during the first 100 miles of driving. If you can't adjust the idle speed with the air cleaner installed, remove it, make the adjustment, and then replace the air cleaner and check again for the specified rpm.

9. Turn each idle adjusting screw in an equal amount to obtain the smoothest possible idle, within the range of the limiters. Check for idle smoothness only with the air cleaner installed.

10. After the final adjustment of the curb idle rpm and fuel mixture, stop the engine and adjust the carburetor fuel bowl vent valve (Fig. 2) to 0.060"-0.090".

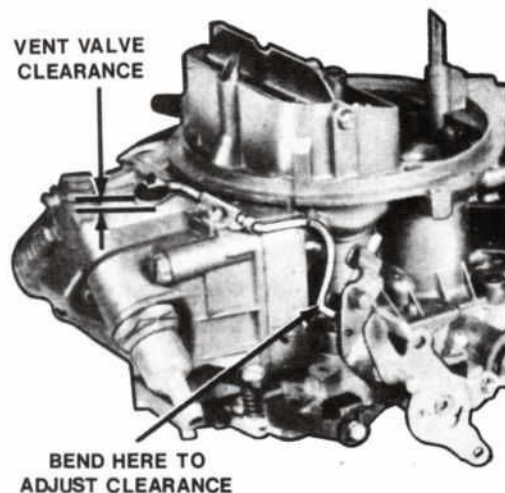


Figure 2—Fuel Bowl Vent Valve Adjustment

Additional Idle Speed and Fuel Mixture Procedures

If a satisfactory idle condition is not obtained after performing the preceding normal idle fuel settings, additional checks of engine systems must be performed.

1. The following items should be checked and, if required, corrected.
 - a. Vacuum leak(s)
 - b. Ignition system wiring continuity.
 - c. Spark plugs.

SERVICE PROCEDURES

- d. Distributor breaker point dwell angle.
- e. Distributor point condition.
- f. Initial ignition timing.

In certain instances, it may be possible that the idle condition is not as good as normally expected. It is suggested that the customer with a new vehicle be advised that the vehicle be driven 50 to 100 miles. Then, when the engine friction has been reduced, the idle condition should be improved. If, after this break-in period, the idle condition is believed to be unsatisfactory, readjust the engine idle speed to specification and observe for a satisfactory idle.

2. If the idle condition is not improved after the items in Step 1 have been checked, perform the following engine mechanical checks:

- a. Fuel level and fuel bowl vent.
- b. Crankcase ventilation system.
- c. Valve clearance, using the collapsed tappet method.
- d. Engine compression.

3. There may be isolated cases where a satisfactory idle condition can not be obtained after making these engine system checks. If this condition is encountered, the air-fuel ratio may have to be checked with an Exhaust Gas Analyzer, the air-fuel ratio adjusted and new blue service limiter caps installed. However, it should be emphasized that the Exhaust Gas Analyzer should only be used as a last step in diagnosing engine idle problems. *Furthermore, any modification to the idle limiter caps should only be made by authorized Ford or Lincoln-Mercury Dealers, or Autolite-Ford District Service Manager.*

If the idle speed and mixture adjustments have been made as recommended, and the engine is in good operating condition, a satisfactory idle should be obtained.

New Choke System

A new choke system is used on the Model 4150-C carburetor for the 428 Cobra Jet engine. The choke lever and piston assembly are separated. This allows individual adjustment of the fast idle cam clearance and choke plate pulldown.

Fast Idle Cam and Choke Plate Pulldown Adjustment

1. Remove the choke thermostatic housing cap.
2. Place the choke plate in the fully closed position by opening the throttle lever to about $\frac{1}{3}$ throttle, and press down on the front side of the choke plate. While holding the choke plate closed, release the throttle lever.
3. With the choke plate in the closed position, measure the distance between the flat of the fast idle cam and the choke housing mounting post (Fig. 3). If the setting is not to specification, straighten or bend the choke rod to obtain the specified clearance.
4. Bend a 0.036" wire at a 90° angle approximately $\frac{1}{16}$ to $\frac{1}{8}$ inch from one end. Insert the bent end between the lower edge of the piston slot and the upper edge of the slot in the choke housing (Fig. 4). Open the throttle lever to about $\frac{1}{3}$ throttle and rotate the choke lever counterclockwise so the bent end of the wire is held in the housing slot by the piston slot with light pressure applied to the choke lever. Measure

the distance between the air horn and the down side of the choke plate (Fig. 4). If the setting is not to specification, bend the adjusting tab on the choke lever to obtain the specified clearance.

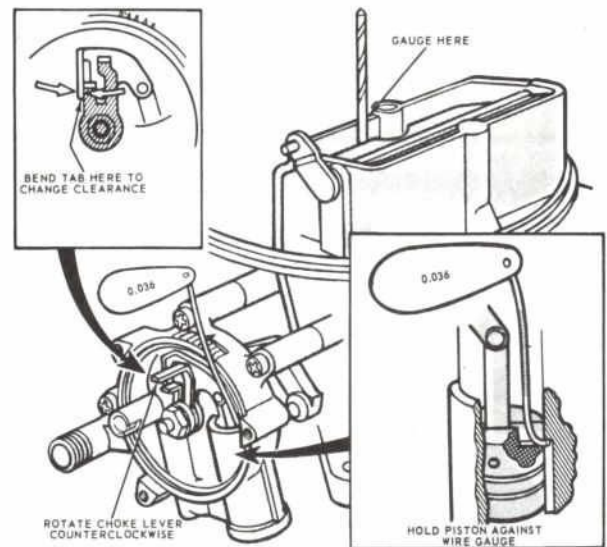


Figure 3—Cobra Jet Choke Plate Pulldown Adjustment

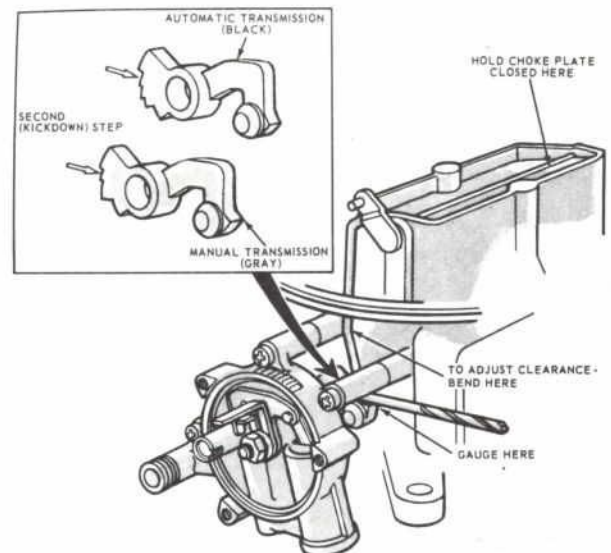


Figure 4—Cobra Jet Fast Idle Cam Adjustment

5. Install the choke thermostatic housing. Make sure the bimetal loop is installed around the choke lever. Set the cap notch to specifications.
6. Connect a tachometer to the engine. With the engine operating and temperature stabilized, set the fast idle screw on the kickdown or second high step of the fast idle cam (Fig. 4).

NEW FUEL SYSTEM

4150-C 4-V CARBURETOR

Vehicle	Engine CID	Trans.	Carb. Number	Air-Fuel Ratio
Fairlane, Montego, Mustang and Cougar (Cobra Jet)	428	Manual	C9AF-M	14.2:1
Fairlane and Montego (Cobra Jet)	428	Auto.	C90F-H Ⓞ	14.3:1
Mustang and Cougar (Cobra Jet)	428	Auto.	C9AF-N Ⓞ	14.3:1

Carburetor Number (9510)	C9AF-M	C9AF-N	C90F-H
Carburetor Size			
Throttle Bore Diameter—Primary	1.69	1.69	1.69
—Secondary	1.69	1.69	1.69
Venturi Diameter —Primary	1.38	1.38	1.38
—Secondary	1.44	1.44	1.44
Air Flow (cfm)	735	735	735
Fuel System			
Fuel Level	Lower Edge of Sight Plug Parallel with Float Bowl Floor (Bowl Inverted)		
Dry Float Setting	5.0	5.0	5.0
Fuel Pressure (psi)	0.060-0.090	0.060-0.090	0.060-0.090
Vent Valve Setting	66	66	66
Main Metering Jet—Primary	79	79	79
—Secondary	6-8	6-8	6-8
Power Valve Timing (In Hg)	½ Turn	½ Turn	½ Turn
Secondary Throttle Opening			
Choke System			
Choke Bimetal and Cap	GT1	GTA	GTA
Choke Setting	2-Rich	1-Rich	1-Rich
Pulldown Setting	0.300	0.300	0.300
Fast Idle Cam Setting	0.060	0.080	0.080
Dechoke (± 0.030)			
Pump System			
Capacity/10 Strokes (cc)	18-23	18-23	18-23
Pump Cam Position	No. 2	No. 2	No. 2
Cam Color Identification	White	White	White
Override Spring Adjustment (min.)	0.015	0.015	0.015
Dashpot			
ADJUSTMENT	0.100	0.100	0.100
Idle Speed			
Curb Idle (rpm)	700	650	650
Fast Idle (rpm)	1350 Ⓞ	1550 Ⓞ	1550 Ⓞ

Ⓞ Rod Linkage.
Ⓞ Cable Linkage.

Ⓞ On the Top Step of the Cam.
Ⓞ On the Kickdown or Second Step of the Cam.

428 Cobra Jet "Ram Air" Engine

An optional "Ram Air" version of the 428 Cobra Jet is available on 1969 models of Mustang, Fairlane, Cougar and Montego (Figures 5 & 6). The "Ram Air" system allows outside air, which is colder than the ambient air in the engine compartment, to be forced through a functional hood scoop and into the air cleaner by means of a butterfly door during open throttle or heavy load conditions. The "flap", atop the air cleaner stays closed, however, during normal engine operation, and air enters the air cleaner through the conventional duct and valve assembly to the right front of the air cleaner.

When the intake manifold vacuum drops to 4" Hg (such as during open throttle or heavy loads), the vacuum motor opens the ram air valve, allowing air to be forced into the air cleaner directly from the hood air scoop. The colder outside air contains greater amounts of power producing oxygen than warm air, thereby creating increased horsepower.

To check the operation of the ram air valve, the valve should be in the open position with the engine off, or with

the vacuum hose disconnected. The ram air valve should be in the closed position when the engine is operating at curb idle.

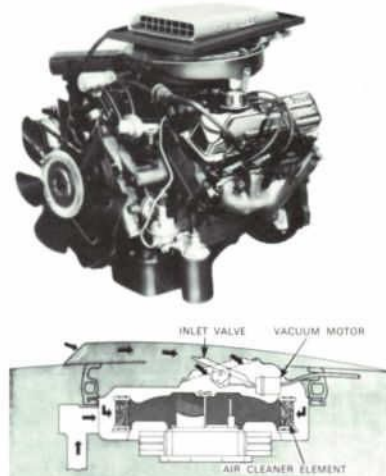


Figure 5—"Ram Air" Version of 428 Cobra Jet—Mustang Shown, Others Similar.

SERVICE PROCEDURES

If the valve will not fully open or close, check for damage, valve binding, vacuum leaks or vacuum line disconnected. To check the operation of the vacuum motor alone, connect the motor to a minimum vacuum of 7" Hg. The motor shaft should move to the fully withdrawn position. Replace the vacuum motor if normal operation cannot be accomplished.

Check the hood-to-air cleaner seal for all-around contact. Replace the seal, if distorted.

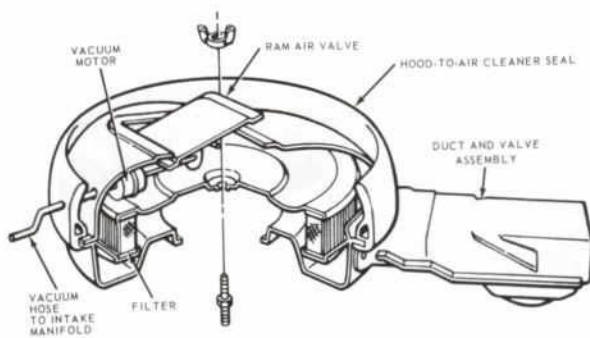


Figure 6—"Ram Air" Air Cleaner

SOLENOID THROTTLE MODULATOR

The Autolite Model 1101 1V carburetor used on 1969 models equipped with the 250 CID Six engine and air conditioning, and the Model YF 1V carburetor used on 1969 models with the 240 CID Six engine and manual transmission incorporate a solenoid actuated throttle modulator. The modulator smooths out engine shut-down. Instead of going directly from a high rpm curb idle throttle position to engine off, the solenoid introduces a second stage, lower rpm curb idle throttle position prior to engine shut-down. When energized, a plunger on the solenoid holds the throttle at the higher rpm position. When the ignition is turned off, the solenoid is de-energized, and the plunger withdraws, allowing the throttle plate to close further than the normal curb idle position. Carburetors with a solenoid throttle modulator have a higher and lower curb idle specification; as an example 700/500.

Adjustment

Autolite Model 1101 1V—Turn the solenoid assembly (Fig. 7) in or out of the bracket to obtain the *higher* curb idle rpm, then tighten the lock nut. Disconnect the solenoid lead wire at the bullet connector, then adjust the carburetor throttle stop screw to obtain the lower curb idle rpm specification. Connect the solenoid lead wire and open the throttle slightly by hand. The solenoid plunger should follow the throttle lever to increase engine rpm to specifications.

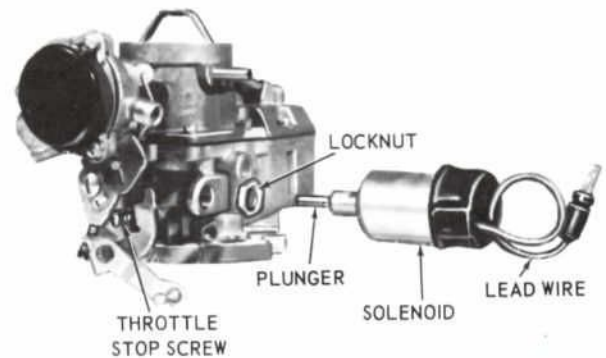


Figure 7—Autolite Model 1101 1V With Solenoid Throttle Modulator

Model YF 1V—Turn the solenoid plunger screw (Fig. 7) in or out to obtain the higher curb idle rpm. Disconnect the solenoid lead wire at the bullet connector near the harness, then adjust the carburetor throttle stop screw to obtain the lower curb idle rpm. Connect the solenoid lead wire and open the throttle slightly by hand. The solenoid plunger should follow the throttle lever to increase the engine rpm to specifications.

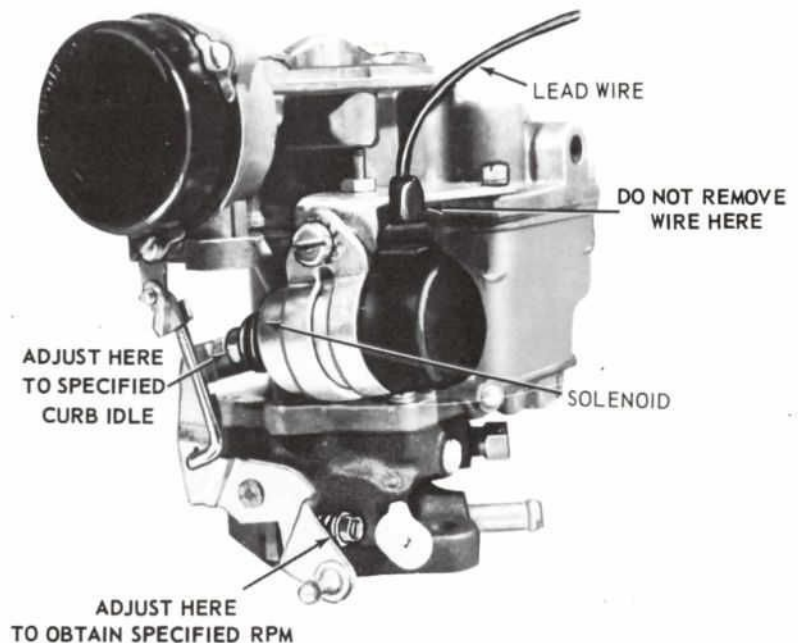


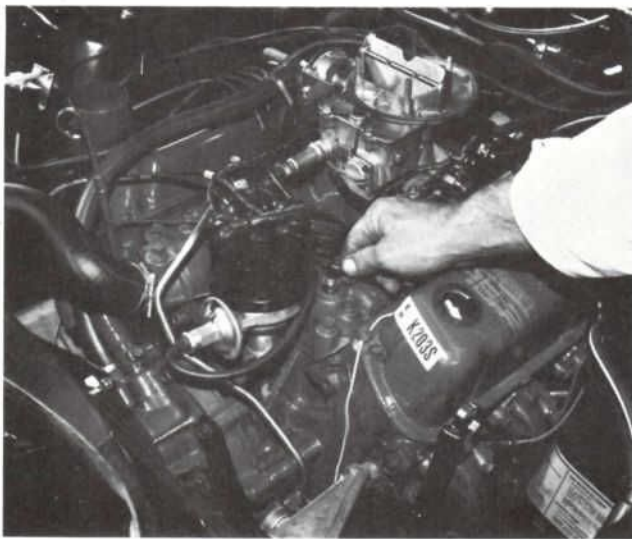
Figure 8—Model YF 1V With Solenoid Throttle Modulator

New Cooling System Pressure Test Procedure

A new cooling system pressure test for 1969, and previous car models, has been developed. It provides a more thorough check because the system is checked with the radiator cap installed. Some modification to existing pressure testers may be required in order to use this procedure.

1. Shut the engine off. To prevent loss of coolant and to avoid the danger of being burned, place a cloth over the cap and rotate the cap slowly counterclockwise to first stop and allow pressure to escape completely. Then turn the cap again slowly counterclockwise to remove.
2. After the cooling system pressure has been released, remove the radiator cap, wet the rubber sealing surface and reinstall cap tightly on the radiator.
3. Disconnect the electrical connector from the engine temperature sending unit and remove the temperature sending unit from the manifold.

With the radiator cap installed, only a small amount of coolant will be lost when the sending unit is removed.



Pressure Test—Replace Sending Unit With Adapter Fitting

4. Install an adapter fitting ($\frac{3}{8}$ N.P.T. male thread on one end, and a hose connection on the other end to accommodate the tester hose) tightly into the intake manifold or cylinder head in place of the sending unit.
5. Remove the radiator overflow hose from the retainer clips. Make sure the hose is firmly installed on the radiator overflow tube and is in good condition. Insert the free end of the overflow hose into a container of water.
6. Attach the pressure pump and gauge to the adapter fitting and pressurize the cooling system until bubbles are observed in the water container. Discontinue pumping when bubbles appear.

When the bubbles cease, read the pressure gauge. The gauge reading is the pressure relief of the cap and should be within 10 to 16 psi. If the pressure reading exceeds the specified limit, replace the radiator cap.

7. If bubbles continue and the pressure drops below 10 psi, the radiator cap is not holding pressure. Release pressure and wash cap in clean water to dislodge any foreign matter from the valves. Check the rubber sealing surface of the cap and also the cap sealing surface in the radiator neck. Inspect the cam lock flanges on both sides of the filler neck for maximum cap engagement.
8. Recheck the cooling system as outlined in step 6. If the cap still does not hold pressure, the cap is defective and must be replaced. Recheck system after a new cap is installed to assure that the system will now hold pressure.
9. If the bubbles in the water container cease and the radiator cap is within pressure specifications, observe gauge reading for approximately two minutes. Pressure should not drop during this time.
10. If pressure drops, check for leaks at the engine to heater core hoses, water valve hose (A/C equipped), thermostat housing gasket, etc. Any leaks which are found must be corrected and the system rechecked.
11. If the system holds pressure, remove the radiator cap to release the pressure, then reinstall the cap.
12. Remove the adapter from the manifold or cylinder head and reinstall the temperature sending unit. Check coolant level and replenish if necessary with the correct coolant solution.

ANTI-FREEZE SOLUTION STRENGTH

Cooling systems of 1969 passenger cars assembled for delivery in the United States are filled with permanent anti-freeze and water solution to provide -20° F protection. Regardless of the climate or whether anti-freeze protection is required or not, the radiator should have a minimum solution of water and permanent anti-freeze equal to 0° F protection to guard against corrosion and coolant boiling. The permanent anti-freeze used should meet Ford specification M97B18-C, such as Ford Coolant (Ford Part No. 8A-19549-A).



Use Coolant That Meets Ford Specification M97B18-C



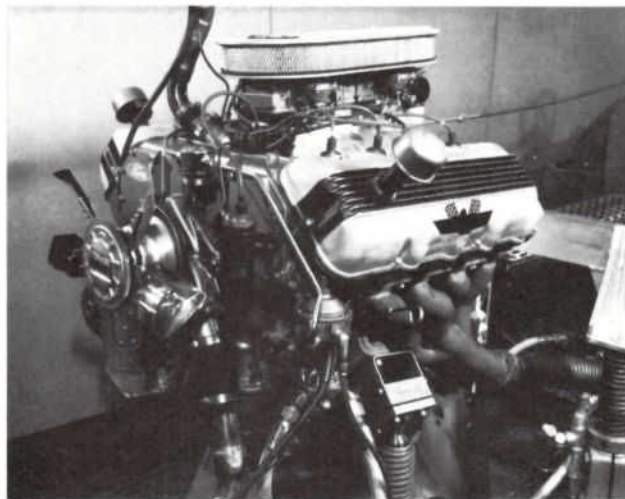
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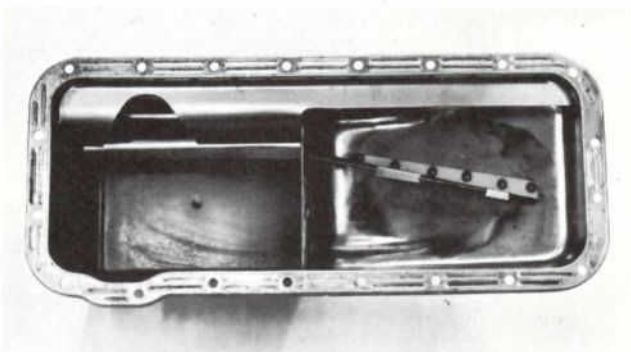
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