SHOP TIPS FROM Autolite Ford

VOL. 6, NO. 6 FEBRUARY, 1968

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Get acquainted with Ford's new British import . . . 1968 CORTINA. Models • Features • Specifications

1968 CORTINA ...

IN THIS ISSUE

COMING NEXT MONTH

"Performance Corner"

Introduces . . . Powerful, "Under-the-Hood" Venum from FORD . . . 428 COBRA JET.

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 Ford

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INTRODUCTION

Ford Division, with three of the most successful introductions ever—Thunderbird, Falcon and Mustang—feel they have another sure-fire winner in the Cortina. Though built in England, where Cortina leads the best seller list, it's not just another import . . . Cortina is a fully Americanized car with many "better ideas" from Ford. With imported car sales fast approaching the 800,000 mark, and expected to go much higher, Cortina ought to fit perfectly into this fast rising market. Backed by the same vigorous marketing and promotional activities as for every other car in the Ford Family of Fine Cars, sales of Cortinas should create plenty of new parts and service business. The following information is presented to help you prepare to take advantage of this great NEW sales opportunity by learning all about the 1968 Ford Cortina.

MODELS

The 1968 Cortina comes in five models:

Cortina GT 2-Door Sedan
Cortina GT 4-Door Sedan
Cortina Deluxe 2-Door Sedan
Cortina Deluxe 4-Door Sedan
Cortina Deluxe Station Wagon

Essentially, the GT model is a more powerful and sporty version of the Deluxe model. For instance, the GT comes equipped with:

- Radial ply tires on special flat ledge wheel rims
- 4-speed manual transmission with close ratio gears and heavy duty drive shaft
- Floor-mounted gearshift
- Stiffer front suspension and traction arms added to the rear suspension
- Larger drum brakes on the rear
- More powerful engine
- Special trim and instrumentation: electric clock on console, 7000 rpm tachometer, oil pressure gauge and ammeter gauge

The 1968 Cortina Specification Chart on page 9 fully describes the 2-door Cortina GT. Other models are the same except as shown.

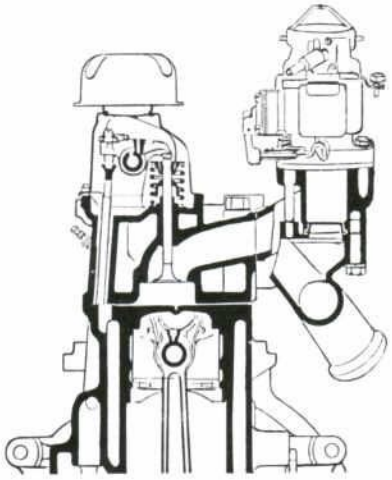


Figure 1—Typical Head Design for "In-line" Engine

FEATURES

ENGINE

GENERAL DESCRIPTION

The engine is a four cylinder, in-line, overhead valve design operating on a four stroke cycle. It features new, advanced-design "bowl-in-piston" and a "cross-flow" head for more power, better performance and higher efficiency than similar engines. The engine is available in two models: a 1600 c.c. (cubic centimeter) displacement design for Deluxe models and a more powerful 1600 c.c. version for GT models. The GT engine has special intake and exhaust manifolds, a modified camshaft for increased valve life and dwell, a 2-bbl Weber carburetor and a compression ratio of 9.2:1, as compared to a 9.0:1 compression ratio and a single barrel carburetor on the Deluxe model engine. Both engines use premium fuel.

"CROSSFLOW" HEAD

Most "in-line" engines, are designed so the intake manifold is on the same side of the engine as the exhaust manifold. In the case of the Cortina, the carburetor and intake manifold were previously above the exhaust manifold on the left side of the engine (Fig. 1). This arrangement tends to restrict the "free breathing" capacity of the engine. Not only do the gases have to turn a sharp corner to get out, but the position of the valves in the cylinder head results in a baffling or masking effect that obstructs the flow of gas, making it turbulent rather than smooth.

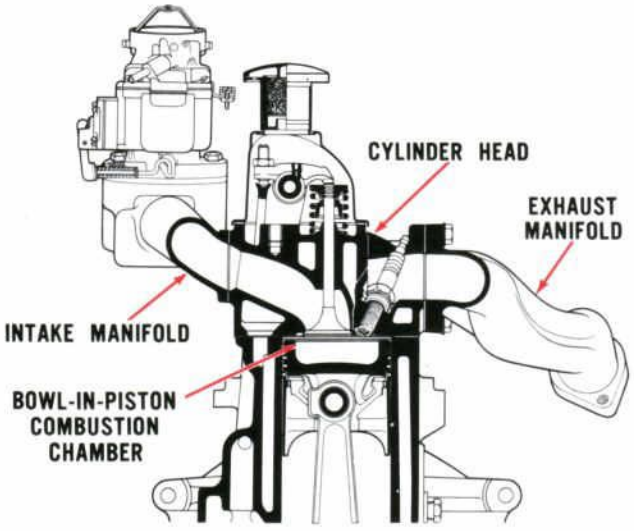


Figure 2–Cortina "Crossflow" Head Design

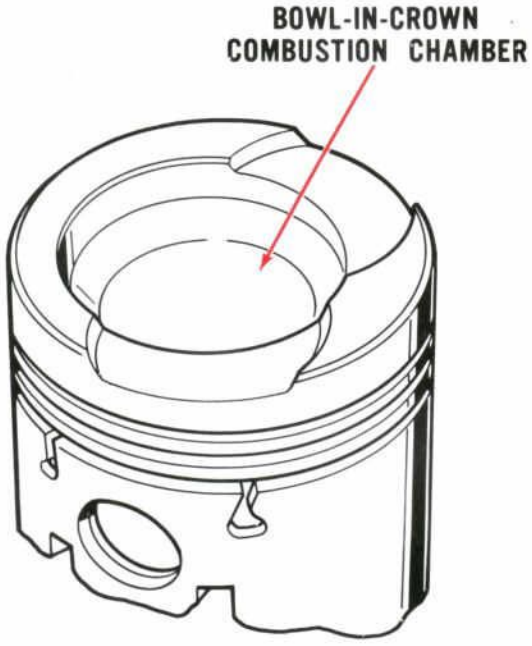


Figure 3–Cortina "Bowl-in-Piston" Design

However, the Cortina engine has been redesigned so the carburetor and intake manifold are now positioned on the right side of the engine; opposite the exhaust manifold (Fig. 2). Intake and exhaust valves are placed on opposite sides of the cylinder head, with the intake valve positioned so it encourages a natural swirling or spiral movement of the incoming air/fuel mixture into the cylinder on the descending intake stroke of the piston. This swirling action is the key to good combustion as it more completely mixes the air and fuel mixture right up to the moment the spark plug fires for maximum power and smooth performance. After the air/fuel charge is burned, exhaust gases move smoothly across the cylinder without having to turn any corners to get into the exhaust manifold. The net result is an engine that breathes better, thereby becoming more efficient and producing more power for a given quantity of fuel; in much the same manner as an athlete who improves his performance by improving his breathing capacity.

BOWL-IN-PISTON

Along with the crossflow head design, Ford has another better idea with a "bowl-in-piston" design (Fig. 3). This is a design whereby the combustion chamber is machined very accurately from the piston head, instead of the cylinder head. The cylinder head is virtually flat to accommodate the crossflow design. The spark plug (a long reach *Autolite* AG 22 for GT models, or AG 32 for Deluxe models and Station Wagons) is located so that only a very short flame path is required to ignite the air/fuel mixture, resulting in a very rapid and controlled burning of the air/fuel mixture. Much closer control can be maintained over combustion chamber shape, volume and surface finish. And the valves can be larger and the intake and exhaust ports designed to the crossflow configuration.

1968 CORTINA ...

The bowl-in-piston combustion chamber is compact — offering minimum surface area to the burning air/fuel charge when gas temperatures are at their highest around top dead center. Less heat is then lost to the cooling system. With less heat wasted, more heat is available for useful work. This reduced "chilling" of the burning air/fuel mixture helps bowl-in-piston engines of a 9:1 compression ratio to show thermal efficiencies comparable to those normally obtained at 10:1. The net result is better all-around performance, and good low-speed torque for improved pickup and acceleration when passing another vehicle.

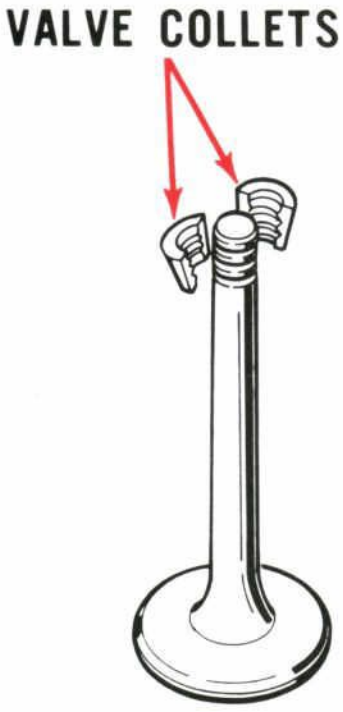


Figure 4—"Ribbed" Valve Retainers (Collets)

VALVES

The valves have 45° seats and are mounted almost vertically in the cylinder head. Intake valves are 2.2" in diameter and exhaust valves 1.25" in diameter.

The intake valve head has a diffused aluminum coating to increase resistance to high temperature oxidation and to form a hard wearing surface on the seating area. *Under no circumstances should the faces of "aluminized" intake valves be ground or the valves lapped, as this will remove the coating and reduce the valves wear and heat resistant properties.* If the valve faces are worn or pitted, it will be necessary to fit new valves and recut the valve seats or; alternatively, lap the seats using dummy valves. The *exhaust* valves may be lapped or the faces ground if required.

The valves have been designed to rotate slowly on their seatings, to prevent localized heat build-up. Wear and noise are reduced, while valve seating conditions are improved even though higher temperatures are present due to greater power output. Beginning at about 1500 rpm, vibrations and rocker arm action tend to cause valves to rotate naturally. Ford takes advantage of this phenomenon by using tapered valve retainer locks (collets), which have three ribs that correspond to three grooves in the valve stem (Fig. 4).

The two halves of the retainer locks butt together, leaving a small radial clearance, instead of clamping to the valve stem as in the normal manner. The valve is then free to slowly rotate, much like a nut on a vibrating bolt.

CYLINDER BLOCK

The cylinder block is cast iron and is cast integrally with the upper half of the crankcase. Cylinder bores are machined directly into the block, and graded for size. The grade number of each bore is stamped on the push rod side of the cylinder block, adjacent to the top face. Standard and oversize cast iron dry type liners are available.

The cylinder head gasket is asbestos with a steel core. Composition type gaskets *must not* be used with Cortina engines.

CRANKSHAFT

The cast iron crankshaft features five large diameter main bearings (Fig. 5) as compared to the 3 or 4 main bearings for most other engines of this size. The five bearing design lowers stress in the bottom end and reduces crankshaft whip to provide for longer engine life and smoother, quieter performance. The crankshaft runs on steel-backed copper/lead,

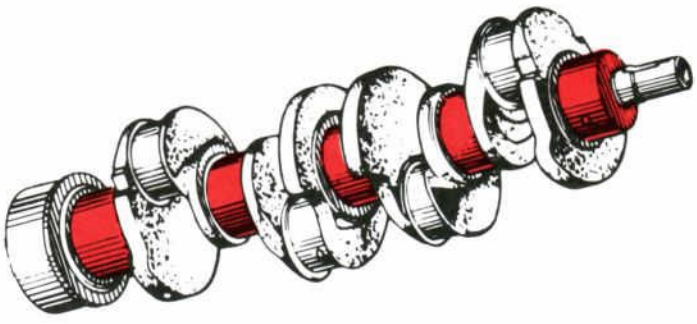


Figure 5—Five-bearing Crankshaft

or lead/bronze bearing inserts. Main bearing caps are retained by bolts without lockwashers. The intermediate and rear caps are identical, *but must not be interchanged*. When disassembling, be sure their positions are marked. This is normally done in production, with a number 2 stamped on the front intermediate cap and number 4 stamped on the rear intermediate cap. The rear cap is not marked. All caps must be installed with the cast arrows pointing *forward*.

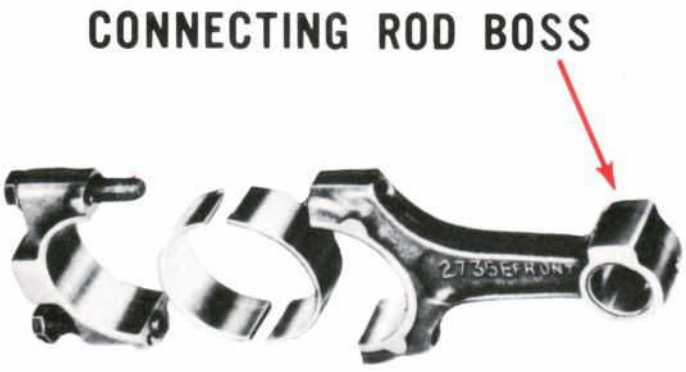


Figure 6–Connecting Rod

CONNECTING RODS

Connecting rods (Fig. 6) are "H" section steel forgings with detachable end caps. The caps are located by two hollow dowel pins pressed into the connecting rod. Caps are retained with two ⅜" diameter bolts. Bearing inserts are of either copper/lead, lead/bronze or aluminum/tin. Never mix materials when replacing inserts. Undersize bearings are available. The piston pin runs on a steel-backed bronze bushing, which is not serviced. The service connecting rod has the bushing installed. When assembling the connecting rod to the piston, make sure it is fitted correctly–with the marking "front" on the web toward the front of the engine.

FRONT COVER

The front cover is an aluminum casting, with an oil seal pressed in to prevent oil leaks around the crankshaft pulley boss. The oil level dipstick is located in the front cover. A timing pointer is also incorporated on the front cover to facilitate setting ignition timing.

OIL PAN AND OIL FILTER

The oil pan is bolted to the bottom of the cylinder block in the conventional manner. A drain plug is located on the right-hand side. To remove the two rear pan bolts, position the flywheel so the recesses in the flywheel are adjacent to each bolt.

A full-flow type oil filter is bolted to a mounting flange integral with the oil pump, on the right side of the engine. To remove the filter, unscrew the bolt and withdraw the filter body and element. Remove the sealing ring from the groove in the filter body mounting flange, then locate the new ring (supplied with the replacement element) in the groove at four diametrically opposite points. *Do not fit the ring at one point and then work it around the groove as the rubber may stretch, thus leaving a surplus which may cause an oil leak*. Thoroughly clean the filter body and insert a new element. Install a new washer (supplied with replacement element) on the bolt and reinstall the fiter to the oil pump body.

STARTER

The standard starter is a *pre-engaged* type (Fig. 7). Its pinion has 11-teeth and the ring gear 132 teeth to provide quieter cranking levels.

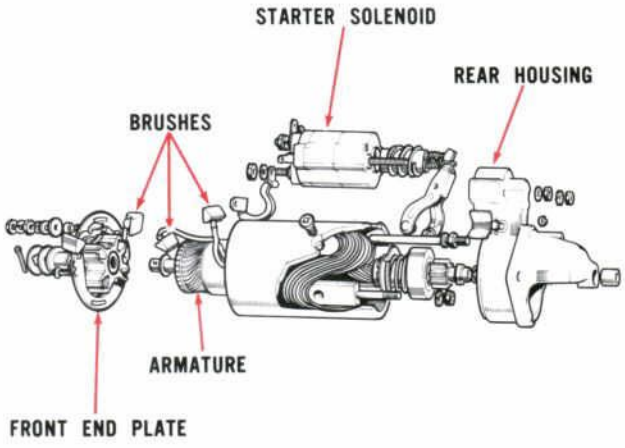


Figure 7–Pre-engaged Starter

COOLING SYSTEM

The cooling system is the impeller assisted, thermo-syphon pressurized type, filled with a 50% solution of Rotunda Long Life Antifreeze. The corrugated fin, high efficiency radiator is located in the front of the engine compartment and incorporates a pressure cap and drain plug. A wax-type thermostat, located in the water outlet at the front of the cylinder head, controls engine operating temperature. When the thermostat is closed, coolant circulates within the engine, by means of a by-pass tube drilled into the cylinder head and block between the thermostat housing and the inlet side of the water pump.

1968 CORTINA ...

FUEL SYSTEM

The fuel tank holds 12 U.S. gallons (9.6 gallons for Station Wagons) and is located below the luggage compartment. The fuel filter cap is flush fitting type, located in the luggage compartment rear panel. (R.H. rear quarter panel on Station Wagons). A short length of filler pipe connects to the tank. A groove in the filler cap sealing flange vents the fuel tank.

Cortina Deluxe models use an Autolite single barrel carburetor. GT models use a Weber 2-bbl. carburetor. If the car is equipped with an automatic transmission, the carburetor incorporates an automatic choke, which is heated by the cooling system. Both the Autolite and Weber carbuetors use a paper type filter element.

EMISSION CONTROL SYSTEM

All engines are equipped with a "closed" PCV system and Thermactor (Fig. 8) to keep air pollutants within Federal limits. They are very similar to units previously used on Ford Motor Company vehicles.

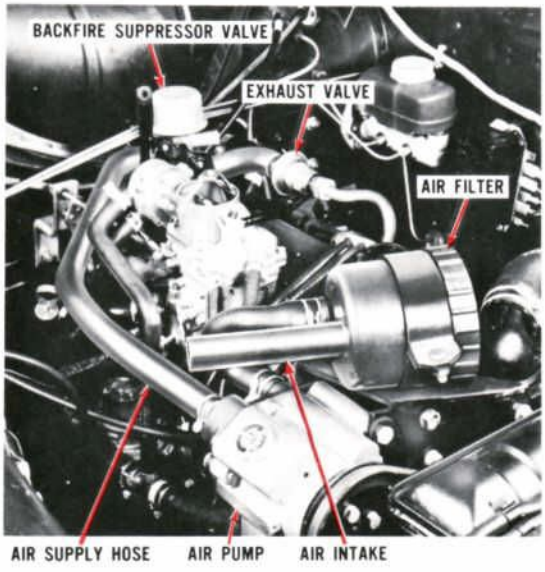


Figure 8–Thermactor Emission Control System

IGNITION TIMING

Cortina models use a 12-volt electrical system. The ignition system uses a ballast type resistor coil, an Autolite dual-advance distributor, mounted in the front right-hand side of the engine, and Autolite powertip sparkplugs.

All 1968 Cortina engines are equipped with Thermactor and have an initial advance of 4° before TDC.

To set ignition timing, align a mark on the crankshaft pulley with the appropriate mark on the front cover timing pointer. All reference to timing degrees are in terms of crankshaft degrees.

CLUTCH AND TRANSMISSION

CLUTCH

The clutch mechanism consists of a single dry-plate disc with a diaphragm plate that is bolted to the engine flywheel. The clutch release system is self-adjusting and is hydraulically actuated (Fig. 9).

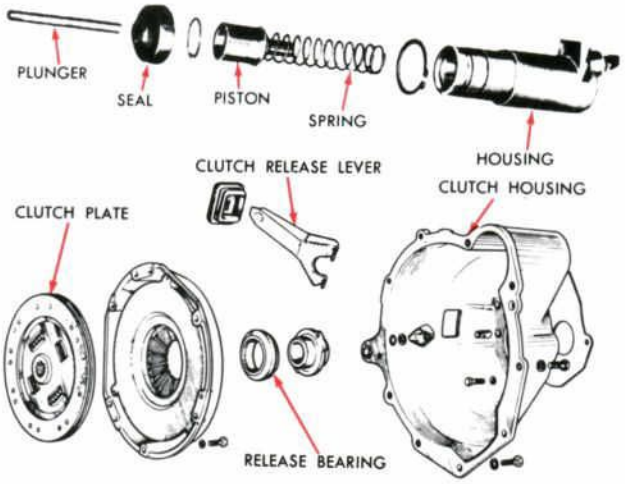


Figure 9–Clutch Assembly

MANUAL TRANSMISSION

The manual transmission has four forward speeds and one reverse. Gear ratios are:

	Cortina Deluxe	GT Cortina
Direct drive	1.0:1	1.00:1
Third	1.41:1	1.40:1
Second	2.40:1	2.01:1
First	3.54:1	2.97:1
Reverse	3.96:1	3.32:1

Cortina GT models have a special extension housing mounted to the rear of the transmission.

AUTOMATIC TRANSMISSION

A three speed torque converter type automatic transmission is available as an option on all Cortina Deluxe models only. Its operation is typical of this type of automatic transmission.

REAR AXLE

A semi-floating rear axle with a hypoid ring gear and pinion is used on all 1968 Cortinas. The only ratio available through production is 3.900:1. Service ring gear and pinion sets with 4.125 and 4.444:1 ratios are available only from parts warehouses. The ring gear and pinion are mounted in the differential carrier which is bolted to the front of the axle housing (Fig. 10). The pinion is mounted on two taper roller bearings that are pre-loaded after collapsing a tubular spacer between them. The ring gear is bolted to the differential case which also runs on two taper roller bearings. These bearings are preloaded by spreading the differential carrier. In addition to the

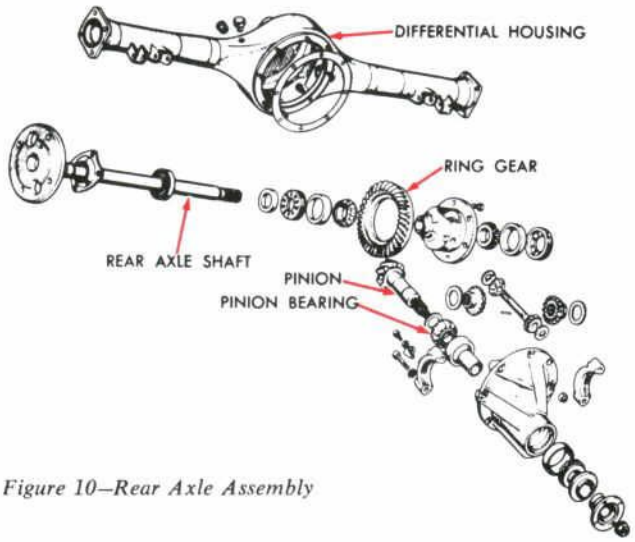


Figure 10—Rear Axle Assembly

above settings, the only other adjustment is the pinion depth of mesh in the ring gear; controlled by a selective spacer between the pinion head and the rear taper roller bearing.

The axle shafts are splined to the differential side gears and run in ball races in the axle housing at their outer ends. The ball races have a built-in oil seal and no separate seal is fitted in the axle housing.

The drive shaft is the "Tube-in-Tube" type (rubber bonded) such as used on the Mustang and Thunderbird. It is splined to the transmission output shaft and bolted to a flange at the pinion shaft. The universal joint at each end is pre-lubricated and sealed.

TIRES

The standard tires for all Deluxe models are 5.60 x 13 cross ply. Station Wagons use 6.00 x 13 cross ply tires as standard equipment. Cortina GT models come with 165 x 13 radial ply tires as standard equipment. The radial tire is also available as *optional* equipment on Deluxe and Station Wagon models. The following chart lists recommended tire pressures.

CORTINA TIRE PRESSURE SPECIFICATIONS

	GT		Sedan		Station Wagon	
	F	R	F	R	F	R
5.60 x 13	—	—	24	24	—	—
6.00 x 13	—	—	—	—	24	24
165 x 13 radial	24	28	24	28	24	30

SUSPENSION

REAR SUSPENSION

The rear suspension is the semi-elliptic leaf type, with hydraulic, double-acting, telescopic shock absorbers. (Note: Station Wagons only use a lever arm type shock absorber.) The rear axle is located closer to the front spring mount than the rear one to assist in reducing axle tramp and spring wind-up during acceleration, or when driving over rough roads. Cortina GT models incorporate radius arms to reduce further these effects.

FRONT SUSPENSION

All Cortina models employ independent front suspension with large coil springs mounted concentrically with hydraulic, double-acting shock absorbers which are integral with the wheel spindle (Fig. 11). Lateral movement of each wheel is controlled by the track control arm, and fore-and-aft movement is controlled by the stabilizer bar.

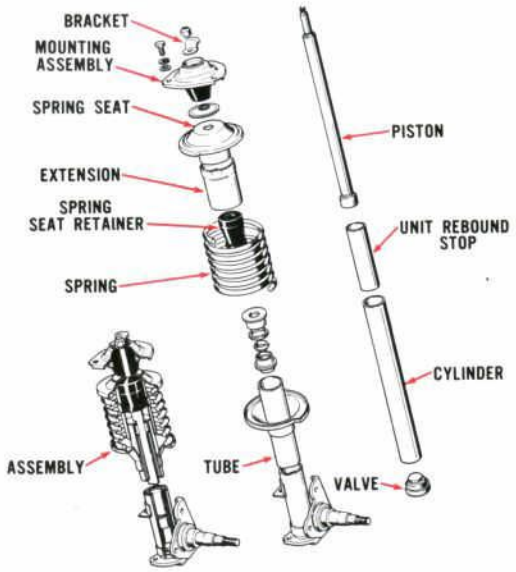


Figure 11—Front Suspension

1968 CORTINA ...

BRAKES

The brake system is a hydraulic, dual line type (Fig. 12). Two separate hydraulic brake systems, one for the front disc brakes (Fig. 13), the other for the rear drum brakes are utilized. Should either system lose fluid, a warning lamp on the instrument panel lights up as the brakes are applied. If one circuit fails, the Cortina can still be stopped, using the unaffected pair of brakes.

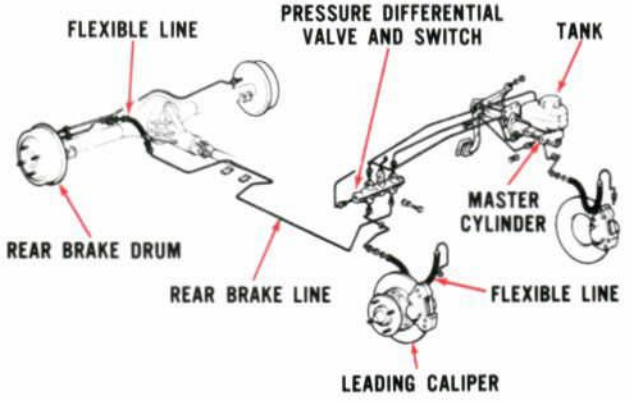


Figure 12—Dual Hydraulic Brake System

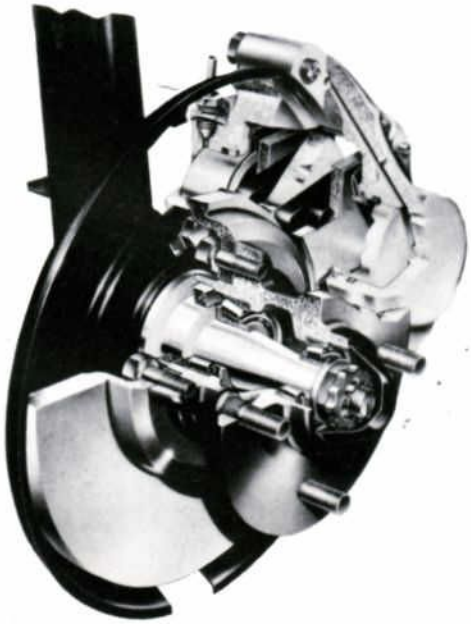


Figure 13—Front Disc Brake

Two types of calipers are used on the front. Cortina GT models use "leading" calipers, while Deluxe models utilize "trailing" calipers, (Fig.14). The lining pads for the front brakes are also different as illustrated in Fig. 14.

The rear brakes are the typical drum type with a self-adjusting mechanism that is activated by the parking brake.

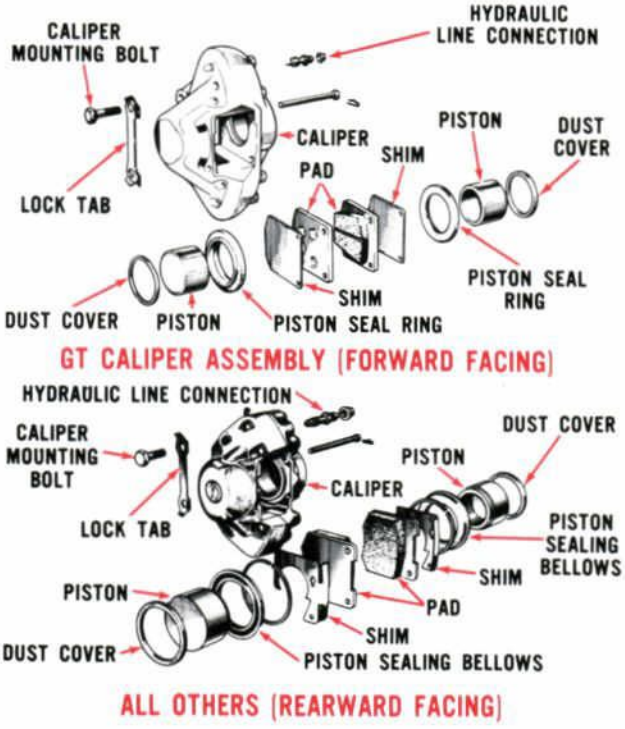


Figure 14—Exploded view—Cortina GT and Cortina Deluxe Model Disc Brake

Both front and rear brakes are serviced by a dual brake master cylinder (Fig.15). A central baffle within the reservoir separates the two systems. When adding fluid, be sure the fluid level is just above the balance channel in the top of the baffle.

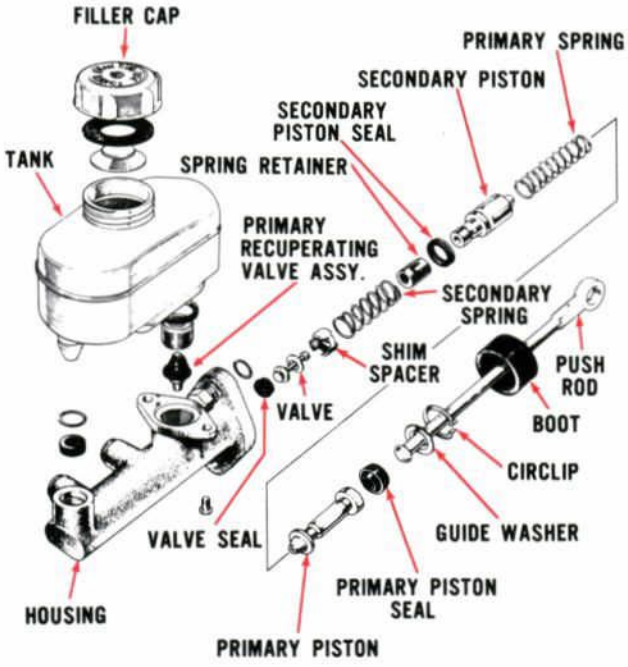


Figure 15—Dual Master Cylinder Assembly

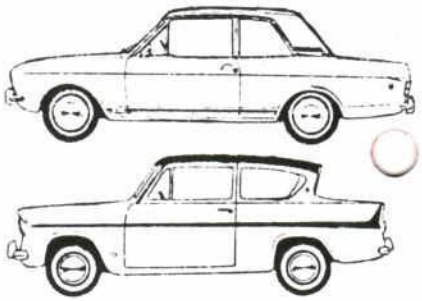
MODELS, FEATURES & SPECIFICATIONS

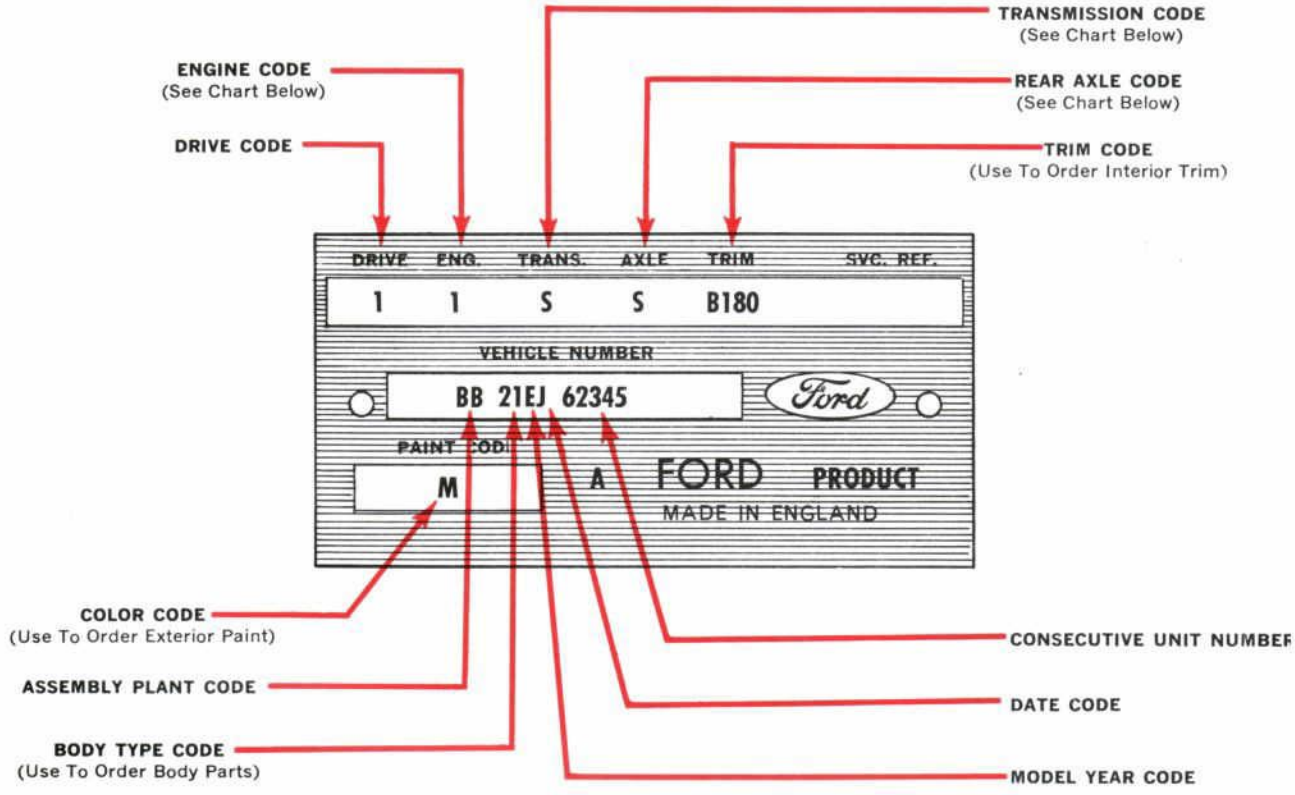
1968 CORTINA SPECIFICATIONS

	2-DR. CORTINA GT	4-DR. CORTINA GT	2-DR. CORTINA DELUXE	4-DR. CORTINA DELUXE	CORTINA STATION WAGON
FRONT SEAT TYPE	Bucket				
NO. PASSENGERS	5				
BODY CONSTRUCTION	All-steel integral				
WHEELBASE	98″				
OVERALL LENGTH	168″				169.5″
OVERALL WIDTH	64.9″				
OVERALL HEIGHT (Unloaded)	54.7″				
WHEEL TREAD—Front/Rear	52.5/51.0″				
CURB WEIGHT	2028 lbs.	2088 lbs.	1974 lbs.	2027 lbs.	2173 lbs.
TRUNK CAPACITY (With Spare)	21 cu. ft.				70.5 cu. ft.
TIRES	165 x 13 radial ply		5.60 x 13 Cross Ply 165 x 13 Radial Ply		6.00 x 13 Cross Ply 165 x 13 Radial Ply
GROUND CLEARANCE (Min.)	5.15″				
ENGINE TYPE	4 cyl. OHV Cross-Flow cylinder head. Bowl-in-Piston combustion chambers. (Premium fuel required)				
ENGINE DISPLACEMENT	97.6 cu. in.				
COMPRESSION RATIO	9.2:1		9.0:1		
BRAKE HORSEPOWER @ RPM	89.5 @ 5400		71.5 @ 5000		
COOLING SYSTEM (With Heater)	13.2 pints				
FUEL TANK CAPACITY	12.0 U.S. gallons				9.6 U.S. gallons
CARBURETOR	Two-barrel Weber		Single barrel Autolite with accelerator pump		
CHOKE CONTROL	Manual		Manual with 4-speed. Automatic with auto. trans.		
ELECTRICAL SYSTEM	12-volt system with heavy-duty 57-ampere-hr. battery, Negative ground				
DISTRIBUTOR	Mechanical and vacuum advance				
TRANSMISSION	4-speed all-synchronized floor shift (heavy-duty drive shaft for GT)				
TRANSMISSION—Optional	Not offered		3-speed Automatic		
FRONT SUSPENSION	Independent coil spring with double-acting hydraulic shock absorbers. Front stabilizer bar.				
REAR SUSPENSION	Leaf-type rear springs and double-acting hydraulic shock absorbers. (Traction arms added for GT.)				
BRAKES	Self-adjusting, hydraulic, disc-type front and drum-type internal expanding rear.				
BRAKE DRUM DIAMETER	Front—9⅝″ disc Rear—9″ drum		Front—9½″ disc Rear—8″ drum		
BRAKE LINING SWEPT AREA	285.6 sq. in.		247.4 sq. in.		
REAR AXLE RATIO	3.9:1				
REAR AXLE TYPE	Semi-floating hypoid				
TURNING RADIUS	30.0 feet				
INSTRUMENTS	Speedometer, odometer, temperature gauge, fuel gauge, generator light, main beam light, turn indicator lights, oil pressure light. GT's have a 7000 rpm tachometer and have oil pressure gauge and ammeter in place of lights. Brake testing light.				
SPARK PLUG and GAP	AG 22 0.023″		AG 32 0.023″		
DISTRIBUTOR POINT GAP	0.025″				
SERVICE LOCATIONS	FUEL FILLER CAP—Sedans: Flush fitting cap in luggage compartment rear panel. Station Wagons: R.H. rear quarter panel. OIL FILLER CAP—Front of valve rocker arm cover. OIL FILTER—Front righthand side of engine. PCV VALVE—Inside oil separator tank, rear righthand side of engine. HOOD LATCH—Button in top center of grille. To Open: Press in button, move safety catch to left.				

1966–1968
CORTINA and ANGLIA
CAR IDENTIFICATION PLATES

• ANGLIA • CORTINA • CORTINA GT • CORTINA LOTUS •





ENGINE CODES

CODE	CYL.	CID	CARB. VENTURI
1	4	60.1	1V
3	4	73.1	1V
D	4	91.5	1V
G	4	91.5	2V-GT
H	4	95.2	4V-Lotus
U	4	97.5	1V
X	4	97.5	2V-GT
Y	4	95.2	4V-Lotus

TRANSMISSION CODES

CODE	TRANSMISSION TYPE
A	4-speed—floor shift
B	4-speed—column shift
C	Automatic Transmission
S	4-speed—floor shift

REAR AXLE RATIO CODES

CODE	RATIO
A	3.900:1
B	4.125:1
C	4.444:1
D	3.77:1
S	4.444:1
2	4.444:1
3	4.125:1

1957 FORD CAR and THUNDERBIRD SHOP MANUALS AVAILABLE...

from

CLASSIC THUNDERBIRD CLUB INT.
THE AMERICAN ROAD
Thunderbird
CLUB

The supply of Shop Manuals for the 1955, 1956 and 1957 Ford and Thunderbird has long been exhausted. However, in response to a great demand, a limited number of the 1957 Shop Manuals are now available at $5.00 each from the Classic Thunderbird Club, Int. The information in the 1957 manual also applies to 1955 and 1956 Thunderbirds, except for the 6-volt electrical system used on 1955 models.

You can obtain a 1957 manual by:

(1) Completing the following form:

Send _____ copy(ies) of the 1957 Ford Car and Thunderbird Shop Manual (Form 7098-57) @ $5.00 each to:

Name_____

Address_____

City_____ State_____ Zip Code_____

NOTE: Purchasers outside Domestic U.S.A. must add 30¢ to each manual ordered for mailing expenses. Funds MUST be payable in U.S. Currency. All orders will be mailed within 10 days of receipt. Please allow ample time for postal service.

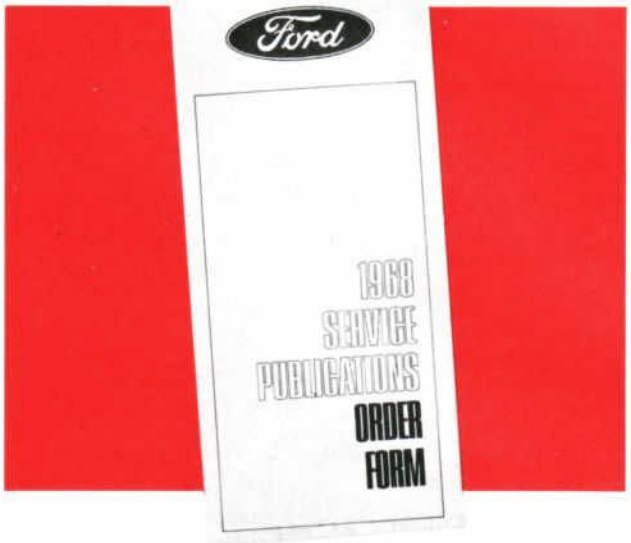
(2) Make payable and mail your check or money order to:

Lois C. Eminger, FoMoCo Liaison Officer
Classic Thunderbird Club, International
Room #1074–Engineering Staff Bldg.
Ford Motor Company
Box 2053
Dearborn, Michigan 48121

NOTE: If you have Thunderbird parts, especially the hard to get ones, please contact the Classic Thunderbird Club.

1968 SERVICE PUBLICATIONS AVAILABLE FROM YOUR FORD AND LINCOLN-MERCURY DEALER

Your Ford or Lincoln-Mercury dealer can help you obtain official Ford Motor Company Service Publications. Just ask for the special order form illustrated, and he will be pleased to help you get these valuable aids to improve your knowledge of the Ford products you service. There are:



■ **SHOP MANUALS**–Containing servicing procedures and specifications for making repairs or adjustments on vehicles of the year and model to which they apply.

■ **SHOP OR MAINTENANCE MANUAL SUPPLEMENTS**–Generally contain repair and adjustment information only on components that were changed or new in that particular model year. For complete information, the Shop Manual or the preceeding model year(s) is also required.

■ **OWNER'S MANUALS**–Contain information on operation and driver care of the vehicle, and valuable hints on proper servicing of the vehicle to which they apply.

■ **SERVICE SPECIFICATIONS**–These handy pocket size books list summarized repair and adjustment specifications necessary to service Ford Motor Company cars and trucks for the indicated model year. Other booklets in this series include repair and adjustment information on specific components such as: automatic transmission and air conditioning.

Also ask your Ford or Lincoln-Mercury dealer about Ford Service Training Aids. He can help you obtain the same modern, up-to-date Training Books, Films, Transparencies, Flip Charts and Programmed Training Books that are used in Ford Service Training Centers to instruct automotive technicians to become more knowledgeable and skillful in servicing today's more sophisticated automobile.

HOT AND COLD INTAKE DUCT DIAGNOSIS

The "hot and cold" air intake duct system (incorporated in the air intake system) is used on 1968 vehicles sold in the U.S. If this system does not function properly, it will affect the vehicle's exhaust emission and may result in failure to meet Federal emission regulations as well as affecting driveability.

APPLICATION LIST

Group 1 Duct and Valve Assembly Without Override System

All .....170-1V CID Engines
200-1V CID Engines
240-1V CID Engines
Cougar Only .....390-2V CID Engines
All .....462-4V CID Engines

Group 2 Duct and Valve Assembly With Override System Attached Directly to Air Cleaner

GT and Non GT
Montego, Fairlane,
Cougar, Mustang .....390-4V CID Engines

Group 3 Duct and Valve Assembly With Override System in Duct Assembly

289-2V Engines
All .....302-2V and 4V CID Engines
All .....390-2V CID Engines except Cougar
Ford, Mercury .....390-4V CID Engines
All .....428-4V CID Engines except Police
429-4V CID Engines
460-4V CID Engines

Group 4 No Duct and Valve Assembly

Police .....428-4V CID Engines
Hi-Performance .....427-4V CID Engines

To determine whether the system is functioning properly, the following procedure should be followed:

ANALYSIS AND REPAIR PROCEDURE

A. Duct and Valve Assembly Without Override System (Application Groups 1 and 2).

1. With duct assembly installed on vehicle, cold engine, and ambient temperature in the engine compartment of less than 100°F., the valve plate should be in the "heat on" or up position (See Fig. 1).

2. If the plate is not in the above position, check for possible interference of plate and duct which would cause the plate to hang-up in its given travel. Correct, if interference is present, by realigning the plate.

3. Remove duct and valve assembly from vehicle.

4. Immerse the duct assembly in water so that thermostat capsule is covered with water.

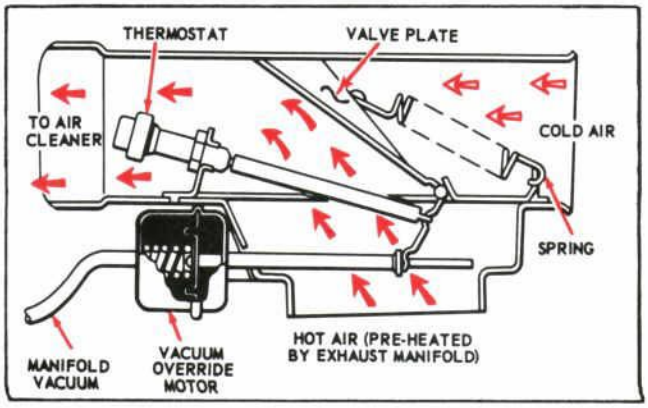


Fig. 1—Duct and Valve Assembly (Heat on Position)

5. Raise the water temperature to 100°F., allow 5 minutes to stabilize temperature, and observe the valve plate position. The correct position should be in the heat on or up position (See Fig. 1).

6. Increase the water temperature to 135°F., allow 5 minutes to stabilize temperature, and observe the valve plate position. The correct position should be in the "heat off" or down position (See Fig. 3). If the valve plate does not meet the requirements as outlined in Steps 5 and 6 and no interference is observed of the plate and duct, the duct and valve assembly should be replaced.

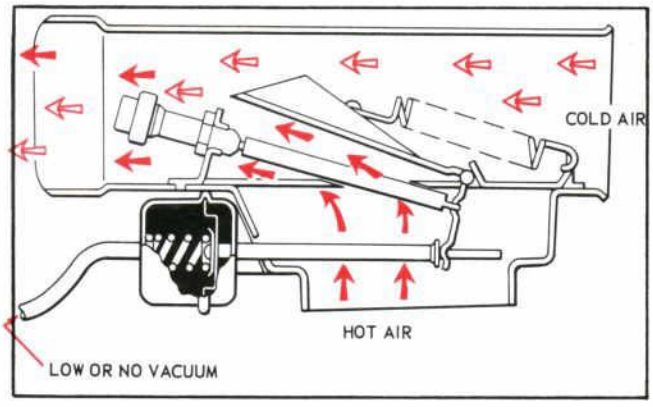


Fig. 2—Duct and Valve Assembly (½ Heat on Position)

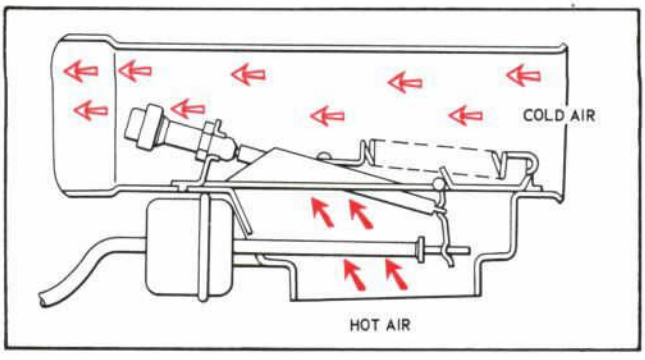


Fig. 3—Duct and Valve Assembly (Heat off Position)

B. Duct and Valve Assembly with Override Attached Directly to Air Cleaner (Application Group 2) Only

In addition to checking the duct and valve assembly (section A, above) the vacuum motor that is attached to the air cleaner should be checked for functional operation.

1. Start engine, observe vacuum motor plate. It should be fully closed (See Fig. 4.)

2. Disconnect the vacuum hose at the vacuum motor. The plate should now be in the fully open position (See Fig. 4.)

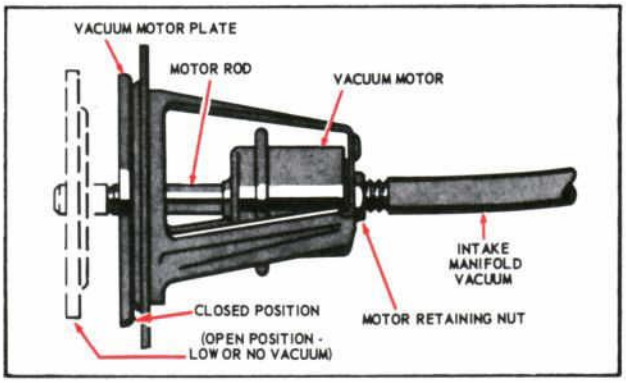


Fig. 4—Vacuum Override Motor Assembly Attached to Air Cleaner

3. If the above positions are not obtained, check for:

   a. Interference and alignment of plate and motor rod.

   b. Vacuum available from hose at the vacuum motor (minimum of 15 inches of vacuum). If vacuum is not available, check the hose and connection for leaks.

4. If the vacuum motor plate still remains in one position, remove vacuum motor from the air cleaner, connect again to a vacuum source to confirm the vacuum motor is not operating. If the motor rod does not move when vacuum is applied, the motor is defective and should be replaced.

5. Reassemble the motor to the air cleaner and repeat Steps 1 and 2.

C. Duct and Valve Assembly with Override Motor Attached Directly to Duct and Valve Assembly (Application Group 3)

1. With duct assembly installed on vehicle, cold engine, and ambient temperature in the engine compartment of less than 100°F., the valve plate should be in approximately ½ "heat on" or up position. (See Fig. 2.)

2. If the plate is not in the above position, check for possible interference of plate, duct, and/or vacuum motor which would cause the plate to hang-up in its given travel. Correct, if interference is present, by realigning the plate or vacuum motor as required.

3. Start engine, observe valve plate position while engine is still cold. The correct position for the plate is in the full "heat on" or up position. (See Fig. 1.) Align plate or vacuum motor if interference is noted.

4. If the valve plate remains only in the ½ "heat on" or up position as observed in Step 1, remove the vacuum hose at the override vacuum motor and check for vacuum at the hose (minimum of 15 inches at idle).

5. If the vacuum is less than specified, check for vacuum leaks in the hose and hose connection.

6. When the vacuum meets specification, reconnect the hose to the override motor and again with under hood temperature less than 100°F., observe valve plate position.

7. If the plate still remains only in the ½ "heat on" or up position and there is no interference between the valve plate, duct, or vacuum motor rod, the vacuum motor should then be removed and connected to a vacuum source.

8. If the motor rod moves a minimum of ½ inches, the motor is functionally okay and should be reassembled into the duct assembly and a check for interference and misalignment; and a check of the thermostat capsule should be made as outlined in Step 10.

9. If the motor rod does not move a minimum of ½ inches, the motor is defective and should be replaced. After assembling the replacement motor into the duct assembly, a check should be made as outlined in Steps 1 thru 5 to assure alignment is correct and no interference exists.

10. With the engine off, remove the duct and valve assembly from vehicle and follow Steps 4, 5, and 6 in Section A.

STARTER CABLE ROUTING

1967 LINCOLN

When working on or around the starter, always be sure and route the starter cable correctly. Figure 1 illustrates the proper and incorrect routing. The starter cable MUST be routed properly (*forward* instead of rearward of the automatic transmission dipstick tube) or the cable may contact the exhaust manifold resulting in a damaged cable and/or an electrical grounding (short circuit) condition during starter operation.

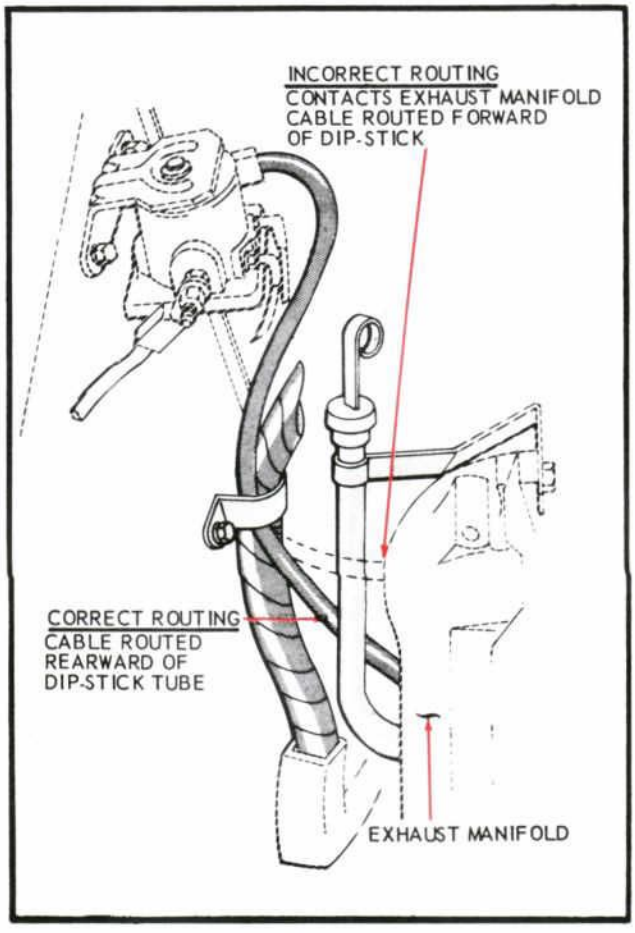


Fig. 1–1967 Lincoln Starter Cable Routing

NEUTRAL STARTER SWITCH IDENTIFICATION

1967 Mercury Intermediate with Column Mounted Automatic Transmission Shift Linkage

The neutral start switch (Ford Part Number C70Z-7A247-D) is marked with two identification color codes:

1. A green or red paint daub on the actuator pin indicates the switch can be used on both 6 and 8 cylinder engine cars.
2. A daub of yellow paint on the actuator pin indicates the switch may be used only on cars with an 8-cylinder engine.

PIVOTLESS IGNITION POINT WEAR PATTERN

ALL 1968 CARS

The pivotless ignition contacts used on 1968 vehicles have an erosion pattern on the tungsten contact discs that is different from that observed on the pivot type contact used on previous models. This *new* wear pattern may be diagnosed as "misaligned contact" by those not familiar with the pivotless contact assembly. Figure 2 shows a comparison of "normal wear pattern" for pivotless and pivot type contact points.

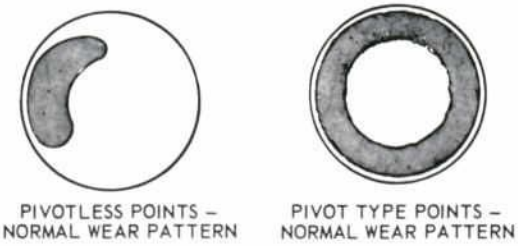


Fig. 2–Breaker Point Wear Patterns

DISC BRAKE SPINDLE MOUNTED INDICATOR ADAPTER

A rigid, simple and convenient device for mounting and obtaining accurate dial indicator readings for disc brake rotor face runout and wheel stud runout is shown in Figure 3. The adapter can easily be fabricated from two standard nuts (Ford Part Numbers 34426-S7 (or 34457-S7) and 33825-S).

This handy device is less expensive and gives a more positive reading than a magnetic indicator base.

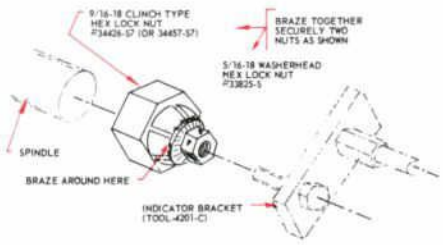


Fig. 3–Spindle Mounted Indicator Adapter

SERVICE BRIEFS

CORRECTION—SERVICING EXHAUST EMISSION CONTROL SYSTEM AIR PUMPS

1967 MODELS
(If so equipped)

The September *1966* "Announcement Issue" of Shop Tips contained 1967—'66—'65 Maintenance Schedules for Ford Motor Company passenger cars. On page 13, the 24,000-mile or 24-month maintenance interval states that the exhaust emission control system *air pump* should be replaced on the 1966-67 vehicles, if so equipped. This is in *ERROR!* Only the air pump *FILTER* should be replaced. As is the case with all filters, such replacement is made on a "customer paid" basis. Please change your Shop Tips to reflect this correction.

REAR AXLE VENT LOOSENESS AND LUBRICATION LEAKAGE

Lubricant leakage and/or looseness of the rear axle vent can be corrected by using "Loctite" sealant (Ford Part No. C3AZ-19554-A) around the vent. Apply sealer as follows:

1. Raise the vehicle on a hoist. If the hoist is other than the frame contact type, provide adequate working clearance by lowering the axle with the aid of jack stands under the rear frame members.

2. Brush all dirt away from the area around the vent.

3. Remove the vent and hose assembly. With a suitable solvent, clean the vent and the area around hole in the axle housing. CAUTION: *Do not permit the solvent to enter the axle through the vent hole.*

4. Apply a small amount of "Loctite" around the serrations of the vent.

5. Place the vent in its original position in the axle housing, and tap it lightly with a soft-face hammer until it bottoms. NOTE: Regardless of the vent design, the vent is properly positioned if the *internal* 45 degree slash opening is pointed midway between the left rear wheel and the front of the car, *away from the ring gear.*

6. Remove the jack stands (if applicable) and lower the vehicle.

NOTE: Allow the vehicle to set about 15-20 minutes prior to putting it into service.

CHANGE IN SPARK PLUG USAGE

The spark plug recommendation for 1967 390-4V, 410, and 428 CID engines (except police interceptor) has been changed from BF-42 . . . to BF-32. On *normal* replacement ONLY, BF-32 spark plugs should be used in the above engines.

1967-68 THUNDERBIRD AND 1968 MONTEGO SPEEDOMETER CABLE "QUICK CONNECT" ATTACHMENT

These vehicles feature a "Quick Connect" Speedometer cable attachment. To detach the speedometer cable assembly from the speedometer head, release the catch located on the speedometer cable assembly by pressing the knurled surface of the speedometer cable plastic connector, as shown in Fig. 4, and simultaneously pulling the cable away from the speedometer head.

To attach the speedometer cable to the speedometer head, align the cable housing to the speedometer head assembly. Push the cable on with a rotating motion until the nylon catch snaps into position. The catch snaps and locks into a groove in the shaft end of the speedometer head assembly.

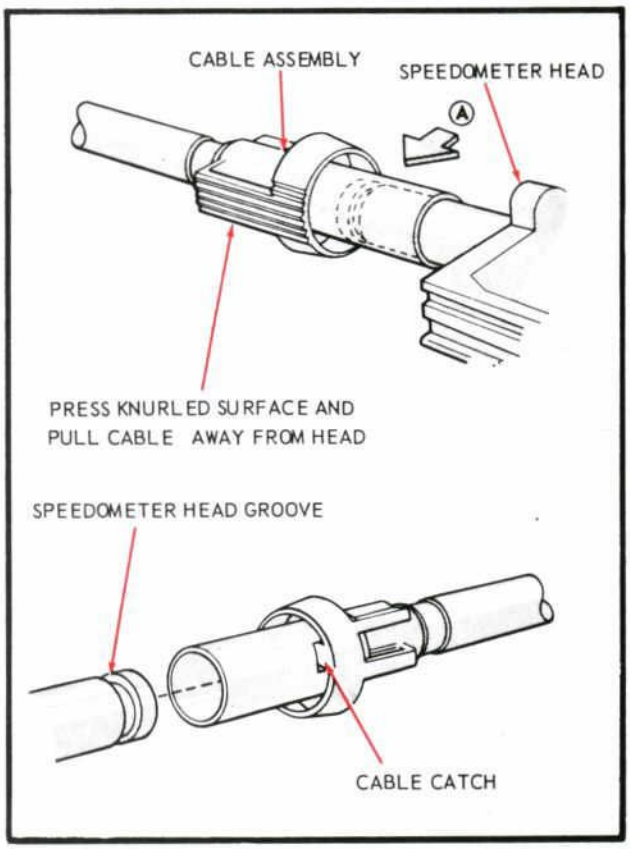


Fig. 4—Speedometer Cable "Quick Connect"

YOUR SOURCE FOR GENUINE FORD AND AUTOLITE ORIGINAL EQUIPMENT PARTS

Autolite OIL • FUEL • AIR FILTERS

THE FULL TIME PROTECTORS!

Autolite 6000-Mile Oil Filter—Effective filtration begins *immediately* with a new Autolite 6000-Mile Oil Filter—as opposed to most pleated paper types, which filter relatively poorly at first, until they build-up a sludge-bed on the surface. Autolite's two-stage, depth-type design continues to provide superior filtration over the 6000 mile service interval because . . . the first stage (1) of superfine rayon mesh screens out fine, abrasive contaminants down to micron size. At the same time, oil is forced through the second stage (2) which contains highly absorbent, high-density cotton material. This second stage catches water and acids, which reduces sludge build-up . . . and the less sludge that forms in the engine, the longer the oil lasts. This two-stage filtration principle gives Autolite 6000-Mile Oil Filters the ability to hold up to 10 times as much engine-harming "gook" as ordinary filters.

The spring loaded, positive action by-pass valve (3) is located up front, at the top of the filter. If pressure exceeds 8 psi the valve opens so that oil no longer will pass through the filter. Trapped dirt can't be washed back into the engine, as can happen with many other oil filters. Just one more example of the superior "full time" protection provided by Autolite 6000-Mile Oil Filters.

Autolite Fuel Filter—Their full-flow, in-line design provides "full time" protection by filtering moisture, dirt and gum from 100% of the gasoline. Every drop of gas that reaches the carburetor has been filtered, to keep it cleaner, longer—providing extra miles of "just tuned" performance. Only 11 different Autolite Fuel Filters will meet the needs of more than 85% of the cars on the road today. Replacement with these top quality filters are your customers' best assurance of long lasting, "full time" protection . . . and your best assurance of referrals and repeat orders.

Autolite Air Filter—Engines breathe in a fantastic volume of air—over 9,000 gallons with each gallon of gasoline consumed. Yet regardless of engine speed, Autolite Air Filters clean harmful, wear-producing impurities such as sand, silica and dust particles from 100% of the air. Dirty air can not by-pass an Autolite Air Filter because of a rubber "plastisol" seal at both ends, and an INNER and OUTER wire mesh screen for extra strength. The element is constructed of the highest quality cellulose fiber . . . made to rigidly controlled porosity and thickness specifications . . . thoroughly impregnated with special resins to resist water, oil, fumes and fire, and designed for the special breathing characteristics of each engine. No one can afford a mere "will fit" filter; not when Autolite offers your customers unsurpassed, "full time" protection with broad application coverage of Autolite Air Filters.

ORIGINAL EQUIPMENT ON ALL FORD VEHICLES . . . BEST FOR ALL CARS!