

Operating Instructions

for the

Automatic Gearbox

FITTED TO

NEW

ZEPHYR

AND NEW

ZODIAC CARS



BY APPOINTMENT
TO HER MAJESTY THE QUEEN
MOTOR VEHICLE MANUFACTURERS

FORD MOTOR COMPANY LTD DAGENHAM

LUBRICATION

The lubricants used in this car have been supplied by one of the following Companies :—

ALEXANDER DUCKHAM & COMPANY LIMITED
ESSO PETROLEUM COMPANY LIMITED
MOBIL OIL COMPANY LIMITED
SHELL MEX & BP LIMITED
VIGZOL OIL COMPANY LIMITED
C. C. WAKEFIELD & COMPANY LIMITED

Always use a good quality lubricant of the correct grade. The following grades, marketed by the above Companies, are approved for use in your car :—

ENGINE	GEAR BOX & OVERDRIVE <i>(where fitted)</i>	REAR AXLE
<i>Summer and Winter</i>	<i>Summer and Winter</i>	<i>Summer and Winter</i>
Duckham's NOL Twenty	Duckham's NOL EP 80 Transmission Oil	Duckham's Hypoid 90 Esso Expee
Esso Extra Motor Oil 20W/30	Esso Expee Compound 80	Compound 90 Mobilube GX 90
Mobiloil Arctic	Mobilube GX 80	Shell Spirax 90 EP
Shell X-100 Motor Oil 20/20W	Shell Spirax 80 EP	Energol EP S.A.E. 90
Energol S.A.E. 20W	Energol EP S.A.E. 80	Vigzol Vitapoid 90
Vigzol New D 20	Vigzol Hyex 80 Castrol	Castrol Hypoy Gear Oil
Castrolite	Hypoy 80	

THE AUTOMATIC GEAR BOX *(where fitted)*

The lubricant used in the Automatic Gear Box has been supplied by one of the following Companies and the approved grades for use in both Summer and Winter are also shown :—

Alexander Duckham & Co. Ltd.	Nolmatic automatic transmission fluid Type " A "
Esso Petroleum Co. Ltd.	Automatic transmission fluid 55
Mobil Oil Co. Ltd.	Mobil fluid 200
Shell Mex and BP Ltd.	Donax T6. BP Energol Auto- matic Transmission fluid Type " A."
C. C. Wakefield & Co. Ltd.	Castrol TQ Automatic Trans- mission fluid Type " A."

**Read this Booklet and your Instruction Book
carefully**

Copyright in Great Britain

October 1956

INTRODUCTION

Zephyr and Zodiac cars with an automatic gearbox have no clutch pedal as the torque converter replaces the normal clutch and renders this unnecessary. It is essential, however, for the driver to know how to operate the car since the accelerator pedal, in effect, also acts as the clutch pedal. Read the following instructions very carefully, both in your own interest and in the interests of other road users and be sure you understand how to control the car.

Remember, the engine must never be accelerated for tests of any sort unless the handbrake is applied and the control is in the " N " or " P " position. Do not set the engine idling speed too fast or it may be found that the vehicle will creep slowly forward when the engine is idling. With the choke in use engine speed is increased and unless the brakes are firmly applied the car may move forward immediately one of the driving ranges is selected.

The automatic transmission fitted to the Zephyr and Zodiac cars is controlled by a selector lever on the steering column. Its position is indicated by the quadrant pointer (Fig. 1), which is illuminated at night by a small bulb located in the pointer housing. The lever has five positions, marked R. L. D. N. and P. The lever must be first raised to enter or leave the " P " position, or when moving from " D " to " L " or vice versa. The engine can only be started if the lever is in the " P " or " N " position. Selection of the " R " position automatically switches on the reversing light (if fitted).

This position provides reverse and to select it, lift the lever unless it is already in the " L " range and then move to " R."

Reverse " R "

An automatic lock in the gearbox prevents the engagement of reverse at speeds above 3 to 5 m.p.h. (5 to 8 k.p.h.). If the selector lever is accidentally moved to the " R " position when the car is moving forward neutral will be automatically engaged and the car will coast until the road speed drops below 3 to 5 m.p.h. (5 to 8 k.p.h.), at which speed reverse will be engaged. However, to prevent this sudden engagement of reverse gear the car should be brought to a standstill before selecting the " R " position.

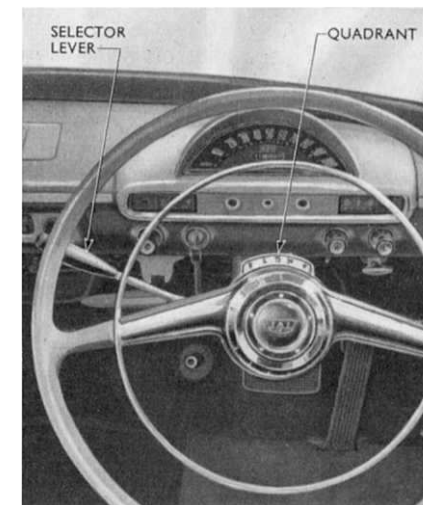


Fig. 1 Selector Lever

INTRODUCTION

Low "L " In this range the gearbox operates only in first gear and will not change to intermediate or top gear. Use this ratio when descending steep hills to provide engine braking. It is possible to change from "D" to "L" range at any road speed, but this must not be done at speeds above 30 m.p.h. (48 k.p.h.). If this change is made above 30 m.p.h. (48 k.p.h.), the engine will be driven at an excessively high speed with possible consequent damage to the engine or transmission. On icy roads it may be advisable to select the "L" range.

Drive "D " This range provides for all normal driving conditions and gives automatic gear changing to first, intermediate and top gears. When travelling in other than top gear in this range engine braking is not available and, if necessary, make the change to the "L" range as outlined above.

Neutral "N " In this range the engine can be started and idled indefinitely. If it is necessary to tow the car for a short distance this range should be selected. See also page 6.

Park "P " This is virtually the same range as the "N" position, except that the transmission is mechanically locked. This complements the handbrake and should be engaged when parking on a steep hill. It cannot be engaged at speeds above 3 to 5 m.p.h. (5 to 8 k.p.h.).

The locking device remains engaged until the transmission takes up the drive, regardless of the selector lever position, and so obviates the need for holding the car on the brakes when restarting on a hill. If, however, the car is parked on a downhill gradient, it may be found necessary to temporarily engage reverse gear to release the locking device before the car will travel forwards. It may be necessary to hold the selector lever in the appropriate range until the lock disengages; the lever will then stay in the selected position.

Tyres These cars are fitted with 6.70-13 tyres. The pressures should be maintained at 24 lbs. per sq. in. (1.68 kg. per sq. cm.).

DRIVING THE CAR

Move the selector lever to the "P" or "N" position and start the engine in the normal manner: it cannot be started if the selector lever is in any other position. For normal driving, move the lever to the "D" position, release the handbrake and depress the accelerator. The car will instantly move away in first gear, automatically changing to intermediate and top gear, depending on the road speed and load requirements. With a small throttle opening the upward change will be made at a low speed, with a large throttle opening the upward change will be made at a higher road speed so the maximum acceleration available can be used. If the choke is used, see Para 2 Page 3, ease off the handbrake for a smooth start.

If it is necessary to run the engine for any period, as when carrying out adjustments, you must select the "P" or "N" range and fully apply the handbrake.

If extra power is required for hill climbing depress the throttle pedal past the normal wide open position to the "kick down" position, which is indicated by a hard spot in the pedal travel. Intermediate gear will be automatically engaged, but the car will stay in this gear as long as the pedal is depressed fully, even if it comes to a standstill. Should it be necessary to engage first gear, allow the speed to drop below 10 m.p.h. (16 k.p.h.) and momentarily fully release the throttle pedal. Alternatively, the change to first gear can be made below approximately 30 m.p.h. (48 k.p.h.) by moving the selector lever to the "L" position. This method should normally be adopted to prevent the engine labouring under load at excessively low speeds in second gear.

When descending very steep hills and it is required to use the engine as a brake, apply the footbrake to reduce the road speed below 30 m.p.h. (48 k.p.h.) and select the "L" range.

For maximum acceleration below approximately 45 m.p.h. (72 k.p.h.), as when overtaking, the accelerator pedal should be depressed beyond the normal wide open position to the kick down position, which is indicated by a hard spot in the pedal travel. The gearbox will change to intermediate gear for rapid acceleration and the change to top gear will be made automatically when the road speed exceeds approximately 55 m.p.h. (88 k.p.h.), or as the throttle pedal is released.

To Start the Engine

**Engine Idling—
Car Stationary**

**Climbing or
Descending Hills**

**Kick Down
Acceleration**

Stopping the Car To stop the car, release the throttle pedal and apply the brakes in the normal manner, keeping the selector lever in the " D " position. To drive away, release the brakes and depress the accelerator. If the vehicle is to be left unattended, select the " P " or " N " position and apply the handbrake.

Should there be any tendency for the car to creep forward when idling in traffic stops, apply the brakes : an unduly high engine idling speed can, however, contribute to this tendency.

Starting the Engine by Pushing Do not start the car by towing, as when the engine starts the car will be in gear and may collide with the towing vehicle. Place the selector lever in the " N " position, switch on the ignition and when the road speed is approximately 25 to 30 m.p.h. (40 to 48 k.p.h.), select the " D " range. Do not select the " L " range as this will drive the engine at excessive speed.

Towing The car must be towed with the selector lever in the " N " position. If the transmission is defective, the propellor shaft must be disconnected or removed to prevent further damage to the gearbox.

Rocking Out of Mud, Sand or Snow If it is found on soft surfaces that the car will not move due to wheel spin, it should be rocked backwards and forwards in an attempt to obtain a satisfactory wheel grip. To do this, select the " R " and " L " position of the lever with the accelerator pedal slightly depressed. To take advantage of each improvement in momentum the change to the " R " position must be made when the car is actually moving forward and vice versa. If the road wheel speed is above the equivalent of 3 to 5 m.p.h. (5 to 8 k.p.h.), reverse will not be engaged immediately and a light throttle opening only must be used to keep the speed below this figure.

CAUTION

When running the engine with the selector lever in any one of the driving positions and the rear wheels held stationary, all the energy supplied to the torque converter by the engine is changed to heat. To prevent overheating the gearbox lubricant the engine should only be allowed to idle under these conditions.

- 1.—Check the oil level every 1,000 miles (1,600 km.).
- 2.—With the car on a level floor, apply the handbrake and place the selector lever in the " L " position. Run the engine at idling speed until the gearbox reaches its normal working temperature.
- 3.—Switch off the engine, slowly remove the gearbox clip-stick (Fig. 2) and check the oil level. Use only a lintless rag to wipe the dipstick.
- 4.—Add oil if necessary to bring the level up to the full mark on the dipstick.
- 5.—Re-check the oil level as described above.
DO NOT OVERFILL THE GEARBOX AND DO NOT USE ANY BUT AN APPROVED GRADE OF LUBRICANT. Unsuitable oils may cause unsatisfactory operation of the gearbox.

To Check the Oil Level

It may be found advisable to allow your Dealer to carry out this operation but, should you desire to do it yourself, the following instructions should be closely followed and all precautions taken to ensure absolute cleanliness.

Draining and Refilling

- (1) Drain and refill the gearbox every 15,000 miles (24,000 kms). If the oil is drained immediately after a run it may be found to be quite hot and due care should be taken when removing the drain plug.
- (2) Apply the handbrake, place the selector lever in the " L " position and, if necessary, run the engine at idling speed until the gearbox reaches normal working temperature.
- (3) Switch off the engine, remove the drain plug on the left side of the gearbox sump and drain the gearbox.
- (4) Rotate the engine until the converter drain plug appears at the lower opening of the converter casing and remove the converter drain plug.
- (5) With the converter drain plug removed, remove the converter pressure take-off plug (Fig. 3).

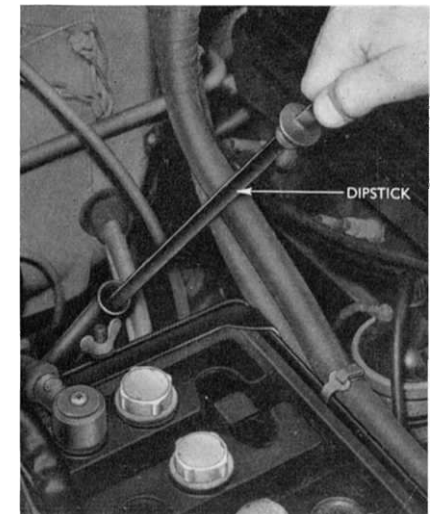


Fig. 2 Gearbox Dipstick

LUBRICATION

(6) After the oil has been drained, refit the converter drain plug, converter pressure take-off plug and the gearbox sump drain plug.

(7) Remove the fourteen bolts from the gearbox sump flange and detach the sump and gasket.

(8) Turn the filter retainer through 90°, detach the filter and thoroughly wash it to remove all foreign matter. **DO NOT WIPE THE FILTER OR SUMP WITH RAG.**

(9) Refit the filter securing it in place with the retainer.

(10) Fit a new gasket to the sump flange and refit the sump securing it in place with the fourteen bolts, which should be tightened to a torque of 10 to 13 lbs./ft. (1.38 to 1.79 kgm.).

DO NOT USE ANY FORM OF JOINTING COMPOUND TO RETAIN THE GASKET IN POSITION.

(11) Pour ten pints (5.7 litres) of approved grade of lubricant into the gearbox.

(12) Start the engine and allow it to idle for one minute with the selector lever in the "L" position to transfer oil from the gearbox to the converter.

(13) With the engine still idling and the selector lever in the "L" position, slowly add oil to bring the level up to the full mark on the dipstick. Approximately 15 pints (8.52 litres) are required to refill the gearbox and converter after draining. Stop the engine and quickly recheck the oil level.

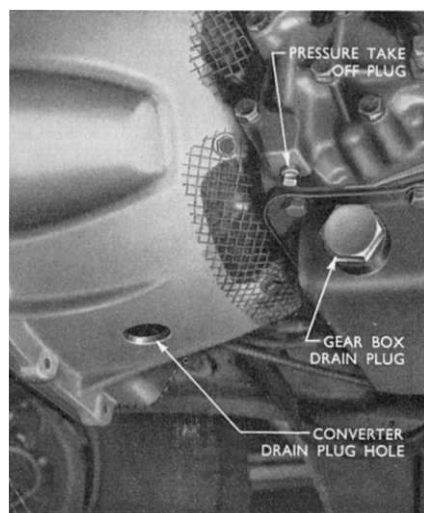


Fig. 3 **Draining the Gearbox**