
**Vol. 1—No. 1** **November, 1946**

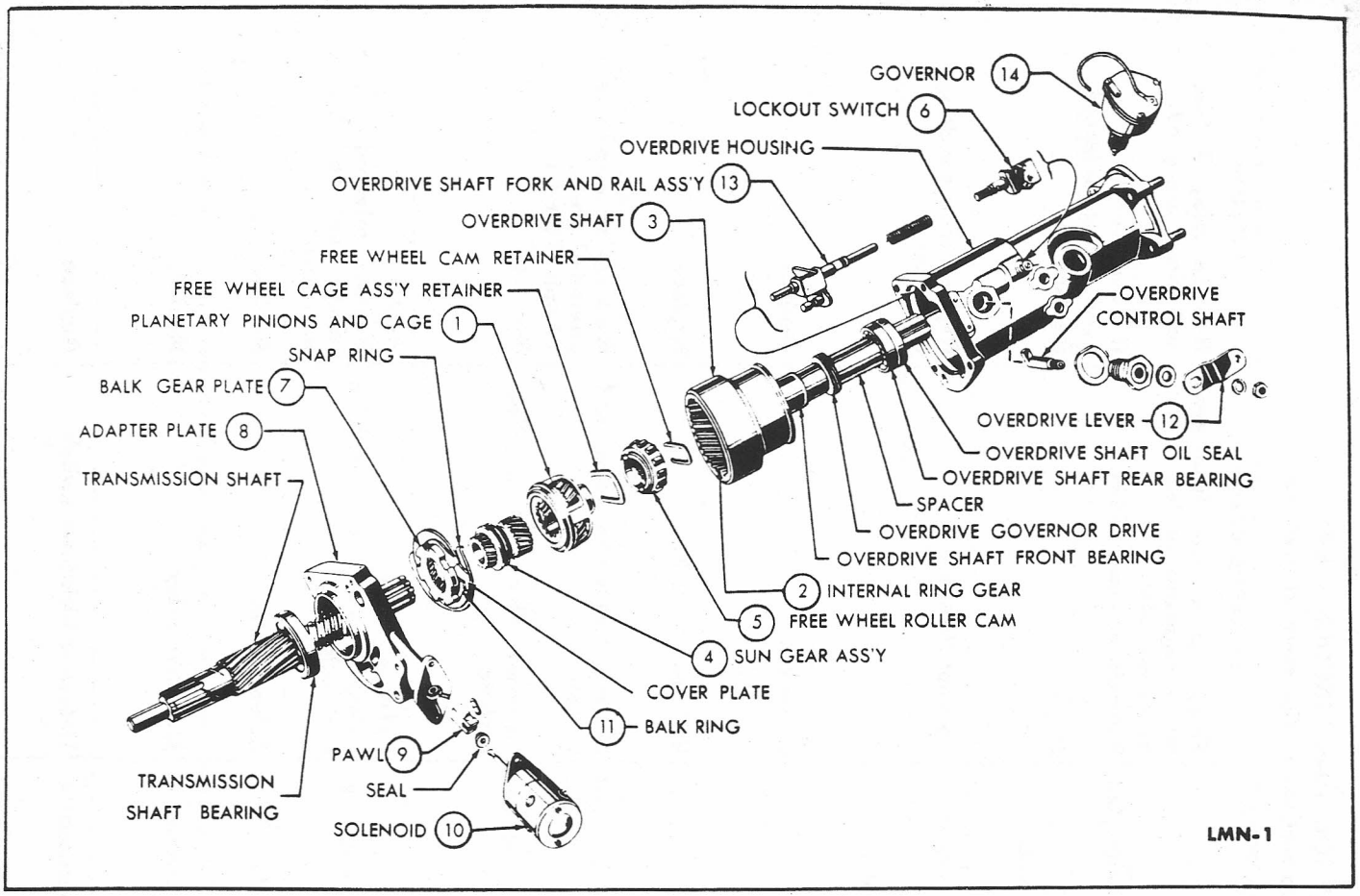
## INTRODUCTION

This is the first in a new series of the "Service News" which will be issued monthly in the interests of the Lincoln-Mercury Service Organization.

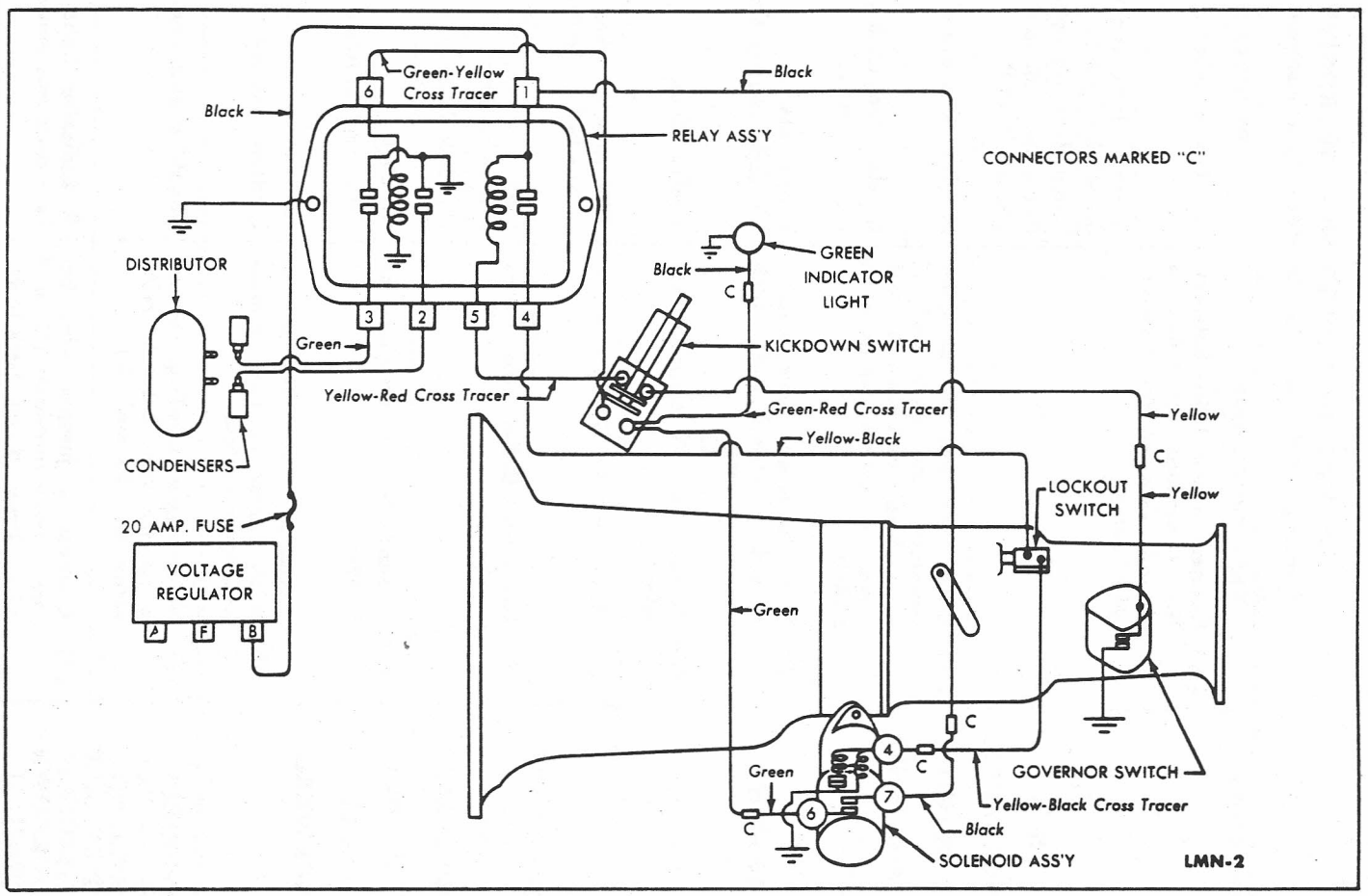
Text and illustrations in the "Service News" will be devoted to the Lincoln and Mercury cars exclusively. Articles will be published dealing with service policies, repair operations, uses of tools and equipment, care and maintenance, and pertaining to the manufacture and inspection of various parts and assemblies entering into the building of the Lincoln and Mercury cars.

Dealers doing Lincoln-Mercury service work will find that a careful study of the "Service News" by their service personnel will prove of great assistance in increasing the efficiency of their service organization. Likewise the descriptive matter on the manufacture and inspection of the Lincoln and Mercury will prove beneficial to their salesmen. It is, therefore, necessary that the news reach all personnel concerned.

It is our aim to make the Lincoln-Mercury "Service News" as replete with information and as interesting as possible. As an interchange of ideas is often invaluable, outstanding service suggestions worthy of publication, submitted by dealers or their personnel, will be given consideration.




**TRANSMISSION OVERDRIVE—Fig. 1**




**SCHEMATIC OVERDRIVE WIRING DIAGRAM—Fig. 2**

## OPERATING PRINCIPLES (Fig. 1)

The Overdrive unit is attached to the rear of the transmission. Overdrive is accomplished by planetary gearing, which consists of a central sun gear (4) surrounded by three planetary pinions (1) and an internal ring gear (2).

To operate the car in OVERDRIVE, the Overdrive hand control is pushed "in". Pawl (9) in adapter plate (8) is slid into engagement of one of the six notches in the balk gear plate (7) by means of a solenoid (10) after the car reaches a speed of approximately 25 MPH.

When the car speed falls below approximately 22 MPH., the governor switch (14) breaks the electrical circuit to the solenoid (10). Pawl (9) is withdrawn from the balk gear plate (7) by a spring contained in the solenoid (10), causing free wheel cam rollers to lock between free wheel cam (5) and their outer rolling surface of the overdrive shaft (3) resulting in CONVENTIONAL drive, as the entire gear set rotates as one unit.

## GOVERNOR SWITCH (Fig. 2)

The governor which is located on the left side of the overdrive housing contains a switch normally open, which CLOSES at approximately 25 MPH., and OPENS at approximately 22 MPH. When this switch is closed, it causes an electrical current to flow which energizes the overdrive solenoid.

## SOLENOID (Fig. 2)

The solenoid engages and disengages the overdrive by a stem which is actuated by the energizing and de-energizing of the solenoid. It may be removed from the overdrive adapter by separating the three wires at bullet connectors and by removing the cap screws from mounting flange. Turn the solenoid about a quarter turn to disengage the stem from the pawl and withdraw.

The stem of the solenoid has a ball end flattened on opposite sides so that it may be engaged to the pawl in the overdrive adapter.

When mounting the solenoid, use the reverse process of removing. To make certain the solenoid stem has become engaged to the pawl, line the solenoid flange with the mounting holes and attempt to pull it off. If the stem is properly engaged, the only noticeable motion will be the resistance of the solenoid spring.

## KICKDOWN SWITCH (Fig. 2)

The kickdown switch consists of two separate switches, an upper and a lower, enclosed as a single unit. It is located under and actuated by the accelerator pedal. When additional power is required, (above 25 MPH Overdrive) the accelerator pedal is pressed all the way down. The upper switch breaks the electrical circuit and de-energizes the solenoid; the lower switch completes the electrical circuit through the relay momentarily interrupting the ignition circuit, thus breaking engine torque permitting release of sun gear, resulting in Conventional drive.

The unit will remain in Conventional drive until the accelerator pedal is released, thus slowing down the engine and permitting the Overdrive to become engaged.

## RELAY (Fig. 2)

The relay consists of two units; one unit closes a set of contacts for interrupting the ignition circuit and the other for completing the circuit to the solenoid.

## LOCKOUT SWITCH (Fig. 2)

The lockout switch located on the Overdrive housing opens the circuit when the transmission is in reverse or when the Overdrive hand control is pulled out.

## SERVICE INSTRUCTIONS — OVERDRIVE CONTROL 1946 LINCOLN CARS

**Servicing of this unit can be done by adjustment and corrections to the external controls**

| CONDITION | TEST PROCEDURE | RESULTS OF TEST | PROBABLE CAUSE | REMEDY |
|---|---|---|---|---|
| IF OVERDRIVE DOES NOT ENGAGE WHEN DRIVEN ABOVE 25 MPH. | (A) Connect a test lamp between No. 4 terminal on relay to ground. Ground No. 5 terminal of relay. | No click at relay. | Fuse, relay, or wire from generator regulator to No. 1 terminal on relay. | Replace relay if fuse and wiring are good. |
| | | If relay clicks and lamp lights, but no solenoid click. | Solenoid or connections. | If connections are good, replace solenoid. |
| | | Lamp does not light. | Relay. | Replace |
| | | Relay and solenoid both click, (Apply Test B). | | |
| | (B) Break Governor wire at bullet connector and press end of wire which enters loom against screw terminal of lockout switch. | If relay does not click or vibrate. | Lockout Switch. | Replace after checking connections. |
| | | If relay does click or vibrate (Apply Test C). | | |
| | (C) With Governor wire disconnected ground end which enters the loom. | If relay clicks. | Governor. | Replace |
| | | No click (Apply Test D). | | |
| | (D) Ground No. 5 terminal on relay. | If relay clicks. | Kickdown switch. | Replace |
| CAR STAYS IN OVERDRIVE WILL NOT ROLL BACKWARDS | (E) Disconnect No. 5 wire at relay. | Click in relay when wire is removed or touched to terminal. | Ground between relay and Governor. | Repair or replace grounded parts. (Apply Test F) |
| | (F) Disconnect Bullet connector at Governor. | Click in relay and solenoid releases when disconnected. | Governor shorted or points sticking. | Replace |
| | | No click (Apply Test G). | | |
| | (G) Ground No. 5 terminal on relay. | No click. | Relay defective. | Replace |
| | | Click and indicator light stays on. | Solenoid stuck or overdrive unit locked. | Replace solenoid and check pawl for free movement. |
| | (H) With engine idling operate kickdown switch. | Ignition cuts out completely. | Solenoid stuck. | Replace |
| OVERDRIVE OPERATIVE. WILL NOT DISENGAGE THROUGH KICKDOWN SWITCH | (I) While engine is idling, connect a jumper wire between relay terminals (6) and (1). | Should engine continue running. | Defective relay. | Replace |
| | (J) Connect a jumper wire between relay terminals (6) and (1). Press down Kickdown. | If Indicator light in speedometer face does not come on. | Defective kickdown switch. | Replace |