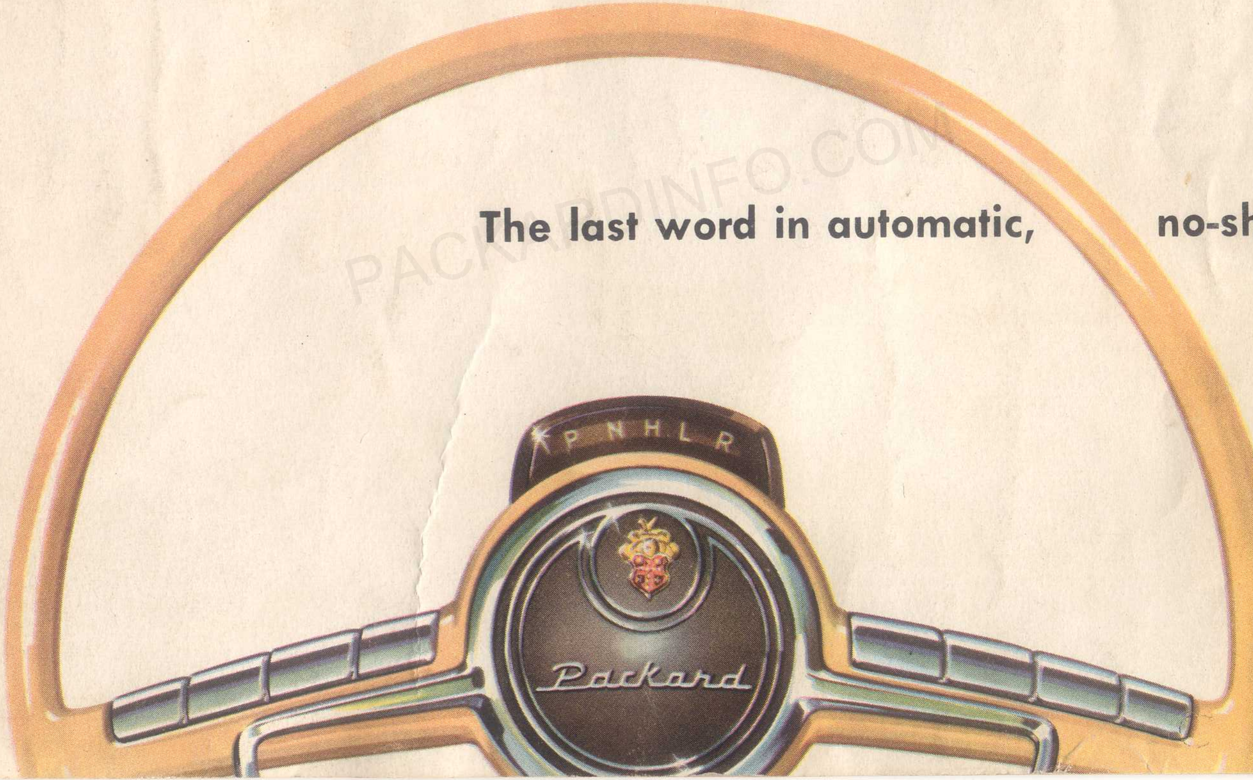
NEW PACKARD

Ultramatic Drive

The last word in automatic, no-shift control!



Packard Ultramatic Drive is now standard equipment on America's most luxurious motor car . . . the 160-horsepower Packard Custom. *As production of this precision-built unit gradually attains higher volume, Packard Ultramatic Drive will be offered on other models in the Packard line as optional equipment, at extra cost.*

New in

principle . . . new in performance!

—*there's never been anything like*

PACKARD *Ultramatic Drive*

Packard Ultramatic Drive goes beyond all earlier types of automatic drives in performance. And the reason is simple . . .

It's because this new drive sensation—born of a 16-year Packard development and test program—goes beyond the others in basic *principles.*

Packard Ultramatic Drive is the last word in simplicity . . . in smoothness . . . and in all-range, all-driving-conditions efficiency. It gives you more *responsive,* more *flexible,* more *positive* car control than you've ever enjoyed before.

How Packard Ultramatic Drive measures up to these sweeping claims is clearly and briefly told in the pages that follow.

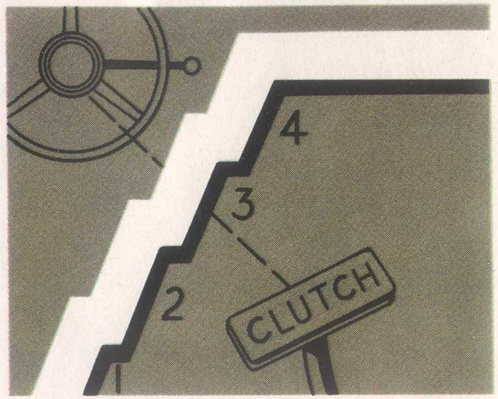
How Packard *UltramaticDrive* compares with earlier

... in basic principles

Patents on automatic drive units date back as early as 1904. But it was not until the late 1930's that modern automatic drives were offered, in volume, to the motoring public.

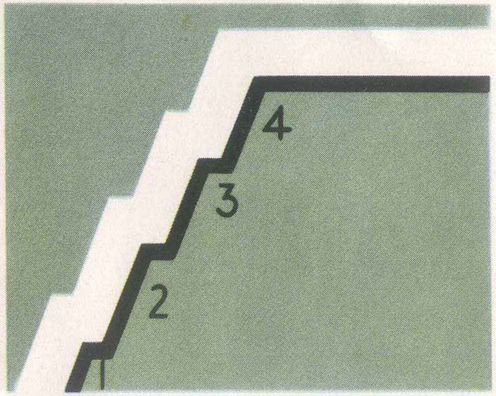
Of today's three most widely used passenger car drive designs, two were introduced in prewar years and are often described as "step-type" drives. The third, introduced after the war, might be described as a "curve-type" drive.

These simple diagrams show you how those drives compare, in principle, with Packard Ultramatic Drive.

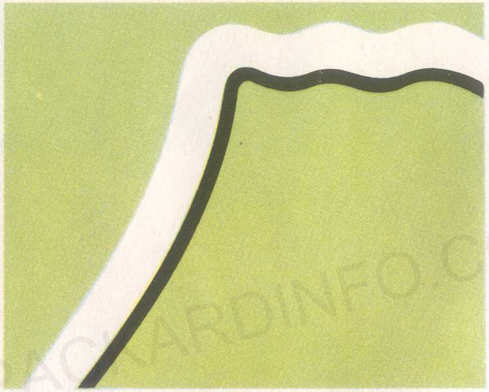


DRIVE "A": Introduced in 1939. Employed a fluid coupling plus conventional clutch, operated by foot pedal. Two-speed semi-automatic transmission provided four forward speeds. Clutch pedal and gear shift lever had to be used to shift from low-range to high-range, but no shifting was required in normal driving. In either range, it was necessary to release pressure on the accelerator in order to change gear ratios.

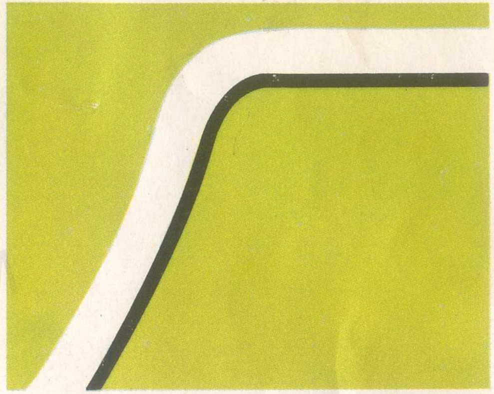
drives



DRIVE "B": Introduced in 1940. Employed a fluid coupling plus four-speed automatic transmission. No clutch pedal. The fluid coupling transmitted the engine's "twisting" effort (torque) directly to the transmission, where it was stepped up or down through a system of planetary gears. Gearshifting was performed entirely by the transmission.



DRIVE "C": Introduced in 1948. Employed a hydraulic torque converter, which provides an infinite range of "gear ratios" without use of gears, and thus eliminates need for an automatic transmission. Two-speed transmission offered a choice of low range or high range operation. No clutch pedal. In this design, the car was driven at all times through the torque converter—at cruising speeds as well as during acceleration.



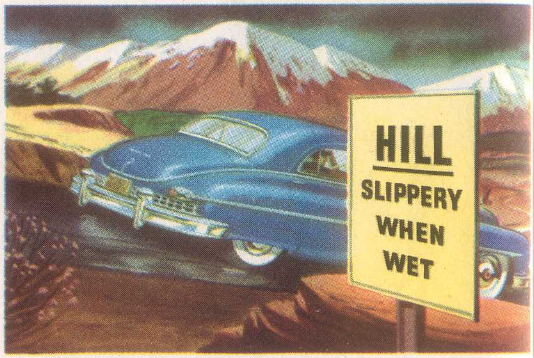
PACKARD ULTRAMATIC DRIVE: Introduced in 1949. Employs an advanced design torque converter for smooth, rapid acceleration—and solid mechanical drive for slippage-free cruising. Dual-range transmission offers a choice of low range or high range operation—with torque converter acceleration, and solid mechanical-drive cruising, in each range. No clutch pedal. Automatic controls perform the switch from torque converter to mechanical drive.

How Packard *Ultramatic Drive* compares with earlier drives . . .

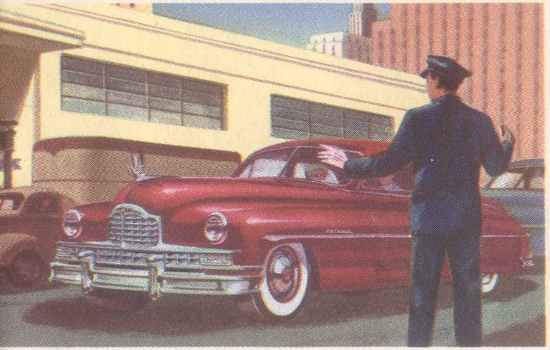
. . . in performance

Packard Ultramatic Drive combines the fast fluid smoothness and efficiency of torque-converter *acceleration* with the positive, slippage-free advantages of solid mechanical drive at *cruising* speeds. It does away with the clutch pedal—and eliminates gear-shifting, either by the driver or the transmission. It simplifies your driving on every count—and gives you more responsive, more flexible, more positive control. Here are its principal advantages . . .

SIMPLICITY: No clutch pedal. Nothing new to learn. Just set the selector lever at "H", step on the gas, and steer!



ALL-RANGE SAFETY: No involuntary, unexpected "down-shifts" on slippery pavement. Smooth, positive engine braking, when needed, downhill.

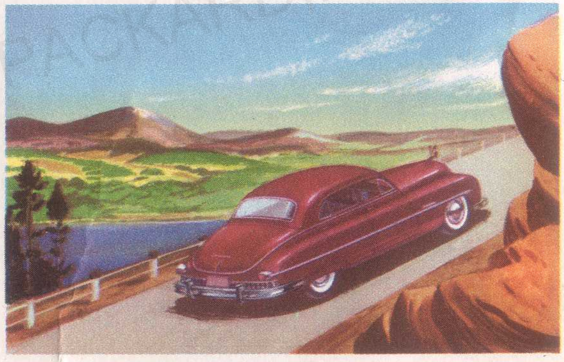


SMOOTHNESS: No gear-shifting, either by the *driver* or by the *transmission.* No jerking, ever, in acceleration or deceleration.

THRIFTY EFFICIENCY: No gasoline-wasting slippage at cruising speeds. Simpler in design and construction. Trouble-free operation for the life of the car.

QUIETNESS: No "clunking"—because there's no gear shifting anywhere, at any time. No annoying "racing engine" sensation—because there's no slip while cruising.

MORE RESPONSIVE CONTROL: No slip while cruising. No lag, waiting for gears to shift. For instant bursts of safety-sprint acceleration—just "tramp down"!



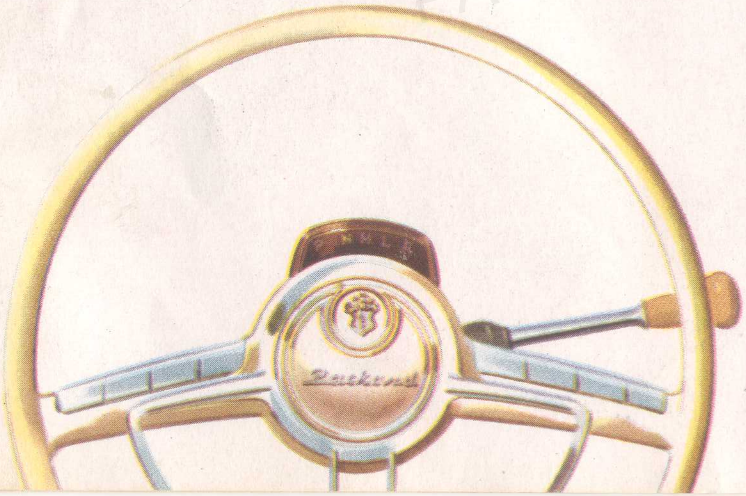
MORE POSITIVE CONTROL: No sluggishness on steep grades. No over-heating of the drive mechanism during long climbs.

MORE FLEXIBLE CONTROL: Easy change from Forward to Reverse . . . *instantly* . . . without clashing. Yes—in winter driving, you can rock the car in snow!

X-Ray view of the advanced features of Packard *Ultramatic Drive*

Automatic controls. Automatic, yes—but they never try to "out-smart" the driver. If his foot pressure on the accelerator is light, the controls will switch from torque converter to mechanical drive at 15 miles per hour. If pressure on the accelerator is heavy, the controls will switch from torque converter to mechanical drive at 55 miles per hour. If pressure on accelerator is released momentarily, at any point between 15 and 55 miles an hour, the controls will switch immediately from torque converter to mechanical drive.

If driver "tramps down", at any cruising speed below 50 miles an hour, the controls will switch instantly from mechanical drive to torque converter for rapid acceleration. (At cruising speeds *above* 50 miles an hour, direct drive acceleration is superior to torque converter acceleration.)

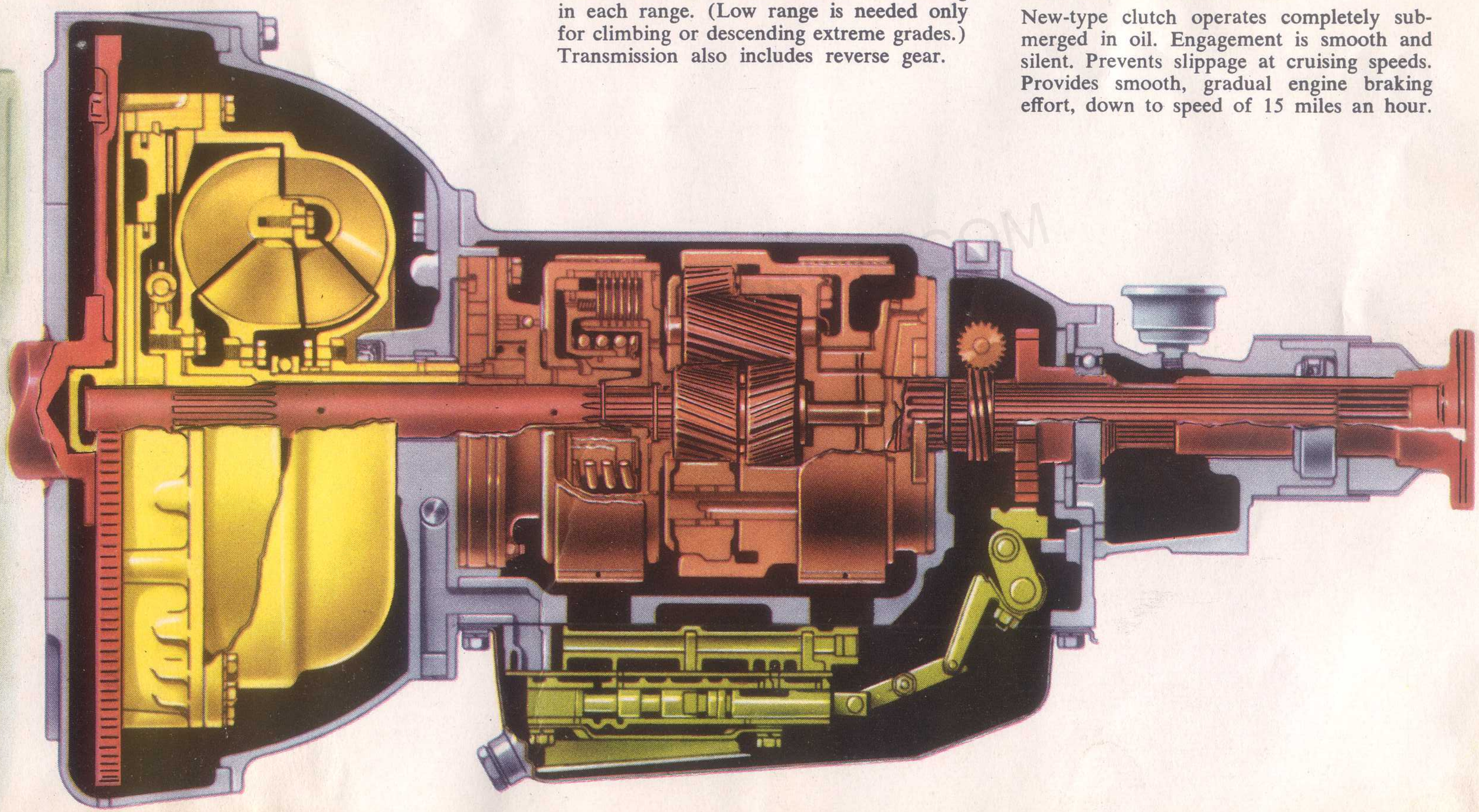


Selector lever. Settings for "Park", "Neutral", "High Range", "Low Range", and "Reverse".

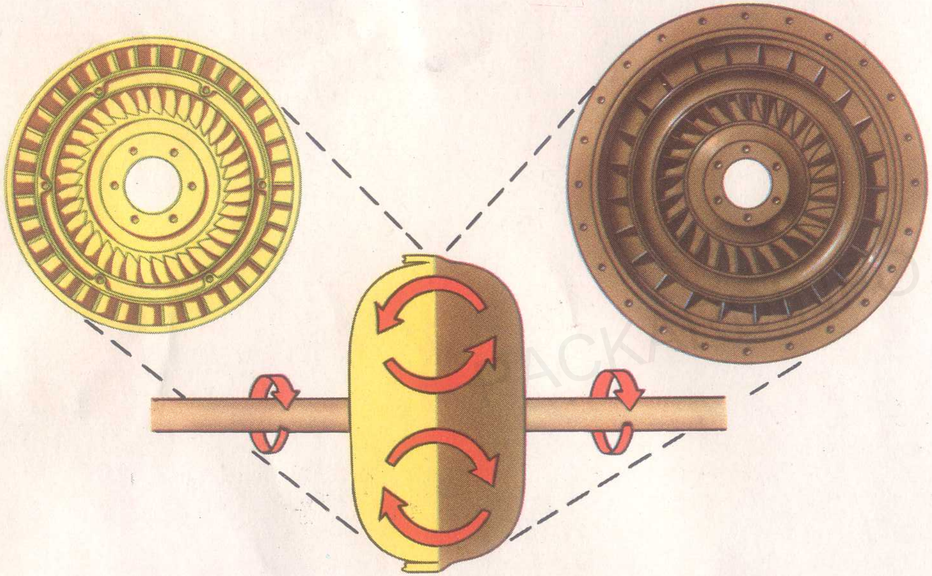
Advanced design torque converter.
Provides an infinite range of "gear ratios" without gears. Multiplies engine torque as much as two and one-third times during acceleration. Used only for acceleration, when varying degrees of slippage are desirable. Not used for cruising.

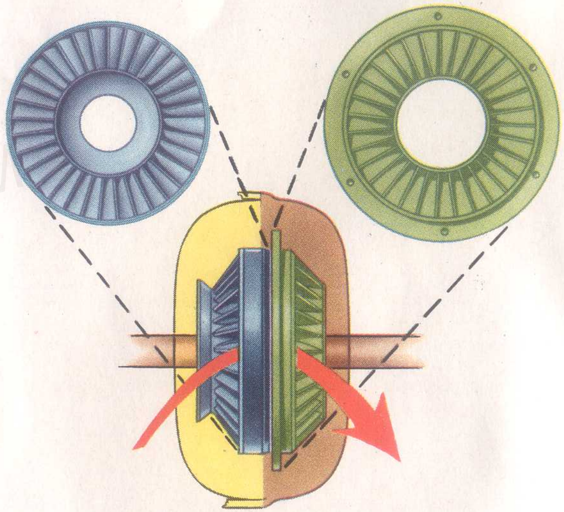
Dual-range transmission.
Gives driver a choice of low range or high range operation—with torque-converter acceleration and solid mechanical-drive cruising in each range. (Low range is needed only for climbing or descending extreme grades.) Transmission also includes reverse gear.

Mechanical direct drive.
New-type clutch operates completely submerged in oil. Engagement is smooth and silent. Prevents slippage at cruising speeds. Provides smooth, gradual engine braking effort, down to speed of 15 miles an hour.



How to understand the torque converter principle . .

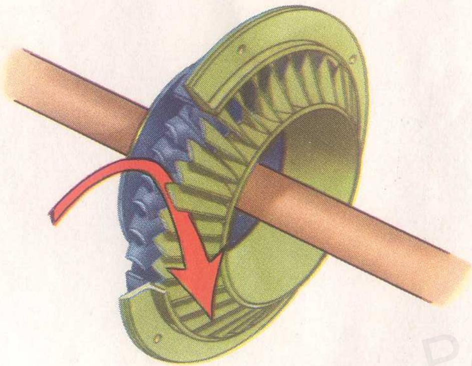


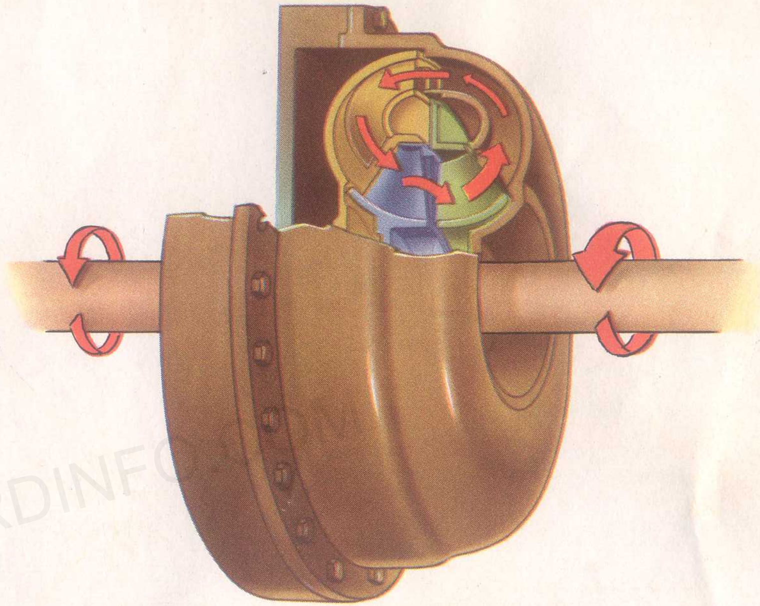


1. The torque converter, in shape, resembles a fluid coupling. Two bowl-shaped members, whose inner sides are lined with vanes, face each other in an oil-filled chamber. One member, the pump (or *driver*), rotated by the engine, directs the oil against the vanes of the facing member, called the turbine (or *follower*).

2. To change the fluid coupling into a torque converter—so as to *multiply* the "twisting effort"* or torque of the engine—a *reactor* unit is placed between the pump (or driver), and the turbine (or follower).

. in 4 easy lessons





3. The vanes of the reactor pick up the flow of oil from the turbine (or follower), and "curve" the oil's direction of flow into a forward direction to step up its velocity to assist the pump (or driver).

4. The reactor assists the pump (or driver) in making the oil *"work harder"* while it is traveling through the turbine (or follower). By doing so, it multiplies the engine torque*.

* *In Packard Ultramatic Drive this "twisting effort" is multiplied approximately two and one-third times.*

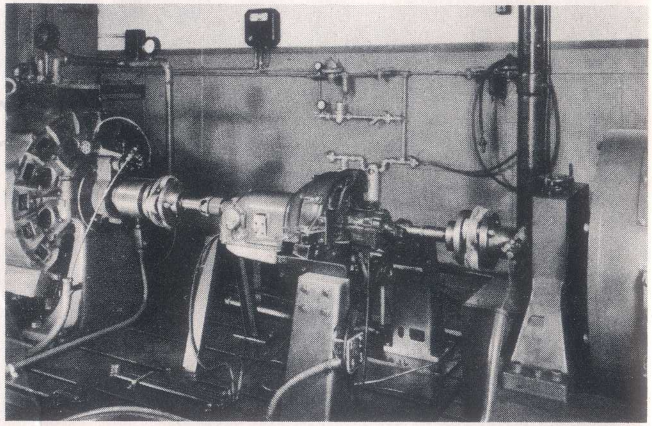
HISTORICAL NOTE: The torque converter principle was put to work as early as 1905, in a marine application. Later it was used in industrial and heavy vehicle applications.

Background story of Packard *Ultramatic Drive*

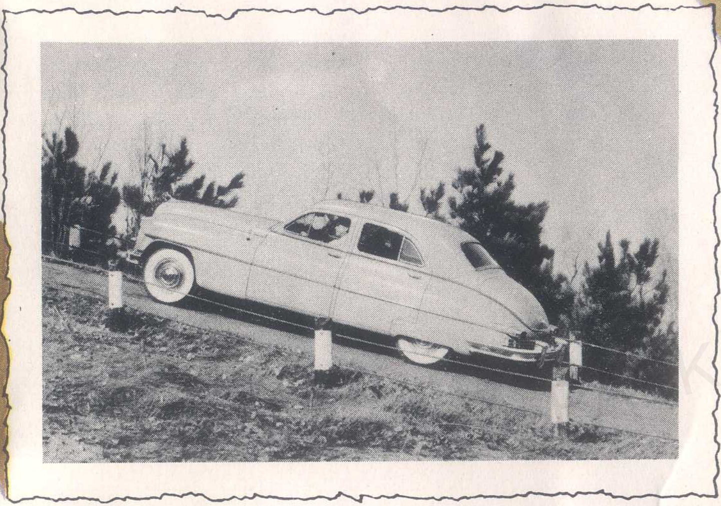
Behind today's sensational Ultramatic Drive is a story that covers a quarter-*century!*

During that period, Packard has designed, built, and tested numerous types of automatic drive units. History shows that Packard obtained its first automatic drive patent in 1924—and that its first patent on a unit embodying the principles of today's Ultramatic Drive was granted in 1934.

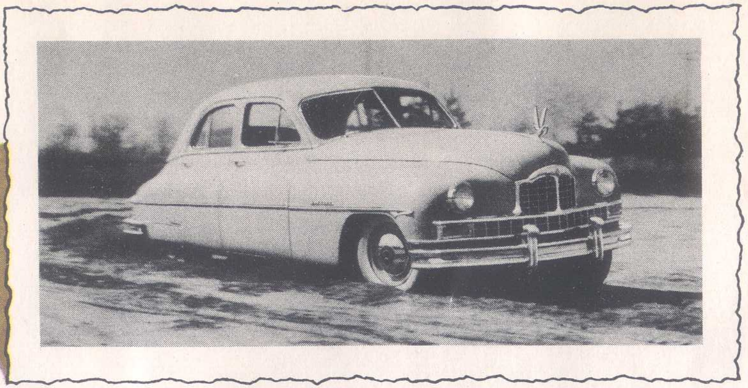
Packard Ultramatic Drive ran a gauntlet of grueling tests in the laboratory, on the 504-acre Packard Proving Grounds, and on roads throughout the United States. Some typical tests are pictured on these pages.



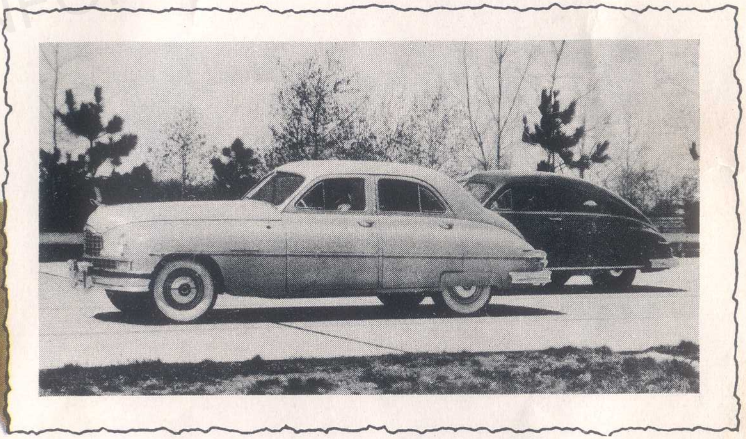
Efficiency test: Use a huge double dynamometer (Cost $35,000) to get exact measurements of the energy that goes in and the energy that comes out of the Packard Ultramatic Drive.



Flexibility test: Bring car to a complete stop on a 38% hill. Then move smoothly away again without any engine-stalling.

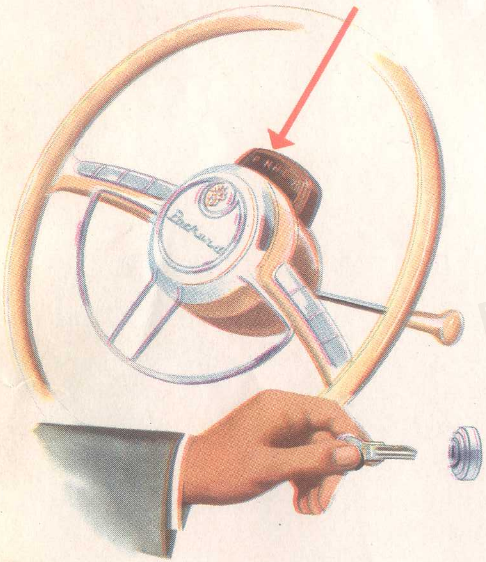


Durability test: Pull out of deep sand as shown without chatter.

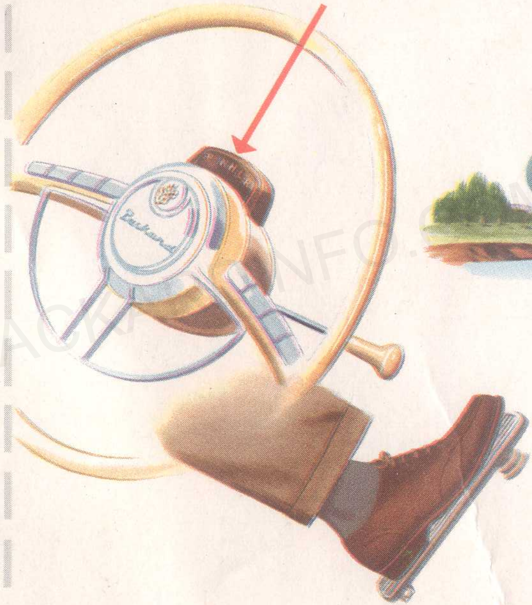


Responsiveness test: Compare smoothness and responsiveness of Packard Ultramatic against other drives under all conditions.

Now . . . you're ready to go for a ride with Packard



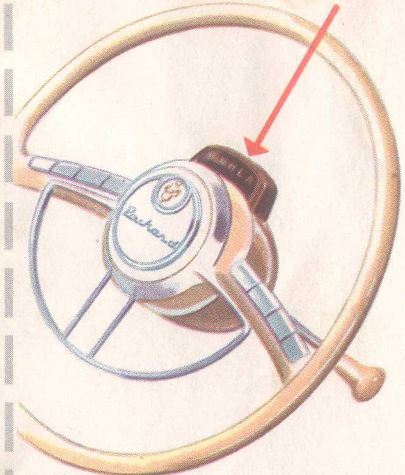
To start, just move the selector lever to "N" (Neutral) or "P" (Park). For safety's sake, the starter will not function when the selector lever is in any other position.



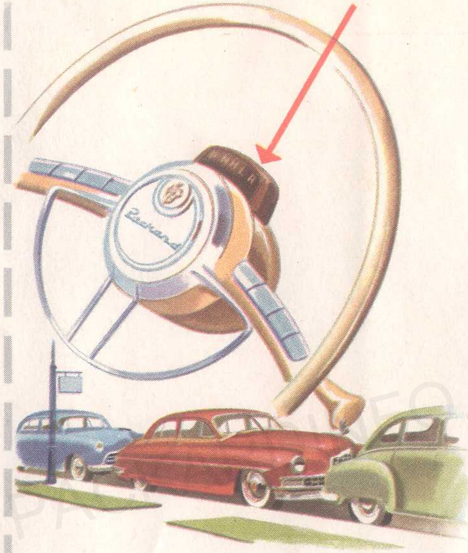
After starting the engine, move selector lever to "H" (High Range) and step on the gas. Under all normal driving conditions, there's no need to move the lever from the "H" position.

For instant bursts of safety-sprint acceleration—just "tramp down" on the accelerator. To stop the car, merely release the accelerator and step on the foot brake pedal. In decelerating to a stop, engine braking effort is smooth, gradual. The switch-back from direct drive to torque converter occurs when speed drops below 15 miles per hour.

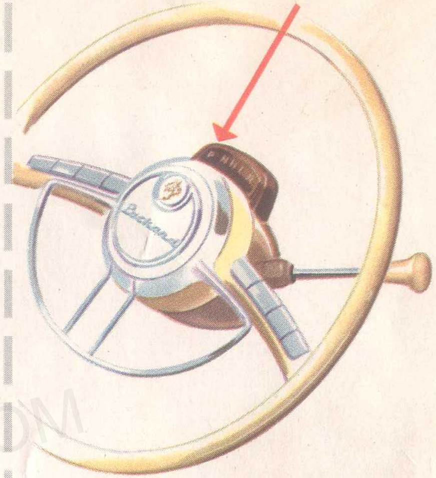
Ultramatic Drive



For driving up and down very steep hills . . . or for driving on sandy or muddy roads, move the selector lever to the "L" position. In this low range (equal to 2nd gear) you still enjoy the advantages of torque converter acceleration, and mechanical drive cruising.



To reverse for parking, bring the car to a stop. Move the selector lever to the "R" position; then press the accelerator. To move forward again, simply step on the brake, bring the car to a stop. Move the selector lever to "H" and press the accelerator.



For safe parking on hills or steep inclines, simply bring the car to a complete stop and move the selector lever to "P" (Park) and turn off the ignition key. When the lever is at "P", the drive unit is "locked" to the frame of the car and the rear wheels are rigidly braked.

And what about service needs?

The simplified design and precision manufacturing of Ultramatic Drive reduce maintenance requirements to the vanishing point. Your Packard serviceman simply checks the oil level every 1,000 miles and changes oil about once a year. This maintenance can be performed during engine oil changes. What's more, it can be performed from *underneath* the car. No need for a mechanic to step inside the car.

Questions and Answers

about Packard *Ultramatic Drive*

Q: What are the chief differences between Packard Ultramatic Drive and other widely used drive designs?

A: Compared with all earlier drive designs, Packard Ultramatic Drive is more responsive, more flexible, more positive. (See pages 4, 5, 6, 7.)

Q: What are the principal parts of Packard Ultramatic Drive?

A: Advanced design torque converter; new type of solid mechanical drive; dual-range transmission; automatic controls. (See pages 8, 9.)

Q: At what speed does Packard Ultramatic Drive switch from torque converter to mechanical drive?

A: The switch is made at speeds as low as 15 m.p.h. or as high as 55 m.p.h.—or at any point in between, depending on the amount of acceleration you want. (See pages 8, 9.)

Q: Can I have torque converter acceleration at cruising speeds?

A: Yes. At any speed below 50 m.p.h., just "tramp down." (At cruising speeds above 50 m.p.h., the torque converter isn't needed, because it will not improve direct drive acceleration.)

Q: Will the torque converter overheat during sustained hill-climbing?

A: No, because in Low Range, mechanical drive is available for extended hill-climbing.

Q: Is there any slippage in Ultramatic Drive?

A: Yes and no. During acceleration, varying degrees of slippage are desirable —for the sake of smoothness, and to prevent damage to other parts of the car —and the torque converter permits such slippage. At cruising speeds, solid mechanical drive prevents slippage.

Q: Can the engine be used as a brake during deceleration?

A: Yes. Packard Ultramatic Drive remains in solid mechanical drive until speed drops below 15 m.p.h. Engine braking effort is smooth and gradual.

Q: In case of battery failure, can a car equipped with Packard Ultramatic Drive be pushed to start?

A: Yes. And it should be *pushed*—not *pulled*—because when the engine starts, the car will accelerate momentarily.

Q: Can a car equipped with Packard Ultramatic Drive be rocked in deep snow?

A: Yes.

Q: If any adjustments are needed, can they be performed at any Packard dealer's service station?

A: Yes. (See page 15.)

Specifications, designs, and prices subject to change without notice.

PACKARD MOTOR CAR COMPANY • DETROIT 32, MICHIGAN

Litho in USA