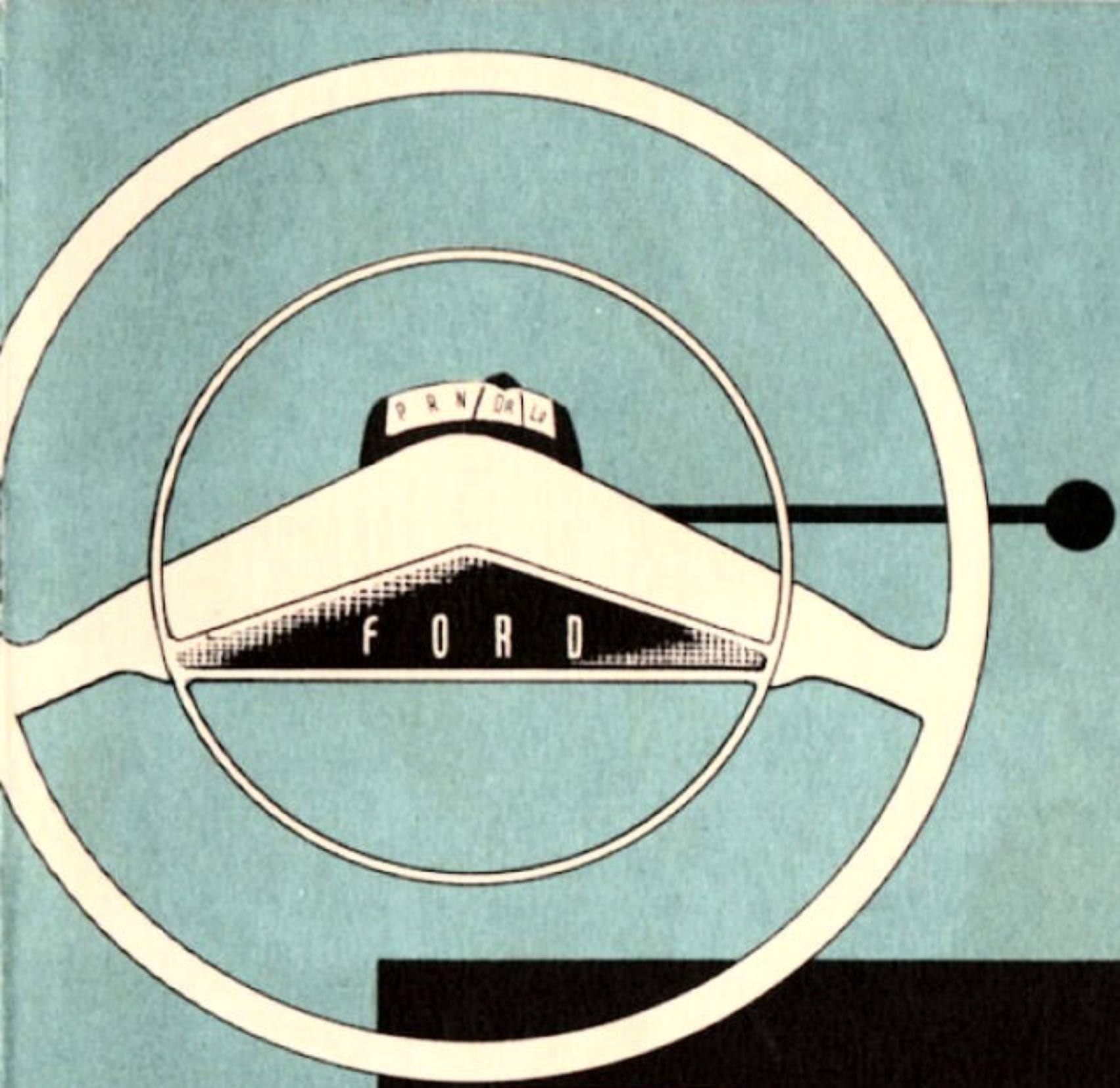


Fordomatic DRIVE

Finest for efficient

and effortless driving

THE *Fordomatic* DRIVE

WITH THE INTRODUCTION of the Fordomatic Drive, Ford is making available to the motoring public the automotive industry's finest achievement in automatic transmission engineering.

Fordomatic Drive has been under development for many years during which time the basic design has been tested, studied and compared with automatic transmissions originating both in this country and abroad. Fordomatic owners very definitely will benefit by these years of engineering study and research which place the new Fordomatic Drive well ahead of most automatic transmissions. And the comparative table on page 23 provides substantial evidence of that fact.

Fordomatic Drive is designed for use with Ford V-8 and Ford Six engines. This means that it is not necessary for you, as a Ford owner, to buy a larger, or oversized engine in order to get automatic power transmission—Ford engines and Fordomatic Drive are engineered to operate together as a perfect power unit.

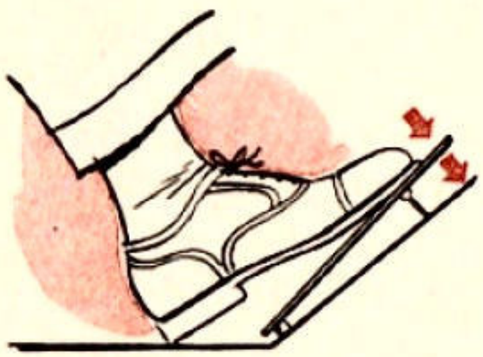
Fordomatic Drive is soundly built for long life, dependable and economical performance and trouble-free operation. Fordomatic Drive brings to today's motoring a new conception of safe, easy and pleasurable driving.

But words cannot do justice to the superior performance qualities of the Fordomatic Drive. You must drive it to appreciate it fully. If you haven't already done so, see your Ford Dealer now and arrange for the greatest thrill yet . . . a "Test Drive" in the '51 Ford with Fordomatic Drive.

Fordomatic MAKES DRIVING EASIER FOR YOU

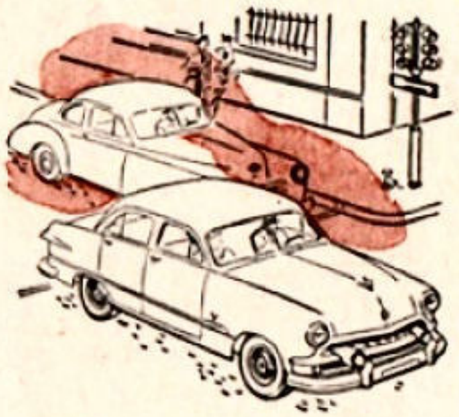
The Fordomatic Drive sets a new high standard in downright driving pleasure. It takes the work out of operating a car. It helps you to be a safer driver. And it gives you an entirely new experience in smooth-surging acceleration.

All you do is Step to Go . . . Step to Stop



Fordomatic Drive eliminates the conventional clutch and gearshift lever altogether. The unique five-position Semaphore Selector on the steering column has Park (P), Reverse (R), Neutral (N), Drive (DR) and Low (LO) positions. For all normal forward driving the selector lever is set at the drive (DR) position and you control the movement of your car with the accelerator and brake. When you want to go, you step on the gas—when you want to stop, you step on the brake . . . it's as simple as that!

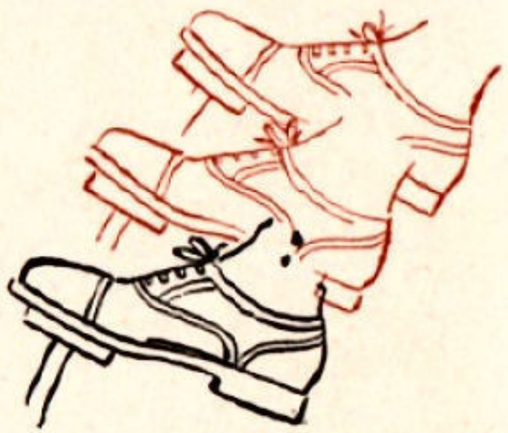
Automatic intermediate gear assures quicker starts —more flexible performance



With selector in drive (DR) position the Fordomatic Drive starts your car in intermediate gear—then automatically advances to high gear at from 17 to 65 miles per hour, depending upon how far you depress the accelerator pedal. This gives you quicker automatic "getaway" than is possible with any drive not having an automatic intermediate gear. When on a hard pull, such as in climbing a very steep hill, the Fordomatic Drive goes back to intermediate gear automatically when car speed falls to about 20 miles per hour.

Fordomatic Drive saves you countless hand and foot operations

Did you ever stop to think that it takes 14 separate hand and foot operations to shift into low, then into second, and finally into high gear—when starting a car with a conventional transmission? That means you must make literally hundreds of these hand and foot operations every hour you drive under normal conditions. But with the Fordomatic Drive set for normal driving, there is only *one* operation needed to get going . . . *just step on the gas!* It takes 92% of the work out of driving! The extra effort the Fordomatic Drive saves you reduces fatigue—adds immeasurably to your driving pleasure.



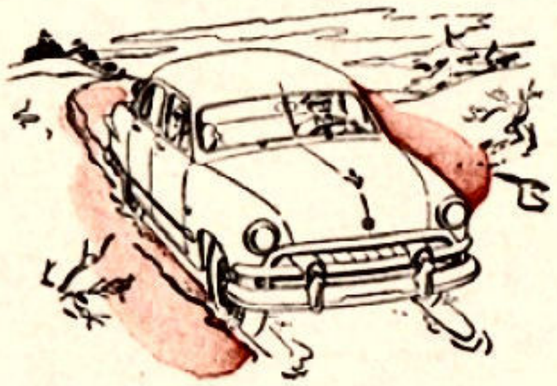
No jerky starts ...no jumping at low speeds

You never get jerky starts because your car is whisked away on the Fordomatic "cushion of oil" so smoothly that you seem to be floating. And you can bring your car right down to a "walk" with none of the jumping or chattering you get from most cars equipped with an ordinary transmission. That's because, whether you're creeping or driving at highway speeds, the Fordomatic Drive feeds exactly the right amount of power to the wheels of your car for smoothest performance.

Torque converter combined with automatic transmission gives velvet-smooth performance under all driving conditions

The Fordomatic Drive is composed of two units: a torque converter and an automatic gear box which work together . . . and transmit power to the rear wheels of the car through a "cushion of oil" that assures velvet-smooth performance under all driving conditions. The transmission automatically changes gear ratios as needed. And the torque converter provides an additional and infinite number of transmission ratios that vary automatically, as needed, to maintain exactly the right power balance between the engine and driving wheels of your car.

It's easy to "rock" your car in snow or sand with the Fordomatic Drive



If it ever becomes necessary to "rock" your car to get out of sand, mud or snow, you can do it easily. Just hold the accelerator pedal down for moderate engine speed and move the selector lever back and forth between the reverse (R) and low (LO) positions.

You can park your car "in gear"

When you want to park your car, all you have to do is move the selector lever to the park (P) position. This positively locks the rear wheels and prevents them from turning.

You can get a "push start" at low speed with the Fordomatic Drive

Should it ever become impossible to use the selfstarter because of a dead battery, or any other reason, your car can be started by pushing it at a relatively low speed. All you have to do is leave the selector lever at the neutral (N) position until the car reaches a speed of approximately 15 miles per hour. Then turn the ignition key to "ON," move the Selector to the low (LO) position and step on the gas. The Fordomatic Drive allows push starts at a considerably lower speed than many other automatic transmissions.

Fordomatic BOOSTS PERFORMANCE —OPERATES ECONOMICALLY

The Fordomatic Drive keeps engine speed down for good gas economy

The engine of a Ford Car has to turn over 3.73 times for each revolution of the rear wheels in direct drive with an ordinary transmission. But at normal cruising speeds with the Fordomatic Drive, the engine turns over just slightly more than 3.31 times for each revolution of the wheels. This results in good gasoline economy—allows the engine to operate quietly—reduces engine wear and tear.

Fordomatic Drive selects transmission ratios scientifically for topnotch performance

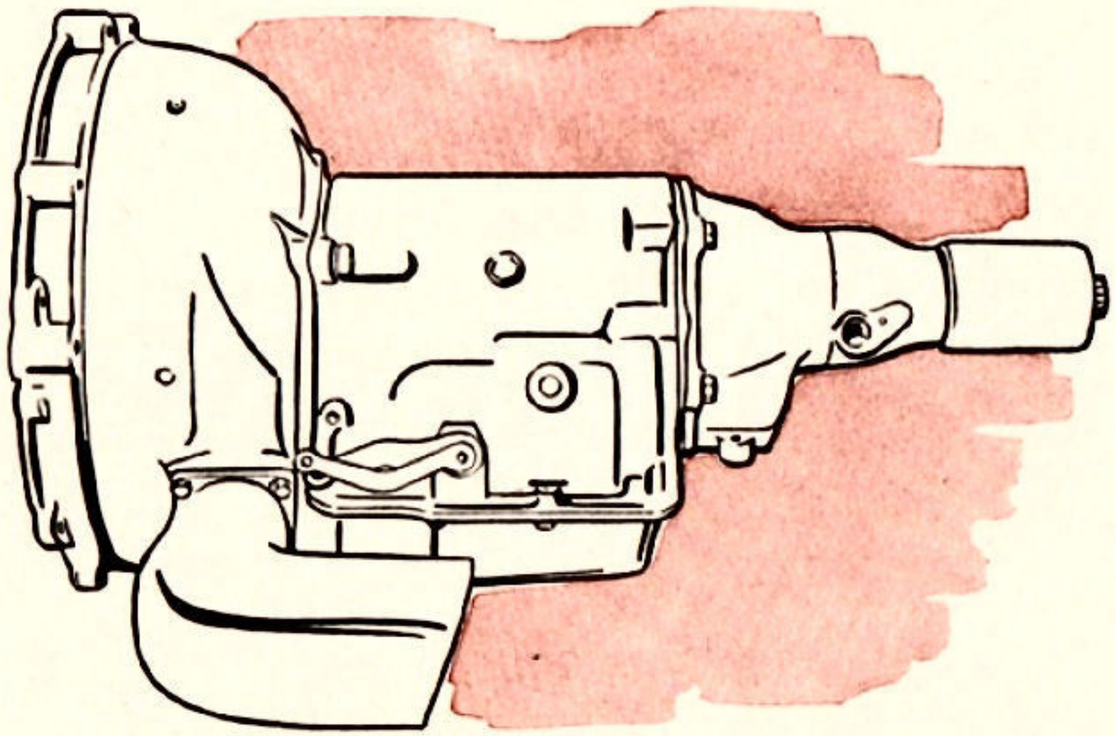
The automatic transmission and torque converter in the Fordomatic Drive combine to provide an endless number of ratios through which engine power is fed to the rear wheels of your car. And the Fordomatic Drive automatically adjusts the ratio as needed to give you the best in both performance and operating economy.

The Fordomatic Torque Converter is air cooled for top efficiency

The Fordomatic Torque Converter is completely air cooled—thus eliminating the need for a complicated water-cooled heat exchanger

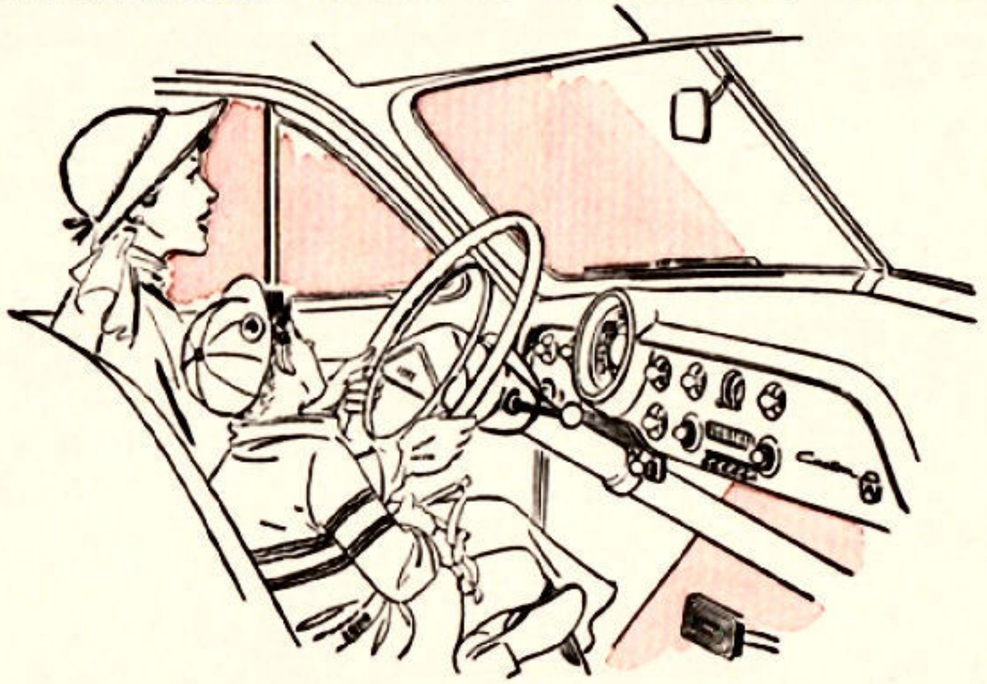
such as is found in many other automatic drives. This is possible because the Fordomatic Drive has an automatic intermediate gear . . . so it is not necessary to overwork and, as a consequence, overheat the torque converter.

Fordomatic Drive is ruggedly built for long life and trouble-free performance



The Fordomatic Drive offers many advantages over many other automatic drives on the market—notably an automatic intermediate gear. It is soundly engineered and ruggedly built for long life and trouble-free performance. Also the Fordomatic Drive is economical to service because it is designed for easy accessibility.

Fordomatic MAKES DRIVING SAFER



Fordomatic Drive enables you to give your entire attention to the road ahead

With a Fordomatic Drive, you don't have to bother with shifting and clutching operations. You can keep your attention on the road ahead. This will be appreciated by every driver . . . and is particularly helpful to beginners, and to many women who have always found gear shifting in heavy traffic a distracting chore.

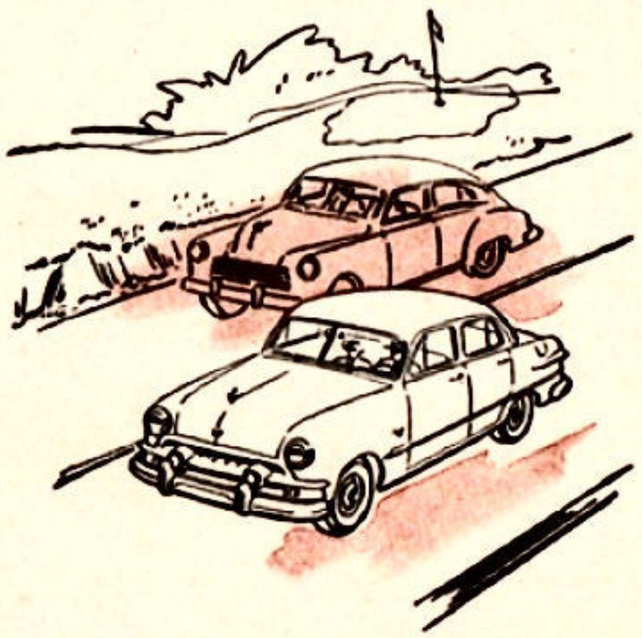
With Fordomatic Drive you can use the engine as a brake when decelerating or going down hills

When you take your foot off of the accelerator, the Fordomatic Drive allows the engine to help slow the car down in much the same manner as a conventional transmission. Or if you're going down an exception-

ally steep hill and want to increase the braking effect of the engine, you can do so by moving the selector lever to the low (LO) position *at any speed*. However, as a safeguard, the transmission *will not* go into low if the car is going over 30 miles per hour. Instead it will go into intermediate and will stay there until car speed falls below 30 miles per hour, then will go into low automatically. This advanced Fordomatic feature prevents the danger of severe skids and strain on your car that might occur if it were suddenly thrown into low gear above 30 miles per hour.

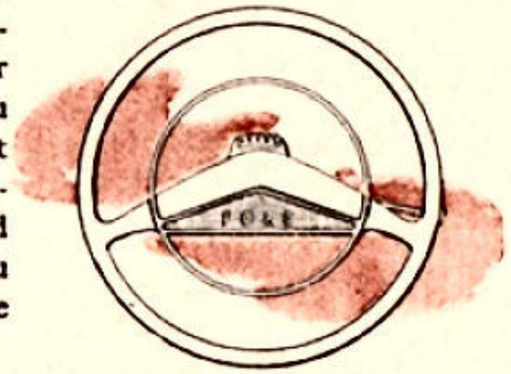
You have a reservoir of extra power for passing cars or accelerating on hills

Whenever you need an extra burst of power for passing or to accelerate on hills, you can get it by simply pressing the accelerator pedal all the way down. This puts the transmission back in intermediate for flashing acceleration. Then it returns to high gear automatically after desired speed has been attained. Under a heavy pull with the throttle wide open, the transmission goes into intermediate automatically when the speed of the car falls to about 20 miles per hour. *These safety and convenience features are not available in any automatic transmission that doesn't have an intermediate gear.*



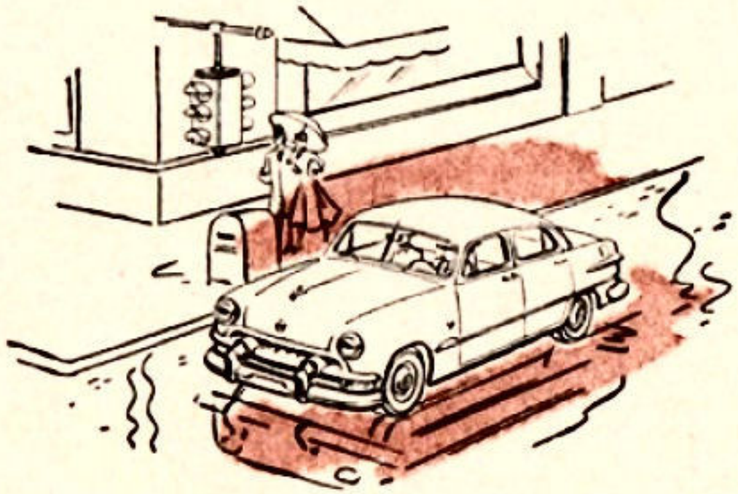
You can make extremely fast starts if necessary

With the selector lever in the drive (DR) position, the Fordomatic Drive will give unusually spirited starts—as fast as the majority of owners will ever want. Normal Fordomatic starts are much faster than any automatic transmission that does not have an intermediate gear—unless those transmissions are put in low gear for the start and manually shifted to high gear after the car has built up speed. However, if you should ever need to make an extra fast start, all you have to do is set the selector lever in the low (LO) position and step on the gas. Then, when you reach the desired speed, just move Selector to drive (DR).



Fordomatic Drive minimizes the danger of skids

Oftentimes skids on slippery roads are caused by misuse of the clutch and by feeding power to the rear wheels erratically. The Fordomatic Drive minimizes both these dangers for . . . there's no clutch to misuse . . . and power is transmitted to the wheels in a steady, even flow.



Semaphore Drive Selector assures accuracy

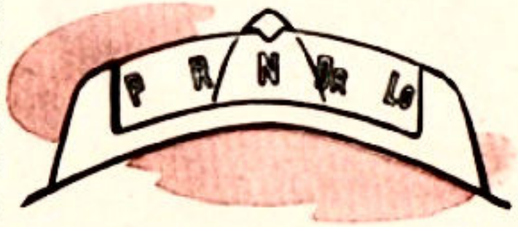
The Semaphore Drive Selector is of advanced design, completely different in arrangement from selectors used with most other automatic transmissions, to make driving easier and safer for you. The five positions on the Selector are arranged so that the two settings for forward motion are at the right of neutral while the settings for reverse motion and parking are both at the left of neutral. With this sequence of selector settings you never have to pass through any forward motion positions when going from neutral to reverse as is necessary with most other selector arrangements. This outstanding Ford feature helps you avoid the danger of putting your car in a forward gear when you intend to go backward. As an additional safeguard, it is necessary to lift the Selector lever up slightly to move it from the neutral (N), position to the reverse (R), parking (P) or low (Lo) positions.

Exclusive Illuminated Semaphore Drive Selector Quadrant makes night driving easier and safer

The Semaphore Selector quadrant is conveniently mounted on the steering column. For greater safety and driving ease at night, the selected driving position on the quadrant is illuminated when the lights of the car are on. As the selector lever is moved to each position, the corresponding position on the quadrant lights up. The park (P) and reverse (R) positions on the quadrant have red lights. The neutral (N) position has an amber light. And the drive (Dr) and low (Lo) positions have green lights. This enables you to adjust the Selector with ease and accuracy, even on the darkest night . . . and helps safeguard against errors in selection.

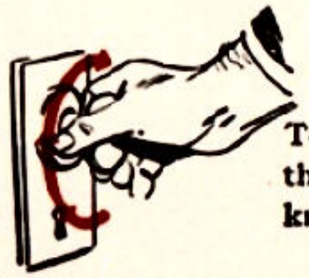
Selector must be in neutral (N) position before starter will operate

You are fully protected against the danger of starting the engine of your car while the transmission is in any of the driving positions . . . because the Selector must be in neutral (N) position before the starter will operate.



HOW THE *Fordomatic* DRIVE WORKS

Before looking inside the Fordomatic Drive to see how it is made and how it operates, it is necessary to understand two terms that will be used frequently. They are: "torque" and "centrifugal force."



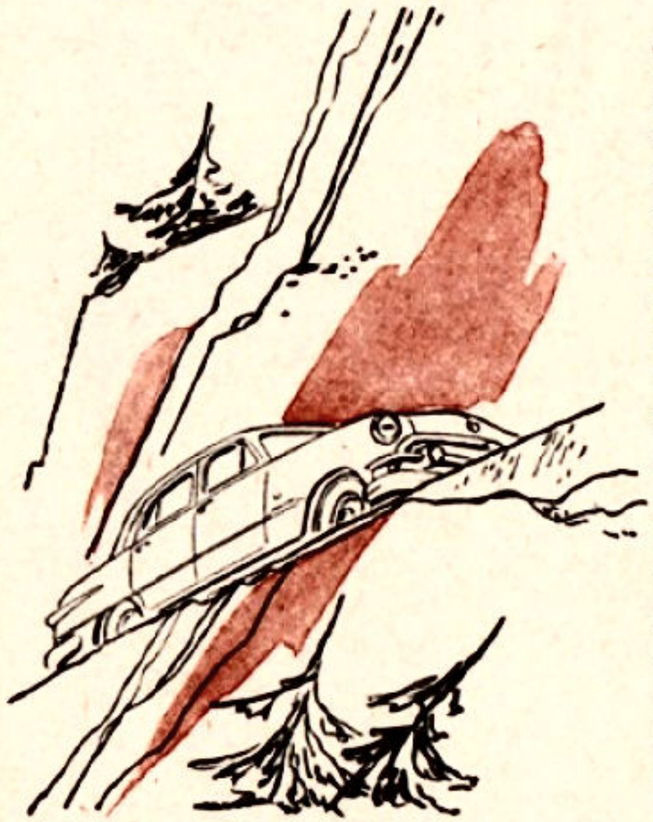
What is torque?

Torque is simply twisting force . . . the same force that everyone uses every time he twists a doorknob, or unscrews the top of an ordinary fruit jar.

What is centrifugal force?

Whenever any object is whirled around in a circular movement, *centrifugal force* is created. A good illustration of this is the childhood stunt of whirling a bucket of water overhead without spilling any. It is centrifugal force that pushes the water outward, toward the bottom of the bucket and prevents its being spilled.

Some means of multiplying engine torque is essential



To start the car in motion, to accelerate it rapidly from one speed to another, or to climb steep grades, a relatively high torque must be applied to rear wheels. The torque required at normal driving speeds is quite low in comparison. If an engine were used that could develop enough torque for the *difficult* conditions it would be very inefficient in normal driving operation as well as being larger, heavier and more costly than necessary. Obviously, some means of multiplying the torque output of the engine is necessary to meet the various performance requirements.

A conventional transmission is limited in gear ratios

In a conventional transmission gear changing is necessary to vary the rate at which engine torque is fed to the rear wheels of a car. The conventional transmission has a series of gears of various sizes that are engaged in various combinations, by manual gear shifting. But good as the conventional transmission is, only a limited number of gear ratios can be achieved.

Such a transmission provides only three or four forward speeds . . . when literally hundreds of different speeds are needed to give the utmost in smooth performance and to utilize the power of the engine most efficiently.

Fordomatic Drive employs a torque converter and an automatic transmission to give a countless variety of transmission ratios

The Fordomatic Drive is made up of two units: a highly-efficient torque converter and a super-smooth, automatic planetary transmission . . . which operate together to produce a blend of transmission ratios to meet any operating requirement.

How Fordomatic Torque Converter Works

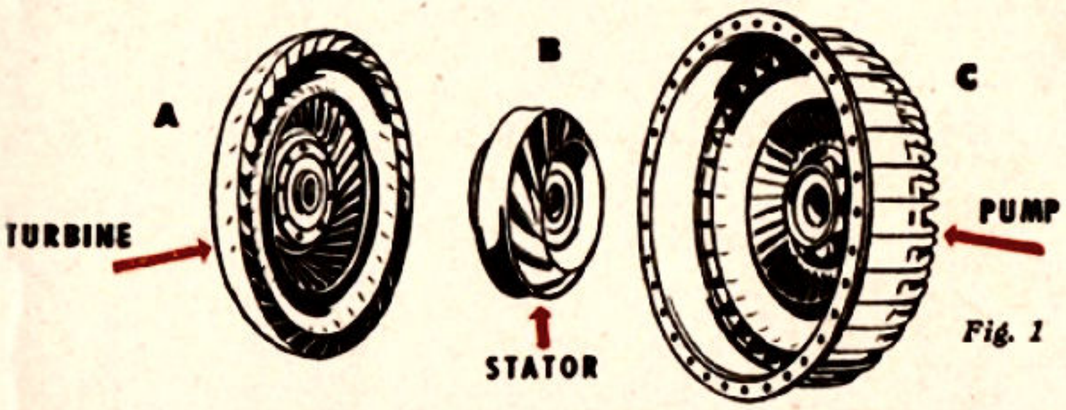


Fig. 1

The Fordomatic Torque Converter is made up of three wheels, as shown in Figure 1. The two semi-doughnut-shaped wheels, marked "A" and "C," have specially contoured paddle-like blades around their insides. The wheel marked "B" has blades set at an angle so that the spaces between them provide a nozzle effect.

Wheels "A" and "C" are installed to operate facing each other, with wheel "B" in between them, as shown in Figure 2. Wheel "C" is called the *pump* and is connected to the engine of the car. Wheel "A" is called the *turbine* and is connected, through the driving mechanism, to the rear wheels of the car. Wheel "B" is the *stator*. When installed in the Fordomatic Drive housing, this assembly is filled with oil.

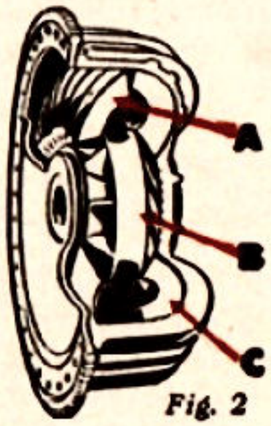


Fig. 2

Special contours of blades result in high efficiency

The blades in the pump are curved in one direction, whereas the blades in the turbine are much more sharply curved in the opposite direction. The curvature of these blades is of greatest importance—for they are scientifically designed to develop high torque efficiently. Cutaway drawing, (Fig. 3), shows path of oil through blades of pump, turbine and stator.

Fig. 3

Centrifugal force plays a vital part

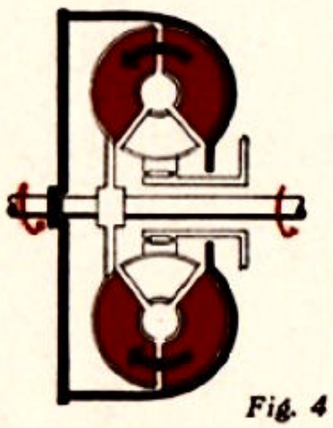


Fig. 4

When the pump is spun by the engine of the car centrifugal force tries to throw the oil in the pump *outward*. However, the oil can't be thrown outward in a straight line because of the curvature of the pump case and its blades. Therefore, the oil is thrown against the blades of the turbine, as illustrated by the arrows in Figure 4. The force with which oil is thrown against the blades of the turbine causes the turbine to turn in the same direction as the pump is turning.

After the oil passes over the turbine blades, it leaves the inner edge of these blades, traveling in a direction almost opposite to that in which the turbine is turning.

If nothing were done to change the direction of the oil flowing from the turbine, it would strike the blades of the pump on their leading surfaces and tend to stop the pump . . . thus causing the engine to work much harder to keep the pump turning.

Stator redirects oil and increases its speed

And this is where the stator comes in. The stator has no mechanical connection to either the pump or the turbine. As you will notice in Figure 5, the stator, indicated in red, fits right in between the outlet of the turbine and the inlet of the pump—so all oil has to pass through it when returning from the turbine to the pump.

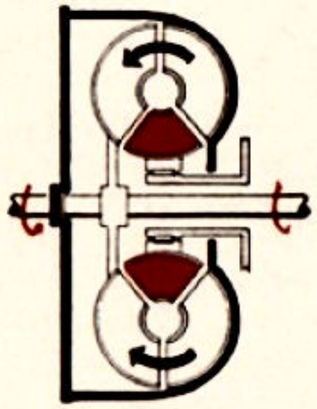


Fig. 5

The purpose of the stator is to change the direction of the oil flowing from the turbine so it is going in the same direction as the pump. Also, the openings between the stator blades speed up the flow of the oil . . . so that it re-enters the pump in such a manner that less engine torque is required to drive the pump at any given speed.

Stator can turn in only one direction

When the oil leaving the turbine strikes the blades of the stator, it tries to turn the stator in the opposite direction to which the pump is turning. But that is prevented because the stator is mounted on a one-way clutch that allows it to turn only in one direction—the direction in which the pump turns. While the car is being started, or is under a heavy pull, the stator does not move in either direction. But after the car has reached a steady driving speed, the stator turns in the same direction as the pump.

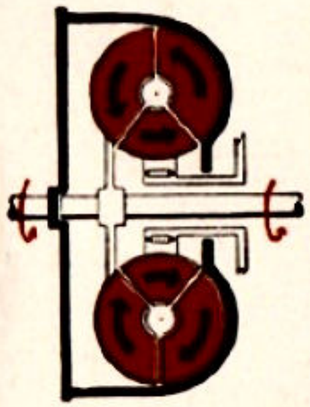


Fig. 6

Thus you see (as illustrated in Figure 6) there is a continuous circulation of oil through the three units of the torque converter . . . from the pump—through the turbine—through the stator—and back into the pump.

Difference between pump and turbine speeds determines amount of torque multiplication

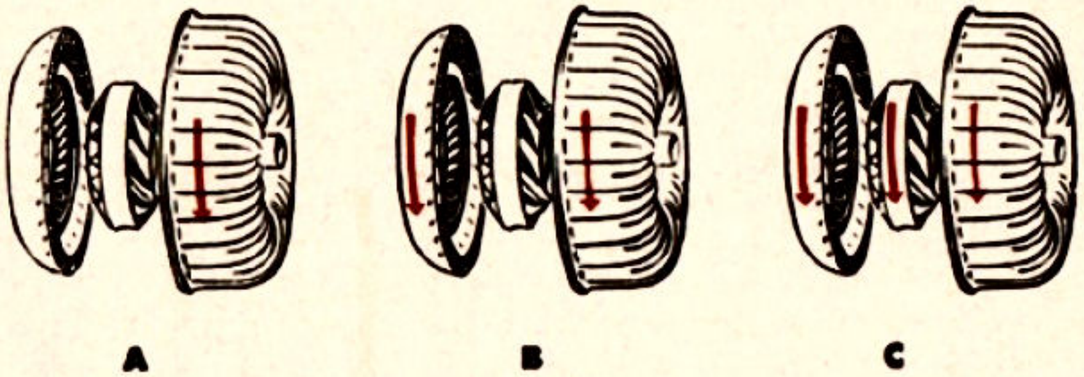


Fig. 7

It is the speed with which oil is circulated through the units of the torque converter that determines the degree of torque multiplication. For example, when starting the car from a dead stop, the turbine is standing still while the pump is turning quite rapidly ("A" in Fig. 7). This permits the pump to force oil through the turbine and stator at the maximum rate. As a result a great volume of oil is forced through the turbine, causing the turbine to turn very slowly but with enormous twisting force as the car begins to move. Thus engine power is fed to the rear wheels of the car very smoothly and slowly but with great torque . . . to produce high pulling ability with low car speed.

Since the rear wheels are driven by the turbine, the speed of the car is dependent upon the speed of the turbine. As the speed of car picks up, the speed of the turbine begins to approach the speed at which the pump is turning ("B" and "C" in Fig. 7). As the turbine turns faster and faster, more and more centrifugal force is created within the turbine. The centrifugal force thus generated tries to throw the oil in the turbine towards the outer edge of the turbine, opposing the flow of oil from the pump into the turbine. Thus the rate at which oil circulates from pump to turbine to stator and back into pump decreases as turbine speed approaches pump speed. The amount by which torque is multiplied also decreases gradually as turbine speeds up and this rate of circulation decreases.

At normal cruising speeds the torque converter becomes an efficient fluid coupling

When the speed of the turbine is almost as fast as the speed of the pump, the torque converter stops multiplying torque entirely—and acts as a fluid coupling between the engine and the driving mechanism of the car. The fluid coupling action of the Fordomatic Drive is unusually efficient because of the scientifically contoured blades in the pump, turbine and stator. At no time is there a mechanical connection between the engine and transmission. Power always flows through the Fordomatic cushion of oil that assures smoothest performance.

Torque Converter provides an infinite variety of drive ratios

Every variation between the speed of the pump and the speed of the turbine causes a proportionate variation in the rate (or ratio) at which engine power is fed to the rear wheels of the car. So it is easy to see that the torque converter can send engine power to the rear wheels at an absolutely countless number of *different ratios*, within its operating range. And that's equivalent to having an ordinary transmission with thousands of different gear-shifting positions . . . except that the torque converter automatically and scientifically selects *exactly* the right ratio to maintain a perfect power balance between the engine and the rear wheels of the car at all times.

The Fordomatic Torque Converter is air cooled

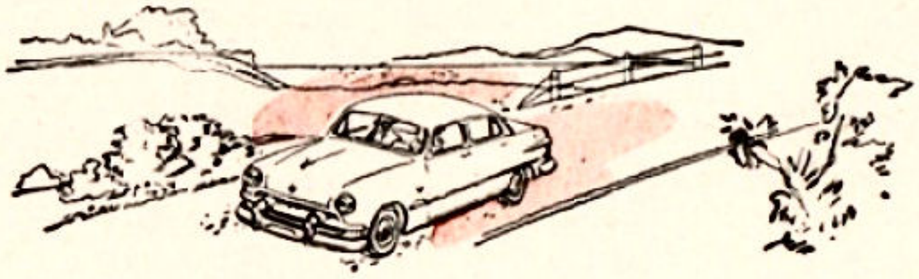
The cast-aluminum housing of the pump, which turns with the engine, has cooling fins around the outside that also act as fan blades to circulate air around the torque converter unit. Therefore, there is no need for a complex water-cooled heat exchanger such as is used in many other automatic drives.

The automatic transmission works with the torque converter to broaden its range

As you have learned in the foregoing paragraphs, the torque converter provides a countless number of ratios through which engine power can be fed to the rear wheels of the car.

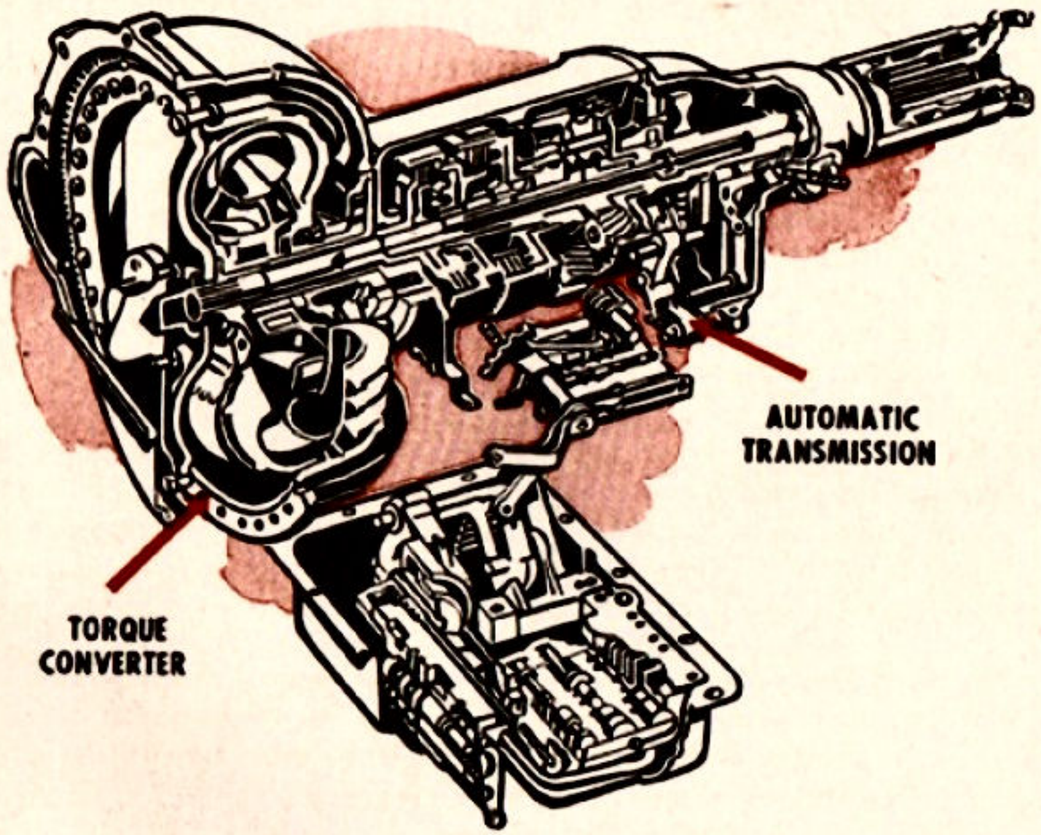
Now, you may wonder why it is necessary to have a transmission at all. The answer to that is twofold. First, it is necessary to have a transmission of some kind to provide a reverse gear. Second, the torque converter has a range of torque multiplication between 2.1 to 1 and 1 to 1. And this is not a wide enough range to produce satisfactory performance under normal driving conditions unless a high (numerical) rear axle ratio, or an engine of greater size than is desirable for normal operating conditions, or a combination of the two, is used.

But when the torque converter and automatic transmission are combined to operate as a unit, you get a range of torque multiplication ratios between 3.11 to 1 and 1 to 1, when the unit is operating automatically. What's more, when the emergency low gear is engaged, a ratio as high as 5.13 to 1 is available.



An automatic planetary transmission is used in the Fordomatic Drive

The automatic transmission in the Fordomatic Drive is of the planetary gear type. This type of transmission is both simple and rugged in construction . . . and is the smoothest-operating transmission ever designed *because all the gears are always meshed*. Changes in gear ratios are accomplished by a series of bands and clutches. These bands and clutches are automatically operated by a series of hydraulic controls within the transmission case. The controls are actuated



by : : : the position of the accelerator pedal—the position of the selector lever—and the speed of the car. They all work in harmony to relieve you of the need to even think of gear shifting under all normal, forward driving conditions . . . and to add a new thrill to driving that you can't imagine until you *test drive* a '51 Ford equipped with Fordomatic Drive.

FORDOMATIC DRIVE COMBINES OUTSTANDING PERFORMANCE WITH ECONOMY BECAUSE...

(1) **You get excellent automatic performance without the need for a bigger engine . . . for the Fordomatic Drive performs equally well with the 100-h.p. Ford V-8 or the 95-h.p. Ford Six. Some of the present-day cars have to be equipped with a more powerful engine than is needed for normal driving in order to get satisfactory automatic performance. Because the Fordomatic Drive is designed to operate with the highly efficient and economical Ford V-8 and Six engines—no increase in horsepower is needed—and that brings you a saving in operating expense.**

(2) **You get superior acceleration, with no need to change the selector lever under any normal driving conditions, because Fordomatic Drive has an automatic intermediate gear . . . which many other automatic transmissions do not have.**

(3) **You get quiet engine performance throughout the entire range of normal driving speeds. This is because the engine runs relatively slower at all speeds than the engine in a car equipped with an ordinary transmission or most automatic transmissions. As a result, you can expect good gasoline mileage and less wear and tear on the engine.**

The Fordomatic Drive is optional at extra cost. The specifications contained herein were in effect at the time this book was approved for printing. The Ford Division of the Ford Motor Company, whose policy is one of continuous improvement, reserves the right, however, to change specifications or design at any time without notice and without incurring obligation.

Here are 10 reasons why the new Fordomatic Drive gives you more than other automatic transmissions

	FORDOMATIC DRIVE	CHEVROLET POWERGLIDE	STUDEBAKER AUTOMATIC DRIVE	BUICK DYNAFLOW	PACKARD ULTRAMATIC	HYDRA-MATIC DRIVE
Combination of torque converter and automatic transmission to provide a wide range of fully automatic power transmission—for extremely flexible, smooth performance.	YES	NO	YES	NO	NO	NO
Automatic intermediate gear plus torque converter —for smooth, rapid starting and acceleration without excessive engine speeds.	YES	NO	YES	NO	NO	NO
Numerically low rear axle ratio—for economical performance, quiet operation, long engine life.	YES	NO	NO	NO	NO	YES
Engine braking (with selector in "Lo") thru intermediate gear above 30 mph, thru low gear below 30 mph—for maximum control on deceleration.	YES	NO	NO	NO	NO	YES
Torque converter always available—for instant acceleration in every speed range when necessary.	YES	YES	NO	YES	NO	NO
Instant return to intermediate gear (by depressing accelerator all the way down)—for extra hill climbing or accelerating ability.	YES	NO	YES	NO	NO	YES
Safety selector sequence to eliminate necessity of passing through forward speed positions when shifting to reverse—for greatest safety and convenience.	YES	NO	NO	NO	NO	NO
Simple three-element torque converter—for high efficiency without unnecessarily complicated construction.	YES	NO	NO	NO	NO	NO
Air cooled torque converter (or fluid coupling)—for effective cooling with no complicated water-cooled heat exchanger or water lines.	YES	NO	YES	NO	NO	YES
Complete hydraulic-mechanical operation and control, requiring no vacuum or electrical connections—for greatest reliability.	YES	NO	NO	YES	YES	YES

FEATURE BY FEATURE, *FORDOMATIC* LEADS THE FIELD!

Fordomatic

EASIER · SAFER ·
MORE THRILLING
TO DRIVE

FORM NO. 7283

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