Ford
Motor Cars
1907

Model
"N"

Ford Motor Co.
Detroit, Michigan, U.S.A.
Model "N" Runabout
"Eliminate the guess; let certainty, accuracy, take the place of perhaps. See that the quality of work and materials are such that there shall be no culls—no seconds—no loss of materials or time in assembling the complete car." These were Mr. Ford's axioms in working out his plans. The result is a system, an organization, and a car of such quality and ability—such powers of performance and endurance—as has commanded the admiration of our strongest competitors. And, now that nearly 3,000 of this model are on the road—we can say there have been less troubles, less repairs and less replacements of defective parts for these 3,000 cars than for any 300 cars ever built before. In other words, Mr. Ford has attained his ambition and if this Ford model is "more hated by competitors than any other car ever built," it is also true that it is more prized by its owners than any other of any make.

We used adjectives lavishly to describe the car—but that was when they were not to be seen, as now, fluttering about, silently and speedily, everywhere. Now we say to the inquiring buyer, "ask any Ford owner or,—better still,—ask a competitor—and read between the lines of the answer.

In a word the Ford Model "N" runabout is built to withstand the roughest usage over the roughest roads. There is not a weak place in it. We have to apologize for no part of it. Better materials never were put into a car. Its lightness is its greatest strength because that lightness has been obtained only by the use of the best materials procurable—pressed steel, steel forgings, stampings and other high grade metals instead of castings of greater weight, bulk and uncertainty as to strength. Rated at 15 horse power, it delivers that at the wheels. Any car of the 3,000 will make forty miles an hour on a level road and will climb anything the wheels can hold on the high gear. It is silent, swift-running and flexible. Tire consumption is less than on any other car in the world, bar none. In short, it represents the very highest degree of attainment in automobile building. It is cheap only in price.

The almost limitless market made it possible to plan for theretofore unheard-of quantities—to buy material on a large scale, to equip a factory with special automatic machinery useful only for building this one model. And this quantity production, this perfect standardization, this volume of business made it possible to produce the car at the price. The plan was as simple as it was clever—and now all the world concedes it was a master stroke on the part of Ford, though but a few months ago none could understand his motive or his philosophy.
Motor
Detailed Description.

Model "N"—four-cylinder, vertical; located longitudinally under hood at the front. Cylinders cast in pairs. Bore, 3 1/4 inch; stroke, 3 3/4 inch; rated horse power at normal speed, 15. (Under series of tests connected with and driving dynamo develops 18.4 h. p.) Aluminum crank case. Crank shaft bearings, highest grade Babbitt metal; exceptionally long. Cam shaft bearings, bronze.

Crank Shaft—Drop-forged steel, specially heat-treated by our own process. All bearing surfaces ground to half-a-thousandth of an inch accuracy.

Cam Shaft—Drop-forged in one piece with all cams integral, from special high grade steel; cam surfaces case-hardened and all bearing surfaces ground.

Valves—Drop-forged; heads integral; seats and stems ground to micrometrical accuracy.

Connecting Rods—Drop-forged from special steel in "H" section. Lower bearing cap hinged. Provision for adjustment is made by the insertion of fibre shims which can be removed and filed down for that purpose. Piston pin bearings, bronze; split bushing adjustable by tightening set screw. Large hand holes at the left side of motor, covered by removable plates, permit of easy inspection and adjustment of crank and piston pin bearings without otherwise disturbing the engine.

Pistons—Cast from fine grain gray iron, our own formula. First rough turned, then turned to within a few thousandths of size; are then annealed to relieve strains in the metal and effect such distortion as will result from heat. After cooling, are finished by grinding. Each piston provided with four rings of the eccentric type, split diagonally. Rings are ground on both sides and on the outer surface.

Cylinders—Cast from the finest quality gray iron. After first boring operation, cylinders are annealed to relieve strains, after which they are rebored and finally reamed so as to secure an absolutely straight and round cylinder.

Piston Pins—Steel, hardened and ground.

Lubrication

Mechanical Oilier—A faultless lubrication system is afforded by a mechanical oiler with sight feeds for regulating the flow. One tube serves to maintain a uniform level in the engine base and the other leads to the ball housing which encloses the universal joint in the cardan shaft. All engine parts—crank shaft and connecting-rod bearings, piston pins, cylinders, cams, and valve lifters, are lubricated by the "splash" system. Owing to the fact that the stroke in this engine is shorter than the bore and that the pistons project into the base at the end of each stroke, the splash system of lubrication leaves nothing to be desired. It is certain and simple. The oil begins to flow when the engine starts and while it is running the supply is in direct proportion to speed of the motor—in other words, to exactly meet its requirements. When the motor stops the oil ceases to run so that once the feed is regulated a constant level can be maintained in the engine base regardless of variation of speeds. A partition mid-way between front and rear of the engine base prevents the oil flooding the rear cylinders when climbing steep grades and keeps the two pairs equally lubri-
cated. Oil cups are provided at every bearing point throughout the car—even at the spring connections. Provision is made both in the transmission gear and in the differential and bevel gear housing of the rear axle, to pack these parts with heavy grease, one supply of which will last for several weeks.

IGNITION—By jump spark; current supplied by batteries—standard equipment (Model "N") two sets of six Columbia dry cells. Quadruple coil in handsome case located on the dash Switch on front of case. Each coil unit is separate and complete in itself and any unit may be removed or replaced without disturbing the others. High tension wires well insulated and carried in fibre brackets so that disarrangement or short-circuiting is impossible.

CARBURETOR—Float feed; automatic, specially designed for this car. Gasoline tank located under the seat with gravity feed to carburetor.

Cooling

Perfect cooling under all conditions is afforded by a most efficient vertical tube radiator which forms the front of the hood and in which the centrifugal pump is incorporated. The circulation system has been carefully worked out so that the water is constantly in motion and it is impossible for the engine to overheat no matter how hot the weather or how long it may run idle or on the low gear.

MOTOR SUSPENSION—The transmission gear is carried in a cast aluminum frame the front of which is bolted to the rear end of the motor, thereby forming the rear support of the latter. A bracket, cast integral with the front end of the engine base, rests on the front cross-member of the frame and this, with the two arms of the transmission frame which are bolted to the side frame members, gives an ideal three point suspension, and a rigid construction in engine and transmission. This construction is the reverse of most "three point suspension" systems, in all others of which two points of the triangle are at the front of the frame and the apex at the center. The Ford idea gives the maximum of flexibility while at the same time relieving the transmission shaft of all twisting or distorting strains.

Transmission

The transmission is of the Ford spur-planetary type, nearly eight thousand of which are now in use and which have proven so wonderfully efficient and durable. Low speed and reverse clutches are of the fibre-lined, steel band type, which take hold smoothly and which spring away from the drums when disengaged so as to prevent "dragging" and the consequent waste of power. The high-speed clutch is of the multiple disc type with fibre discs interposed between smooth cast iron discs. A transmission gear is almost unnecessary on this Model "N" car as the excessive power of the engine enables the car to climb almost any hill or negotiate the muddiest or sandiest roads on the high gear—and at a slow speed if the driver so desires. The low gear is seldom or never used except for the first twenty or thirty feet when starting from a stand-still. It will be seen, therefore, that this transmission should outwear almost any other part of the car.

Final Drive

The Ford triangular drive system is patented in every country in the world. It is the only system in which all driving shafts,
universal joints, gears and other moving parts are enclosed in a dust proof and oil tight housing from transmission gear to the hub caps of the wheels. The drive is direct to the center of the chassis regardless of whether the car is running straight or turning corners; and only one universal joint is necessary. A ball-and-socket connection between the tubular tension member of the transmission frame allows the axle to oscillate in any direction and thereby relieves the passengers of all strains and shocks due to unevenness of the road. It also permits of the use of full elliptic springs, flexibly connected to the frame brackets instead of the rigid connection necessary when the driving strain must be transmitted through the medium of the springs. This system is broadly covered by letters patent in all countries. The universal joint comprises four members—the two drop-forged steel sections and the halves of the split bronze retaining ring. It is, at the same time, the simplest, most efficient and most durable universal joint ever devised, and as it is automatically lubricated at all times, the owner “never knows it is in the car.” The drive shaft bearings are of Babbitt, carefully reamed and fitted and the oil from the universal joint flows constantly down through these bearings and into the differential housing.

Rear Axle

The rear axle proper is the well known Ford design, the driving members being enclosed in a tubular steel housing, press-fitted and riveted to the cast steel sections of the differential case. Hyatt roller bearings of the indestructible type are fitted at both ends of the live members. The differential gear is of the three pinion, bevel type; all gears made from special high-grade, drop-forged, steel blanks. The driving pinion and main bevel gear are drop-forged from special chrome nickel steel, teeth accurately planed and case hardened. The axle may be taken apart in a few minutes, differential gear and other parts removed and examined.

Front Axle

The front axle of the Model “N” is a marvel of the drop-forging art. The entire axle is drop-forged in one piece from special steel and is specially treated after forging. It is in “I”-beam section—the form which gives the maximum of strength with the minimum of weight. The worst that can happen to this axle, even in a collision with a telegraph pole, is to bend it; and even if bent double, it can be heated in a blacksmith’s forge and straightened without having suffered any actual injury. Steering knuckles and spindles, are drop-forged from special steel, in one piece. Front wheels are carried on large ball-bearings—balls being more suitable for supporting the end-thrusts occasioned by steering.

Steering Gear

The Ford Reduction-Gear steering device is the only really new thing in this line that has been developed in several years. Like the rear axle, it is being patented in all countries and we believe it is the most satisfactory solution of the steering problem that has yet appeared. It is just sufficiently irreversible to relieve the driver of all road worries and at the same time yields enough to irregularity of the road to save the car from the many shocks and twists from which it would otherwise suffer. The gears, instead of being located below the frame where they become clogged with mud and cut by grit and dust, are placed at the top of the post just within the hub of the steering wheel. Ball joints connect the steering arm with the transverse steering rod.

Springs

Full elliptic springs are the only satisfactory type for rough American roads and the imperfect block pavements of our cities—and Ford cars are built for hard service over such roads. The lightness of the frame and body and
the disposition of the load—engine over front axle, passengers between front and rear—permits the use of very light, flexible rear springs—the result is the most perfect riding runabout ever built. Instead of the stiff side springs at the front, there is a single transverse spring shackled to forged integral bosses on the front axle. The front cross-frame member rests upon the center of this spring and there is, therefore, provided a three point suspension for the frame as well as for the motor and transmission gear. (For the enlightenment of those who believe side springs would be superior to the single transverse spring, might say we tried this out thoroughly before deciding to adopt the one we have. The difference in steering was not noticeable while in riding qualities the transverse spring proved to be incomparably superior. In the 3,000 cars now on the road (Jan. 1st, '07) no weakness has ever developed in the spring construction so we can assert that for a light car, constructed as this one is, this spring suspension has no equal.)

Three Point Suspension

While we are on the subject, it might be well to note that the "three point suspension" idea has been carried to what might be termed, its "logical conclusion" in this car. The driving forces are transmitted through tubular radious members from the outer ends of the rear axle, at a point just below the spring blocks, to a common center at the ball joint previously described; then, from a point almost directly below this ball joint is another from which diagonal tubular radious members convey the driving forces again to the ends of the front axle; the engine and transmission are supported at three points; and the frame also has a three-point suspension on the two rear springs and the single transverse front spring as previously outlined. The wonderment which everyone, after his first ride in a Ford runabout expresses, is induced by the constructive factors above outlined.

Frame

The frame is of the approved pressed steel type, in channel section, and is made from the highest grade of material procurable. It is cold pressed and tapered toward the front and rear. The frame has a factor of safety many times the load which it will ever be called upon to sustain. This is also true of axles and every other part.

Body

The neatly designed Model "N" runabout is such a familiar sight on the streets of every city in America—and even in Europe now—it seems almost unnecessary to describe it. Briefly, then: two semi-individual seats, standard width and height, handsomely upholstered in dark green M. B. Leather and curled hair. "Torpedo-back" for carrying tools, rain coats, rugs and extra ties. Highly finished, neatly striped and trimmed.
Brakes

The Model "N" car is splendidly equipped with brakes. For service use, there is a contracting fibre brake, the brake operating on a special drum on the transmission shaft. For emergency use there are a pair of internal expanding, bronze rings contained within dust proof, pressed steel drums attached to the rear hubs. Then the reverse clutch band, operated as it is by a foot lever, may be used as a brake if desired. The service and emergency brakes, being also operated by foot levers, there are three foot levers, any one of which will slide the wheels on any kind of road surface.

Tires

The Model "N" is equipped with 28 x 3 inch clincher tires. Owing to the fact that no one tire concern can supply us with our full requirements, it is impossible for us to give customers an option on make of tire—we must equip each day's output with whatever tires we have in stock. It is sufficient to say we buy the best there is and since the tire pool went to pieces, we have no difficulty in getting any brand we desire and in fact the scrambling on the Ford tire business today is in sharp contrast to the attitude of some tire concerns a year ago when a concerted effort was made to prevent Ford carrying out his plans for a four-cylinder runabout at a reasonable price.

Fuel Capacity

The gasoline tank is located under the seats and has a capacity of eight gallons. As this car averages about twenty-five miles per gallon of gasoline, this is sufficient for about two hundred miles of running over ordinary roads.

Operation and Control

We believe we are justified in saying no other car in the world is so simple to master and easy to control as are the Ford Runabouts, Models "N" and "R." Hundreds of these cars are driven constantly by ladies and misses, not to mention the youths of fourteen to eighteen years of age who use them. So far as we know there has never been an accident which was in any way due to the inexperience of the driver or to any other cause, even remotely associated with the control of the machine. A single lever at the side operates the low speed and the high, the movement being the simple backward and forward one with neutral position midway. The reverse is operated by a foot lever as above indicated. Spark and throttle levers are located at the right and left side, respectively, of the steering post and just below the wheel, so that both can be operated by the index fingers without removing the hands from the steering wheel or releasing the hold on it even for a second. Having excess of power to meet all conditions the car may be driven at any speed from four miles per hour to its maximum speed of about forty miles per hour by simple throttle and spark control alone. Even for driving in congested city streets it is seldom necessary to use the brake or to disengage the clutch. The spark lever may be "slowed down" to a point beyond center and the throttle to the last notch, at which position the car will travel at a very slow pace and yet with plenty of power so that the engine will not labor nor jerk. The motor is easy to start, so that a lady has no difficulty in this regard, whereas to start a single or even a two-cylinder motor of anything like the same horse power would be an almost impossible task for a woman.

EQUIPMENT.

Consists of tools and tire repair kit only—lamps, tops, etc., extra. Catalogue and prices on request.

PRICE.
Model N—$600 F. O. B. Detroit.

GUARANTEE.
Regular guarantee formulated and adopted by the American Motor Car Manufacturers' Association goes with all Ford cars.
MODEL "N" Specifications

MOTOR—4 cylinder, 4 cycle.
HORSE POWER—15; BORE, 3 1/8"; STROKE, 3 1/4".
CYLINDERS—Longitudinally, underhood at front.
VALVES—Inlet and exhaust offset; all on left side, integral. All bearing surfaces hardened and ground.
CRANK SHAFT—Set at 180 degrees. Drop forging from steel heat treated after forging; no welds. Bearing surfaces ground.
CRANK CASE—Aluminum; side plates removable for inspection or adjustment of bearings.
COOLING—Water; centrifugal pump, gear driven.
IGNITION—Jump spark; batteries, storage and dry cells.
FAN—Cast in fly wheel.
CARBURATOR—Ford design; float feed, automatic.
LUBRICATION—Mechanical force feed oiler; splash system in engine base.
CLUTCH—Multiple disc.
TRANSMISSION—Ford planetary system; all spurs.
FINAL DRIVE—Car on shaft with single universal joint to bevel drive gears in live rear axle. Ford three point system (patented in all countries) with all moving parts enclosed in dust proof casing, running in oil.
FRONT AXLE—One piece steel drop forging in I-beam section, specially treated.
FRAME—Pressed steel.
STREERING—By Ford reduction gear system; irreversible; gears at top of column away from dust and grit.
BRAKES—2 sets. (a) Service hand brake on transmission. (b) Internal expanding brakes in rear hub drums.
OPERATION AND CONTROL—High and low speeds by hand lever at right of driver; reverse by foot lever; service and emergency brakes by foot lever, ratchet lock.
TIRES—Pneumatic; standard equipment 8 1/2x23 clincher.
SPRINGS—Front; Semi-elliptic, transverse spring. Rear; Full elliptic.
DUST PAN—Protects all machinery from mud and grit.
WEIGHT WITH TANKS FULL—1050 pounds.
WHEEL BASE—84". Tread 56".
GASOLINE CAPACITY—8 gallons.
PRICE—$60, 9 side oil lamps, without lamps or horns, $560, F. O. B., Detroit, Mich.
CATALOGUE of parts, lamps and other accessories for the asking.

MODEL "R" Specifications

MOTOR—4 cylinder, vertical, 4 cycle.
HORSE POWER—15; BORE—3 1/2"; STROKE—3 1/4".
CYLINDERS—Cast in pairs. Water jackets integral.
VALVES—Inlet and exhaust offset; all on left side, integral. All bearing surfaces hardened and ground.
CRANK SHAFT—One piece steel forging. Eight cast from steel specially heat treated after forging; no welds. Bearing surfaces ground.
CRANK CASE—Aluminum; side plates removable for inspection or adjustment of bearings.
COOLING—Water; centrifugal pump, gear driven.
IGNITION—Longitudinally, under hood at front.
FAN—Cast in fly wheel.
CARBURATOR—Ford design; float feed, automatic.
LUBRICATION—Mechanical force feed oiler. Also splash system in engine base.
CLUTCH—Multiple disc.
TRANSMISSION—Ford planetary system; all spurs.
FINAL DRIVE—By card on shaft with single universal joint to bevel drive gears in live rear axle. Ford three point system (patented in all countries) with all moving parts enclosed in dust proof casing, running in oil.
FRONT AXLE—One piece steel drop forging in I-beam section specially treated.
FRAME—Pressed steel.
STREERING—By Ford reduction gear system; irreversible; gears at top of column away from dust and grit.
BRAKES—2 sets. (a) Service hand brake on transmission. (b) Internal expanding brakes in rear hub drums.
OPERATION AND CONTROL—High and low speeds by hand lever at right of driver; reverse by foot lever; service and emergency brakes by foot lever.
SPARK AND THROTTLE—Give all speeds from 4 to 45 miles per hour on high gear.
TIRES—Pneumatic; standard equipment 8 1/2x23.
SPRINGS—Front; Semi-elliptic, transverse spring. Rear; Full elliptic.
DUST PAN—Protects all machinery from mud and grit.
WEIGHT WITH TANKS FULL—1100 pounds.
WHEEL BASE—84". Tread 56".
GASOLINE CAPACITY—8 gallons.
PRICE—$60, 9 side oil lamps, tail lamps, tube hose, storage battery and iron for top, $750, F. O. B., Detroit, Mich.
TOP—Improved full leather top, extra heavy bows, shock-absorbing rest, storm front and side curtains complete. Prices on request.
CATALOGUE of parts and accessories for the asking.
FORD

Specifications Model "K"

MOTOR—6 cylinders, vertical, 4 cycle.

HORSE POWER—40; bore 4 ¾ inches, stroke 4 ¾ inches.


VALVES—Inlet and exhaust valves, all on right side.

CAM SHAFT—One piece nickel-steel forging. Eight cams, integral. All bearing surfaces hardened and ground.

CRANK SHAFT—Set at 150 degrees. Drop forging from chrome nickel steel specially treated by Wyman and Gordon process; no welds. Bearing surfaces ground.

CRANK CASE—Aluminum; divided horizontally.

COOLING—Water, centrifugal pump, gear driven.

ENGINE GEAR—All enclosed.

IGNITION—Jump spark. 2 separate systems, consisting of (a) Holly high tension magnet with single, non-vibrating coil; (b) Storage battery with sextuple vibrator coil.

FLY WHEEL—65 pounds only—thanks to even torque and "overlapping impulses" of 6 cylinders.

FLY WHEEL CLEARANCE—1 1/4 inches.

CARBURETOR—Ford design, float feed, automatic.

LUBRICATION—Mechanical oiler. 8 units; individual pumps for cylinders. Also splash system in engine base.

CLUTCH—Multiple disc.

TRANSMISSION—Ford planetary system; no internal gears, all spurts. Gears made from chrome nickel steel, hardened.

FINAL DRIVE—By cardan shaft with single universal joint to bevel drive gears in live rear axle. Ford three point system (patented in all countries) with all moving parts enclosed in dust proof casing, running in oil.

FRONT AXLE—One piece steel drop forging in 2 beam sections, specially treated.

FRAME—Nail steel. Cold pressed, extra heavy.

STEERING—By Ford reduction gear system; reversible.

BRAKES—2 sets. (a) Service hand brake on transmission. (b) Internal expanding brakes in rear hub drums.

OPERATION AND CONTROL—High and low speeds by hand lever at right of driver; reverse by foot lever; service brake by foot lever; emergency brakes by hand brake at side, ratchet lock.

SPEE AND THROTTLE—Give all speeds from 4 to 80 miles.

WHEELS—Artillery wood type. Hubs extra strong.

TIRES—Pneumatic; American clincher, 84 x 4 inches.

NUMBER OF PASSENGERS—Normal load, 8 adults; room for 2 extra seats, giving capacity of 7 if desired.


SENDERS—Enclosed full length of car.

DUST PAN—Protects all machinery from mud and grit.

WHEEL BASE—120 inches. TREAD—60 inches.

GASOLINE CAPACITY—15 gallons.

STANDARD EQUIPMENT—Side oil lamps and tube horns.


WITH EXTENSION TOP, side curtains and storm front, pair gas lamps and generator, $3,050.
So great is the demand for
catalogs of Ford Runabout
models, our requirements keep the
presses running constantly. To send
catalogs, elaborately printed and
treating of our high priced touring,
car models to every inquirer—most
of whom are concerned only with
the runabouts, would be a needless
extravagance, the cost of which
Ford customers would, of course,
have to pay in the end.

We therefore issue separate cat-
als for each Ford Model. This
puts the information you desire in
concise form.

Brief specifications of each 1907
Ford model will be found on the
last three pages of the different cat-
als—persons interested in other
models than "N" will be cheerfully
furnished with catalogs on request.
Ask for catalog "R" or "K" as
case may be.

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Model "K"—"Six-forty"
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