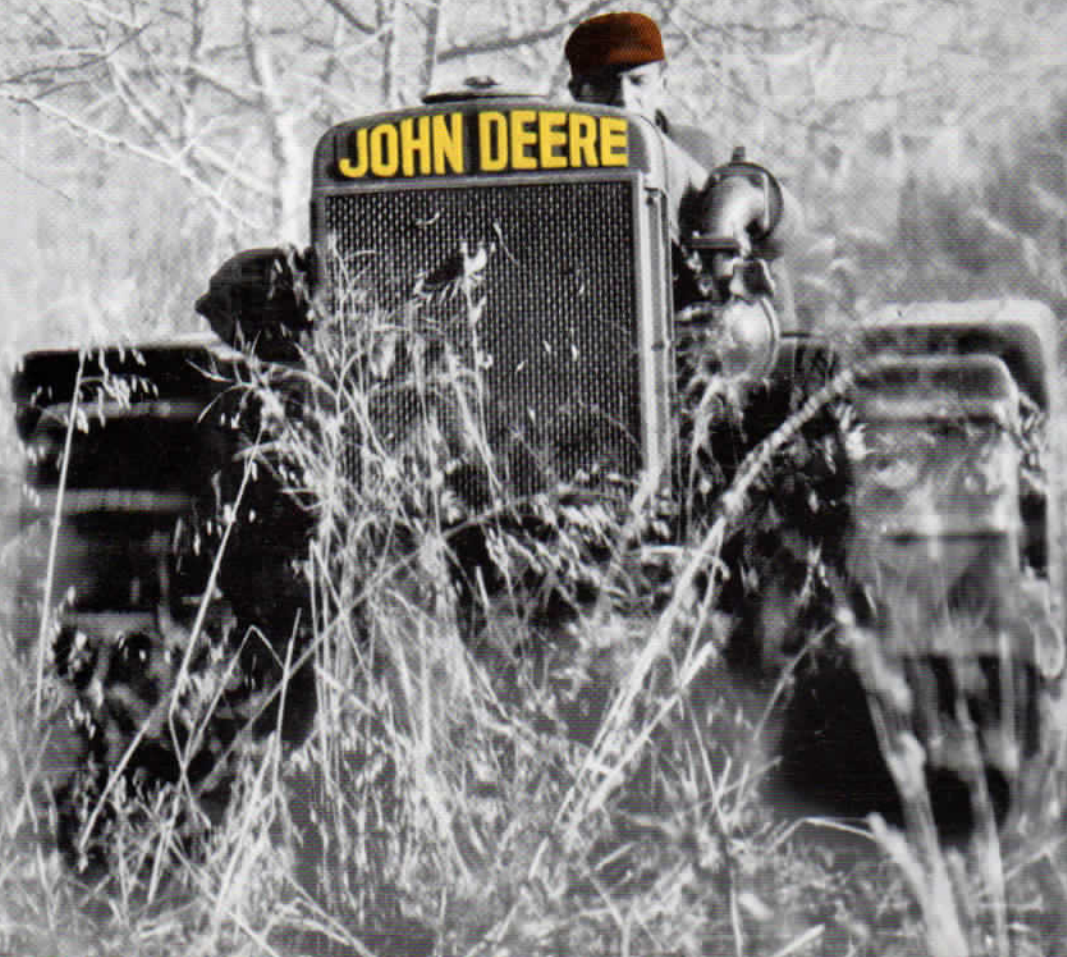


TWO-CYLINDER®

Featuring the Two-Cylinder and New Generation Eras of John Deere

JULY-AUGUST 2008



JOHN DEERE ORCHARD TRACTORS

Orchard tractors, as a group, are the second-most sought-after configuration in vintage tractor collecting. Hi-Crop tractors are in the top position in that category. However, neither the orchard tractor or the Hi-Crop are even a contender for being the most *popular*; that title goes to row-crop tractors by a huge margin.

There are four basic configurations of vintage John Deere agricultural wheel tractors: Row-Crop, Standard, Orchard, and Hi-Crop. Hi-Crops are variations of row-crop tractors, and orchard tractors are variations of standards. If Hi-Crops were the most common tractor produced, and row-crop tractors were rare and seldom seen except at shows, people would be paying the big premium for the row-crop tractors (also known as general-purpose tractors). But that's not the way it is. Collectors are drawn to the unusual; something that has a different look. Sure, they want a tractor...or two...or ten that reminds them of the good old days on the farm, or recaptures the look in that old photograph of Grandpa, but most anyone, whether they admit it or not, would jump at the chance to have an unusual tractor at a bargain price. Unfortunately, the two seldom go hand in hand. Scarce tractors usually cost more; as the production numbers go down, the price goes up.

Readers may be quick to point out that there are other variations of certain configurations, citing the Utility, Row-Crop Utility, and Special from Dubuque; and they are right to do so. However, these tractors are closely related to the Standard and Tricycle (Dubuque's row-crop designation). And Waterloo tractor enthusiasts who own the nar-

row, wide, and/or high versions of the general-purpose models have a prize as well — some of them brilliantly rare — but they are part of the row-crop lineup.

The orchard tractors, also known as grove and orchard tractors, have what it takes to be noticed. They're low and squatty, and are quite the contrast to the tall and lanky Hi-Crops. Many of them left the factory with citrus fenders, and this adds just that much more to their unique appearance. A list of options available on no other models provides challenges for restorers and the opportunity of individuality for collectors. Their low-down profile and generous fenders provide safety and security for operators. As far as production goes, orchard tractors rank a distant third behind row-crop and standard tractors. Some of them are among the rarest of all tractors, and none of them are plentiful.

Individuals having an orchard tractor can be proud of their possession, as they are certainly in a league estimated to represent less than ten percent of all vintage John Deere tractor collectors. This article reviews — through the use of images, expanded captions, and the reproduction of rare original sales literature — orchard tractors from the Waterloo Boy and Two-Cylinder Era through the New Generation. The reader will discover that not all tractors used in orchards were orchard tractors by description, and that not all true

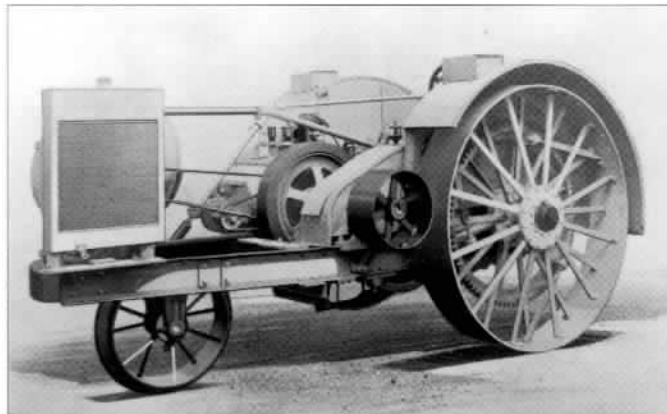
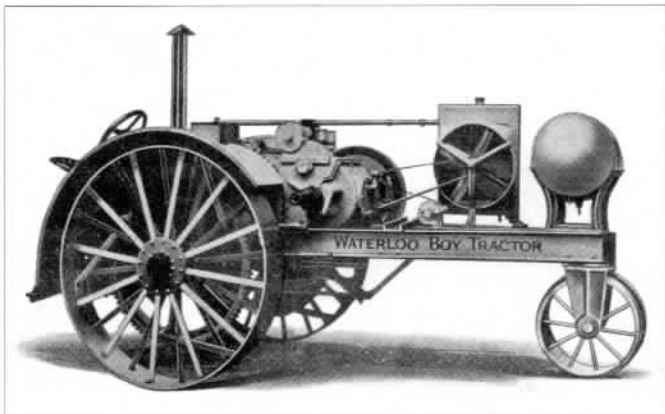
orchard tractors saw service in a grove or orchard. It's an interesting mix. Let's get started...

JOHN DEERE ORCHARD TRACTOR



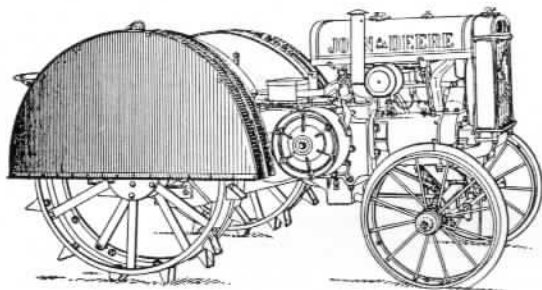
*When you buy JOHN DEERE IMPLEMENTS
YOU ARE SURE OF PROMPT REPAIR
SERVICE DURING THEIR LONG LIFE.*

Cover of sales literature Ba-251-1341.



Not much is known about the Waterloo Boy "California Special," a single-front-wheel version of the Model "R", other than what was written in a 1917 sales brochure, "This tractor is specially adapted to the requirements of orchardists and fruit growers." Available images suggest that perhaps the "California Special" was made in two wheelbase lengths, the shorter (above right) of them seeming to make more sense for applications when tighter turns would have been an advantage.

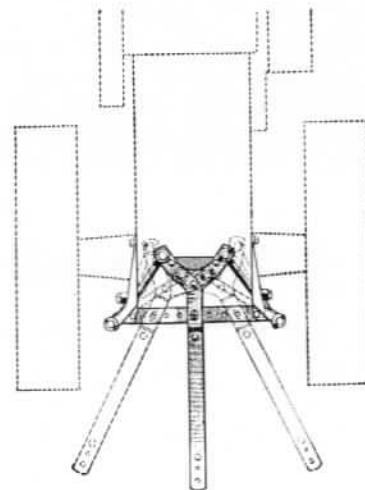
Although rumors persisted for awhile about a decade ago that one of these tractors had been discovered in California or Oregon, none of this materialized. The 39 "California Specials" built were clearly noted in the Serial Number Register, and the discovery of one would likely rival the significance of the most valuable vintage tractors in existence.



AD223 Citrous Grove Fenders
AD364 Citrous Grove Fenders
AD494 Citrous Grove Fenders

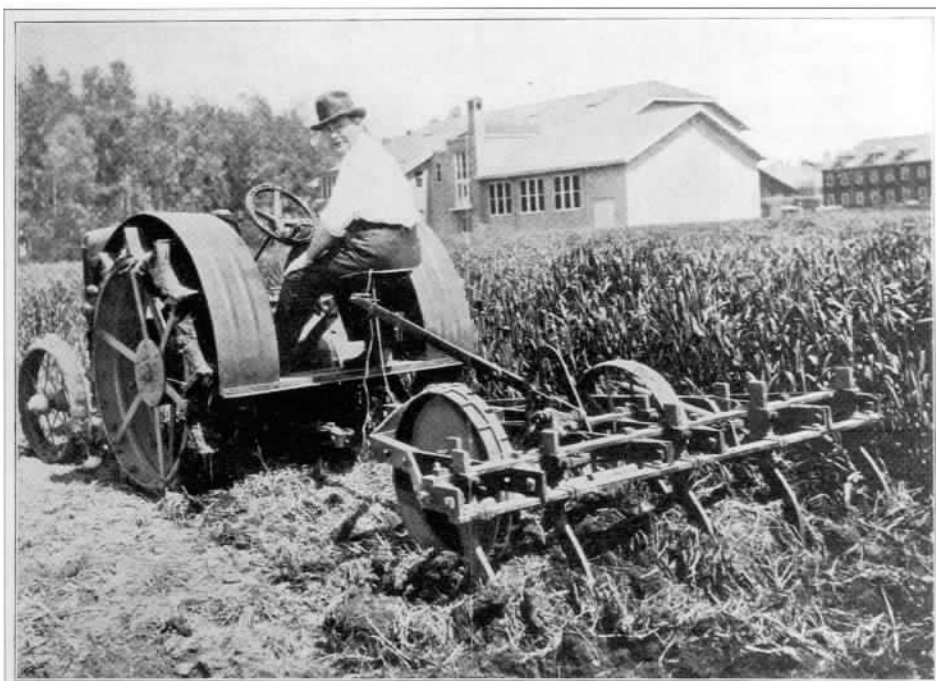
Attached over regular fenders and extend below hub of drive wheel to prevent damage to ends of vines and boughs through becoming entangled in spokes of wheel. Give serial number of tractor when ordering.

Left and Right: Following the Waterloo Boy "California Special," the Model "D" with orchard equipment options struggled to be an effective tractor for orchardists and fruit growers. Among the options were Citrus Fenders (referred to as "citrous grove fenders" in early documents) that shielded the upper half of the drive wheels from branches, and the California Drawbar that provided flexibility in offsetting drawn equipment, most often disk harrows.



AD272 California Drawbar

Used generally in orchards and vineyards. Attached in place of regular drawbar.



The No. 3 Orchard Cultivator was developed early on, shown here behind a 24-inch (1925) spoke-flywheel "D". The cultivator was in process of being tested at University Farm, Davis, California. Adjustability of the shovel standards up and down or sideways, proper spacing of standards, and the high frame, were features that made it possible for the No. 3 to succeed where curved-shank-type cultivators failed.



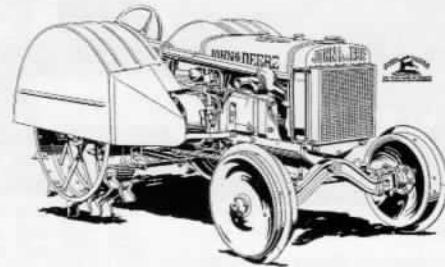
Above and Right: Things started to brighten up for orchard owners in 1929, when the Lindeman brothers of Lindeman Power Equipment Company, Yakima, Washington, began to modify a John Deere "GP" Tractor for improved performance in nearby orchards. The "GP" was "lowered" several inches, and fenders were extended. Deere officials looked it over and were impressed. By 1931, John Deere had created a half-dozen "GPO" ("GP" Orchard) Tractors by using unsold 1930 "GP" Wide-Tread Tractors with the "crossover" manifold system; in other words, the first six-inch-bore "GPs". The tractors were advertised, they were well accepted, and production officially (and finally) began at serial number O-15000 in March 1931.

Note that the introductory ad also showed one of the six experimental (crossover manifold) "GPO" Tractors, incorporating a line drawing of the photo shown above.

The John Deere Orchard Tractor Is Here!!

A Tractor specially designed to meet the most exacting requirements in Orchard Work.

Just as efficient in field work as on orchard jobs.



The Power
The Economy
The Durability
of John Deere Tractors all in a specially designed tractor to meet all orchard conditions. NOTE the low-down construction—the kind of construction that permits working right up close to the trees.

Note the well-shielded drive wheels and steel disc front wheels, which prevent catching and bruising of limbs. The operator sits low on the seat of this tractor and still has ample vision ahead. No projections on the tractor to injure limbs—even the steering wheel is but little higher than the fuel tank.

REMEMBER that this is a General Purpose Tractor that can be used for orchard, field and belt work—to save time, save labor, and reduce production costs.

A Three-In-One Outfit with One Investment

At its highest point, which is at the steering wheel, it is only 54 1/4". At the fenders it is 51 1/4" high, and at the radiator cap only 50 1/2" high.

All of the important working parts on the John Deere General Purpose Orchard and Field Tractor are completely enclosed within a dust-proof case.

SEND FOR SPECIAL LITERATURE
giving complete specifications and details

John Deere Plow Company

SAN FRANCISCO

LOS ANGELES

JOHN DEERE General Purpose Orchard and Field TRACTOR



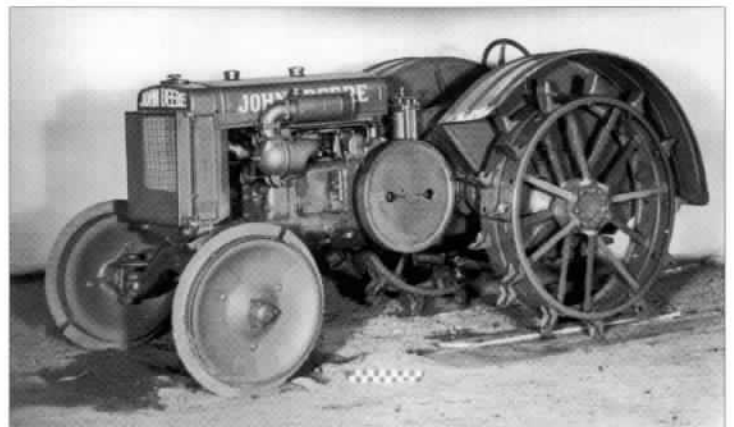
Built for Orchard
and Field Use

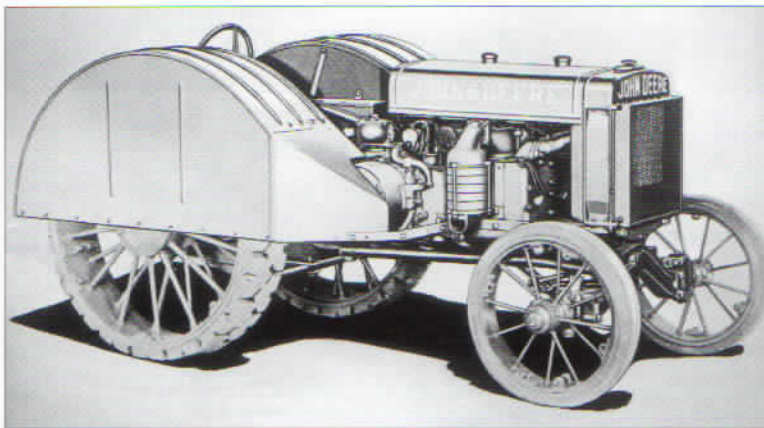


When you buy John Deere Implements you are sure of prompt repair service during their long life.

Left: Even though "GPOs" were in production for almost a year by the time sales literature was published, the cover photographs showed the experimental crossover-manifold version, as did two interior shots. One photo used in the literature dated clear back to 1929, a retouched shot of Lindeman's first conversion.

Upper and Lower Right: Both the left and right side of quite possibly the first production "GPO", one photo without and one with the optional citrus fenders. Note also the cast iron AC830R Front Wheels, designed to shed low-lying branches. The more common C2021R Wheel Enclosure Disk was also available to cover the spokes of the regular front wheels.





Above: The fine-looking, beautifully restored "GPO" was photographed at a past Two-Cylinder Expo. These tractors are very scarce today. Not including the six pre-production crossovers, 712 were built; but that was over 75 years ago and most of them have disappeared.

Left: This retouched line art of a "GPO" with industrial wheel equipment and citrus fenders is somewhat of a mystery. Although these tires and wheels would have been available, it is highly unlikely that anyone working an orchard would have requested them.

HERE IS A REAL COST-REDUCER

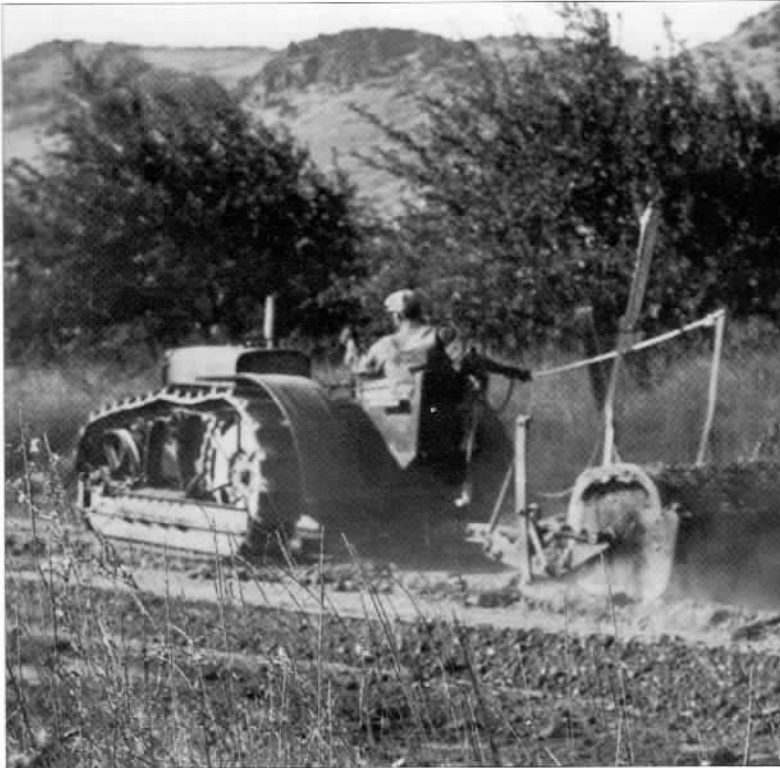
*Low-Pressure Balloon Tires
Save the Fairway*

*The John Deere
No. 109 Tractor with
Golf Course Mower*



THE JOHN DEERE RUBBER-TIRED TRACTOR
Adapted to Use on Golf Courses

Below Left: A variation of the "GPO" was created especially for use on golf courses. Only one is listed in the Serial Number Register, and it appears to have been changed back to a regular "GPO" before being shipped nearly two years after it was built. Prior to that, it had been on display, etc. The serial number was 15407, and the final listed shipping point was Urbana, Illinois.



Left: It may seem a far stretch for orchard or grove use, but in the early 1950s the Lindemans devised two versions of a crawler attachment for the Model "D". Cumbersome to say the least, one of the units was tested by John Deere engineers and failed to show significant improvement in pulling power. But that's not all the Lindemans were after; they wanted traction on the wet, slippery slopes of Washington, and the crawler did provide that.

Note that the inset photos of each version, taken while the tractors were on display in front of the factory, show them without fenders, while the field shots show the fenders in place. Value of either unit today? Unimaginable.





Top: With John Deere involved in producing "GPO" Tractors, the Lindemans wasted no time in testing the tractor with a crawler track attachment in place of wheels. The smaller tractor made far more sense than the "D" for grove and orchard use, and right at two dozen were built. Today they are highly prized by the few collectors fortunate enough to own one.



Above Left: The photo provides a visual record of the tangled mess that used to be common in 1930s-era groves before the days of efficient tractor-powered grooming.

Above: The little Lindeman-John Deere "GPO" Crawler had no problem tugging heavy skids of fruit crops.



Left: The Lindeman-John Deere "GPO" Crawlers (usually just referred to as the "GPO" Crawler) were originally fitted with fenders. However, those run in more open terrain typically had the fenders removed, thus making service more accessible. As of this time, most of the fenders have been lost.

Right: The classic Lindeman-John Deere "GPO" Crawler, rare by any standards.





Above Left: Groves and orchards weren't the only uses for the "GPO" Crawler, as can be attested to by this photo of one putting its way through a hopfield, also known as a hop garden or hop yard. The Yakima Valley was (still is) an ideal site for growing hops. Incidentally, the only major commercial use for hops is in beer. The U.S. is second in hops cultivation, with Germany as the leader.

Above Right: Success with the "GPO" Crawler; a team of Lindeman Power Equipment Co. employees monitored the performance of several Lindeman-designed implements that improved orchard operations.

Below: A superb Lindeman-John Deere "GPO" Crawler at a past Worldwide Two-Cylinder Club Expo.



NEW



JOHN DEERE MODELS AO and BO TRACTORS for Grove, Orchard, and Vineyard

NEW in Performance

Here are grove and orchard tractors with all the simplicity, economy, dependability of other John Deere Tractors . . . built for extra years of service.

NEW in Speed

Four speeds forward—2, 3, 4, and 6-1/4 miles per hour—adapt these tractors to a wide variety of uses, including hauling. There is a reverse of 3 miles per hour.

NEW in Economy

The engines in the Models AO and BO are of the exclusive John Deere two-cylinder design. They burn the low-cost fuels that save you money.

NEW in VALUE

Get the feel of the Model AO or BO—out in the field. Notice how easily it handles . . . the convenience of all controls . . . the perfect view of the work . . . the comfort of the dust-proof full-skirted fenders . . . the wide, roomy platform . . . the easily adjusted hitch . . . not a thing has been overlooked.

GET THE FEEL OF THE WHEEL . . . ASK YOUR DEALER FOR A DEMONSTRATION

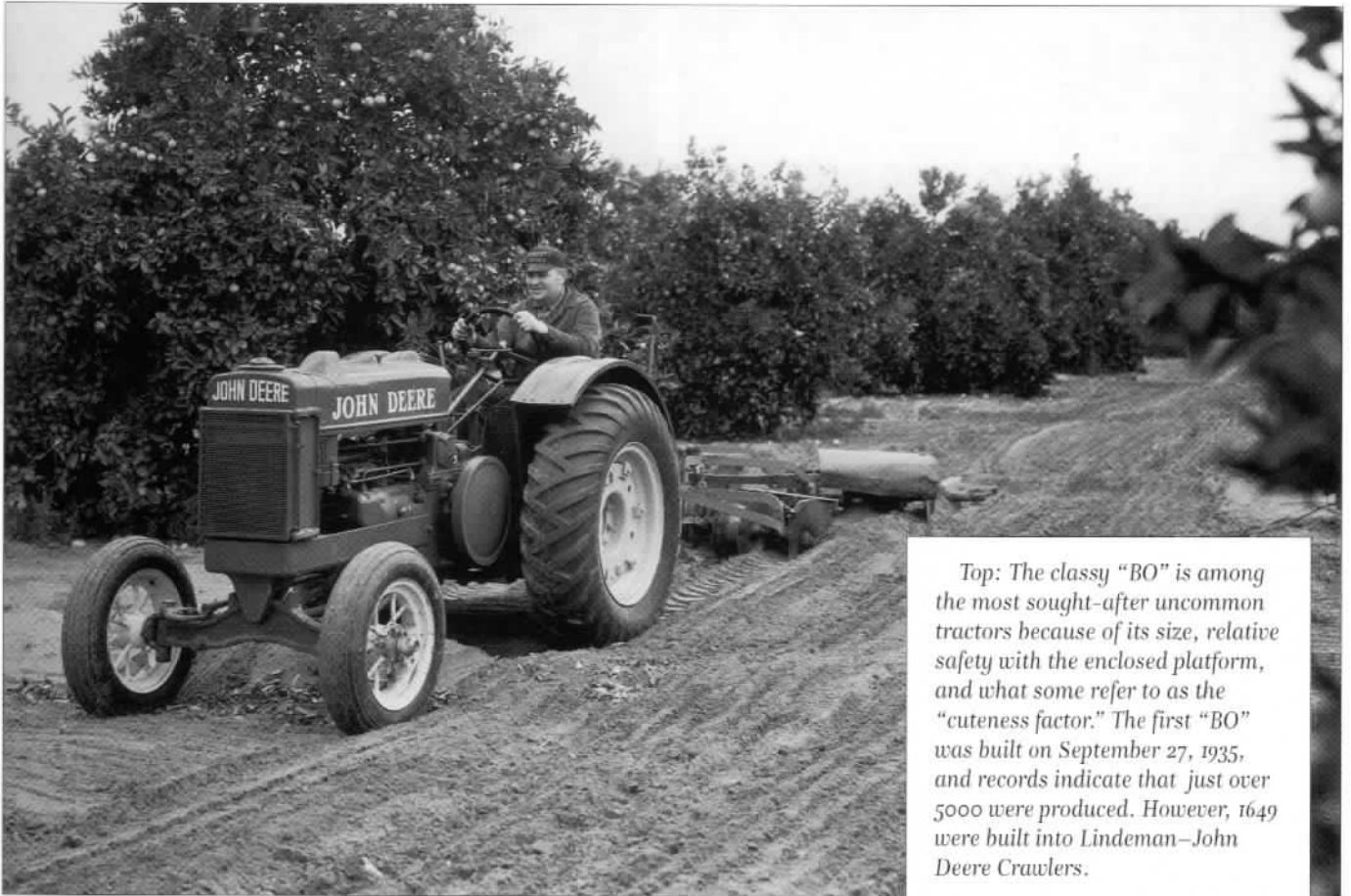
Left: The "GPO" was discontinued with Decision No. 5399, dated March 28, 1935, which stated: "Due to the introduction of the General Purpose Model 'AR' Tractor, production of The General Purpose 'GP' and General Purpose Orchard Tractors will be discontinued. Effective: When approximately 30 Orchard Tractors now in process are completed."

The last "GPO", serial number 15732, was shipped to Roseburg, Oregon, on April 9, 1935.

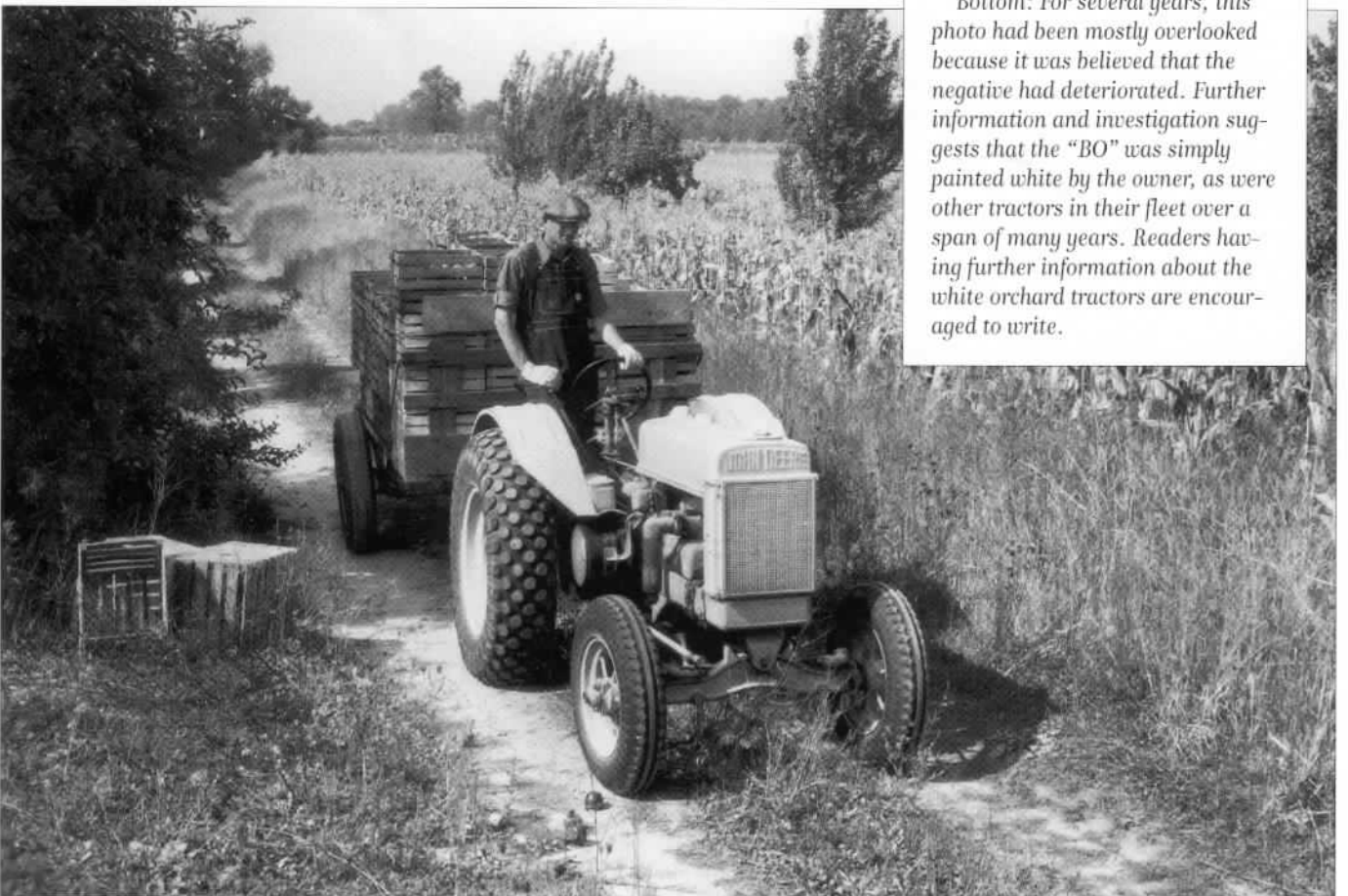
The four-page sales literature (left) dated December 1935, announced both the Models "AO" and "BO". It was preceded by a far more comprehensive piece (see page 11).

Below: The earliest "AO" Tractors had a short intake stack as shown here, instead of the later "mushroom"-style AA887R Air-Intake Stack that matched the later mushroom-style AA888R Exhaust Opening Cover. The "AOs" were serial numbered in with the "ARs", starting at 250000. The first "AO" was 250075, built May 22, 1935.





Top: The classy "BO" is among the most sought-after uncommon tractors because of its size, relative safety with the enclosed platform, and what some refer to as the "cuteness factor." The first "BO" was built on September 27, 1935, and records indicate that just over 5000 were produced. However, 1649 were built into Lindeman-John Deere Crawlers.



Bottom: For several years, this photo had been mostly overlooked because it was believed that the negative had deteriorated. Further information and investigation suggests that the "BO" was simply painted white by the owner, as were other tractors in their fleet over a span of many years. Readers having further information about the white orchard tractors are encouraged to write.

JOHN DEERE

Grove and Orchard Tractors



**And a Complete
Line of Orchard
Equipment**

For Groves, Orchards, Vineyards, and Hopyards

The first highly descriptive sales brochure (24 pages) on the new Model "AO" and "BO" was published in October 1935. The nation was still reeling from the effects of The Great Depression and the brochure (A-240-35-10) was essentially distributed to dealers only in grove and orchard territories. Consequently, it is regarded as a rare piece today, and is being reproduced in its entirety in this issue.



You're going to see scenes like this duplicated many times—the John Deere Model BO Grove Tractor at work in citrus. Notice the low, trim design of the tractor, the streamlined hood, the short turn the tractor is making . . . features you'll like in the John Deere Models AO and BO Tractors.

With their wide range of speeds—2, 3, 4, and 6-1/4 miles per hour—the John Deere Models AO and BO have the right speed for every job — plowing, disking, cultivating, mowing, spraying, hauling. Scene shows Model AO pulling power sprayer in New York apple orchard. Sprayers can be operated by the integral power shaft.



In sandy or gravelly soils, both Models AO and BO Tractors can be fitted with dual pneumatics for wider distribution of weight and greater traction. Scene shows a Model AO handling a disk harrow in a citrus grove, seven miles northeast of Mesa, Arizona.

Note the center photo of the "AO" pulling a power sprayer. The photo had been re-touched, removing the exhaust cap and short air intake stack and replacing them with the "mushrooms." This is otherwise the same photo as shown on page 9. Note also the very rare dual rubber-tire setup in the bottom photo, referred to in the original caption as "dual pneumatics" and not even listed in Parts Catalogs of the era.

NEW

JOHN DEERE GROVE and ORCHARD TRACTORS

Here are grove and orchard tractors with all the simplicity, economy, dependability of other John Deere Tractors . . . built for extra years of service . . . tractors that set a new standard of value in their respective sizes.

NEW in Performance

Gasoline and fuel tank caps are protected by streamlined guards. Air intake and exhaust openings are protected by low covers just above the top of the hood. There is not a thing to catch branches. The fenders prevent damage to trees. (Citrus fenders to cover upper half of wheel can be supplied.)

Easy handling is another important feature of the John Deere Models AO and BO Orchard Tractors, due to the automotive-type steering and the independent braking of each rear wheel. This makes possible the short turns around trees and at the ends of the tree rows you want.

NEW in Speed

Four speeds forward—2, 3, 4 and 6-1/4 miles per hour—adapt these tractors to a wide variety of uses, including hauling. There is a reverse of 3 miles per hour.

You'll find these tractors efficient power plants on drawbar and belt work. In plowing, you have a center hitch to both plow and tractor, with two wheels in the furrow.

NEW in Economy

The engines in the Models AO and BO are the same two-cylinder engine that is making such an outstanding record in the John Deere Models A and B Tractors. They burn the low-cost fuels that save you money. They are so simple that you can easily understand them and keep them in perfect running order yourself.

NEW in VALUE

Because of its simplicity, its adaptability, its greater range of speed, its ability to burn low-cost fuels, its design, its construction, the John Deere Tractor has established itself as the yardstick of tractor value. It stands alone with an exclusive combination of features found in no other make of tractor.

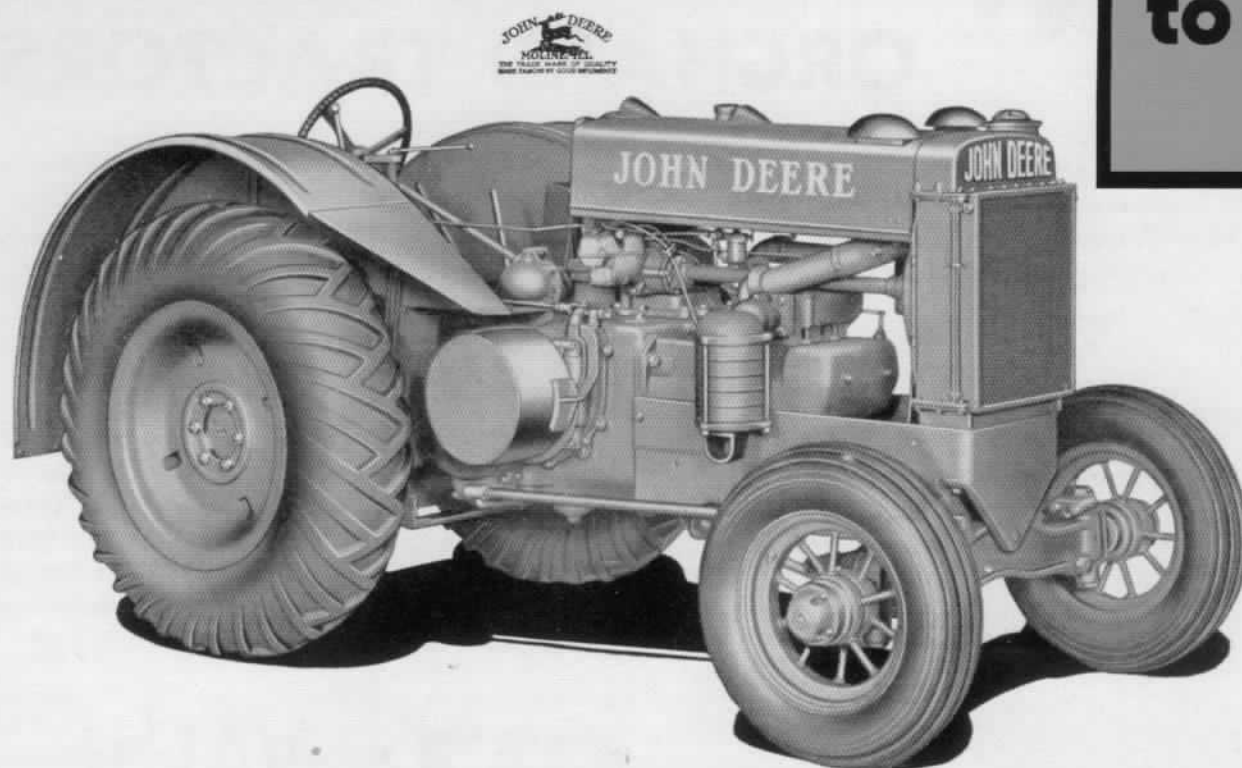
Get the feel of the Model AO or BO—out in the field. Notice how easily it handles . . . the convenience of all controls . . . the perfect view of the work . . . the comfort of the dust-proof, full-skirted fenders . . . the wide, roomy platform . . . the easily adjusted hitch . . . not a thing has been overlooked.

[3]

The features of the new orchard tractors were summarized on page 3 of the sales literature. Obviously, the "AO" and "BO" were superior to the "GPO" that preceded them. Of course, for today's collector that's a matter of perception. The "GPO" currently has the advantage of being more valuable than its successors, but the "AO" and "BO" were far more efficient machines for orchardists of the mid-1930s.

Look Them Over . . . You'll Like

to Cut Costs

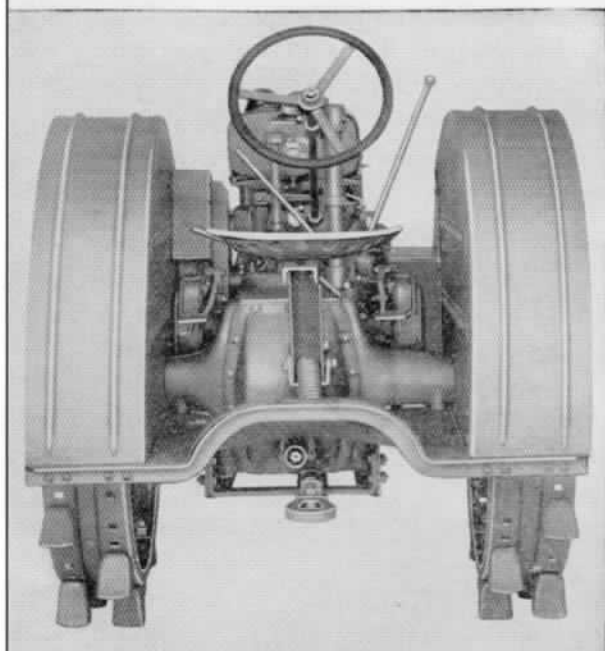


MODEL AO ORCHARD TRACTOR

Handles the load ordinarily pulled by a 6-horse team

Above: Here's the Model AO Orchard Tractor equipped with low-pressure rubber tires which are special equipment. Note the heavy, cast rear wheels. This wheel construction eliminates spokes and provides proper traction in most conditions without the use of special wheel weights. This tractor is regularly furnished with steel wheels as shown on Model BO Orchard Tractor at the right. Can be furnished with special citrus-type fenders also shown at right.

Left: Notice the full-skirted fenders, spring-cushioned seat, foot brake, handy position of all controls, shielded power take-off, and easily adjusted drawbar. The platform is wide and roomy—you can stand or sit at will. (These features apply to both Models AO and BO Tractors.)



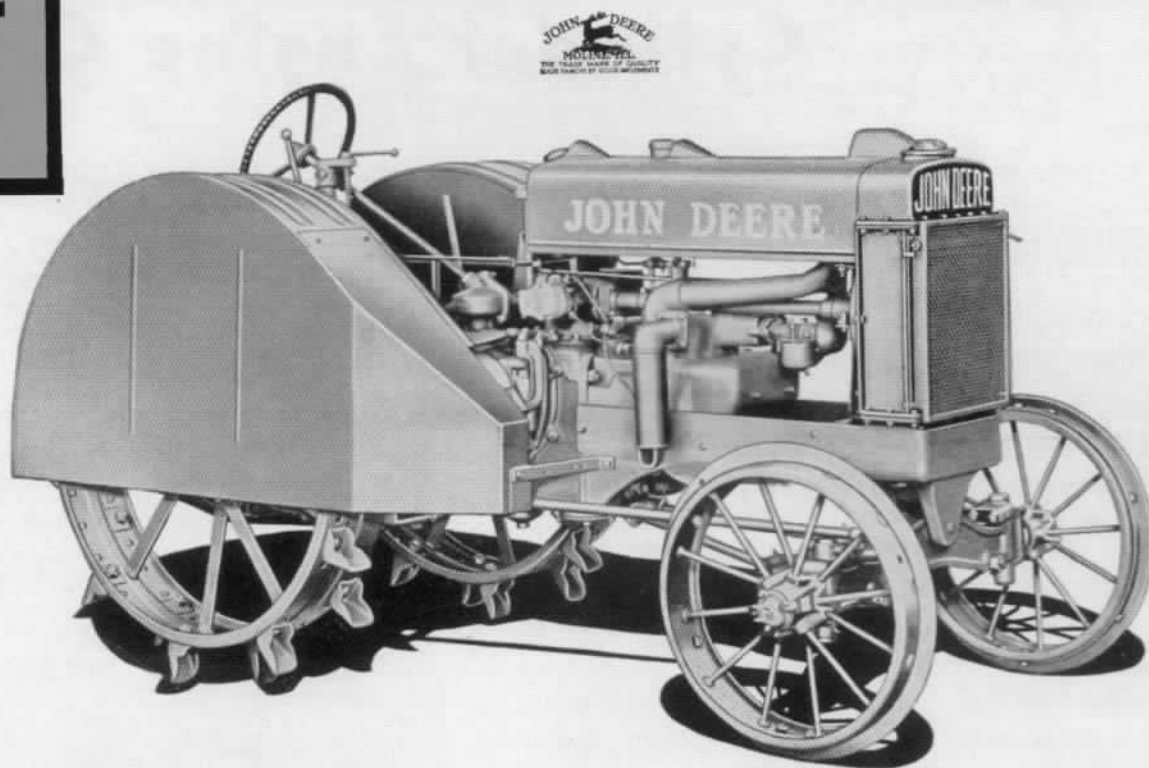
Get the Feel of the Wheel . . . Ask

The "AO" handles the load pulled by a six-horse team. Imagine trying to handle such a team in the close confines of an orchard. so, a smaller two-horse team was used in days gone by, and the amount of work accomplished was but a small fraction of the "AO". The A1106R Rear Wheels shown in the top view are solid cast, rim and all, and were available for a short time on the "AO", "AR", "BO", and "BR".

ke the Way They're Designed

Your

sts



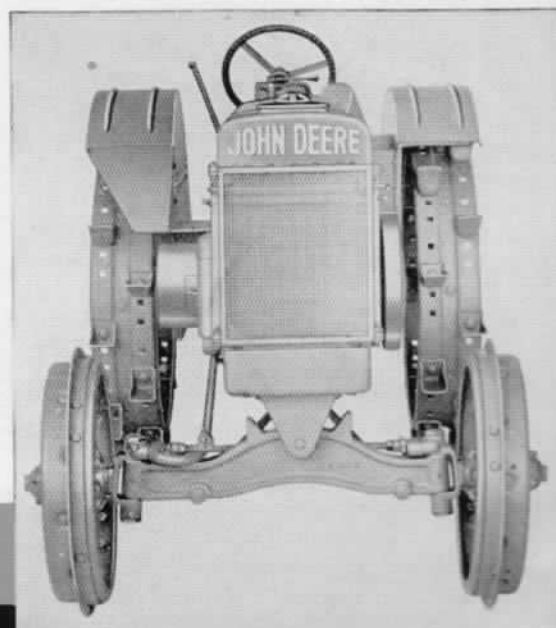
MODEL BO ORCHARD TRACTOR

Handles the load ordinarily pulled by a 4-horse team

The John Deere Model BO Orchard Tractor has an over-all height of only 52½ inches. The hood is streamlined to get under the low-hanging branches.

The Model BO, shown here, is equipped with steel wheels, which are regular equipment and with special citrus-type fenders which are an extra. Can also be furnished with low-pressure rubber tires and solid cast wheels, as shown on the Model AO at the left, at extra cost.

Right: This photograph will show you the ample clearance provided for the belt in belt work. It is easy to line up an AO or BO tractor with the driven machine. A cross belt can be used. Notice, too, the narrow, compact design for maximum visibility.



Your Dealer for a Demonstration

The overall height of the "BO" at the top of the fenders and the streamlined guards on the hood that protected the fuel caps and air intake was 52-1/2 inches — about five less than the "AO" — which made it the popular choice in crowded orchards. The image shows the ultimate classic early orchard tractor; a "BO" on steel wheels and equipped with the optional citrus fenders.



Simple as Only a Two-Cylinder Engine Can Be

The engines of the Models AO and BO Tractors, as in all John Deere Tractors, are of two-cylinder design.

The advantages are many. There are fewer moving parts to wear and require adjustment and eventual replacement. Parts are heavier, more rugged. They stand up better under the full or three-quarter throttle loads to which you will put your tractor. This insures longer engine life—lower maintenance costs.

Being simpler, these engines are easier to understand, easier to keep in perfect running order yourself. All parts are readily accessible—easy to get at—easy to handle because of their more rugged size. You can make most adjustments yourself instead of hiring them done. Advantage number two.

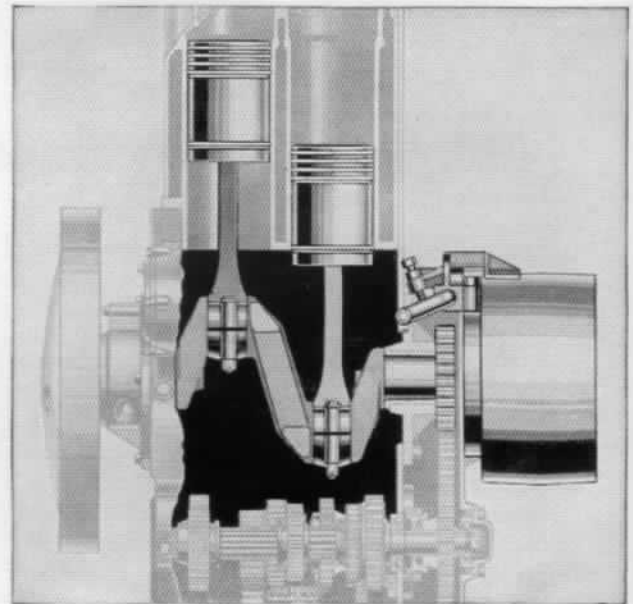
Now, add advantage number three. The John Deere Models AO and BO Tractors burn low-cost fuels successfully—distillate, some grades of Diesel oils, fuel oils, stove tops, furnace oils, and similar fuels that save you money every working day. See chart on next page for what this means to you in doing your work at lowest cost.

These are the economy features of the John Deere two-cylinder engine. Because of the rugged, statically and dynamically balanced parts, there is smoothness of operation. It de-

velops an even flow of power on belt, power take-off, and drawbar work of all kinds.

Because there are only two cylinders, the John Deere Engine is more compact. It is placed so that the crankshaft is crosswise to the tractor chassis. The belt pulley is placed on the right end of the crankshaft. No power is lost through bevel gears in transmission to either belt or drive wheels. All the power developed is delivered to the belt pulley.

Add all these advantages together. There is good reason why more and more farmers say with pride: "My tractor is a John Deere—It has only two cylinders."



There are only two cylinders and the belt pulley is right on the end of the crankshaft.

[6]

As "Simple as Only a Two-Cylinder Engine Can Be," but this was during the era of burning low-cost fuels. In later years, as collectors and restorers know, the simple two-cylinder engine became much more sophisticated and complicated. Nonetheless, the wonderful pulse remained, especially with Waterloo-built tractors, until the multi-cylinder roar of the New Generation.

Your Fuel Dollar Buys

—in terms of GALLONS

—in terms of POWER



GASOLINE

8.8 gal. at 11.3¢ per gal.



KEROSENE

10.7 gal. at 9.3¢ per gal.



NO. 1 DISTILLATE

14.7 gal. at 6.8¢ per gal.



NO. 2 DISTILLATE

16.0 gal. at 6.3¢ per gal.

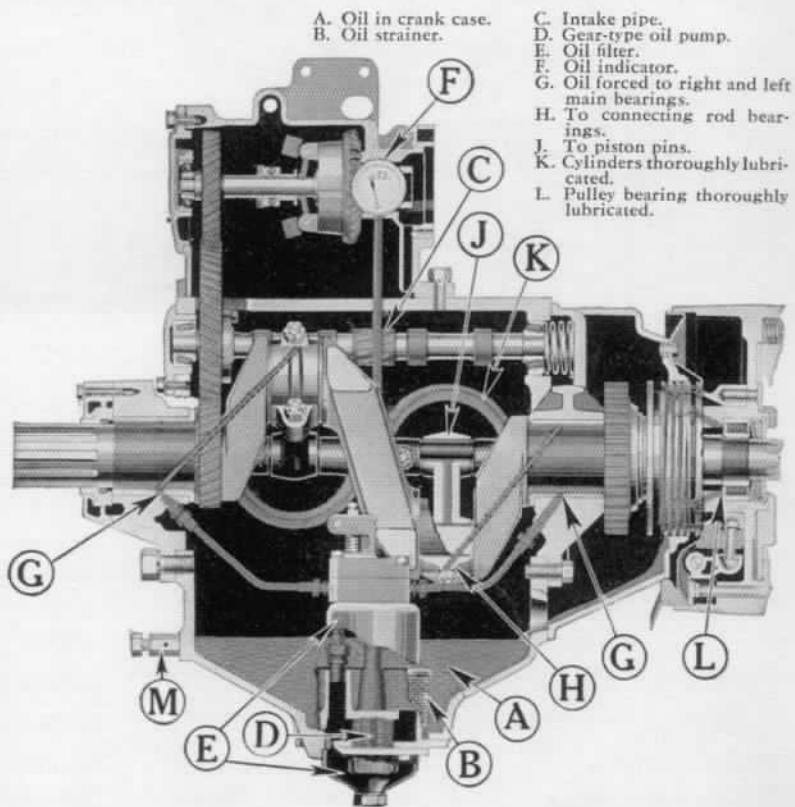
These fuel figures are based on the prices current in the principal agricultural sections of the country as of January 1st, 1935. These average prices may not be the present prices in your community. A check-up may reveal even greater differences. These figures do show, however, the real economies to be obtained by burning the lower cost fuels.

Gasoline 40° Gravity	100% ($\frac{124,800}{\text{per gal.}}$)	1,098,240 Power Units (Heat Units)
Kerosene 47° Gravity	130% ($\frac{124,800}{\text{per gal.}}$)	1,434,870 Power Units (Heat Units)
No. 1 Distillate 37° Gravity	184% ($\frac{124,800}{\text{per gal.}}$)	2,008,960 Power Units (Heat Units)
No. 2 Distillate 27° Gravity	204% ($\frac{124,800}{\text{per gal.}}$)	2,240,000 Power Units (Heat Units)

These figures showing the heat value or power value of the low-cost fuels are taken from a bulletin of the United States Bureau of Standards. They show the greater power of these low-cost fuels. This economy is one of the reasons why John Deere owners—farmers who burn the lower cost, more powerful fuels—show greater profits at the end of the year.

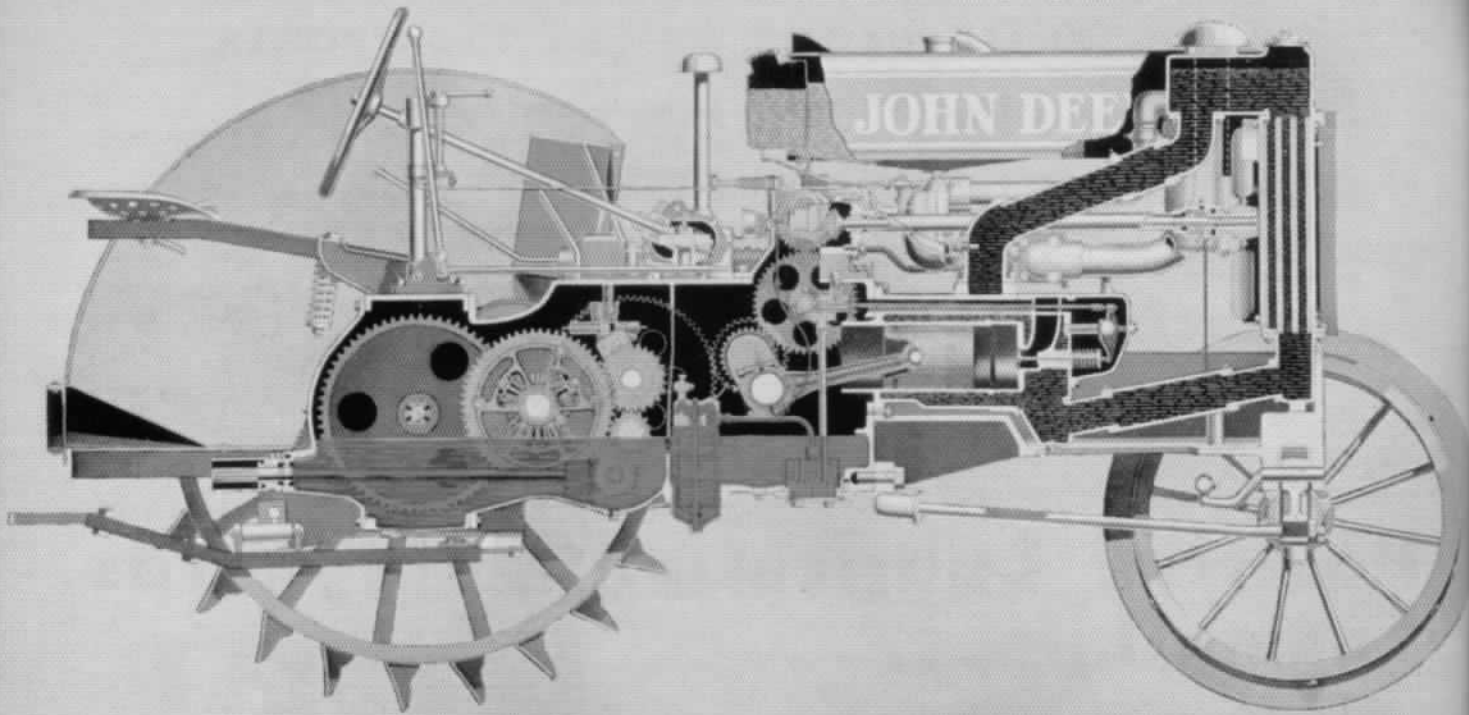
Positive Lubrication Safeguards Engine Life...

The engines in the John Deere Models AO and BO have a pressure, force-feed lubrication system. A positive, gear-driven pump forces screened oil under pressure through the oil filter to the main bearings where it is led through the drilled crankshaft to the connecting rod bearings, and through the drilled connecting rods to the piston pin bushings. Pistons, cylinder walls, and all internal parts of the crank case are lubricated with oil thrown off the revolving crankshaft. Lubrication is positive. No part of the engine is dependent upon the dip or splash system for lubrication. The volume of oil delivered to the bearings is more than adequate and is under sufficient pressure to float the bearings, thereby preventing metal to metal contact and largely eliminating wear and the necessity for bearing take-up.



{ 7 }

Number 2 Distillate provided over twice the heat units per dollar than gasoline. Today's diesel is also superior to gasoline in heat units, and is fired at very high compression which is a significant advantage over the old distillate (all-fuel) engines, but the price advantage has disappeared. Low-sulfur diesel is now a relatively high-priced fuel. Note the unusual rear-view engine cutaway.



Here Is Simplicity Demonstrated

This cutaway view shows the extreme simplicity of the John Deere Models AO and BO Tractors. This feature alone would make these tractors outstanding. Notice the absence of all small complicated parts. Because of the exclusive John Deere two-cylinder engine design, hundreds of moving parts have been made unnecessary. All parts are rugged, able to stand up to the heavy-duty tractor jobs, easy to understand, easy to take care of, right on the farm. Yet in spite of heavier, stronger parts, the total weight of the tractor is less.

Notice, too, that all working parts are fully enclosed in a dust-proof case and that gears run in a constant bath of oil. It's easy to figure out what this means to you in longer life, greater freedom from repairs and upkeep. Crankshaft, connecting rods, piston pins, cylinder walls, and governor are positively lubricated by the full force feed, pressure lubricating system, shown on the preceding page.

Cutaway also shows the location of the oil pump, oil filter, integral power take-off, spring-mounted seat, and the operation of the thermo-siphon cooling system.

[8]

The cutaway views of the tractor on pages 8 and 9 show an "AO"; study of it and the "BO" on other pages will reveal several obvious differences between the two models, making future identification simple and immediate. The importance of keeping up with lubrication is obvious in the side view, as the gears ran in a constant bath of oil. Note that the thermo-siphon cooling system is illustrated.

This overhead view further emphasizes the remarkable simplicity of the John Deere AO and BO Tractors. It shows the horizontal two-cylinders, the ruggedness of all parts, the belt pulley on the crankshaft, the narrow compact design of the tractor chassis.

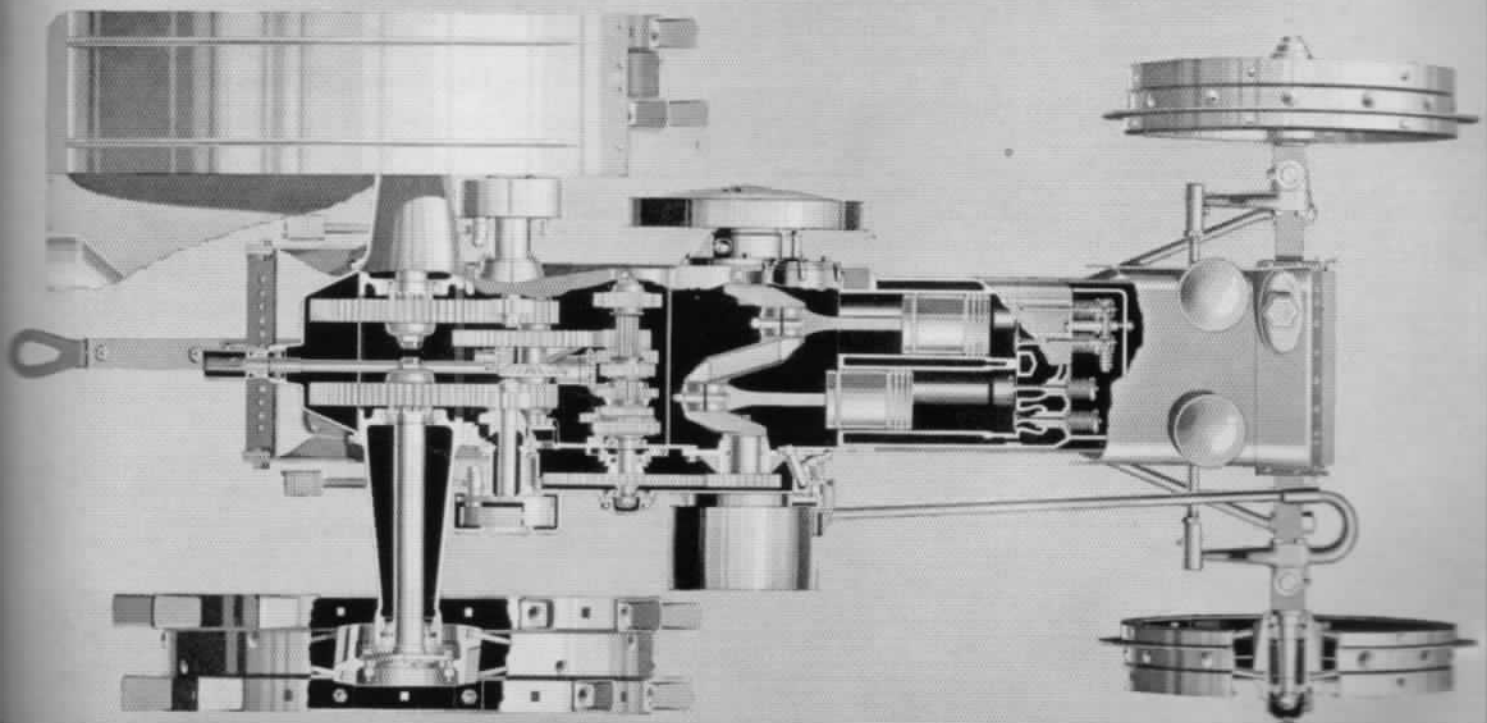
Equally important as this, it shows how power is delivered in a straight line—from pistons, through the crankshaft to the belt, and through the transmission to the drive wheels. There are no bevel gears to consume power, except in the differential. Power is delivered in a *straight* line. This straight-line power transmission—made possible because of two-cylinder engine design—is one big reason why the John Deere performs so satisfactorily, why it delivers such

a high percentage of its weight in power at the drawbar.

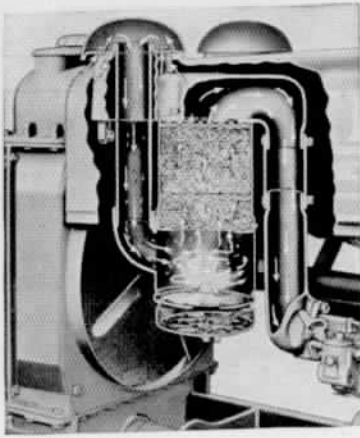
Here is power—a smooth flow of power at all times. The belt pulley at the opposite end of the crankshaft to the flywheel is, in effect, another flywheel. In combination with the sensitive John Deere governor and heavy rotating parts, power is carried through from one stroke to another with greater uniformity.

This overhead view shows the location of the foot brakes, the wider fenders, the centered location of the power shaft. It shows, likewise, the large percentage of weight located over the rear wheels which makes for both easier steering and handling as well as better traction in tough conditions.

Designed to Deliver Maximum Power



The overhead view shows what John Deere referred to as "straight-line power," referring to the ability for the engine to supply power directly to the transmission in a straight line rather than — if the reader will allow the term — around a 90-degree corner; this being possible with the transversely mounted engine. Another advantage of the day was the belt being driven off the end of the crankshaft.



Notice how the swirling motion of the air causes the oil to rise in a mist, thoroughly saturating the dust with oil. This affinity of dust for oil is the principle of this cleaner—the reason why it is so effective.

Only Clean Air Enters the Carburetor

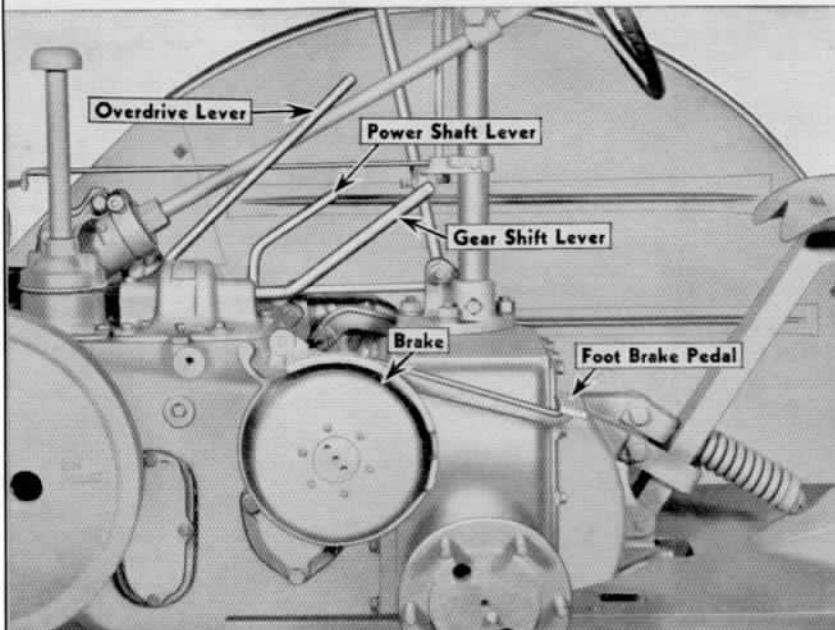
Clean air is second only to good lubrication in promoting long life in a tractor. Sand or dust getting inside the tractor engine can cause more wear in an hour's time than might be caused by months of operation with dust-free air.

The body of the filter unit is filled with a closely-packed wire core. An oil pan in the bottom of the unit is filled with oil. The air is drawn into the stack and down into the base of the cleaner by the suction created by the engine, and as the air stream swirls through the space below the filter core, it passes through a mist of oil, thoroughly saturating the dirt particles. When the air and oil are drawn into the upper part of the cleaner, the oil-soaked dirt particles are arrested by the wire core. The dirty oil drains down into the reservoir in the bottom where the dirt settles out of the oil and is easily removed. Thus, only *clean* air is allowed to reach the cylinders. The oil is kept warm and free flowing by a warm draft from the fan. It is not necessary to wash the core—the oil does this for you.

Enclosed Operating Parts Automatically Oiled

All of the important working parts on John Deere Tractors are completely enclosed within a dust-proof case. Parts operating in oil

carry oil to all other parts within the case, insuring thorough, automatic lubrication, and safeguarding tractor life.



All Controls Right at Your Finger Tips

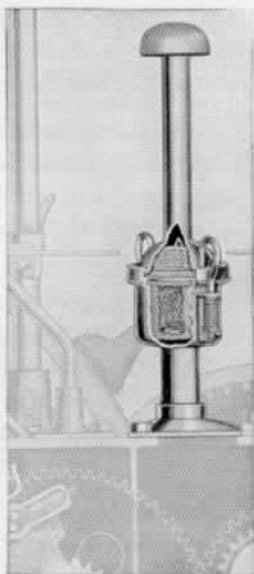
The John Deere Models AO and BO are as convenient to handle as your automobile. You can easily reach all controls—clutch lever, power shaft lever, overdrive lever, gear shift, and throttle. And right under your feet are the convenient brakes that stop each rear wheel independently, enabling you to make extremely short turns around trees and at the ends of tree rows. These brake pedals are equipped with locking device to hold them in a set position.

[10]

Most of the comments made on pages 10 through 13 were typical of John Deere tractor advertising of the era. Reading through each of the engineering and operating features provides an understanding of how well these 70-year-old machines were designed and built. In comparing them today with their competition, it seems amazing that anyone would have actually purchased something other than a John Deere.

Breather and Ventilator Keep Crank Case Free from Gases and Vapors

A crank case ventilator pipe connected with the air cleaner maintains a forced circulation of air in the crank case, removing all gases and vapors. The bird-cage type air cleaner in the crank case breather removes dirt and abrasives so that only clean air enters the case. This principle of operation results in a good condition of oil through the prevention of "sludge" and aids the John Deere tractor in burning low-cost fuels.



John Deere Natural-Draft Carburetion

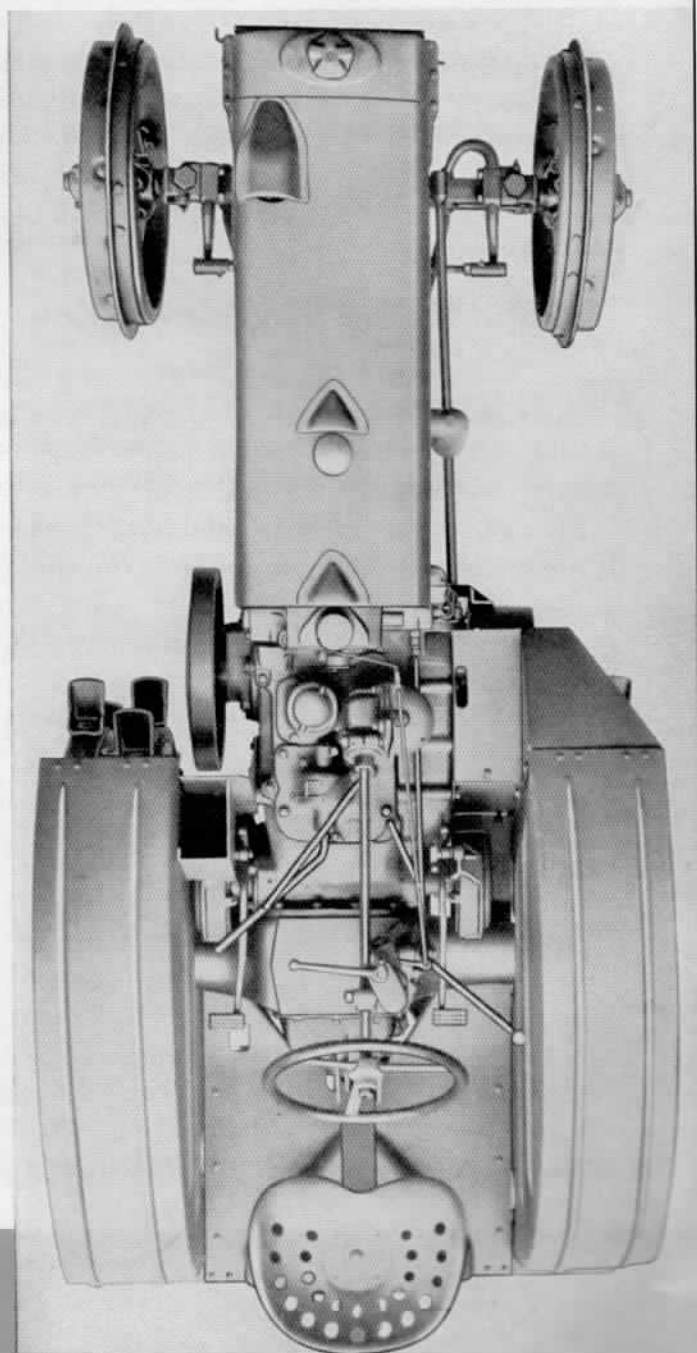
Efficiency and economy have been aided materially by the *natural-draft* fuel induction system of John Deere Tractors.

In all John Deere Tractors, from the first one placed in the field twelve years ago to those of today, the fuel has been drawn downward a short distance from the carburetor, through a short, heated manifold into the combustion chamber of the engine. This design aids complete, clean fuel combustion. It permits the development of maximum power from fuels and results in uniform fuel economy and engine operation at all engine speeds.

At Right: Overhead view of the Model BO. Notice that all controls are within easy reach of the operator.

Muffler and Spark Arrester

John Deere Models AO and BO Tractors are equipped with a combination muffler and spark arrester below the hood line which softens the sound of the engine and deadens live sparks—an important safety factor when working in any fields, and around buildings or straw stacks.



[11]

Don't think for a moment that the fuel-induction system was easy to develop. Although other manufacturers tried, none was as successful as John Deere in developing a tractor that burned low-cost fuels such as kerosene and petroleum distillate. The layout of the engine allowed a short, heated path from the carburetor to the combustion chamber, and that made all the difference.

Hand-Operated, Dry-Plate Clutch

The power of the engine is engaged by means of a dry-plate clutch, which is easy to operate from the tractor seat or from the ground. Only one man is required to back the tractor to machines for attaching to drawbar. This clutch picks up the maximum load gradually. Positively locks in or out. The clutch facings are inexpensive and are practically the only clutch parts that ever need replacing. These facings *float* in the clutch—and can be quickly and easily replaced. Adjustment can be made in less than five minutes.

John Deere Thermo-siphon Cooling System

The engine in the John Deere Tractor is cooled by the thermo-siphon system. This provides effective temperature control in simplest form.

After the engine is started, the water does not begin to circulate until the engine is hot enough to insure complete fuel combustion. The water circulates according to the needs of the engine—not arbitrarily to the dictates of a water pump. Elimination of the water pump means fewer parts—less wear and service.

The fan is gear and shaft driven—positive in action. No belts are required—there are no adjustments, no delays, no expense.

Smooth, Vibrationless Power

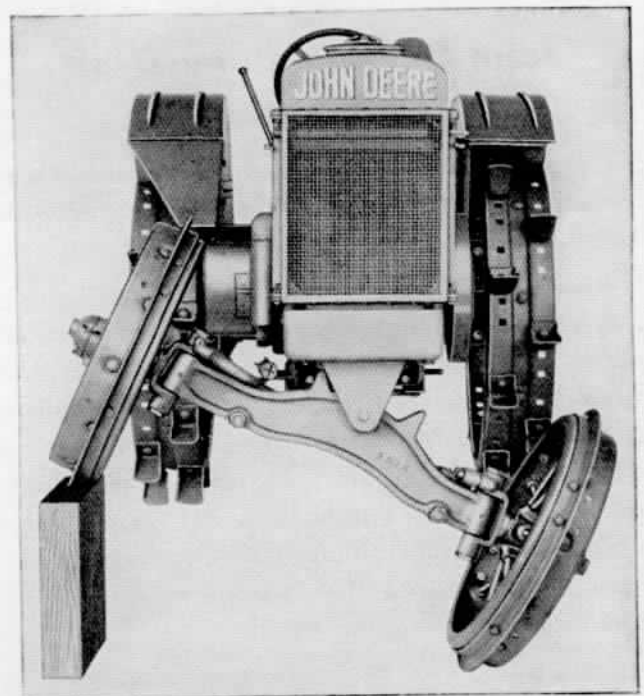
Because of the permanently sensitive governor, the heavy, dynamically-balanced reciprocating parts, and the belt pulley on the opposite end of the crankshaft to the flywheel—in effect another flywheel—power is carried through from one power stroke of the engine to another

with greater uniformity. There is a smooth, steady flow of power at belt, power take-off, and drawbar at all times.

The governor on the Models AO and BO Tractors controls the engine at all speeds and responds instantly to any variation in the load. Heavy-duty ball bearings minimize friction and wear of the governor. Direct oil line from the filter insures positive lubrication. The flyballs have no actuating springs—the John Deere governor stays sensitive even after years of service.

Flexible Front Axle

The Models AO and BO have flexibility for all field conditions. The front axle can oscillate 19 inches without binding. This will appeal particularly to the man who has to work in rough conditions or who has to cross irrigation ditches or water dikes. There is no twist or strain on the tractor.



[12]

The John Deere Thermo-siphon Cooling System is an interesting story in itself. It wasn't until the 1950s that a young engineer with Deere studied the system extensively, and discovered that it wasn't really very effective at truly circulating the water. Even so, water seemed to move around enough to do a reasonable job of keeping the early and relatively low-powered two-cylinder engines cool.

Banjo-Type Rear Axle Housing

Great strength and rigidity are secured by casting this housing in one piece and shaping it like a truss. There are no bolts to loosen and the proper alignment is maintained.

Safety and Comfort

The Models AO and BO have a spring-cushioned seat which is adjustable fore and aft to the reach of the operator. A large, roomy platform permits the driver to sit or stand at will. The fenders provide protection from moving parts as well as exclude dust and dirt.

Power Shaft

The power shaft is located *inside* the transmission case where it is automatically lubricated and fully protected from dust and dirt. The power shaft extension is located approximately in the center of the rear axle housing cover which makes it possible to attach power-driven implements in the center of the tractor. This power shaft is regular equipment on all John Deere Models AO and BO Orchard Tractors.

Radiator Curtain and Guard

One of the requisites of operating a tractor successfully and economically is the ability to get the engine up to proper temperature quickly and maintain it. By means of the radiator curtain, any part or all of the radiator can be covered to meet varied weather conditions. A radiator guard protects the curtain and prevents the radiator fins from being damaged.

Water-Temperature Gauge

A water-temperature gauge, located within easy view of the operator, gives you the exact temperature of the cooling system at all times. This takes the guesswork out of regulating the radiator curtain. It's easy to maintain the exact temperature for the most efficient burning of the low-cost fuels.

Easy to Get at All Working Parts

The connecting rod bearings, crankshaft bearings, valves, ball and roller bearings—practically every operating part of the John Deere Models AO and BO can be adjusted from a standing position. This means a lot to you in keeping your tractor in perfect running order.

Simplicity Means Fewer Repairs

Because the John Deere Models AO and BO Tractors are so simple in construction, there are fewer parts to wear, fewer adjustments to make. This is an important point to consider when you figure the year-to-year cost of tractor operation.

Built Low

John Deere Grove and Orchard Tractors are built low. The Model BO stands only 52-1/2 inches high over-all. Notice that the Model BO in the illustration below comes only a little higher than a man's waistline. Notice, too, the streamlined hood—there's not a thing to catch branches.



[13]

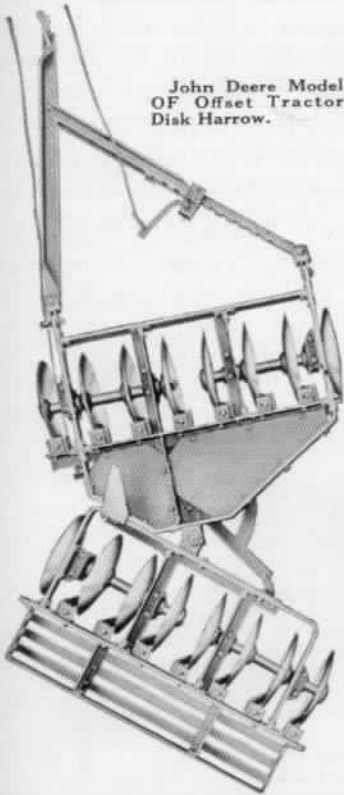
The photo shows how low the profile of the "BO" actually was, but all is not exactly as it seems. Scaling the known height of the tractor, the man is estimated to be at least six foot, four inches. Doesn't really matter, as the "BO" was small, and that's part of its widespread appeal today, along with a safe operator's platform for younger drivers. The problem is finding one with an owner willing to sell.

John Deere Model OF Disk Harrow

Rugged strength and the mechanical efficiency to handle the toughest disking jobs are qualities that have popularized the John Deere Model OF Offset Tractor Disk Harrow especially in the orchard country of California and the Pacific Northwest. Because of its heavy-frame construction and wide spacing of the large disks of correct curvature, the OF penetrates readily in hard ground and turns under heavy cover crops, leaving the soil



Here's a Model BO and Model OF Disk Harrow making a fine moisture-conserving mulch in a California pear orchard.



John Deere Model OF Offset Tractor Disk Harrow.

well-pulverized and compact. While unexcelled as an orchard disk harrow, it also does good work in field.

Front gang throws the soil to right; rear gang throws to left, leaving the ground level. Left-hand turns can be made without straightening gangs. Pull trip rope and straighten gangs for right-hand turns. Tractor does all the work of angling and straightening gangs. The angling operation is almost entirely automatic. Just pull the rope when going straight ahead to get the cutting position generally used. To get the extreme cutting, either turn to left or back the outfit as required. Gangs can be offset to left, if desired. The OF is low down; easy to handle. Sizes: 4-1/2-, 5-1/4-, 6-, 6-3/4-, 7-1/2-, 8-1/4-, and 9-foot. Can be furnished with 20- or 22-inch heat-treated disk blades.

[17]

The Model "OF" Offset Tractor Disk Harrow was designed for rough use. Its heavy frame and wide disk spacing did a real job at getting through the heavy side growth common in many orchards, and the offset design allowed it to pass under branches. Working close to trees made the optional citrus fenders a wise choice. Depth bands were an option for the "OF" to protect shallow roots in soft soils.

SPECIFICATIONS

John Deere Model AO Tractor

CAPACITY—Handles load ordinarily pulled by six horses or mules. Operates 24-inch John Deere Thresher, 22-inch Competitive Thresher.

SPEED—1st, 2 MPH; 2nd, 3 MPH; 3rd, 4 MPH; 4th, 6-1/4 MPH; Rev., 3 MPH.

BELT PULLEY—Dia. 12-3/4 inches. Face 7-1/4 inches. RPM 975 with 1 Roller and 1 Bronze Bearing.

BELT SPEED—3270 FPM.

ENGINE—

2 Cylinders—Cast-in-Block.

Valves-in-Head.

Engine Speed—975 RPM.

Bore—5-1/2 inches. Stroke—6-1/2 inches.

Crankshaft—Special Quality Steel Drop Forged, 3-inch Crank Pins.

Bearings—2 Main, Bronze Backed, Babbitt-Lined. Removable. 2-3/4 inches Dia. x 3-1/4 inches wide.

Connecting Rods—Special Quality Steel Drop Forged.

Bearings—Babbitt-Centrifugally Spun in Rod. 3 inches Dia. x 2-3/8 inches wide. Bronze Bushings for Piston Pin.

Governor—John Deere Design. Enclosed Fly-Ball Type with 1 Ball Thrust and 2 Self Adjusting Ball Bearings.

Carburetor—Natural Draft Type with Load and Idle Adjustment.

Ignition—High Tension Magneto with Enclosed Automatic Impulse Starter.

Air Cleaner—Oil Wash Type.

Lubrication—Full Force Feed Pressure System with Oil Filter.

Cooling—Thermo-Siphon with Gear and Shaft Driven Fan. (No belts or water pump.)

Fuel Tank Capacity—16 gals.

Gasoline Tank Capacity—1 gal.

Water Capacity—8 gals.

CLUTCH—Two 10-inch Dry Disks—Locking In and Out.

TRANSMISSION—Selective Type Spur Gears, Forged, Cut, and Heat-Treated. Shafts Operating on 3 Roller, 2 Taper Roller, 7 Ball, 2 Bronze Bearings.

Rear Axles—2-3/4 inches Dia. Mounted on 4 Taper Roller Bearings.

REAR WHEEL SIZE—Dia. 42-3/4 inches, Face 10 inches.

FRONT WHEEL SIZE—Dia. 28 inches, Face 6 inches. Mounted on 4 Taper Roller Bearings.

REAR WHEEL TREAD—50-1/2 inches.

WHEEL BASE—76 inches.

TURNING RADIUS—13 feet.

TURNING RADIUS WITH DIFFERENTIAL BRAKES—9 feet 10-1/2 inches.

DRAWBAR RANGE—

Vertical Adj. 12-14-16 inches.

Horizontal Adj. 26-1/2 inches.

POWER TAKE-OFF—544 RPM.

DIMENSIONS—

Over-all width—61 inches.

Over-all length—124 inches.

Height to Radiator Cap—55 inches.

SHIPPING WEIGHT—4088 pounds.

John Deere Model BO Tractor

CAPACITY—Handles load ordinarily pulled by four horses or mules.

SPEED—1st, 2 MPH; 2nd, 3 MPH; 3rd, 4 MPH; 4th, 6-1/4 MPH; Rev., 3 MPH.

BELT PULLEY—Dia. 10-5/8 inches. Face 5-1/2 inches. RPM 1150 with 1 Roller and 1 Bronze Bearing.

BELT SPEED—3200 FPM.

ENGINE—

2 Cylinder—Cast-in-Block.

Valves-in-Head.

Engine Speed—1150 RPM.

Bore—4-1/4 inches. Stroke—5-1/4 inches.

Crankshaft—Special Quality Steel Drop Forged, 2-1/2-inch Crank Pins.

Bearings—2 Main, Bronze Backed, Babbitt-Lined. Removable. 2-1/4 inches Dia. x 2-1/2 inches wide.

Connecting Rods—Special Quality Steel Drop Forged.

Bearings—Babbitt-Centrifugally Spun in Rod. 2-1/2 inches Dia. x 2 inches wide. Bronze Bushing for Piston Pin.

Governor—John Deere Design. Enclosed Fly-Ball Type with 1 Ball Thrust and 2 Self Adjusting Ball Bearings.

Carburetor—Natural Draft Type with Load and Idle Adjustment.

Ignition—High Tension Magneto with Enclosed Automatic Impulse Starter.

Air Cleaner—Oil Wash Type.

Lubrication—Full Force Feed Pressure System with Oil Filter.

Cooling—Thermo-Siphon with Gear and Shaft Driven Fan. (No belts or water pump.)

Fuel Tank Capacity—12 gals.

Gasoline Tank Capacity—1 gal.

Water Capacity—5-1/2 gals.

CLUTCH—Two 8-inch Dry Disks—Locking In and Out.

TRANSMISSION—Selective Type Spur Gears, Forged, Cut, and Heat-Treated. Shafts Operating on 3 Roller, 4 Taper Roller, 5 Ball, 2 Bronze Bearings.

Rear Axles—2-3/8 inches Dia. Mounted on 4 Taper Roller Bearings.

REAR WHEEL SIZE—Dia. 40 inches, Face 8 inches.

FRONT WHEEL SIZE—Dia. 24 inches, Face 5 inches. Mounted on 4 Taper Roller Bearings.

REAR WHEEL TREAD—41-1/4 inches.

WHEEL BASE—68 inches.

TURNING RADIUS—11 feet 8 inches.

TURNING RADIUS WITH DIFFERENTIAL BRAKE—8 feet 8 inches.

DRAWBAR RANGE—

Vertical Adj. 12-14-16 inches.

Horizontal Adj. 25-3/4 inches.

POWER TAKE-OFF—553 RPM.

DIMENSIONS—

Over-all width—50 inches.

Over-all length—117-3/4 inches.

Height to Radiator Cap—50-1/2 inches.

SHIPPING WEIGHT—2870 pounds.

GET THE FEEL OF THE WHEEL . . . ASK FOR A DEMONSTRATION

The specifications for the Model "AO" and "BO" Tractors appear above. What was not shown in the literature were the many options, especially wheel equipment, that significantly changed the weight of the tractors. Steel wheels were regular equipment and, although collectors prefer rubber tires for moving tractors around, steel is making a big comeback with those seeking absolute authenticity.

The Lindeman Power Equipment Co. of Yakima, Washington, purchased "BO" Tractors from John Deere and created the Lindeman—John Deere "BO" Crawler. They worked just fine for dealing with the slippery slopes of orchards in the Northwest.

Note that Lindeman did not highlight their name with yellow paint where it was cast into the track frame cover.

