

The First Farmall Series. The F Series.

(1923 to 1939)

The Regular.	The Original "Farmall".	(1923-1932)
The Farmall F-30.	A larger Farmall.	(1931-1939)
The Farmall F-12.	A smaller Farmall.	(1932-1938)
The Farmall F-20.	The Regular's replacement.	(1932-1939)
The Farmall F-14.	The F-12's replacement.	(1938-1939)

It is hard for us to appreciate how odd and ugly the first Farmalls appeared to the farmers of 1923. No tractor that looked and operated like the Farmall had been seen before. Many machinery companies, including IH, had been working on motorized cultivators and motorized mowers. Those tended to be geeky or goofy looking contraptions. There were multiyear struggles within IH about which way to go with the mechanization of farm machines. The concept of a

versatile tractor that could power many different machines seems obvious now.

It was not so in 1923.

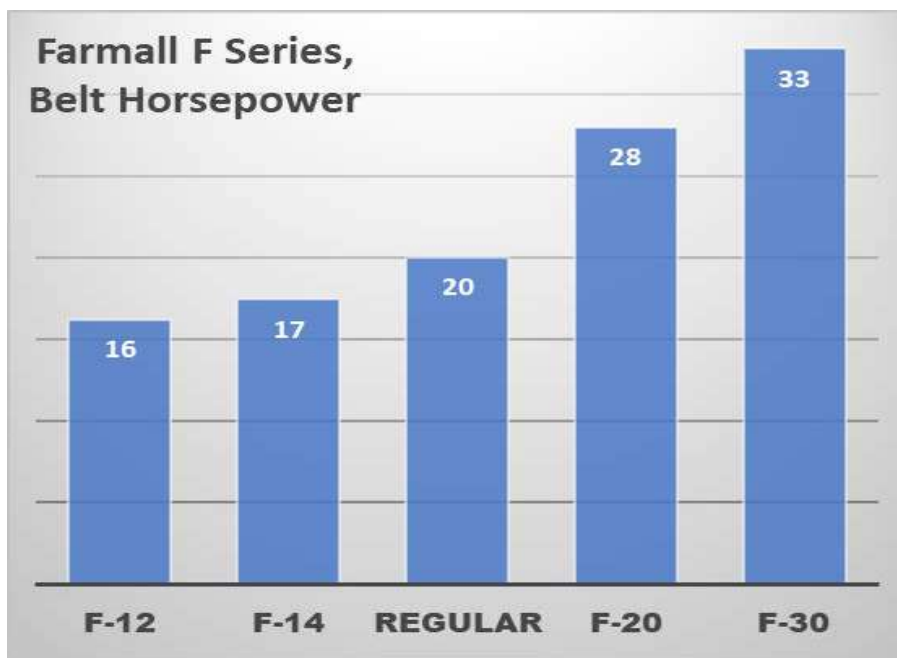
Henry Ford was already producing a functional and cheap Standard tractor, the Fordson.

The IH designers needed to produce the Farmall or any new tractor cheaply.

These first generation Farmalls were not pretty, but they did the job and they were affordable.



The Farmall (The Regular), the F-20, the F-30, the F-12 and the F-14.

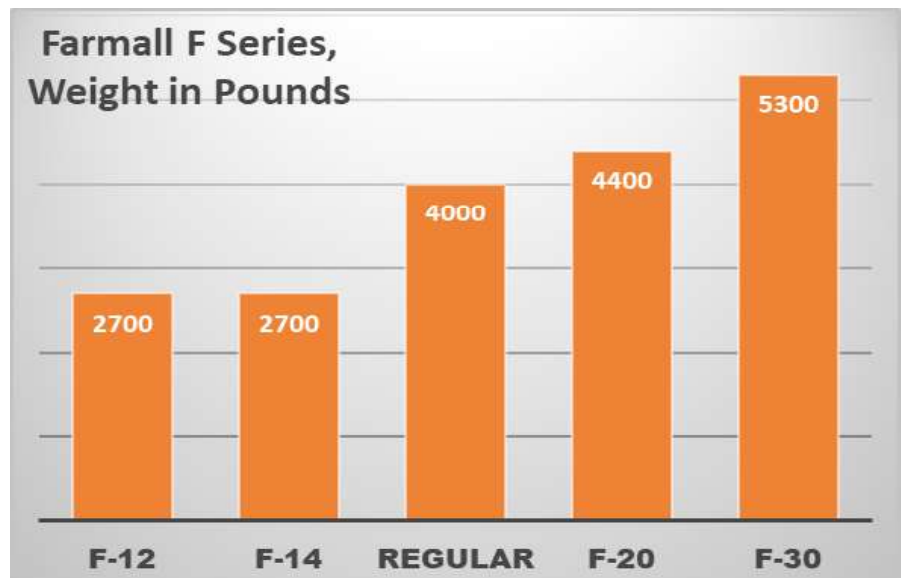


When Did the Farmall Appear?

Various sources date first Farmall anytime between 1923 and 1926. Because the design was so unique, IH rolled it out cautiously. 25 were built and tested in 1923. 200 were tested and improved in 1924. Most were tested in cotton country. Improvements were incorporated each year. 800+ were built in 1925. 4,430 were built in 1926. IH built a dedicated Farmall factory. 9,500 were built in 1927. 25,000 in 1928.



ABOVE: Granddaughter Hazel and Grandson Saul.
Not all of our tractors are IH



LEFT: Russ, Ella and Gail with the F-12.
They rode with me on many tractor trips throughout the Midwest.
It was great fun.

The Regular. The Farmall. (1923-1932)

The Farmall tractor was introduced in 1923. Before the Farmall was invented, tractors were big and bulky. They were designed to power threshing and other machines via an endless belt, and to pull large tillage machines.

No tractors were agile enough or user friendly enough to plant corn, cultivate growing crops, cut and rake hay or do many other tasks that were done by human or equine labor.

Horses were essential for every farm.

The Farmall changed all that.

The Farmall was light enough, agile enough and powerful enough to do a great range of farm work.

The first Farmall produced 20 horsepower at the belt and 13 pulling.

Its narrow front end and high crop clearance were ideal for corn cultivation.

The narrow front wheels allowed the Farmall to turn in a very short radius. That was necessary for row crop work and hay cutting.

The high crop clearance under this and future Farmalls allowed work in fields of growing crops.

To achieve that clearance, IH engineers chose to elevate the rear axle by using “planetary” drive gears. Planetary means a small gear on the drive shaft and a much larger diameter gear on the driven shaft (or wheel). That combination has two effects. It raises the tractor rear axle to gain clearance and it provides a substantial speed reduction between the fast turning engine and the slow turning drive wheels.

The Farmall came with both a belt pulley and a Power Take Off (PTO) feature. The tractor was powerful enough to run most threshing and stationary machines with its belt pulley.

The innovative PTO facilitated a whole new design in farm machinery operation. The PTO allowed the tractor to power drawn machines like corn pickers and grain swathers.

The first Farmall was simply branded the “Farmall”. There was no other designation. Later, when IHC realized what a great brand name

Farmall was, they decided to use that name over and over.

Subsequent Farmalls had a second designator. Such as F-20 or M.

To identify the original Farmall, farmers nicknamed it the Regular. That name stuck.

IH also produced a “Fairway” version of the tractor for golf course use. Among other modifications, the Fairway had steel wheels without lugs. Later golf course or grass models used steel spikes on the otherwise smooth steel wheels for traction.

The Regular was replaced in 1932 by the F-20.

Because rubber tires were not available until 1933, all Farmall Regulars were originally produced with steel wheels.

Initially, all IHC tractors were painted gray. IH made the switch from gray to bright red in late 1936. Because of that timing, all Regulars were gray when manufactured.





ABOVE: This “Regular” like all Regulars, was sold wearing steel wheels. On close examination it is obvious that the original wheels were cut off and replaced with rims and rubber tires. The short exhaust port is visible near the center of the photo.



LEFT: This front photo of the “Regular” gives a good view of the planetary drive to the rear wheels. The enclosed planetary mechanism is at the end of the heavy cast housing just inside of each rear wheel. In operation, rapidly revolving shafts, inside of the heavy horizontal axles, end in a small diameter gear. That small diameter gear meshes with a much larger diameter gear which is connected directly to the driving wheels.

What Happened to the Horses?

They were replaced by tractors, of course, but there are some interesting details.

The number of horses on US farms peaked near 30 million in 1920.

Tractors started to have an impact on farming around 1900. Nevertheless, horse numbers increased 10% from 1900 to 1920.

The tractors that existed before 1920 did not replace horses. Those tractors just allowed farmers to expand into the prairies. The huge tractors did that by tilling prairie sod resistant to sod busting by horses. Tractor engines also provided power for stationary threshing machines. That actually increased the need for horses.

Horses can be used to power stationary machines but the mechanisms for that are very inefficient.

Starting around 1920, tractors became small, agile and cheap enough to begin the 40-year process of replacing horses.

Horses were supplanted first in the grain farming areas. Most farms that were primarily crop producing used tractors instead of horses by 1940, many by 1930.

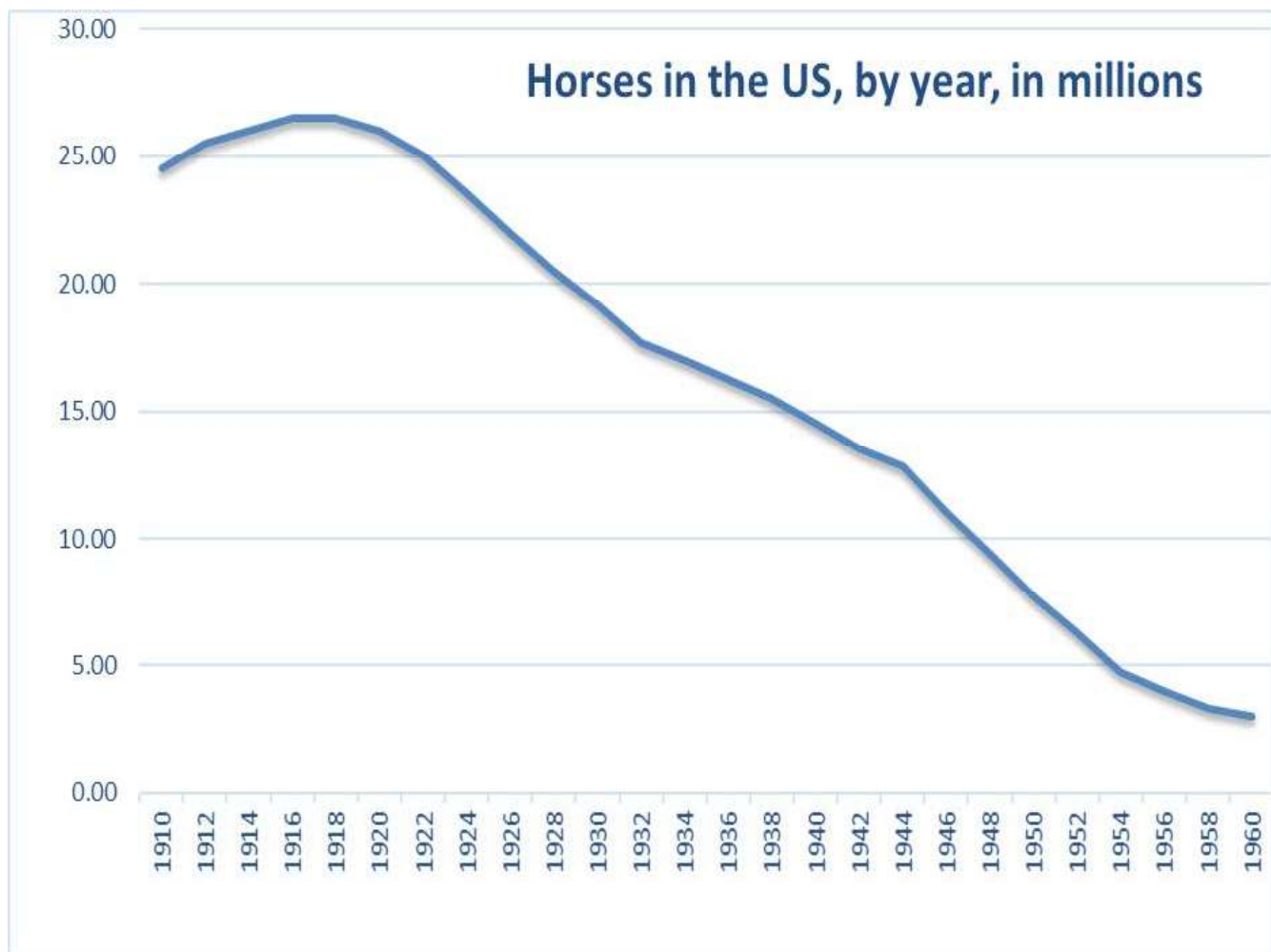
Most livestock and dairy farms of the upper Midwest replaced their horses by 1950.

The small farmers of the south and Appalachian regions were out of horses, or mules, by 1960.

It took specific tractor designs to do that.

The Standard tractors, such as the McCormick-Deering 10-20 and 15-30 were targeted to the wheat farms of the prairie country.

Row crop tractors were targeted to the mixed farmers who raised corn and hay to feed their hogs, beef and dairy animals.



Smaller tractors such as the Farmall A and B were targeted to the many low-acreage farmers of the south and to smaller jobs on Midwest farms. The very smallest tractors, like the Farmall Cub, were targeted to small part-time farmers and truck farms.

To tractor company marketing managers, the horse eliminating challenge was always on the small farm side.

Any tractor that could supply enough power to replace teams of three or more horses was sure to eliminate the horses from high acreage farms.

Tractors needed to be versatile, small and cheap to replace the single equine.

High volume sales were always on the small-tractor end of the market.

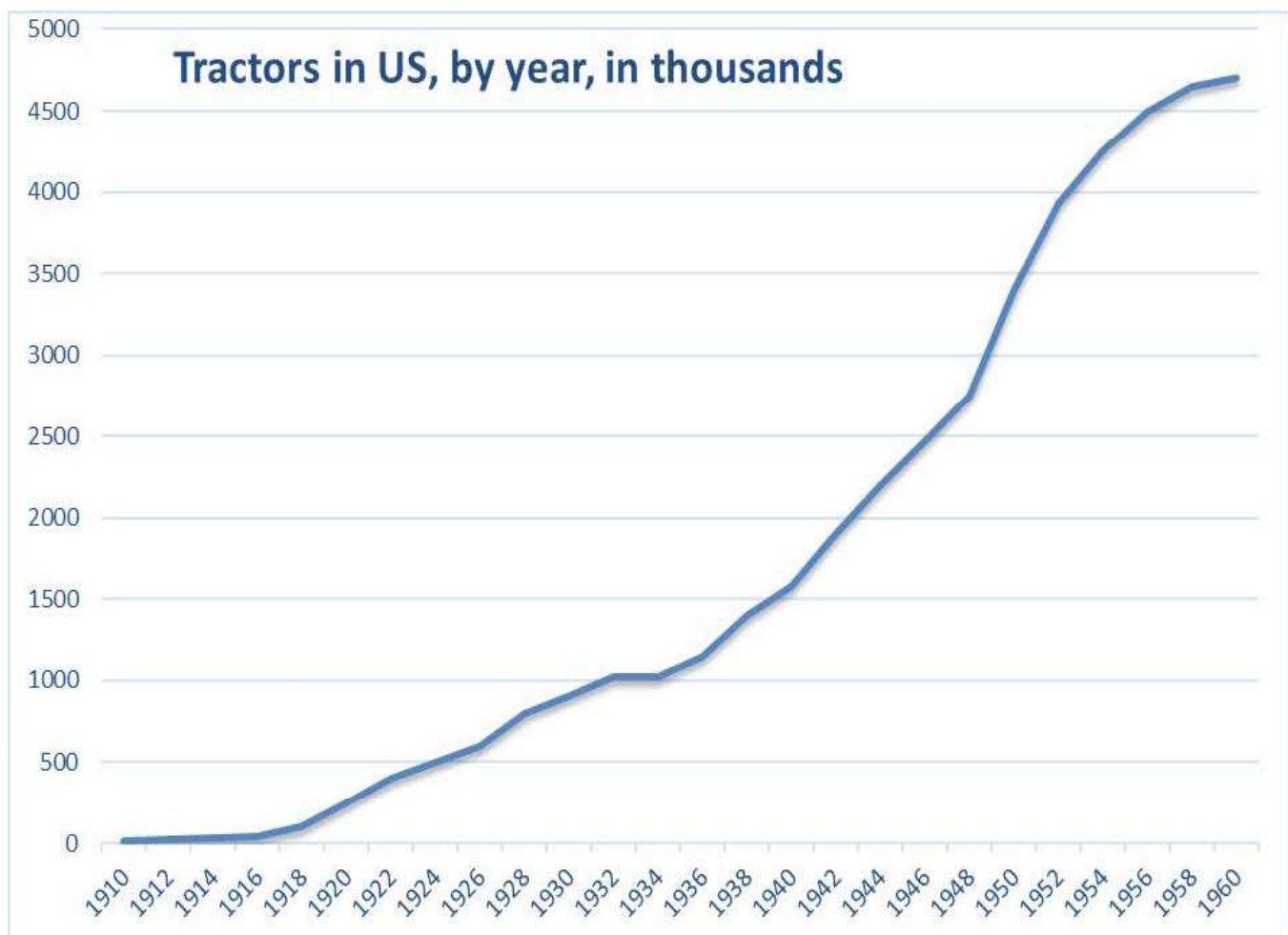
Tractor sales peaked in the early 1950s.

The number of horses hit a minimum by the end of the 1950s.

Tractors had replaced horses to the maximum extent possible. Today only the Amish and a few traditional farmers use horses for farm work.

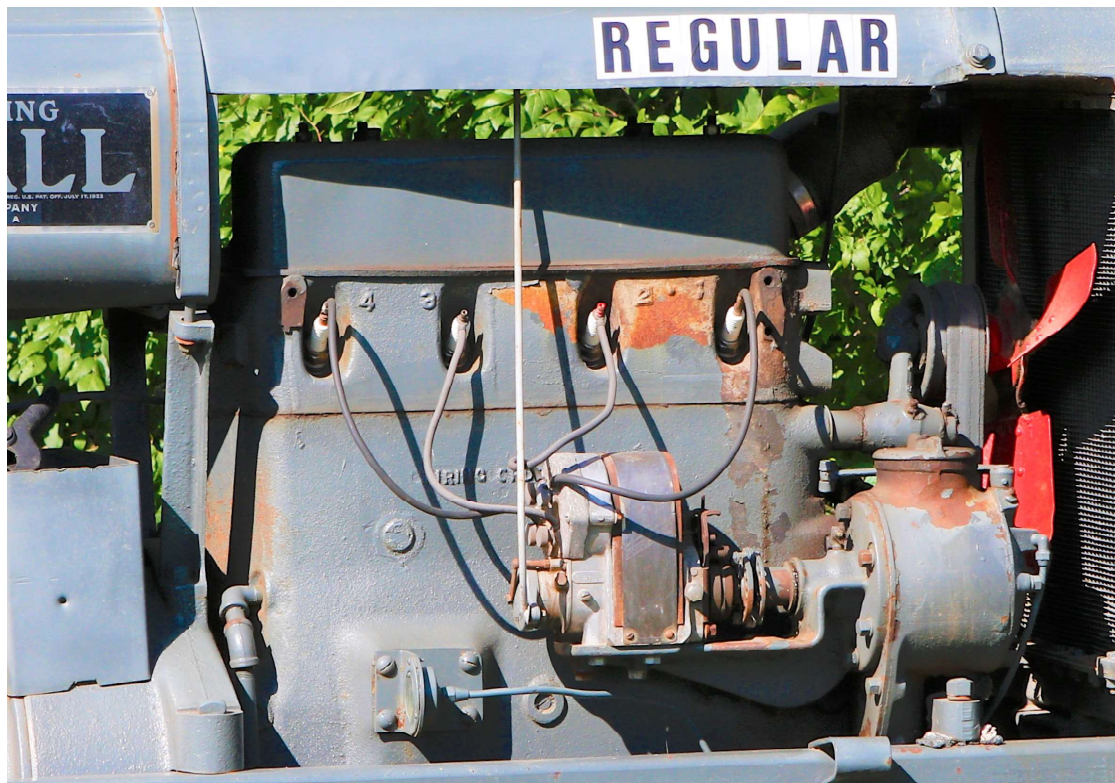


Inter-seeding a pasture with the help of three mustangs..





ABOVE: This left side view clearly shows the exhaust port in the lower center. In future models the exhaust port came with an upstanding pipe and later a muffler. Note the brass carburetor.



ABOVE: Right side engine view. Early tractors were ignited by a “magneto”, before distributors. The magneto is in the center of this photo with wires running to each of the four spark plugs. The small diameter vertical rod in the center is the “shut off” lever.

Farmall Regular Specifications

20 Horsepower on the Belt
13 Horsepower on the drawbar
In Production 1924 to 1932
Total Manufactured including Fairways, 135,000
This Regular was manufactured in 1927
221 CID Engine
Engine RPM, 1,200
Fuel Tank Capacity, 13 Gallons
Standard Rear Steel, 6 X 40
Speeds, 2.0, 3.0, 4.0, Rev. 2.8 MPH
Standard Weight, 4,000
Price in 1930, \$825

BELOW: The gear pattern is painted on the end of the fuel tank. IH neglected to provide farmers with that information on early tractors. The user-added brake pedal is visible in the lower right. The pedal is actually welded to the brake lever. The first Farmalls were designed without brake pedals. Only brake levers and cables. Another oversight that IH soon corrected.



ABOVE: Farmall Regular rear view. The “Regular” has a broad drawbar to which drawn implements could be easily hitched. Many farmers added a wooden board as a working or standing platform. It helped.



The Farmall Regular in these photos was purchased new in March of 1927 by an Iowa farmer named Joseph Penner. Joseph was 31 at the time. He died in 1962. Joseph's son, William Penner, also an Iowa farmer, restored the Regular in the 1970s. William was born in 1914 and died in 1992. William's daughter, Evellyn, married a non-farmer named Everett Vanderpool. Evellyn inherited the Regular from William. Everett drove the Regular in several parades. He bought new rear tires for the Regular in 2013 when he was 83 years old. After Everett died, Evellyn sold the fine old machine to us in 2017.

The F-30. (1931-1939)

A larger Farmall.

The Farmall Regular sold so well that it was almost eight years before IHC produced a second model.

The F-30 was introduced in 1931. It had increased power and weight. The F-30 was designed to meet the needs of larger farms.

The F-30 had four forward gears and a reverse. One more than the three-speed Regular but the speeds were still all “horse pace” slow.

It has a clutch pedal on the left and a hand brake lever on each side.

The ergonomics of the F-30 are terrible. The seat is too low, the controls are hard to reach by foot or hand, the steering wheel is at a clumsy angle.

I doubt that farmers of that time noticed.

It was a rugged and tremendously useful machine.

The F-30 used the same planetary drive scheme to obtain high clearance as the Regular. Its 284 cubic inch engine produced 33 horsepower on the belt or PTO.

That was enough power to run the biggest threshing machines.

It produced over 25 horsepower when pulling.

That was enough to pull a three-bottom plow.

The smaller and lighter Regular could only handle two bottoms.

On Midwestern farms the F-30 was often sold as a replacement and upgrade of the 15-30.

The F-30 had a water pump which was a major improvement over the Regular. The Regular depended on thermo-syphoning. Thermo-syphoning is a big phrase. It means the water had to circulate on its own due to differences in temperature between the hot engine and the cooling radiator.

Otherwise, the design concepts and features were similar to the Regular. Of course, there were many incremental improvements.

The F-30 was also produced in a Cane version. This variation had higher clearance.

The F-30 was replaced in 1939 by the newly styled Farmall M.



LEFT: Left-side-view of the F-30.

IH rerouted the engine exhaust up and away, and added a true muffler.

The canister at the front of the tractor is the air cleaner. The cleaned air is piped to the intake manifold and carburetor. Clean air extended engine life, a lot.



ABOVE: Although the F-30 is a hard tractor to work with ergonomically, it is in many ways a modern tractor. The tractor lacks hydraulics and electric start.

BELOW: This view shows the wide rear hitch of the early Farmalls. This F-30 has a swinging drawbar. The swinging drawbar is of great benefit when turning while pulling tillage machines. Changing the direction of force allows the tractor to pull more effectively.

Farmall F-30 Specifications

33 Horsepower on the Belt
 25 Traction Horsepower
 In Production from 1931 to 1939
 Total Manufactured, 29,000
 This F-30 was Manufactured in 1931
 284 CID Engine
 Engine RPMs, 1,150
 Fuel Tank Capacity, 21 Gallons
 Standard Rear Steel, 12 X 42
 Speeds, 2.0, 2.8, 3.3, 3.8, Rev. 2.5 MPH
 Standard Weight, 5,300 Pounds
 Price in 1939, \$1,075



Fuel on the Farm. Kerosene, gasoline, distillate, diesel and LP.

From the early 1920s until the introduction of the new models in 1939, most IH tractors were designed to run on kerosene.

In the early 1900s farms and small towns had kerosene for lamps.

Gasoline, however, was not widely available.

No cars, no gas stations.

Kerosene was available. It was needed for illumination and heat.

Kerosene combusts well only in a hot environment. Early tractors were started on gasoline and then when hot, switched to kerosene. That switch was done with manual valves.

That also meant that early tractors had two fuel tanks. A small tank for gasoline and a larger, main tank for kerosene. Typically the gasoline tank was a gallon or less. The kerosene tank might be 10 to 20 gallons.

Distillate is a petroleum product that can be extracted during the crude oil refining process. Distillate falls between kerosene and gasoline in characteristics. It gained some popularity around 1940 because of its availability and lower cost at that time.

By 1950, virtually all tractors ran only on gasoline or diesel fuel. For older tractors that had two tanks, the larger tank was then used for

gasoline, not kerosene. The small tank was unused.

IH introduced diesel tractors in the later 1930s. Early diesel engines were difficult to start when cold. Those diesels were again started on gasoline and switched over to diesel fuel when warmed up.

Diesel engine development persisted, however because diesel engines have advantages. Diesel engines have significantly lower maintenance requirements than gasoline engines. Diesel fuel has often been less expensive than gasoline.

By the late 1950s diesel engines were improved to start directly. Even then, unless the engine was hot it was necessary to pre-heat the cylinders. Electrically powered heating plugs (glow plugs) were used.

Many diesels still require some glow plug use, even today.

LP (Liquefied Petroleum) enjoyed popularity in the early 1950s and again in the 1970s. There are advantages and disadvantages to LP. None of those pros and cons are overwhelming however. Over time the encumbrances in handling pressurized gas limited the use of LP. LP tractors can normally be recognized by the large circular tank.

The tank often obstructed the operator's view. Today, farm tractor engines run on a single fuel. Either gasoline, diesel or LP.

Generally diesel for larger tractors, gasoline for small tractors, commercial users may use LP.

LEFT. This is a photo of the fuel tanks on our ancient 15-30 McCormick Deering. The small cylinder in right center is the original gasoline tank. The large oval tank immediately behind it is the original kerosene tank. Beyond that is a similar but smaller water tank. The water tank has a pop can covering the inlet. Water was added to engines designed to run primarily on kerosene to make them run smoother when hot. The water was introduced through the carburetor to reduce pre-ignition, which was undesirable.



BELOW: A photo taken in 1955 on the Phinney Brothers Farm near Granite Falls, Minnesota. The photo was taken for the Midpane Gas Company and used in a LP gas promotion. The three farmers are Gunval Knutson, Merle Phinney and Wayne Phinney. The tractors are a Farmall 400, a Farmall Super M and a Farmall H. Photos courtesy of the Phinney Family.



BELOW: This is another Phinney photo from around 1930. This is a Farmall F-20. Notice the two tank setup. No water tank on this tractor. IH engineers have solved the pre-ignition problem with improved engine cooling. The F-20 has a sack of feed riding on the drawbar. Apparently his tractor was handy enough to help with simple chores. In the background: windmill, water pump, barn and grain bin.



The F-12. (1932-1938)

A smaller Farmall.

The Farmall F-12 was introduced in 1932, shortly after the F-30. It used a small, 113 cubic inch engine to produce 16 horsepower at the belt and 12 pulling.

It was focused to meet the needs of the smaller farm.

The F-12 was IH's third Farmall branded tractor.

The very popular but larger Farmall "Regular" had been introduced in 1924.

The smaller, lighter and less expensive F-12 was built for farms of 40 acres and smaller

With the F-12, the IH engineers tried a new design to achieve crop clearance. They used a combination of straight axles and large diameter rear wheels. This new approach also provided a good operator setting.

In future Farmalls, the straight axle and operator platform design became the common form.

Starting with the letter series in 1939, the planetary rear drive was used only on small tractors. The F-12's 16 horsepower at the belt was enough to power small machines.

The F-12 was categorized as a "one to two bottom plow" tractor.

The Farmall Regular could handle two bottoms.

The F-30, three.

The F-12 was a fine, but inexpensive tractor. It sold quite well.

Between 1932 and 1938, 124,000 F-12s were built and sold.

The normal F-12 weight is 2,700 pounds. That is just half of the F-30 weight of 5,300 pounds.

The F-12 was replaced in 1938 by the similar but improved F-14.





Farmall F-12 Specifications

16 Horsepower on the Belt
 12 Traction Horsepower
 In Production from 1932 to 1938
 Total Manufactured, 124,000
 This F-12 was Manufactured in 1937
 113 CID Engine
 Engine RPM, 1,400
 Fuel Tank Capacity, 13 Gallons
 Standard Rear Steel, 6 X 54
 Speeds, 2.3, 3.0, 3.8, Rev. 2.3 MPH
 Standard Weight, 2,700 pounds
 Price in 1937, \$595.

ABOVE: IH engineers tested many new ideas with the F-12. Straight rear axles vs planetary gears for one. Straight axles with the ability to slide the wheels to adjust wheel spacing became standard on many future models. The F-12 and F-14 also used fuel pumps instead of gravity for fuel flow. Pumps proved troublesome and were discontinued.

RIGHT: With the F-12, IH previewed the basic drawbar mechanism that would be used on the future Letter Series tractors. The drawbar was available with or without a swinging element. From the rear, the F-12 looks much like the future H and M Farmalls. The PTO is correctly placed.



The F-20. (1932-39)

The Regular's replacement.

IHC replaced the Regular with the F-20 tractor in 1932.

Improvements included a more powerful version of the Regular's engine.

Later F-20s had foot-pedal brakes.

This new tractor was still quite clumsy to drive. But at least the basic controls of left side clutch pedal, and right-side brake pedal for each rear wheel were established.

The F-20 used the same 221 cubic inch engine as the Regular but improved engine design produced 28 horsepower at the belt and 21 pulling.

Increased horsepower, by incremental engine improvements, was common at each stage of tractor evolution. The Regular delivered 20 belt and 13 pulling horsepower.

The F-20 employed the same planetary-drive rear axle concept as the Regular and the F-30.

The four forward speeds and one reverse are nicely functional, but still, all slow.

The F-20 sold extremely well.

The F-20 is the "old tractor" that is remembered by most farm boys of the 1950s.

I bought this tractor for \$750 from a car "motor-head" in north central Minnesota.

Someone had swapped it to him years before.

He used it for a while and then ignored it after it gave him trouble.

When I hauled it home, the tires were rotting off but the engine was loose

After a couple days of cleaning and tuning, it runs beautifully.

The F-20, like the F-30 was produced in a high clearance Cane version.

The F-20 was replaced in 1939 by the Farmall H.





Farmall F-20 Specifications

28 Horsepower on the Belt
 21 Traction Horsepower
 In Production from 1932 to 1939
 Total Manufactured, 154,000
 This F-20 was Manufactured in 1938
 221 CID Engine
 Engine RPM, 1,200
 Fuel Tank Capacity, 13 Gallons
 Standard Rear Steel, 6 X 40
 Speed, 2.3, 2.8, 3.3, 3.8, Rev. 2.8
 MPH
 Standard Weight, 4,400 pounds
 Price in 1935, \$875.

LEFT: This F-20 was sold with modern rubber tires. We can know that for two reasons. One, it has cast wheel rims that were designed specifically for rubber tires. Front and rear. And, two, it was manufactured in 1938. IH started manufacturing tractors with rubber wheels in 1937. After 1937, steel wheels were still available but most tractors wore rubber. Rubber was much better.

ABOVE: This F-20 still has remnants of the cable system that IH designed for turning with brakes. The Regular tractor design had automatic brake steering when the tractor was turned sharply at the end of a row. The operator controlled the brakes with levers. That mechanism was fully replaced with foot pedal braking with the Letter Series.

BELOW: The F-20 retained the wide drawbar and planetary drive rear end. That was changed with the Letter Series tractors. The F-20 was replaced by the H in 1939.



The F-14. (1938-1939) The F-12's replacement.

The two models are quite similar.

The F-14 used the same 113 cubic inch engine to produce 17 on the belt and 15 horsepower pulling.

Power was increased primarily by running the F-14 at 1650 RPMs instead of 1400 for the F-12.

That power increase was enough to significantly improve the utility of the F-14. It proved to be enough tractor for most small farms.

In 1937 IH offered electric starting and lighting as options for its tractors.

The steering wheel was elevated and positioned at an angle to improve ergonomics. In fact, the tilted steering wheel and drive shaft is the simplest and surest way to tell an F-14 from an F-12.

I bought a potato sacking machine from an old farmer. He recalled his father using their F-14 to simultaneously pull a potato lifter and a potato sacker through the fields.

The F-14 was replaced by the Farmall A and B in 1939.



ABOVE: This F-14 was sold with steel rear wheels. Clearly the rims and rubber tires were added later. The front tires seem to be original or at least a “factory” version. As rubber wheels were becoming available in the late 1930s, some farmers did opt for combinations.



ABOVE: Note the tilted steering shaft on this F-14. That is the easiest way to tell an F-12 and an F-14 apart. IH made a number of engine tweaking changes and increased the RPMs of the F-14. The resultant increase in power was enough to make the F-14 pass as the only tractor needed on many smaller farms of the time. It is an easy tractor to drive.

BELOW : The F-14 rear end is similar to the future models, H and M. The PTO is correctly placed to drive modern machines. This basic drawbar configuration was used for thirty years.

Farmall F-14 Specifications

17 Horsepower on the Belt
 15 Traction Horsepower
 In Production from 1938 to 1939
 Total Manufactured, 27,000
 This F-14 was Manufactured in 1939
 113 CID Engine
 Engine RPM, 1,650
 Fuel Tank Capacity, 13 Gallons
 Standard Rear Steel, 6 X 54
 Speeds, 2.4, 3.1, 4.0, Rev. 2.4 MPH
 Standard Weight, 2,700 pounds
 Price in 1938, \$655.



Planetary drive, straight axles and keyed straight axles.

This article is about the several ways that rear drive wheels can be mounted and impelled on a farm tractor.

The first and obvious way is to simply bolt the wheels to a straight axle that runs to the differential. That is how many wheels are mounted on cars and trucks.

The first McCormick Deering (Standard) tractors were designed that way also.

In a planetary design, the drive shaft from the differential ends with a small diameter gear. That small gear is in constant contact with the perimeter of a large diameter gear. Apparently, that physical arrangement, a small gear which might appear to revolve around a large gear, reminded someone of planets revolving about the sun.

In any case, picture a small gear actually driving a much larger gear.

The tractor ground wheel is affixed to the larger gear.

This mechanical construct accomplishes several things.

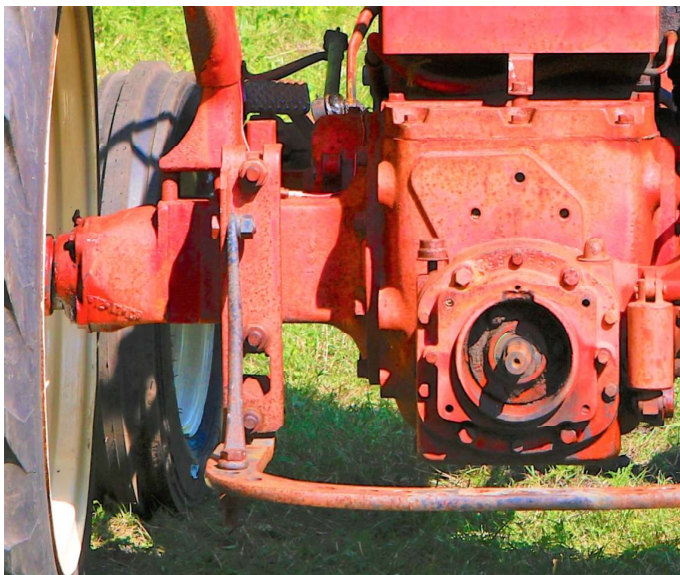
It reduces the high-speed rotation from the gear box to a much lower speed for the wheel. That also increases the torque of the ground wheel dramatically.

Because in practice, the small gear is mounted on the top side of the large gear, another effect is to raise the body of the tractor. That provides improved ground and crop clearance.

A speed reduction can be accomplished in a variety of ways. What is critical in the farm tractor application is the added clearance.

IH used a planetary drive on the first Farmall and in some succeeding models. They used planetary drive on the Regular, The F-30 and the F-20.

When IH produced the F-12 in 1932, they tried a new variation of the straight drive axle. The F-12 axle was keyed and clamped to allow the rear wheels to be moved in or out on the axle. This had the great advantage of width adjustment.



ABOVE: This is rear view of a 330 Utility tractor. The axles are part of a common differential assembly. It functions basically like the rear axle of a rear-wheel-drive automobile. These wheels are mounted securely to the axles and are not adjustable for width.



ABOVE: This is the rear view of an F-20 Farmall. The axle is high to provide crop clearance. The Planetary drive mechanism at each wheel, transfers the force from the high axle to the much lower wheel. The wheels are bolted directly to the hubs and are not adjustable for width.

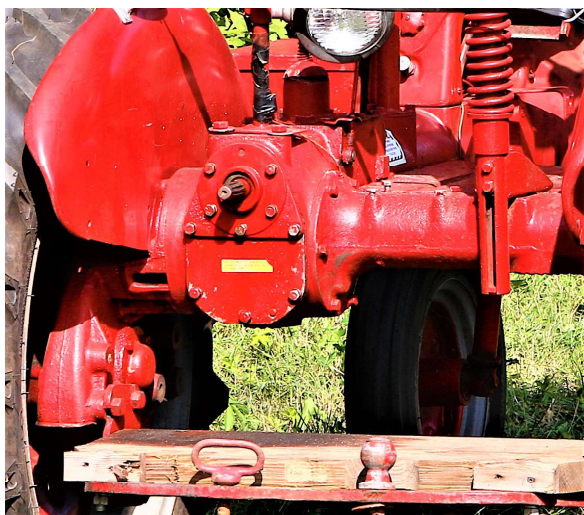
Changing wheel spacing allowed farmers to use tractors for different crop row spacing.

The F-12 used larger diameter rear wheels instead of a planetary drive to achieve high crop clearance.

IH learned from the F series tractors. In the Letter Series tractors, introduced in 1939, IH switched the rear axle forms.



ABOVE: This is the rear of a Farmall 200. A descendant of the F-12, F-14, and C. It has straight, keyed, axles that allow excellent wheel-width adjustment..



ABOVE: This is the rear of a 1947 Farmall Cub. The Cub is a Culti-Vision tractor like the A. As such it is offset with a long axle on the right and a short axle on the left. All Cubs use the planetary drive. Wheel width can only be changed by flipping rims.

The larger tractors, the C, the H and the M, employed the straight, keyed axles of the F-12 and F-14.

The smaller models, the A, the B, and the Cub used planetary drives.



ABOVE: This is the rear of a F-14 Farmall, a descendant of the C and F-12. It has straight, keyed, adjustable, axles.



ABOVE: This photo shows the F-12's keyed axle. This wheel can be moved in or out, to change wheel spacing. That is done by jacking up the tractor, loosening a clamp on the inner side of the wheel and sliding the wheel on the axle. That works pretty good if it is done at least yearly. If it has been decades since the wheel was adjusted, it will take more effort.