

How to use

the

PROOF-METER

... to get the most out of your
FORD TRACTOR

No More


"Blindfold"

Tractor Operation

How many revolutions is my engine making? Is it too fast for this job? Or too slow? . . . Wonder if my P.T.O. speed is where it ought to be? . . . How about my belt pulley? . . . Is it time to change the oil? Or should I have changed it last Monday? Or next Friday?

These are a few of the questions you have probably asked yourself many, many times. Until now it was difficult, impractical, often practically impossible, to answer them. Yes . . .

**Blindfold Operation Can
Cost Plenty of Money!**



* Reproduced under license agreement
with Ford Motor Company.
License # 5001 3-1-54

Only Ford Tractor Has the

**This book tells you how to use it to
get the most out of your Ford Tractor**

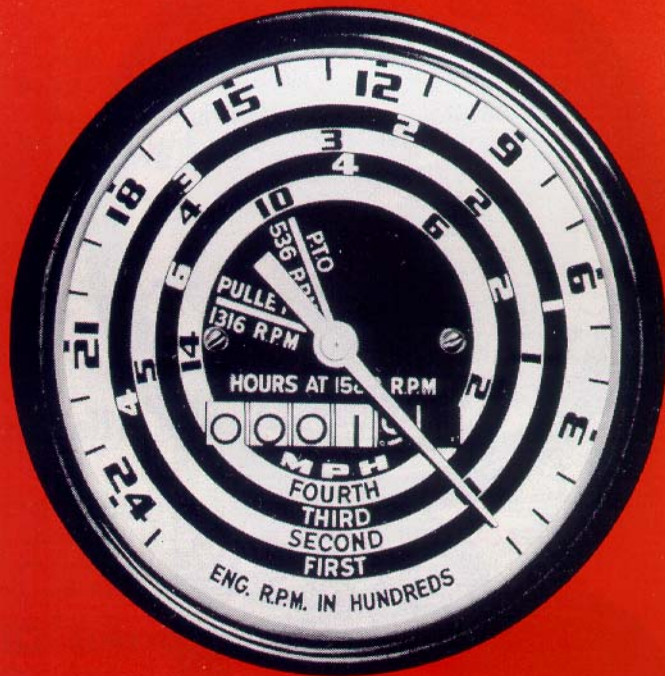
The Proof-Meter, now standard equipment on every new Ford Tractor*, gets rid of the "blindfold" you've had to put up with in operating a tractor. Right before your eyes you can now get proof of what you want and need to know . . . constant proof, convenient proof, positive proof.

The Proof-Meter, located before your eyes on the Ford Tractor's dashboard, is actually five instruments in one. At a glance it tells you *engine speed, tractor travel speed, P.T.O. speed, belt pulley speed and hours worked!*

This book tells you how you can get the most out of your Proof-Meter and therefore how you can get even greater performance and economy from your Ford Tractor itself! Yes . . .

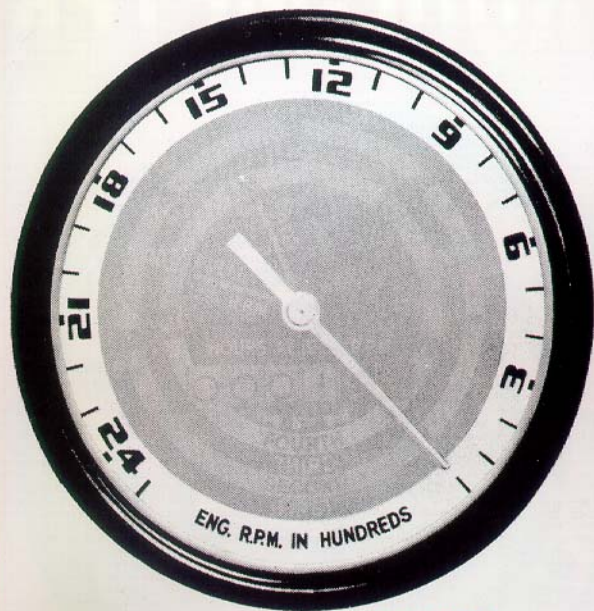
**The Proof-Meter Can
Save You Many Dollars**

PROOF-METER



*8N Ford Tractors with serial numbers beginning at 8N-273178 can be equipped with the Proof-Meter by installing a conversion kit consisting of a Proof-Meter, and new instrument panel. Other 8N Tractors require the above plus a new governor (part number 8N-18204-B).

LET'S SEE WHAT THE PROOF



PROOF BEFORE YOUR EYES

First

ENGINE SPEED

To simplify the explanation of how the Proof-Meter's engine speed indicator works, other readings have been eliminated in the picture, left.

The needle swings counter-clockwise as engine speed increases and tells you your engine speed in "hundreds" of revolutions per minute.

Engine r.p.m. is more than "something nice to know." For, when you really know the engine speed you'll be surprised what you can do, how much you can save in cold, hard cash! The next few pages tell you what we are talking about . . .



Checking Correct Oil Pressure Is A Cinch, Now

Correct oil pressure is vital to the life and efficiency of any tractor. How do you *know* that the oil pressure of your tractor is on the button? And,

how can the Proof-Meter have anything to do with oil pressure? Plenty! Here's how the Proof-Meter enables you to check oil pressure *any time*.

METER CAN DO FOR YOU



Be sure the engine is warm. Speed it up until the needle on the Proof-Meter points at 1500 r.p.m. Then check the oil pressure gauge. It should read 25 or over. But if it should ever

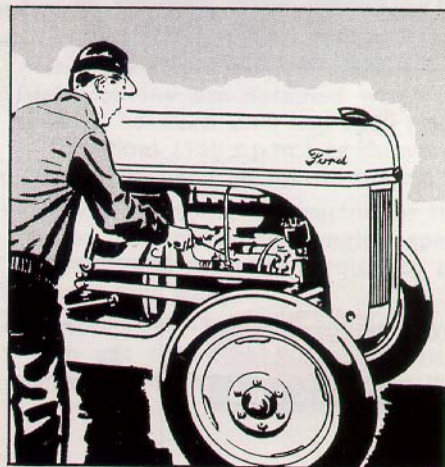
be considerably below this figure, then you should consult your dealer immediately. Thus, you can correct the trouble before expensive wear or damage can happen!

Is She Idling All Right?

Now You Can Tell!

How does the Proof-Meter help you set the idling jet of the carburetor? Pretty slick! Warm the engine, then idle clear down. If the Proof-Meter shows the engine is idling smoothly at somewhere between 400 and 500 r.p.m., then your idling jet and idle speed adjustment on the carburetor is set right. Naturally in cold weather it should be closer to 500 r.p.m.; in warm weather closer to 400 r.p.m. Handy—sure. A money saver—definitely!

Your Ford Tractor dealer should be contacted for any carburetor adjustment other than this.



With the Proof-Meter You Can Tell When the Governor Is Set For Maximum Speed



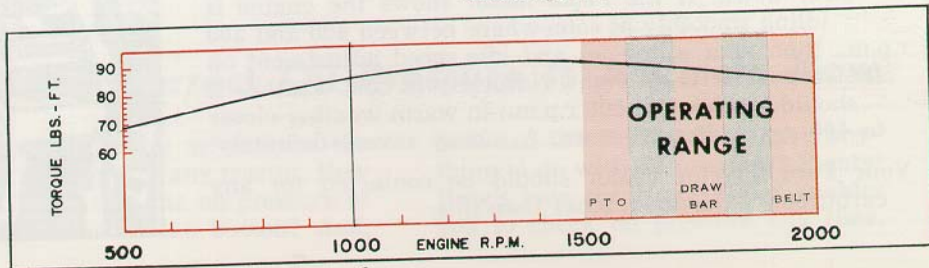
The 8N Ford Tractor is designed for an engine speed of 2200 r.p.m. with the throttle wide open and the tractor under *no load*.

So all you do is "open her up" and if the needle on the Proof-Meter registers 2200 then the governor is adjusted properly for maximum r.p.m. But if the needle goes above or under 2200, then you should see your Ford Tractor dealer for service help.

How Engine Torque Means Something to You

The Ford Engine torque curve is shown below. The highest point on this curve is obtained when the Ford Tractor's engine is running between 1400 and 1500 r.p.m.

At this speed, the tractor engine is developing its greatest "twisting" power. However, a higher engine speed will develop greater horsepower and better performance as well as maximum fuel efficiency. The range of engine speeds recommended for greatest overall efficiency in various types of work is indicated in the shaded portions of the torque chart.



Getting Maximum **Engine Performance**

and **Fuel Economy**

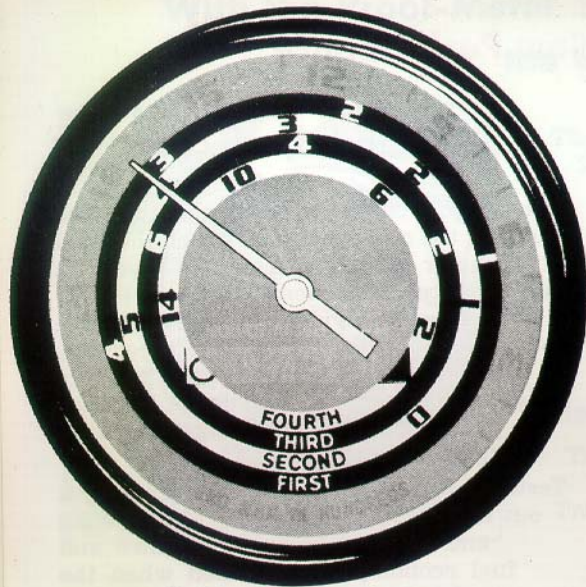


The torque curve on the opposite page shows the speed range in which the Ford Tractor engine operates to give best performance and economy. Until the Proof-Meter was provided, however, making sure you had the right engine speed was not an easy matter. People tried to judge by the sound of the engine, but they didn't really know whether their judgement was right.

Tests show that when the Ford Tractor is out in the field doing work like plowing and discing, best performance and fuel economy are obtained when the speed is between 1700 and 1800 r.p.m. (or about 1750 r.p.m.) as shown by the "drawbar" band on the torque curve.

So when you are using the tractor for this work, just check the engine speed indicator and set your throttle to get the speed you want.

By using the Proof-Meter in this way you can get better performance, lower operating cost and longer tractor life.



Second

TRACTOR SPEED

We have “blacked out” engine speed and show here only the tractor travel speed bands. Each band applies to a particular gear as shown. To find out the speed you’re traveling, just look where the needle crosses the gear band in which you are operating. No guesswork any more!

Here again travel speed is “more than something nice to know.” It affects implement life, implement performance and even *the crops on your farm*. These two pages tell why . . .

Never Operate Over Recommended Tractor Speeds — and You Never Abuse An Implement

Mowing is a good example. In a smooth field it’s easy to mow fast—too fast. Every implement, and the mower is no exception, is designed to do its best work within a certain speed range. Manufacturers build implements to operate at these speeds with, of course, a certain margin of safety. But you cannot operate any mower above its maximum recommended speed without seriously shortening its life. That need never happen with the Proof-Meter before your eyes.





Avoid Misses by Planting at the Correct Speed

When you operate a planter too fast, you are likely to get “misses.” *This cuts down yields and reduces profits.*

Of course, you can guess at the recommended speed and maybe go a little too fast. Or, you can operate considerably under to make sure you’re *not* traveling over speed.

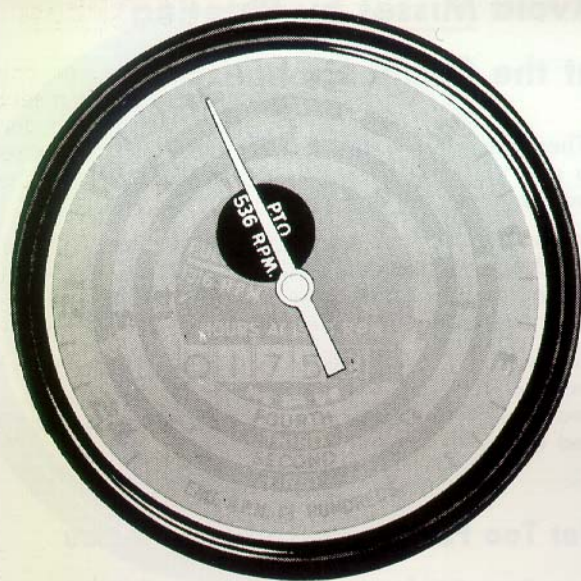
But with the Proof-Meter you can hold the correct speed. Result, you plant at maximum speed, you avoid “misses,” you get the job done faster and cheaper.



Not Too Fast – Not Too Slow – You Get Just Right Applications of Spray

When applying chemical weed killers such as 2, 4-D with specified pump pressures and nozzle sizes, the “speedometer” on the Proof-Meter will permit you to apply exactly the right amount of material per acre. This is important from two viewpoints. You will be assured of applying “enough” to kill weeds. You avoid overdoing the job to the point where you might injure the crop . . . you eliminate the possibility of wasting chemicals.

PROOF RIGHT BEFORE YOUR EYES



Third

P.T.O. SPEED

The recommended P.T.O. speed for any P.T.O. driven implement can be achieved by checking the speed of some shaft on the implement with a speed counter. But practically, you can do this only while the implement is *standing* and under *no load*. Speed naturally drops under load. How much? You guess!

With the Proof-Meter the P.T.O. speed is "right before your eyes" all the time; *while moving, while under load.*

Better Implement Performance When P.T.O. Speeds Are Correct

Let's take the corn picker as an example. When the P.T.O. is running under speed the gathering chains, snapping rolls and husking bed rolls are not sufficiently aggressive to do a thorough job. When these parts run too fast they are over-aggressive, and consequently damage and shell the corn. But with the Proof-Meter "advising" you constantly of the correct P.T.O. speed you can keep the corn picker running at the speed it was designed to run for best performance.

See page 15. Conversion table shows Ford Tractor engine speed for recommended P.T.O. speeds other than ASAE Standard.



PROOF BEFORE YOUR EYES



Fifth

HOURS WORKED

This part of the Proof-Meter resembles the "miles travelled" part of your automobile speedometer.

Instead of registering "miles travelled," however, it records the number of "hours worked," based on an average engine speed of 1580 revolutions per minute.

This hour meter feature of the Proof-Meter can be useful in many ways.

It can increase the life of your tractor, it can cut the operating cost of your tractor, it can even contribute to your over-all farming operation!

An Invaluable Record For Figuring Tractor Costs

Tractor costs have an important bearing on farm profits. It is also true that a tractor can earn a profit for you only when working. Since the Ford Tractor is a year 'round tractor, the Proof-Meter will prove to you how many more hours you use the Ford Tractor—how low the costs are per hour of operation—how much more profitable it is to own.

After you analyze your hour meter records you may be able to figure out new ways of capitalizing on your Ford Tractor in slack seasons. The hour meter will also come in handy in custom work.





Helps in The Planning of Your Farm Operation for Greater Profit

From the Proof-Meter you know the number of hours you put into any given crop on your farm. You can also determine the cost per hour. Add this to other expenses such as seed, fertilizer, etc., and you can determine accurately your total costs and your net profits.

By comparing this cost and profit picture for all crops on your farm, you may find it desirable to increase certain activities and cut down or eliminate others for a greater net profit return.



When Did I Change Oil, Plugs, Oil Filter? No Guessing Any More!

The hour meter section of the Proof-Meter provides the kind of information you need to keep track of the service and maintenance jobs the Ford Tractor requires for top performance and economy.

Be sure to take full advantage of this useful feature. For suggestions see next page and your Operator's Manual.

YOUR **PROOF-METER** TELLS YOU WHEN THESE MAINTENANCE JOBS SHOULD BE DONE

All you do is jot down the reading on the Proof-Meter at the time you do any service job.

Consult Ford Tractor Operator's Manual for more complete details.

1 The level of oil in the crankcase, and in the transmission, differential and hydraulic mechanism should be checked every 10 hours.

2 The steering drag link joints, spindle pins, steering joints, clutch pedal and leveling box should be lubricated after each 10 hours of operation.

3 Clean and refill the lower bowl of the air cleaner after every 10 hours of operation. After every 5 hours of operation under dusty conditions, or more often, as necessary.

4 Oil filler cap should be inspected and cleaned after every 10 hours of operation.

5 Belt pulley assembly should be checked, and lubricated if necessary, every 60 hours.

6 Crankcase oil should be changed every 200 hours. In new tractors, after the first 50 hours of operation.

7 Check steering gear case for oil level every 200 hours.

8

Generator rear bearing should be oiled after every 300 hours of operation.

9

Oil filter cartridge should be replaced after each 400 hours of operation.

10

Air cleaner should be removed and completely cleaned after 600 hours of operation. Under severe dust conditions, every 100 hours, or more often as necessary. This includes removing the lower element, cleaning with a solvent and rinsing in clean engine oil.

11

Front wheel bearings should be repacked after each 600 hours of operation.

12

Transmission, differential and hydraulic oil should be changed each Spring or after each 600 hours of operation. In new tractors, after 50 hours of operation.

Be sure that you check all bolts and nuts for tightness every 20 hours for the first 60 hours when tractor is new; thereafter check every 60 hours.

Belt Pulley Conversion Table

Showing engine speeds for various belt pulley speeds. (Both in revolutions per minute.)

PULLEY SPEED (R.P.M.)	ENGINE SPEED (R.P.M.) (APPROX.)
1060	1565
1080	1595
1100	1625
1120	1650
1140	1680
1160	1710
1180	1740
1200	1770
1220	1800
1240	1830
1260	1860
1280	1890
1300	1920
*1316	1940
1320	1950
1340	1975
1356	2000

*The American Society of Agricultural Engineers (A S A E) have standardized the belt speeds on farm tractors at 3100 feet per minute (Plus or minus 100 feet per minute). With the standard 9-inch belt pulley on the Ford Tractor, this standard belt speed is obtained with an engine speed of 1940 R.P.M., which gives a belt pulley speed of 1316 R.P.M.

A belt driven machine designed to A.S.A.E. Standards will be run at the correct speed without changing any pulleys.

Some belt driven machines do not meet A.S.A.E. Standards. Such machines should be operated at the speed recommended by the manufacturer. This is done by selecting the proper size of driven pulley as follows:

Multiply diameter of tractor pulley (9" on Ford Tractor) by the number of revolutions it makes per minute. Divide this product by the

number of revolutions the driven machine should operate per minute.

This will give the diameter of the driven pulley in inches. For example:

A belt driven machine is designed to operate at 2700 R.P.M. What size driven pulley should be used when the machine is to be operated with the standard Ford Tractor belt pulley and the engine operating 1940 R.P.M.?

Drive Pulley Diameter \times Drive Pulley R.P.M. \div Recommended R.P.M. of driven machine = $9 \times 1316 \div 2700 = 4.4"$, diameter of driven pulley.

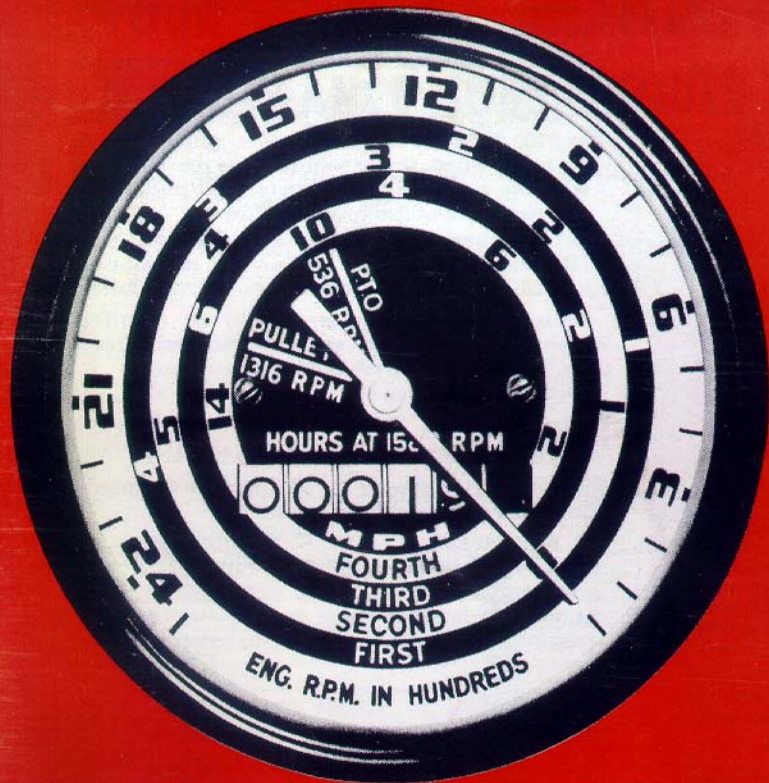
Thus, a 4½-inch pulley would be required. When the resulting driven pulley size is in fractions, go to the nearest half-inch.

Power Take-Off Conversion Table

Showing engine speeds for various P.T.O. speeds. (Both in revolutions per minute.)

P.T.O. SPEED (R.P.M.)	ENGINE SPEED (R.P.M.) (APPROX.)
520	1430
530	1460
540	1485
550	1515
560	1540
570	1570
580	1595
590	1625
600	1650
610	1680
620	1705
630	1735
640	1760
650	1790
660	1825

The relationship between P.T.O. speed and engine speed (in R.P.M.) is such that each increase of 10 R.P.M. in power take-off speed requires an increase of 27.5 in engine speed (R.P.M.).



Right Before Your Eyes

Throughout this book the pictures have illustrated individual features of the Proof-Meter to help explain its use. Here we have "put it all back together again"—the engine speed indicator, the tractor travel speed indicator, P.T.O. speed indicator, belt pulley speed indicator, and the hour meter! Yes, it's *all* always right before your eyes . . . another excellent example of the many benefits you get with "Ford Farming."

