

APPLICATION FOR THE TEST OF THE

Ford Ferguson-System
(Name)

9N
(Model)

Tractor

Dearborn, Michigan
P. O.

Dec. 15, 1939
Date

Department of Agricultural Engineering,
College of Agriculture,
University of Nebraska,
Lincoln, Nebraska.
Gentlemen:

Ferguson-Sherman Mfg. Corp. hereby applies for test
(Applicant)

as provided by Nebraska law, of the Ford Ferguson-System
(Trade Name)

Model 9N (Horsepower not rated) Tractor. Specifications of this tractor
(Model, H. P. Rating)

are given on sheets attached hereto and marked exhibits A, B & C

(A, B, C, Etc.)

(Each loose sheet and each set of sheets permanently bound together to be marked as an exhibit.)

All of the claims made regarding the construction and performance of this tractor by the applicant either directly or thru his selling agents are covered in sheets and catalogs attached hereto and marked exhibits

One exhibit - Exhibit B (Each loose sheet and each catalog to be marked as an exhibit.)

All printed operating instructions furnished to purchasers of this tractor are enclosed herewith and marked exhibits One exhibit - Exhibit C

Mr. Paul H. Rofkar
(Name)

Assistant Service Manager
(Position with Applicant)

will be the official representative of the applicant during the test, and will carry proper credentials.

Ferguson-Sherman Mfg. Corp. hereby agrees that no claim for the tractor in excess of
(Applicant)

those declared herewith will be made by the applicant either directly or thru his agents; and that no tractor will be offered for sale either by the applicant or his agents under permit based on this test, which does not correspond exactly with description given herewith; excepting such changes in claims made for the tractor or in construction of the tractor as may from time to time be approved in writing by the Board of Tractor Test Engineers and the State Railway Commission.

Respectfully submitted,

(Signature)

(Name typewritten) Eber C. Sherman

(Position) President

(TO BE SIGNED BY AN OFFICER HAVING POWER TO MAKE CONTRACTS FOR THE APPLICANT)

SPECIFICATIONS OF Ford (Name) 9N- (Model) TRACTOR

1. Manufacturer: Ford Motor Co.
 Address Dearborn, Michigan
 Tractor submitted for test by Ferguson-Sherman Co. *Not Rated P.R.*
 Horsepower rating: Drawbar 18 At 1400 Belt 22 At 2000 Fuel Gasoline Is this tractor to
 be advertised or sold for operation on kerosene? No No *60 Octane P.R.*

ENGINE

2. Manufacturer: Ford Motor Co.
 Name Ford Model 9N cycle. bore 3-3/16 in.
 Stroke 3-3/4 in. Crankshaft r. p. m. rated load 1400 Engine weight 355 lbs. (Specify equipment included) Generator - fan Electric motor-Distributor-Governor-water pump
 Engine mounted with crankshaft lengthwise Yes ~~XXXXXX~~ of tractor frame.
 3. Cylinders:
 Number 4 Type of cylinder castings In Line Material C.I. Vertical Yes
~~XXXXXX~~ ~~XXXXXX~~ Clearance Volume 6.3 cu. in. Compression pressure 137 lbs. per sq. in. gage at 1400 r.p.m. L. I. or T. head L Head detachable Yes
 Are cylinders ground to dimension? Honed Hardened steel dry sleeve
 4. Valves:
 Type Poppet Location In Block
 Inlet: No. per cyl. 1 O. D. 1.53 in. Port xxx 78 Sq. in. Lift 307 in. Seat angle 45°
 Material: Head Chrome Nickel Alloy/steel Stem Same
 Exhaust: No. per cyl. 1 O. D. 1.28 in. Port xxx 1.22 Sq. in. Seat angle 45°
 Material: Head Chrome Nickel Alloy/steel Stem Same
 Timing: Inlet opens 6 ° before C. Closes 22 ° after L. C. Exhaust opens 38 ° before L. C. closes 6 ° after C. All at .015" Clearance.
 5. Pistons:
 Weight of one with rings and pin 1 lbs. 1 oz. Length 3.16 in. Material Ford Alloy/steel cast
 Piston clearance (for diameters). First land .013 in. Second land .013 in. Third land .013 in.
 Skirt 3.1846 in. 3.1867 in. Are pistons ground to dimensions? Yes
 6. Piston Rings:
 Make or type 2 Compression 1 oil control ring
 Number per piston 3 Width .092 in. Compression
.115 in. Oil Control
 7. Piston Pin:
 Length 2.97 in. Diameter .750 in. ~~xxx~~ or hollow Material Chrome Steel
 Heat treatment Carburized & Hardened Ground to dimension Yes
 Method of holding piston pin Retainers in piston

SPECIFICATIONS OF **Ford**
(Name)

9N
(Model) TRACTOR

8. Piston Pin Bearings:

a. Bearing in piston bosses **No** Total length _____ in. Removable bushing _____

Material _____

b. Bearing in connecting rod end **Yes** Length **1.34** in. Removable bushing **Yes**

Material **Bronze**

9. Connecting Rod:

Type **I-Beam** Length c. to c. **7** in. Material **Forged "EE" Steel**
(Equiv. to SAE 1035)

Heat treatment **Quenched & Annealed-Brin. 269-302**

Weight complete with all bolts, nuts and bearings in place **1** lbs. **6** oz.

Bearing cap bolts: No. **2, Integral** Length _____ in. Material **Forged on Rod.**

Crank bearing: Diam. **2.094** in. Length **1.125** in. Material **Babbitt-Steel Backed, Liner**

10. Crankshaft:

Ford Chrome-Copper Alloy

Weight **41#** Material **Cast Steel** Heat Treatment **Yes-Brin-255-321**

Counter balanced **Yes** Main crankshaft bearings. Number _____

Type **4-Throw**

DIMENSIONS OF EACH BEARING

	Diameter		Length		Material
Front	2.248	in.	1.600	in.	Babbitt-Steel Backed
		in.		in.	
		in.		in.	
Center	2.248	in.	1.898	in.	Babbitt-Steel Backed
		in.		in.	
		in.		in.	
* Rear	2.248	in.	1.600	in.	Babbitt-Steel Backed

* Rear is flywheel end.

11. Flywheel:

Diameter **12.52** in. Weight **48.5** lbs. Solid or spokes **Solid** Method of attaching

(mark x): Flange **X** Taper _____ Straight _____

12. Camshaft:

Material **Ford Copper Alloy Cast Iron** Heat treatment _____

Cams: Integral **X** Separate _____ Camshaft bearings. Number **3**

SPECIFICATIONS OF Ford
(Name)9N
(Model)

TRACTOR

DIMENSIONS OF EACH BEARING

	Diameter		Length		Material
Front	1.797	in.	1.54	in.	is the Cyl. Block
		in.		in.	
		in.		in.	
Center	1.797	in.	1.48	in.	is the Cyl. Block
		in.		in.	
		in.		in.	
Rear	1.797	in.	1.48	in.	is the Cyl. Block

Camshaft drive: Spur gear..... Helical gear X..... Chain..... Crankshaft gear material Cast Iron
Iron..... Camshaft gear material Bakelized Fabric

13. Lubricating System (mark x):

(a) Circulating..... (b) Non-circulating..... (c) Pressure feed X..... (d) Gravity feed.....(e) Splash X..... (f) Drilled crankshaft X.....(g) Mechanical lubricator..... Make Ford..... Capacity 2 gals. P. R. Per Min.Camshaft lubrication (mark x): (a) 1400 Eng. R.P.M.Bearings: Independent lead..... Pressure X..... Splash.....Gears: Independent lead..... Pressure..... Splash XPiston lubrication (mark x): Independent lead..... Pressure..... Splash X

14. Lubricating Oil:

Capacity 1-1/2 gals. to fill crank case to proper operating level.

Oils recommended (give trade names and grades for summer and winter operation).

SAE. 30 for SummerSAE. 20 for Winter (40° or lower)SAE. 10 When Temp. is below Freezing

15. Oil-pump Type:

Type Gear..... Location Front Main Br'g. Cap.

16. Governor:

Make Novi Equip. Co. Type Controlled from St. Col. Variable Speed Enclosed Yes

SPECIFICATIONS OF Ford 9N TRACTOR
(Name) (Model)

Is governor independent of hand throttle? No Regulation: Increase in final speed not over 2200 r.p.m. from rated load speed to no load, with carburetor set for maximum fuel economy.

17. Ignition System: (Give information for all makes or types supplied on stock tractors of this model).

Magneto..... H. T..... L. T..... Make..... Model.....
Impulse coupling..... Make.....
Magneto..... H. T..... L. T..... Make..... Model.....
Impulse coupling..... Make.....
Magneto..... H. T..... L. T..... Make..... Model.....
Impulse coupling..... Make.....
Battery System Yes Make Own Model 9N
Battery System..... Make..... Model.....
Battery Make Mfg. for Ford Type 13 Plate, Wet. Volts 6 Amp. Hours 90
Battery Make..... Type..... Volts..... Amp. Hours.....
Firing order 1-2-4-3 Maximum spark advance 25° (a) 2000 R.P.M. C1400
23° B.T.C. (a) 2000 before top center. Maximum re-
tard 14° B.T.C. (a) 1400 tards Champion
Size and thread 14MM Type H-10
Location Cyl.-Head Gap .024-.029

18. Starting Device:

Electrical Notor Make Own Model 52 Volts 6
Air Pressure: Make..... Model..... Pressure.....

19. Carburetion System:

Carburetor (Give information for all carburetors supplied on stock tractors):

Make Marvel Schebler Size 7/8 Model TSX-33 Fuels Gasoline
Make..... Size..... Model..... Fuels.....
Make..... Size..... Model..... Fuels.....

20. Exhaust Heat used for:

Air..... Fuel..... Mixture in carburetor..... Mixture in manifold Yes

21. Hot-water Jacket on:

Carburetor..... Manifold.....

22. Enclose Cut or Blue Print (Size 8½"x11" or 11"x17") and explanation showing shape and dimensions of intake manifold and application of exhaust heat to air, fuel, or mixture if so used.

23. Is Water Injected With Fuel?..... Describe control valve.....

SPECIFICATIONS OF Ford 9N TRACTOR
(Name) (Model)

24. Fuel Tanks:

Number One Capacity of each in gals. 10 Location Over Engine

25. Air Cleaner:

(Opt.)
Make Donaldson Co.-Unit.Spec. Size 4-3/8 (Mark x) (a) Dry centrifugal (b) Strained
thru cloth or screen (c) Water (d) Oil (specify kind) Oil-Washed Wire
Screen Filter
(e) Other type (describe) SAE 30 Above 40°F.
SAE 10 Above 40°F.

26. Cooling System:

Cooling fluid Water If oil, give specification of oil
Capacity of system 3.5 gals.
Radiator: Make Ford Motor Co. Type Tube-Fin Important dimensions :-
Height 23.66 Width 15.7 Thickness 2.3
Circulation of cooling fluid: Thermosyphon Pump Yes Type of pump Centrifugal
Pump delivery gal. per min. at rated speed of engine 14.8 At 1400 R.P.M. of Engine

27. Air Circulation:

By exhaust nozzle By fan Yes Fan diameter 15.75 in. Number of blades 4
Speed at rated speed of engine 2000 r.p.m. Type drive Belt

28. Belt Pulley:

Rockwood
Diameter 9.0 in. Face 6.5 in. Material Cast Iron Is face of pulley lagged? Yes
If so, with what material? Fibre Speed (at rated speed of engine) 950 r.p.m.
If gear drive, give gear ratio crank shaft to pulley shaft 1.48 Belt pulley shaft bearings: (Describe each bearing.)

Type	Make	Size	Material
<u>Tapered Roller Bearing</u>	<u>Bower-Timken</u>	<u>BT-14137A-14276</u>	<u>SAE 4620</u>

CHASSIS

29. Clutches:

For transmission: Type Dry Friction Make Long Size 9 in.
On differential (if used) type Make Size
For belt pulley (if separate clutch):
Type Positive-Spline Make Ford Size 2 in. O.D.

30. Brakes: (Describe each brake.)

(a) Type Internal Expansion - Shoes
(Contracting band or shoe)
When gears are in neutral, does brake control belt pulley or traction wheel? Traction Wheels only

UNIVERSITY OF NEBRASKA, DEPARTMENT OF AGRICULTURAL ENGINEERING

SPECIFICATIONS OF **Ford** **9N** TRACTOR
(Name) (Model)

32. Differential:

Make **Ford Motor Co.** Type **Four Pinion-Bevel Drive**

Open or enclosed **Enclosed** Can it be locked? **No**

If chain drive is used, give make and description of chain

33. Rate of Travel at Rated Engine Speed: **1400 R.P.M.**

Also mark by (x) speed normally used for plowing.

Speed	Calculated Speed in Miles per Hour (No slippage allowance)	Advertised Miles per Hour on Rated Load
1st (Low)	2.51 at 1400 R.P.M.	
2nd (x)	3.23 at 1400 R.P.M.	
3rd	7.48 at 1400 R.P.M.	
4th		
Reverse	2.69 at 1400 R.P.M.	

34. Drive Wheels:

Number **2 Rubber Tire** Cast solid..... Section of spoke.....sq. in. Shape of

Spoke section..... Spokes cast in or built up..... Diameter **47.2**

(8"x 32" tire) Face **8-31** in. Extension rims width.....in. Lugs: Give descrip-

tions and dimensions of each type of lug furnished on stock tractors in Nebraska

How is power transmitted to the rim? **Axle Shaft**

Drive wheel axle: Live..... Stationary..... Diameter **1.75 In**

Material: **Ford "EEEE" Steel (Equiv. to SAE1050) Hardened to 387-444 Brinell**

35. If Track-laying Type:

No of tracks..... No. shoes per track..... Length of track bearing on ground.....

.....in. Width of each track.....in. Length of each track shoe c. to c. of pins.....in.

36. Non-driving Wheels:

No. **2 Rubber Tire (19 x 4)** Cast solid..... Section of spoke.....sq. in.

Shape of spoke section..... Spokes cast in or built up..... Diameter **28.0** in.

Face **4.5** in. Bearings of non-drive wheels (describe each bearing).

Location	Type	Make	Size	Material
Outer	Tapered Roller	Bower	BT-09196 BT-09074	SAE 4620
Inner	Bearing	Timken	BT-15118 BT-15250	SAE 4620

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37. Steering Arrangement:

Knuckle type.....Swinging axle.....Other type (describe).....**Ford Design**
Spiral Bevel Gear

38. Static Weight on each wheel or track. (Tanks and radiator full, wheel ~~load~~ **Rubber Tire**)

Wheel	Weight, Lbs.
R.H. Front	440
L.H. Front	440
R.H. Rear	665
L.H. Rear	665

Total weight (as above).....**2210**

39. Frame:

Cast **Back Bone Construction** Material.....
Built up.....Material.....
Hot riveted.....Cold riveted.....Bolted **X**
Description.....
Frame mounting (mark x):
To drive wheels. Spring.....Rigid **X**
To non-drive wheels. Spring.....Rigid **X**

40. Drawbar:

Height ~~15~~ **18** **P.R.** in. Verticle adjustment (give limits) ~~12 to 24~~ **15-21** **P.R.** in.
Lateral adjustment ~~20~~ in. **None** **P.R.**
Swiveled ~~Yes~~ **No** **P.R.** Point of swivel how far forward or back of rear axle ~~30 Back~~ **None** in.

41. General Dimensions:

Wheel base c. to c. front and rear wheels **70(a)48" T.** in. Tread c. to c.: front wheels **48 to 76** in.
rear wheels or tracks **48 to 76** in. Width over all **64** in. Length over all **115** in.
Height over all **52** in. Diameter of circle wholly within which tractor may be turned **15 Ft.**

42. The Following Items of Equipment Included in the Above Specifications Are Supplied at an Extra Charge:

Belt Pulley Assy. Complete