UNIVERSITY OF NEBRASKA

LINCOLN

DEPARTMENT OF AGRICULTURAL ENGINEERING

INSTRUCTIONS TO APPLICANT FOR TRACTOR TEST

Three copies are required of each application and all exhibits attached thereto.

Mail three copies to the Agricultural Engineering Department, College of Agriculture, University of Nebraska, Lincoln, Nebraska, together with draft for $250.00; priority of test is determined by our date of receipt.

Specifications will include no equipment except that supplied with stock tractors. It may include items (such as extension wheel rims) for which an extra charge is made but such items must be offered for sale by the tractor manufacturer as a part of the tractor and must not be attachments for which the tractor manufacturer is not directly responsible.

If the customer has choice of two or more makes or types of any item of equipment (such as wheel lugs) description will be given of each make or type. All of these makes or types will be sent with the tractor submitted for test.

In filling out specification sheets, if the blanks provided are not suitable for describing some part of the tractor, specifications on that part should be given on a separate sheet.

APPLICATION FOR THE TEST OF THE

John Deere (Name) GP (Model) Tractor

Waterloo, Iowa August 15 1923
P. O. Date

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

Gentlemen:

The John Deere Tractor Company (Applicant) hereby applies for test as provided by Nebraska law, of the John Deere General Purpose (Trade Name) GP 10-20 (Model, H. P. Rating) Tractor. Specifications of this tractor are given on sheets attached hereto and marked exhibits "A", Pages 1 to 8 Inclusive and Blue Print of Manifold, marked Exhibit "E" (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 "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 "C" and "D"

Mr. H. E. McCray (Name) Chief Engineer (Position with Applicant) will be the official representative of the applicant during the test, and will carry proper credentials.

John Deere Tractor Company (Applicant) hereby agrees that no claim for the tractor in excess of 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) A. H. Head

(Name typewritten) A. H. Head

(Position) Vice President & General Manager

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

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) TRACTOR

1. **Manufacturer:** John Deere Tractor Co.

Address Waterloo, Iowa.

Tractor submitted for test by John Deere Tractor Co.

Horsepower rating: Drawbar 10 Belt 20 Fuel Gas or Kero. Is this tractor to be advertised or sold for operation on kerosene? Yes

ENGINE

2. **Manufacturer:** John Deere Tractor Co.

Name General Purpose Model "GP" 4 cycle. bore 5-3/4 in. Stroke 6 in. Crankshaft r. p. m. rated load 950. Engine weight lbs. (Specify equipment included) Integral with tractor

Engine mounted with crankshaft lengthwise crosswise Yes of tractor frame.

3. **Cylinders:**

Number 2 Type of cylinder castings En Bloc Material Alloy Gray Iron Vertical Horizontal Yes Opposed Clearance Volume 51.9 cu. in. Compression pressure lbs. per sq. in. gage at r.p.m. L. I. or T. head L Head detachable Yes

Are cylinders ground to dimension? Yes

4. **Valves:**

Type Poppet Location Cylinder

Inlet: No. per cyl. 1 O. D. 2 9/16 in. Port. diam 2-1/4 in. Lift 3/8 in. Seat angle 45°

Material: Head SAE 6130 or 3140 Stem SAE 6130 or 3140

Exhaust: No. per cyl. 1 O. D. 2-9/16 in. Port diam. 2-1/4 in. Seat angle 45°

Material: Head Silcrome F Stem Silcrome F

Timing: Inlet opens 20° after T. C. Closes 40 ° after L. C. Exhaust opens 40 ° before L. C. closes 10 ° after T. C.

5. **Pistons:**

Weight of one with rings and pin 12 lbs. 5 oz. Length 7 in. Material Cast iron

Piston clearance (for diameters). First land .028 in. Second land .028 in. Third land .028 in. Skirt .006 in. Are pistons ground to dimensions? Yes

6. **Piston Rings:**

Make or type 3 plain 1 oil drain

Number per piston 4 Width 3/16 in.

7. **Piston Pin:**

Length 4 5-1/4 in. Diameter 1-3/4 in. Solid or hollow Hollow Material 1315 steel Heat treatment Pack Harden Ground to dimension 1.750-1.749

Method of holding piston pin Double setscrew on flats

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) TRACTOR

8. **Piston Pin Bearings:**

a. Bearing in piston bosses..... Total length.....in. Removable bushing.....

Material .....

b. Bearing in connecting rod end Yes Length 2-1/8 in. Removable bushing Yes

Material Bronze

9. **Connecting Rod:**

Type 1 section Length c. to c. 15-3/8 in. Material Steel forging SAE 1040

Heat treatment 179 - 212 Brinell

Weight complete with all bolts, nuts and bearings in place 12 lbs. 5 oz.

Bearing cap bolts: No. 2 Length 4-5/16 in. Material.....

Crank bearing: Diam. 3 in. Length 2-3/4 in. Material Bronze Backed Babbitt

10. **Crankshaft:**

Weight 81 Material SAE 1045 Heat Treatment Brinell 217 - 255

..... Counter balanced No Main crankshaft bearings. Number 2

Type Bronze Backed Babbitt

DIMENSIONS OF EACH BEARING

	Diameter	Length	Material
Front	3 in.	3-1/4 in.	Bronze Backed Babbitt
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
* Rear	3 in.	3-1/4 in.	Bronze Backed Babbitt

* Rear is flywheel end.

11. **Flywheel:**

Diameter 21 in. Weight 105.5 lbs. Solid or spokes Solid Method of attaching

(mark x): Flange.....Taper.....Straight 2-7/8" - 10 s line - split and clamped

12. **Camshaft:**

Material SAE 1015 Heat treatment SAE 1015 IV

Cams: Integral yes Separate..... Camshaft bearings. Number 2

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) TRACTOR

DIMENSIONS OF EACH BEARING

	Diameter	Length	Material
Front Timken	09074 - 09194 in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
Rear Timken	09074 - 09194 in.	in.	

Camshaft drive: Spur gear..... Helical gear...X..... Chain..... Crankshaft gear material.....
SAE 1045 Camshaft gear material...Cast Iron...

13. **Lubricating System** (mark x):

(a) Circulating...X..... (b) Non-circulating..... (c) Pressure feed...X..... (d) Gravity feed.....

(e) Splash..... (f) Drilled crankshaft...X... - drilled connecting rods

(g) Mechanical lubricator..... Make..... Capacity.....gals.

Camshaft lubrication (mark x):

Bearings: Independent lead..... Pressure..... Splash...X.....

Gears: Independent lead..... Pressure..... Splash...X.....

Piston 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).

Medium Tractor Oil for Summer

Medium Auto Oil for Winter

No trade names recommended

15. **Oil-pump Type:**

Type...Gear... Location...Sump of crank case...

16. **Governor:**

Make...Own... Type...Flyball... Enclosed...Yes...

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) **TRACTOR**

Is governor independent of hand throttle? No Regulation: Increase in final speed not over 75 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 X H. T. L. T. Make Fairbanks-Morse Model John Deere

Impulse coupling X Make Fairbanks-Morse

Magneto H. T. L. T. Make Model

Impulse coupling Make

Magneto H. T. L. T. Make Model

Impulse coupling Make

Battery System Make Model

Battery System Make Model

Battery Make Type Volts Amp. Hours

Battery Make Type Volts Amp. Hours

Firing order 1 - 2 Maximum spark advance 40° ° before top center 13° early Maximum retard Spark plugs: Make or makes Champion

Size and thread 1/2 std. pipe Type A-24

Location in head Gap .020 in.

18. **Starting Device:**

Electrical Make Model Volts

Air Pressure: Make Model Pressure

19. **Carburetion System:**

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

Make Ensign Size 1-1/4 Model BJ Fuels Gas. and kero

Make Schebler Size 1-1/4 Model DLT Fuels Gas. and kero

Make Size Model Fuels

20. **Exhaust Heat** used for:

Air Fuel Mixture in carburetor Mixture in manifold X

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?** Yes Describe control valve Needle valve, controlled from seat, with automatic check valve to cut off at light loads

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) **TRACTOR**

24. **Fuel Tanks:**

Number 2 Capacity of each in gals. 15 - kero 1-1/2 - gas Location over engine

25. **Air Cleaner:**

Make Donaldson Simplex Size (Mark x) (a) Dry centrifugal (b) Strained thru cloth or screen (c) Water (d) Oil (specify kind) Oiled fibre

(e) Other type (describe) Also Auxiliary Twister Cleaner

26. **Cooling System:**

Cooling fluid Water If oil, give specification of oil

Capacity of system 9 gals.

Radiator: Make McCord Type Tubular Important dimensions 17-1/2 high, 18-1/2 wide, 3 deep

Circulation of cooling fluid: Thermosyphon X Pump Type of pump

Pump delivery gal. per min. at rated speed of engine

27. **Air Circulation:**

By exhaust nozzle By fan X Fan diameter 17 in. Number of blades 4

Speed at rated speed of engine 1850 r.p.m. Type drive Gear

28. **Belt Pulley:**

Diameter 13 in. Face 6-1/2 in. Material Cast Iron Is face of pulley lagged? No

If so, with what material? Speed (at rated speed of engine) 950 r.p.m.

If gear drive, give gear ratio crank shaft to pulley shaft Belt pulley shaft bearings: (Describe each bearing.) Belt Pulley on Crank Shaft

Type	Make	Size	Material
Plain		3" D. x 2-1/2" L	Bronze
Roller	Hyatt	212	

CHASSIS

29. **Clutches:**

For transmission: Type Disc Make Own Size 10"

On differential (if used) type Make Size

For belt pulley (if separate clutch):

Type ∅ Make Size

30. **Brakes:** (Describe each brake.)

(a) Type Shoe (Contracting band or shoe)

When gears are in neutral, does brake control belt pulley or traction wheel? Belt Pulley

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) TRACTOR

By which lever or pedal is brake operated? Clutch Lever

(b) Type (Contracting band or shoe) When gears are in neutral does brake control belt pulley or traction wheels?

(c) Differential brake (if used). Type Internal Expanding

How controlled Foot pedal Can both differential brakes be set at once? Yes

31. **Transmission:**

Manufacturer Own - spur gear Type selective

Enclosed to what extent Completely

Reduction (pairs of gears) engine to drive wheels or tracks.

Speed Type	Type of gear with number of teeth and in their pairs of contact, from engine, to drive wheel or track					Gear ratio from engine to drive wheels or tracks
	SPUR	SPUR	CHAIN	CHAIN		
1st low	30 with 68	16 with 84	9 with 38	with	with	50 to 1
2nd low	30 " 68	20 " 80	9 " 38	"	"	38-1/3 to 1
3rd low	30 " 68	26 " 74	9 " 38	"	"	27-1/4 to 1
4th low	"	"	Spur	"	"	
Reverse	30 " 68	16 " 24	19 " 84	9 " 38		63 to 1

Give following information for each gear wheel:

* Location	Type Gear	Pitch Diameter	No. of Teeth	Face Inches	Finish	Material	Heat Treatment
Pulley Gear	Spur	6	30	1-1/4	Cut	SAE 1015	SAE 1020 IV
Spline Gear	Spur	13.6	68	1	Cut	SAE 1015	SAE 1015 IV
Spline Shaft Sliding Gear	Spur	3.2 / 4.0 / 5.2 / 16.8 / 16.0 / 14.8	16 / 20 / 26 / 84 / 80 / 74	1-1/4 / 1-1/8 / 13/16 / 1-1/4 / 1-1/8 / 13/16	Cut	SAE 2315	SAE 2315 IV
Ring Gear	Spur						
Sprocket Pinion	Chain Sprocket	4.386	9	7/8	Chilled	C.I.	---
Sprocket	"	18.164	38	7/8	Cast	C.I.	----

Shaft bearings: (Give information for each bearing used in transmission and rear axle.)

* Location	Type	Make	Size	Material
Rt. Spline Shaft	Roller	Timken	447 - 432	
Left Spline Shaft	Roller	Timken	3193 - 3120	
Differential Shaft	Ball	New Departure	1212	
Differential Sprocket	Ball	New Departure	1308	
Rear Axle Inner	Roller	Timken	3982 - 3920	
Rear Axle Outer	Roller	Timken	3982 - 3920	

* Location may be given by reference to cut or blue print attached hereto if desired.

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) **TRACTOR**

32. Differential:

Make Fairfield Type #4-H

Open or enclosed Enclosed Can it be locked? No

If chain drive is used, give make and description of chain Link-Belt 1-1/2 pitch - 1" wide - 7/8 roller

33. Rate of Travel at Rated Engine Speed:

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)	2.41	2-1/3
X	2nd	3.14	3-1/8
	3rd	4.43	4-1/3
	4th		
	Reverse	1.92	2

34. Drive Wheels:

Number 2 Cast solid No Section of spoke 9/16 sq. in. Shape of Spoke section Rectangular Spokes cast in or built up Rivetted Diameter 42-3/4 in. Face 10 in. Extension rims width 6 in. Lugs: Give descriptions and dimensions of each type of lug furnished on stock tractors in Nebraska Forged spade lug 4" high x 3-1/2 wide

5" high x 3-1/2 wide

How is power transmitted to the rim? Through axle

Drive wheel axle: Live X Stationary Diameter 2-3/8

Material: SAE 1045 forging

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 Cast solid No Section of spoke 3/8 sq. in.

Shape of spoke section Rectangular Spokes cast in or built up Rivetted Diameter 24 in.

Face 6 in. Bearings of non-drive wheels (describe each bearing).

Location	Type	Make	Size	Material
Inner	Roller	Timken	3383 - 3320	
Outer	Roller	Timken	2785 - 2720	

SPECIFICATIONS OF JOHN DEERE (Name) "GP" (Model) **TRACTOR**

37. **Steering Arrangement:**

Knuckle type X Swinging axle ..... Other type (describe) .....

.....

38. **Static Weight** on each wheel or track. (Tanks and radiator full, wheel lugs attached.)

Wheel	Weight, Lbs.	
R. F.	700	
R. R.	1150	
L. R.	1210	
L. F.	700	

Total weight (as above) 3760

39. **Frame:**

Cast X Material Cast Iron

Built up ..... Material .....

Hot riveted ..... Cold riveted ..... Bolted .....

Description .....

Frame mounting (mark x):

To drive wheels. Spring ..... Rigid X

To non-drive wheels. Spring ..... Rigid X

40. **Drawbar:**

Height 13 in. Verticle adjustment (give limits) 4-1/2" - from 8-1/2 to 13 in.

Lateral adjustment 34-1/2 in.

Swiveled Yes Point of swivel how far forward or back of rear axle 10-1/4 forward in.

41. **General Dimensions:**

Wheel base c. to c. front and rear wheels 70-1/2 in. Tread c. to c.: front wheels 43 in.

rear wheels or tracks 49-1/2 in. Width over all 59 in. Length over all 112 in.

Height over all 56 in. Diameter of circle wholly within which tractor may be turned 16 ft.

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

5" lugs

6" extension rims