

Tractors and tractor parts which are sent to the Tractor Testing Department, Univ. of Nebr. for an official test, should be shipped freight prepaid.

Shipments made via the C.R.I.&P. in Nebraska will be switched to the spur at the College with a minimum delay.

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 \$500.00; 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

Caterpillar
(Name)R-5

Tractor

(Model)

Peoria, Illinois June 28 1934
P. O. Date

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

Caterpillar Tractor Co.
(Applicant)

hereby applies for test

as provided by Nebraska law, of the Caterpillar R-5

(Trade Name)

Not rated

(Model, H. P. Rating)

Tractor. Specifications of this tractor

are given on sheets attached hereto and marked exhibits A, B, C, D, E, F, G, H.

(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 G

(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 None issued

Mr. J. M. Davies

(Name)

Chief Experimental Engineer

(Position with Applicant)

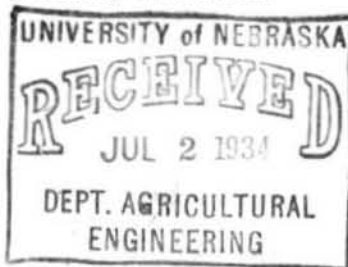
will be the official representative of the applicant during the test, and will carry proper credentials.

Caterpillar Tractor Co.

(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)

(Name typewritten)

C. PARKER HOLT

(Position)

Vice-President

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

SPECIFICATIONS OF Caterpillar (Name) R-5 (Model) TRACTOR

1. Manufacturer: Caterpillar Tractor Co.
 Address Peoria, Illinois
 Tractor submitted for test by Caterpillar Tractor Co.
 Horsepower rating: Drawbar Not rated Belt Not rated Fuel Gasoline Is this tractor to be advertised or sold for operation on kerosene? No

ENGINE

2. Manufacturer: Caterpillar Tractor Co.
 Name Caterpillar Model R-5 cycle. bore 5 1/2 in.
 Stroke 6 1/2 in. Crankshaft r. p. m. rated load 950 Engine weight 1950 lbs. (Specify equipment included) Radiator, Carburetor, Fan, Air Cleaner, Flywheel
 Engine mounted with crankshaft lengthwise Yes crosswise _____ of tractor frame.

3. Cylinders:
 Number 4 Type of cylinder castings Cast in pairs Material Cast Iron Vertical Yes
 Horizontal _____ Opposed _____ Clearance Volume 48.6 cu. in. Compression pressure 75 lbs. per sq. in. gage at 950 r.p.m. L. I. or T. head I Head detachable Yes
 Are cylinders ground to dimension? Yes

4. Valves:
 Type Poppet Location In head
 Inlet: No. per cyl. 1 O. D. 2 3/16 in. Port. diam 1 5/8 in. Lift 440 in. Seat angle 45°
 Material: Head E.W.P. Alloy Steel Stem E.W.P. Alloy Steel
 Exhaust: No. per cyl. 1 O. D. 2 3/16 in. Port. diam 1 5/8 in. Seat angle 45°
 Material: Head Chrome Silicon Steel Stem Chrome Silicon Steel
 Timing: Inlet opens 10° T. C. Closes 42° after L. C. Exhaust opens 35° before L. C. closes 10° after T. C.

5. Pistons:
 Weight of one with rings and pin 13 lbs. 0 oz. Length 6 1/16 in. Material Cast Iron
 Piston clearance (for diameters). First land .0176 in. Second land .0151 in. Third land .0127 in. Skirt .008 in. Are pistons ground to dimensions? Yes

6. Piston Rings:
 Make or type Cast Iron - Plain Compression Rings
 Number per piston 5 Width 3/16 in.

7. Piston Pin:
 Length 4.700 in. Diameter 1 3/4 in. Solid or hollow Hollow Material SAE 1020 Seamless Steel Tubing Heat treatment Carb. and hardened Ground to dimension Yes
 Method of holding piston pin Full floating Type-Endwise Motion Limited by plug in piston bosses.

SPECIFICATIONS OF Caterpillar
(Name)R-5
(Model)

TRACTOR

8. Piston Pin Bearings:

a. Bearing in piston bosses Yes Total length 2 3/4 in. Removable bushing No
Material Cast Iron

b. Bearing in connecting rod end Yes Length 1 3/4 in. Removable bushing Yes
Material SAE #64 Bronze

9. Connecting Rod:

Type "H" Section Length c. to c. 12 31/32 in. Material SAE 1040 Steel Forging
Heat treatment SAE VI

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

Bearing cap bolts: No. 2 Length 3 7/8 in. Material SAE 3135 Steel

Crank bearing: Diam. 2 5/8 in. Length 3 1/4 in. Material Babbitt

10. Crankshaft:

Weight 122# Material SAE 1045 Steel Forg. Heat Treatment SAE VII
Counter balanced No Main crankshaft bearings. Number 3
Type Four Throw in one plane - drop forged

DIMENSIONS OF EACH BEARING

	Diameter		Length		Material
Front <u>Main</u>	<u>3</u>	in.	<u>2 7/8</u>	in.	<u>Babbitt Lined-Forgd. Steel Cap</u>
<u>#1 CrankPin</u>	<u>2 5/8</u>	in.	<u>3 1/4</u>	in.	<u>"</u>
<u>#2 "</u>	<u>2 5/8</u>	in.	<u>3 1/4</u>	in.	<u>"</u>
<u>Center Main</u>	<u>3</u>	in.	<u>4</u>	in.	<u>"</u>
<u>#3 CrankPin</u>	<u>2 5/8</u>	in.	<u>3 1/4</u>	in.	<u>"</u>
<u>#4 CrankPin</u>	<u>2 5/8</u>	in.	<u>3 1/4</u>	in.	<u>"</u>
* Rear <u>Main</u>	<u>3</u>	in.	<u>3 5/16</u>	in.	<u>"</u>

* Rear is flywheel end.

11. Flywheel:

Diameter 20 1/2 in. Weight 258 lbs. Solid or spokes Solid Method of attaching
(mark x): Flange X Taper Straight

12. Camshaft:

Material SAE 1040 Steel Forging Heat treatment Carb. & Hardened
Cams: Integral X Separate Camshaft bearings. Number 3

SPECIFICATIONS OF Caterpillar R-5 TRACTOR
(Name) (Model)

DIMENSIONS OF EACH BEARING

	Diameter		Length		Material
Front	2 7/8	in.	4	in.	
		in.		in.	
		in.		in.	
Center	2 7/8	in.	3 5/8	in.	
		in.		in.	
		in.		in.	
Rear	2 7/8	in.	2 7/8	in.	

Camshaft drive: Spur gear..... Helical gear ☒ Chain..... Crankshaft gear material SAE 1045 Steel Forging
Camshaft gear material SAE 1045 Steel Forging

13. Lubricating System (mark x):

(a) Circulating ☒ (b) Non-circulating..... (c) Pressure feed ☒ (d) Gravity feed.....
(e) Splash..... (f) Drilled crankshaft ☒
(g) Mechanical lubricator..... Make..... Capacity..... gals.

Camshaft lubrication (mark x):

Bearings: Independent lead..... Pressure..... Splash ☒

Gears: Independent lead ☒ Pressure ☒ Splash.....

Piston lubrication (mark x): Independent lead..... Pressure..... Splash ☒

14. Lubricating Oil:

Capacity 4 gals. to fill crank case to proper operating level.

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

See Exhibit Marked "B"

15. Oil-pump Type:

Type Gear Location In Sump

16. Governor:

Make Own Type Centrifugal Fly Ball Enclosed Yes

SPECIFICATIONS OF Caterpillar B-5 TRACTOR
(Name) (Model)

Is governor independent of hand throttle? No Regulation: Increase in final speed not over 150 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 Yes H. T. X L. T. Make Eisemann Model
Impulse coupling Yes Make Eisemann
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 1-2-4-3 Maximum spark advance 300 Fixed Spark before top center Maximum re-
tard 35° When impulse starter is working. Spark plugs: Make or makes Champion Truck Special "A"
Size and thread 7/8-18 N.Thd. Type
Location Right side of cyl. hd. Gap 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 1/2 Model Ked Fuels Gasoline
Make Size Model Fuels
Make Size Model Fuels

20. Exhaust Heat used for:

Air Fuel Mixture in carburetor Mixture in manifold

21. Hot-water Jacket on:

Carburetor No Manifold No

22. Enclose Cut or Blue Print (Size 8 1/2"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. See exhibits marked C, D, E, F.

23. Is Water Injected With Fuel? No Describe control valve

SPECIFICATIONS OF Caterpillar R-5 TRACTOR
(Name) (Model)

24. Fuel Tanks:

Number 1 Capacity of each in gals. 50 Location Behind Engine -
Front of top of tank acts as support for rear of Hood.

25. Air Cleaner:

Make Own (Under Vortex Pats.) Size _____ (Mark x) (a) Dry centrifugal _____ (b) Strained
thru cloth or screen _____ (c) Water _____ (d) Oil (specify kind) _____
(e) Other type (describe) Combination Oil and Centrifugal-Labyrinth cons sts
of matted wire.

26. Cooling System:

Cooling fluid Water If oil, give specification of oil _____
Capacity of system 9 1/4 gals.
Radiator: Make Own Type Flat Tubes & Fins Important dimensions _____
Core dimensions: 28x27 7/16 x 3 5/16 thick
Circulation of cooling fluid: Thermosyphon _____ Pump x Type of pump Centrifugal
Pump delivery gal. per min. at rated speed of engine 32

27. Air Circulation:

By exhaust nozzle _____ By fan x Fan diameter 23 1/2 in. Number of blades 6
Speed at rated speed of engine 1570 r.p.m. Type drive Gear

28. Belt Pulley:

Hub- Cast Iron
Diameter 12 in. Face 8 1/2 in. Material Kim-Paper or Fibre Is face of pulley lagged? _____
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 1 to 1 Belt pulley shaft bearings: (De-
scribe each bearing.)

Type	Make	Size	Material
<u>Roller</u>	<u>Hyatt</u>	<u>RA 311</u>	
<u>Ball</u>	<u>Fafnir</u>	<u>310 W</u>	

CHASSIS

29. Clutches:

For transmission: Type Single Plate - Dry Make Own Size Friction Disc
13 1/2 O.D. x 5 1/2 I.D.
On differential (if used) type _____ Make _____ Size x 5/32 thick
For belt pulley (if separate clutch):
Type _____ Make _____ Size _____

30. Brakes: (Describe each brake.)

(a) Type External contracting band on each steering clutch
(Contracting band or shoe)

When gears are in neutral, does brake control belt pulley or traction wheel? Tracks are held - not
pulley.

SPECIFICATIONS OF Caterpillar

(Name)

R-5

(Model)

TRACTOR

By which lever or pedal is brake operated? By foot pedal on each side of Steering Levers(b) Type External Contracting Band When gears are in neutral does brake control belt pulley
(Contracting band or shoe)
or traction wheels? Tracks are held - Not Pulley

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

How controlled..... Can both differential brakes be set at once?.....

31. Transmission:

Manufacturer Own Type Selective Sliding GearEnclosed to what extent Completely

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

Speed	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
Type	Spur with	Spur with	Bevel with	Spur with	Spur with		
1st low	14 " 32	"	12 " 49	12 " 56	"		43.5 to 1 43.556
2nd low	18 " 28	"	12 " 49	12 " 56	"		29.6 to 1 29.642
3rd low	21 " 25	"	12 " 49	12 " 56	"		22.7 to 1 22.685
4th low	25 " 21	"	12 " 49	12 " 56	"		16.0 to 1 16.007
Reverse	18 " 17	13 " 28	12 " 49	12 " 56			41.0 to 1 38.763

Give following information for each gear wheel: See Exhibit Marked "H"

* Location	Type Gear	Pitch Diameter	No. of Teeth	Face Inches	Finish	Material	Heat Treatment
(1)	Spur	4.235	18	1 1/2	Machined	2345	SAE VIII
(2)	Spur	4.941	21	1 3/16	Machined	2345	SAE VIII
(3)	Spur	5.882	25	1 1/8	Machined	2345	SAE VIII
(4)	Spur	3.294	14	1 1/2	Machined	2345	SAE VIII
(5)	Spur	6.583	28	1 1/2	Machined	2345	SAE VIII
(6)	Spur	5.882	25	1 3/16	Machined	2345	SAE VIII
(7)	Spur	4.941	21	1 1/8	Machined	2345	SAE VIII
(8)	Spur	7.529	32	1 1/2	Machined	2345	SAE VIII
(9)	Spur	4.000	17	1 1/16	Machined	2345	SAE VIII
(10)	Spur	3.059	13	1 3/16	Machined	2345	SAE VIII
(11)	Bevel	13.809	12	2 1/8	Machined	2345	SAE VIII
(12)	Bevel	13.067	49	1 1/8	Machined	2345	SAE VIII
(13)	Spur	3.6923	12	3 1/16	Machined	2345	SAE VIII
(14)	Spur	17.231	56	2 3/4	Machined	2345	SAE VIII

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

* Location	Type	Make	Size	Material
(A)	Ball	Fafnir	310W	
(B)	Ball	Fafnir	310W	
(C)	Ball	Fafnir	310W	
(D)	Ball	(Fafnir)	413 or	
(E)	Plain	(Gurney)	413R	
(F)	Roller	Timken	1.755 O.D.	SAE 64 Bronze
(G)	Ball	(Fafnir)	641 - 632	
(H)	Roller	(Gurney)	311W or	
(J)	Roller	Timken	311R	
	Roller	Timken	732-772B	
	Roller	Timken	652-663	

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

SPECIFICATIONS OF CATERPILLAR
(Name)R-5
(Model)

TRACTOR

32. Differential:

Make Type

Open or enclosed Can it be locked?

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

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)	1.87	1.9
2nd	2.77	2.8 x
3rd	3.61	3.6
4th	5.11	5.1
Reverse	2.11	2.1

34. Drive Wheels:

Number Cast solid Section of spoke sq. in. Shape of

Spoke section Spokes cast in or built up Diameter

..... in. Face 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?

Drive wheel axle: Live Stationary Diameter

Material:

35. If Track-laying Type:

No of tracks 2 No. shoes per track 34 Length of track bearing on ground 71 3/8

..... in. Width of each track 16 in. Length of each track shoe c. to c. of pins 6.735 in.

36. Non-driving Wheels:

No. Cast solid Section of spoke sq. in.

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

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

Location	Type	Make	Size	Material

SPECIFICATIONS OF Caterpillar
(Name)R-5
(Model)

TRACTOR

37. Steering Arrangement:

Knuckle type.....Swinging axle..... Other type (describe) Independent Multiple Disc
Dry Clutch and Brake controlling each track.

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

Wheel	Weight, Lbs.
<u>R.H. Track</u>	<u>6400</u>
<u>L. H. Track</u>	<u>6400</u>

Total weight (as above) 12,800

39. Frame:

Cast Material

Built up Material

Hot riveted Cold riveted Bolted

Description Frameless construction - unit type.

Frame mounting (mark x):

To drive wheels. Spring Rigid

To non-drive wheels. Spring Rigid

40. Drawbar:

(From lower face of std. shoe)

Height 12 9/16 in. Verticle adjustment (give limits) None in.Lateral adjustment 28 1/2 at pin in.Swiveled Yes Point of swivel how far forward or back of rear axle 15 9/16 ahead in.

41. General Dimensions:

Wheel base c. to c. front and rear wheels 71 3/8 in. Tread c. to c.: front wheels..... in.rear wheels or tracks 56 in. Width over all 75 in. Length over all 139 3/8 in.Height over all 69 in. Diameter of circle wholly within which tractor may be turned 175 in.

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

Belt Pulley Drive.