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## Test 1636: White 60 Diesel 18-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1636—WHITE 60 DIESEL 18 SPEED

Department of Biological Systems Engineering

Dates of Test: April 5-27, 1990

**Manufacturer:** WHITE NEW IDEA FARM EQUIPMENT Co., 123 West Sycamore Street, Coldwater, Ohio 45828

## POWER TAKE-OFF PERFORMANCE

Power Hp (kW) <small>*</small>	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb	
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed — Two hours (PTO Speed — 550 rpm)								
61.07 (45.54)	2200	4.188 (15.854)	0.479 (0.292)	14.58 (2.87)	185 (85)	51 (11)	76 (24)	29.15 (96.70)
Standard Power Take-off Speed (540 rpm) — One Hour								
61.61 (45.94)	2160	4.162 (15.757)	0.472 (0.287)	14.80 (2.92)	183 (84)	48 (9)	72 (22)	29.16 (98.75)

## VARYING POWER AND FUEL CONSUMPTION — Two Hours

53.25 (39.71)	2256	3.600 (13.629)	0.473 (0.288)	14.79 (2.91)	183 (84)	49 (9)	74 (23)	.....
.....	2378	1.511 (5.718)	.....	.....	175 (79)	49 (9)	73 (23)	.....
27.39 (20.42)	2322	2.450 (9.275)	0.625 (0.380)	11.18 (2.20)	179 (82)	49 (9)	74 (23)	.....
62.07 (46.28)	2200	4.214 (15.952)	0.475 (0.289)	14.73 (2.90)	184 (84)	50 (10)	74 (23)	.....
13.85 (10.33)	2347	1.953 (7.391)	0.985 (0.599)	7.10 (1.40)	177 (81)	52 (11)	76 (24)	.....
40.53 (30.23)	2289	2.978 (11.273)	0.514 (0.312)	13.61 (2.68)	177 (80)	52 (11)	76 (24)	.....
<b>Av</b> <b>Av</b>	<b>32.95</b> <b>(24.57)</b>	<b>2.784</b> <b>(10.540)</b>	<b>0.591</b> <b>(0.359)</b>	<b>11.83</b> <b>(2.33)</b>	<b>179</b> <b>(82)</b>	<b>50</b> <b>(10)</b>	<b>74</b> <b>(24)</b>	<b>29.13</b> <b>(98.65)</b>

## DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power — Two Hours 8th (3B) Gear											
51.31 (38.26)	4459 (19.83)	4.32 (6.94)	2199	3.85	4.112 (15.567)	0.560 (0.341)	12.48 (2.46)	186 (86)	63 (17)	74 (23)	28.60 (96.83)
75% of Pull at Maximum Power — Ten Hours 8th (3B) Gear											
41.75 (31.13)	3465 (15.41)	4.52 (7.27)	2280	2.71	3.499 (13.244)	0.586 (0.356)	11.93 (2.35)	185 (85)	32 (0)	39 (4)	29.29 (99.19)
50% of Pull at Maximum Power — Two Hours 8th (3B) Gear											
28.50 (21.25)	2310 (10.28)	4.63 (7.45)	2311	1.90	2.897 (10.965)	0.711 (0.432)	9.84 (1.94)	186 (85)	40 (4)	47 (8)	29.14 (98.66)
50% of Pull at Reduced Engine Speed — Two Hours 12th (4C) Gear											
28.49 (21.24)	2310 (10.28)	4.62 (7.44)	1487	1.81	2.274 (8.609)	0.558 (0.339)	12.53 (2.47)	177 (81)	42 (6)	52 (11)	29.14 (98.68)

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 53.9 (rating taken from oil company's inspection data) Specific gravity converted to 60/60°F (15/15°C) 0.8396 Fuel weight 6.991 lbs/gal (0.838 kg/l) Oil SAE 15W40 API service classification CE, CD-II, SG To motor 2.234 gal (8.458 l) Drained from motor 1.747 gal (6.614 l) Transmission and powershift lubricant White Universal Fluid Front axle lubricant SAE 80-90 M.P. Gear Lubricant API GL-5 Total time engine was operated 39.0 hours.

**ENGINE:** Make Consolidated Diesel Corporation-Cummins Diesel Type four cylinder vertical Serial No. 44333570B Crankshaft lengthwise Rated rpm 2200 Bore and stroke (as specified) 4.02" × 4.72" (102 mm × 120 mm) Compression ratio 17.0 to 1 Displacement 239 cu in (3900 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Oil cooler engine coolant heat exchanger for crankcase oil, separate radiators for hydraulic and powershift oils Fuel filter two paper elements and water separator Muffler vertical Cooling medium temperature control one thermostat.

**ENGINE OPERATING PARAMETERS:** Fuel rate 28.9-30.1 lb/h (13.1-13.6 kg/h) High idle 2325-2425 rpm.

**CHASSIS:** Type front wheel assist Serial No. \*403034-60F\* Tread width rear 60" (1524 mm) to 81.3" (2064 mm) front 60.5" (1540 mm) to 66.5" (1690 mm) Wheel base 95" (2413 mm) Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 35.6" (904 mm) Vertical distance above roadway 27.6" (701 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (3) speed operator controlled powershift Advertised speeds mph (km/h) first 2.1 (3.4) second 2.5 (4.1) third 2.7 (4.4) fourth 3.0 (4.9) fifth 3.3 (5.3) sixth 3.6 (5.8) seventh 3.9 (6.3) eighth 4.4 (7.0) ninth 4.7 (7.5) tenth 5.2 (8.4) eleventh 5.6 (9.1) twelfth 6.8 (10.9) thirteenth 9.7 (15.7) fourteenth 11.7 (18.9) fifteenth 14.1 (22.6) sixteenth 16.7 (26.9) seventeenth 20.2 (32.4) eighteenth 24.2 (38.9) reverse 2.2 (3.5), 2.6 (4.2), 3.1 (5.0), 3.7 (6.0), 4.4 (7.1), 5.3 (8.6) Clutch single dry disc operated by foot pedal Brakes dry disc operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on

# MAXIMUM POWER IN SELECTED GEARS

46.23 (34.47)	7762 (34.53)	2.23 (3.59)	2211	14.82	2nd (1B) Gear	181 (83)	62 (17)	68 (20)	28.59 (96.82)
49.21 (36.69)	7172 (31.90)	2.57 (4.14)	2201	8.38	3rd (2A) Gear	185 (85)	62 (17)	74 (23)	28.73 (97.29)
51.38 (38.31)	6556 (29.16)	2.94 (4.73)	2198	6.15	4th (1C) Gear	183 (84)	61 (16)	66 (19)	28.70 (97.19)
52.33 (39.03)	6170 (27.44)	3.18 (5.12)	2196	5.65	5th (2B) Gear	184 (84)	60 (16)	68 (20)	28.72 (97.26)
50.68 (37.79)	5348 (23.79)	3.55 (5.72)	2200	4.55	6th (3A) Gear	186 (86)	62 (17)	73 (23)	28.73 (97.29)
52.39 (39.07)	5065 (22.53)	3.88 (6.24)	2199	4.26	7th (2C) Gear	185 (85)	62 (17)	73 (23)	28.73 (97.29)
51.99 (38.77)	4507 (20.05)	4.33 (6.97)	2200	3.66	8th (3B) Gear	185 (85)	61 (16)	70 (21)	28.72 (97.26)
50.55 (37.70)	4060 (18.06)	4.67 (7.52)	2201	3.36	9th (4A) Gear	185 (85)	62 (17)	73 (23)	28.73 (97.29)
51.92 (38.72)	3730 (16.59)	5.22 (8.40)	2200	3.06	10th (3C) Gear	185 (85)	61 (16)	71 (22)	28.72 (97.26)
52.07 (38.83)	3451 (15.35)	5.66 (9.11)	2202	2.75	11th (4B) Gear	185 (85)	62 (17)	72 (22)	28.72 (97.26)
50.87 (37.93)	2800 (12.45)	6.81 (10.96)	2199	2.21	12th (4C) Gear	185 (85)	62 (17)	73 (23)	28.73 (97.29)
45.78 (34.14)	1731 (7.70)	9.92 (15.96)	2202	1.28	13th (5A) Gear	186 (86)	62 (17)	73 (23)	28.73 (97.29)

# LUGGING ABILITY IN 8th (3B) GEAR

Crankshaft Speed rpm	2200	1980	1761	1540	1319	1103	871
Pull—lbs (kN)	4507 (20.05)	4848 (21.56)	5136 (22.85)	5267 (23.43)	5303 (23.59)	5367 (23.87)	5221 (23.22)
Increase in Pull %	0	8	14	17	18	19	16
Power—Hp (kW)	51.99 (38.77)	50.16 (37.40)	47.07 (35.10)	42.14 (31.42)	36.32 (27.08)	30.69 (22.89)	23.62 (17.62)
Speed—Mph (km/h)	4.33 (6.97)	3.88 (6.24)	3.44 (5.53)	3.00 (4.83)	2.57 (4.13)	2.14 (3.45)	1.70 (2.73)
Slip %	3.66	4.04	4.48	4.63	4.63	4.78	4.63

# Front Wheel Drive Disengaged dB(A) Engaged dB(A)

# TRACTOR SOUND LEVEL WITH OUT CAB

Maximum Available Power—Two Hours	97.0	96.5
75% of Pull at Maximum Power—Ten Hours		97.0
50% of Pull at Maximum Power—Two Hours		95.5
50% of Pull at Reduced Engine Speed—Two Hours		92.0
Bystander in 16th (6A) gear	91.0	

# DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power — Two hours 8th (3B) Gear											
51.25 (38.22)	4515 (20.08)	4.26 (6.85)	2200	5.32	4.105 (15.540)	0.560 (0.341)	12.48 (2.46)	186 (86)	61 (16)	73 (23)	28.74 (97.33)

# MAXIMUM POWER IN SELECTED GEARS

45.17 (33.68)	6209 (27.62)	2.73 (4.39)	2226	14.01	4th (1C) Gear	184 (84)	60 (16)	64 (18)	28.62 (96.92)
51.74 (38.59)	5090 (22.64)	3.81 (6.13)	2199	5.89	7th (2C) Gear	186 (85)	62 (17)	74 (23)	28.73 (97.29)
51.85 (38.67)	4553 (20.25)	4.27 (6.87)	2200	4.88	8th (3B) Gear	185 (85)	61 (16)	70 (21)	28.72 (97.26)

# TIRES, BALLAST AND WEIGHT

<b>Rear Tires</b>			<b>With Ballast</b>			<b>Without Ballast</b>		
Ballast			None			None		
—No., size, ply & psi (kPa)			Two 18.4R34; *, 16 (110)			Two 18.4R34; *, 16 (110)		
—Liquid (each)			132 lb (60 kg)			None		
—Test Equip (each)			None			None		
<b>Front Tires</b>			<b>With Ballast</b>			<b>Without Ballast</b>		
Ballast			None			None		
—No., size, ply & psi (kPa)			Two 13.6-24; 8; 14 (95)			Two 13.6-24; 8; 14 (95)		
—Liquid (each)			25 lb (11 kg)			None		
—Test Equip (each)			None			None		
<b>Height of Drawbar</b>			19.5 in (495 mm)			19.5 in (495 mm)		
<b>Static Weight with Operator—Rear</b>			5665 lb (2570 kg)			5400 lb (2450 kg)		
—Front			3190 lb (1447 kg)			3140 lb (1424 kg)		
—Total			8855 lb (4017 kg)			8540 lb (3874 kg)		

concrete surface with brake applied) right 147" (3.73 m) left 146" (3.71 m)(on concrete surface without brake) right 162" (4.11 m) left 162" (4.11 m) **Turning space diameter** (on concrete surface with brake applied) right 301" (7.64 m) left 298" (7.57 m)(on concrete surface without brake) right 330" (8.38 m) left 331" (8.41 m) **Power take-off** 540 rpm at 2160 engine rpm and 1000 rpm at 2217 engine rpm **Unladen tractor mass** 8340 lb (3783 kg).

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with official SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump was maintained at 142 °F (61°C). Twelve gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. 1636, July, 30, 1990.

LOUIS I. LEVITICUS  
Engineer-in-Charge

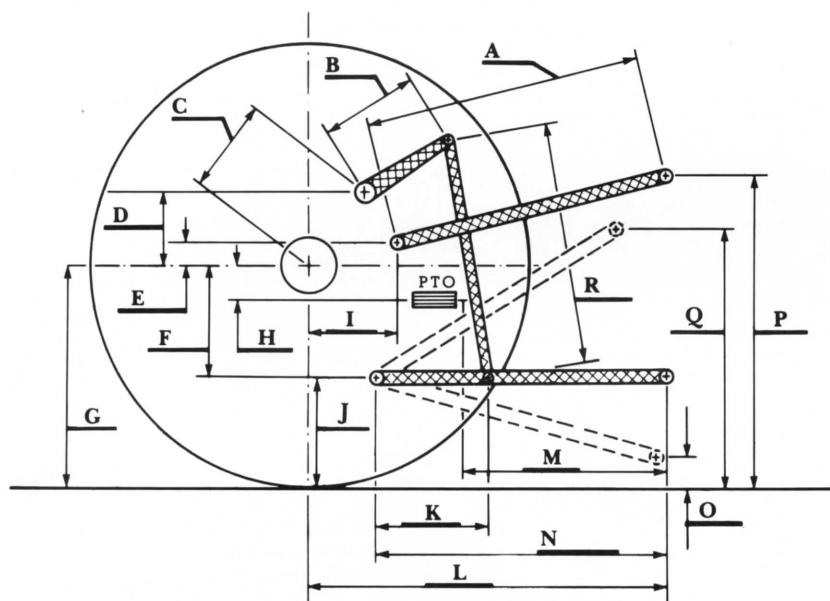
K. VON BARGEN  
R.D. GRISSO  
G.J. HOFFMAN  
Board of Tractor Test Engineers

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2275	(15690)
Location	remote outlet	
Hydraulic oil temperature °F (°C)	144	(62)
Location	pump inlet	
	<b>Maximum Lift Capacity</b>	
QUICK ATTACH	No	
CATEGORY	II	
LOAD lbs (kg)	**4130	(1873)
TIME sec	2.56	
HITCH POINT MOVEMENT in (mm)		
Lowest position	14.3	(363)
Top of timed range	*35.8	(909)
Highest position	36.9	(937)
LOAD CG MOVEMENT in (mm)		
Lowest position	15.0	(381)
Top of timed range	34.7	(881)
Highest position	35.3	(895)

\* The observed power range 21.5" (546 mm) does not meet the minimum power range 24.0" (610 mm) as specified by ASAE Standard S217.10.

\*\* Manufacturers advertised capacity was 4500 lb (2041 kg).



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	27.5	699
B	13.2	336
C	13.0	330
D	12.6	320
E	11.6	294
F	9.8	248
G	30.2	766
H	2.2	55
I	8.9	227
J	20.4	518
K	20.0	508
L	39.8	1010
M	19.4	493
N	32.5	826
O	8.0	203
P	39.4	1001
Q	31.9	810
R	32.8	833



White 60 Diesel

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