4-29-1985

Test 1560: Hesston 55-66 Fiat Diesel 12-Speed

Nebraska Tractor Test Lab
University of Nebraska-Lincoln, tractortestlab@unl.edu

NEBRASKA TRACTOR TEST 1560—HESSTON 55-66 FIAT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp *(kW)*	Crank shaft speed rpm	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temperature °F *(°C)* Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg *(kPa)*
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed — Two hours (PTO Speed—614 rpm)								
45.78 *(34.14)*	2500	3.015 *(11.415)*	0.460 *(0.280)*	15.18 *(2.991)*	187 *(86.0)*	64 *(18.0)*	75 *(23.8)*	28.85 *(97.42)*
Standard Power Take-off Speed (540 rpm) — One Hour								
44.84 *(33.44)*	2199	2.741 *(10.376)*	0.427 *(0.259)*	16.36 *(3.223)*	186 *(85.7)*	64 *(17.8)*	75 *(23.7)*	28.84 *(97.39)*
VARYING POWER AND FUEL CONSUMPTION — Two Hours								
40.33 *(30.08)*	2592	2.661 *(10.072)*	0.460 *(0.280)*	15.16 *(2.986)*	182 *(83.3)*	65 *(18.3)*	75 *(23.9)*	....
0.00 *(0.00)*	2756	0.864 *(3.271)*	....	....	173 *(78.3)*	65 *(18.3)*	74 *(23.3)*	....
20.98 *(15.65)*	2694	1.676 *(6.346)*	0.558 *(0.339)*	12.52 *(2.466)*	175 *(79.4)*	65 *(18.3)*	74 *(23.1)*	....
45.76 *(34.12)*	2501	3.074 *(11.634)*	0.469 *(0.285)*	14.89 *(2.933)*	186 *(85.3)*	66 *(18.6)*	74 *(23.3)*	....
10.58 *(7.89)*	2721	1.255 *(4.751)*	0.828 *(0.504)*	8.43 *(1.660)*	174 *(78.9)*	69 *(20.3)*	74 *(23.3)*	....
30.93 *(23.07)*	2650	2.102 *(7.957)*	0.474 *(0.288)*	14.72 *(2.899)*	177 *(80.6)*	66 *(18.9)*	74 *(23.3)*	....
Av 24.76 ***Av (18.47)***	**2652**	**1.939** ***(7.339)***	**0.546** ***(0.332)***	**12.77** ***(2.516)***	**178** ***(81.0)***	**66** ***(18.8)***	**74** ***(23.4)***	**28.84** ***(97.39)***

DRAWBAR PERFORMANCE

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power — Two Hours 8th (III-1) Gear											
38.39 *(28.63)*	2551 *(11.35)*	5.64 *(9.08)*	2501	6.83	2.959 *(11.201)*	0.538 *(0.327)*	12.98 *(2.556)*	186 *(85.6)*	60 *(15.3)*	71 *(21.7)*	28.78 *(97.17)*
75% of Pull at Maximum Power — Ten Hours 8th (III-1) Gear											
30.77 *(22.94)*	1904 *(8.47)*	6.06 *(9.75)*	2630	4.89	2.404 *(9.101)*	0.545 *(0.332)*	12.80 *(2.521)*	183 *(83.7)*	64 *(17.8)*	77 *(24.7)*	28.54 *(96.38)*
50% of Pull at Maximum Power — Two Hours 8th (III-1) Gear											
21.15 *(15.77)*	1269 *(5.64)*	6.25 *(10.06)*	2671	3.51	1.877 *(7.105)*	0.619 *(0.377)*	11.27 *(2.219)*	180 *(81.9)*	69 *(20.6)*	83 *(28.1)*	28.69 *(96.88)*
50% of Pull at Reduced Engine Speed — Two Hours 10th (III-2) Gear											
21.13 *(15.76)*	1268 *(5.64)*	6.25 *(10.06)*	1732	3.28	1.490 *(5.641)*	0.492 *(0.299)*	14.18 *(2.794)*	181 *(82.8)*	70 *(21.1)*	87 *(30.6)*	28.64 *(96.71)*
MAXIMUM POWER IN SELECTED GEARS											
35.01 *(26.10)*	4608 *(20.50)*	2.85 *(4.58)*	2533	14.93	5th (I-4) Gear			181 *(82.5)*	53 *(11.7)*	61 *(16.1)*	28.82 *(97.32)*
37.03 *(27.62)*	3976 *(17.68)*	3.49 *(5.62)*	2499	11.90	6th (II-2) Gear			182 *(83.1)*	54 *(12.2)*	62 *(16.7)*	28.82 *(97.32)*
37.57 *(28.02)*	3186 *(14.17)*	4.42 *(7.12)*	2502	9.00	7th (II-3) Gear			183 *(83.6)*	55 *(12.8)*	63 *(17.2)*	28.82 *(97.32)*
38.74 *(28.89)*	2576 *(11.46)*	5.64 *(9.08)*	2499	6.89	8th (III-1) Gear			185 *(85.0)*	59 *(15.0)*	70 *(21.1)*	28.78 *(97.19)*
37.52 *(27.98)*	1921 *(8.55)*	7.33 *(11.79)*	2500	5.20	9th (II-4) Gear			183 *(83.6)*	55 *(12.8)*	64 *(17.8)*	28.81 *(97.29)*
37.64 *(28.07)*	1581 *(7.03)*	8.93 *(14.37)*	2500	4.36	10th (III-2) Gear			183 *(83.9)*	56 *(13.3)*	66 *(18.9)*	28.81 *(97.29)*

Department of Agricultural Engineering

Dates of Test: April 15 to 29, 1985

Manufacturer: FIAT TRATTORI, S.p.A. Via Picodella Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 48.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F *(15/15°C)*** 0.8382 **Fuel weight** 6.979 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SE, SF, CC, CD **To motor** 2.239 gal *(8.475 l)* **Drained from motor** 1.962 gal *(7.426 l)* **Transmission and final drive lubricant** API 303 hydraulic fluid **Total time engine was operated** 44.5 hours.

ENGINE: Make Fiat/IVECO Diesel **Type** three cylinder vertical **Serial No.** 8035.06*206-023147* **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.937″ × 4.528″ *(100 mm × 115 mm)* **Compression ratio** 17 to 1 **Displacement** 165 cu in *(2710 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 55-66 1/12*377416* **Tread width** rear 56.1″ *(1425 mm)* to 75.8″ *(1925 mm)* front 55.5″ *(1410 mm)* to 75.2″ *(1910 mm)* **Wheel base** 85.6″ *(2175 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 27.8″ *(707 mm)* Vertical distance above roadway 32.5″ *(825 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 **Advertised speeds mph *(km/h)*** first 1.1 *(1.7)* second 1.6 *(2.6)* third 2.0 *(3.2)* fourth 2.5 *(4.0)* fifth 3.2 *(5.1)* sixth 3.8 *(6.2)* seventh 4.7 *(7.6)* eighth 5.9 *(9.5)* ninth 7.5 *(12.0)* tenth 9.0 *(14.5)* eleventh 11.1 *(17.8)* twelfth 17.6 *(28.4)* reverse 2.8 *(4.4)*, 4.3 *(6.8)*, 5.2 *(8.4)*, 8.3 *(13.4)* **Clutch** dry disc operated by foot pedal **Brakes** wet disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 126″ *(3.20 m)* left 126″ *(3.20 m)*(on concrete surface without brake) right 145″ *(3.68 m)* left 145″ *(3.68 m)* **Turning space diameter** (on concrete surface with brake applied) right 261″ *(6.63 m)* left 261″ *(6.63 m)*(on concrete surface without brake) right 299″ *(7.59 m)* left 299″ *(7.59 m)* **Power take-off** 540 rpm at 2199 engine rpm **Unladen tractor mass** 5290 lb *(2400 kg)*.

LUGGING ABILITY IN 8th (III-1) GEAR

Crankshaft Speed rpm	2499	2255	1994	1741	1501	1245
Pull—lbs	2576	2802	3047	3251	3354	3337
(kN)	*(11.46)*	*(12.46)*	*(13.55)*	*(14.46)*	*(14.92)*	*(14.84)*
Increase in Pull %	0	9	18	26	30	30
Power—Hp	38.74	37.70	35.99	33.28	29.50	24.32
(kW)	*(28.89)*	*(28.12)*	*(26.84)*	*(24.81)*	*(22.00)*	*(18.14)*
Speed—Mph	5.64	5.05	4.43	3.84	3.30	2.73
(km/h)	*(9.08)*	*(8.12)*	*(7.13)*	*(6.18)*	*(5.31)*	*(4.40)*
Slip %	6.89	7.68	8.40	9.00	9.35	9.23

TRACTOR SOUND LEVEL WITHOUT CAB	**dB(A)**
Maximum Available Power—Two Hours	95.5
75% of Pull at Maximum Power—Ten Hours	94.0
50% of Pull at Maximum Power—Two Hours	93.0
50% of Pull at Reduced Engine Speed—Two Hours	90.0
Bystander in 12th (III-4) gear	85.5

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-28; 6; 16 *(110)*	Two 16.9-28; 6; 16 *(110)*
Ballast	—Liquid (each)	480 lb *(218 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5L-15; 8; 36 *(250)*	Two 9.5L-15; 8; 36 *(250)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	72 lb *(33 kg)*	None
Height of Drawbar		19.5 in *(495 mm)*	19.5 in *(495 mm)*
Static Weight with Operator	—Rear	4695 lb *(2130 kg)*	3735 lb *(1694 kg)*
	—Front	1875 lb *(850 kg)*	1730 lb *(785 kg)*
	—Total	6570 lb *(2980 kg)*	5465 lb *(2479 kg)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi *(kPa)*	2875 *(19820)*	
Location	remote outlet	
Hydraulic oil temperature °F *(°C)*	171 *(77)*	
Location	pump inlet	
	Maximum Lift Capacity	**Lift Capacity for Transport**
QUICK ATTACH	no	
CATEGORY	II	*not measured
LOAD lbs *(kg)*	4464 *(2025)*	
TIME sec	2.37	
HITCH POINT MOVEMENT in *(mm)*		
Lowest position	9.2 *(234)*	
Top of timed range	33.2 *(843)*	
Highest position	36.3 *(922)*	
LOAD CG MOVEMENT in *(mm)*		
Lowest position	8.9 *(226)*	
Top of timed range	34.5 *(876)*	
Highest position	38.1 *(968)*	

*Implement load capacity for transport purposes not specified by manufacturer.

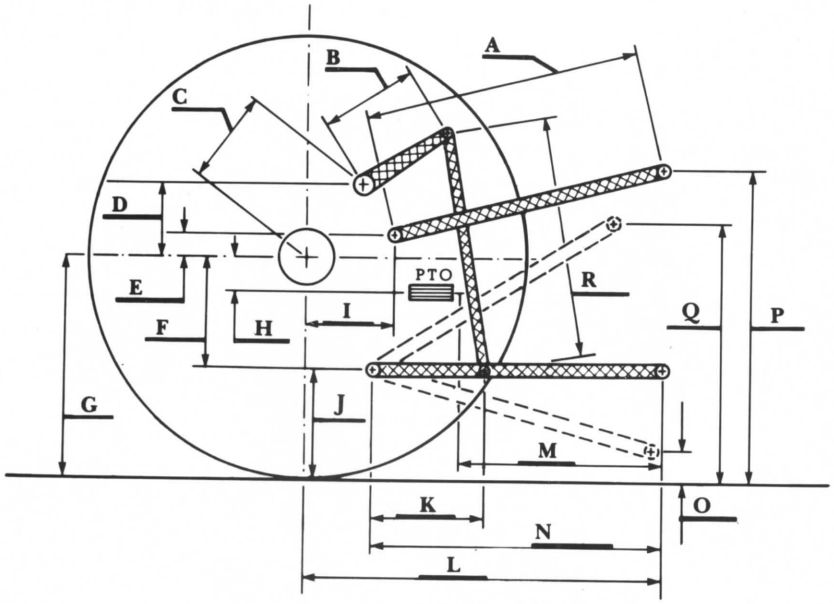
REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 152°F *(66.7°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1560,** June 14, 1985.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
L. L. BASHFORD
T. L. THOMPSON
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	*mm*
A	31.3	*794*
B	10.0	*255*
C	13.8	*350*
D	11.7	*297*
E	10.4	*264*
F	8.1	*206*
G	26.6	*676*
H	0.6	*16*
I	6.9	*176*
J	18.5	*470*
K	16.8	*428*
L	38.2	*971*
M	25.6	*650*
N	35.4	*900*
O	8.0	*203*
P	37.5	*953*
Q	37.0	*940*
R	23.0	*584*

Hesston 55-66 Fiat Diesel

Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director