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Test 1563: Hesston 80-90 Fiat Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1563—HESSTON 80-90 FIAT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	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—1050 rpm)								
70.86 (52.84)	2500	4.115 (15.576)	0.405 (0.247)	17.22 (3.393)	189 (87.2)	62 (16.5)	75 (23.9)	28.75 (97.10)

Standard Power Take-off Speed (1000 rpm) — One Hour								
69.25 (51.64)	2381	3.972 (15.036)	0.400 (0.244)	17.43 (3.435)	189 (86.9)	63 (17.0)	75 (23.9)	28.76 (97.12)

Standard Power Take-off Speed (540 rpm) — One Hour								
65.40 (48.77)	2199	3.683 (13.941)	0.393 (0.239)	17.76 (3.499)	188 (86.6)	64 (17.8)	75 (23.8)	28.78 (97.19)

VARYING POWER AND FUEL CONSUMPTION — Two Hours

64.09 (47.79)	2660	3.850 (14.576)	0.419 (0.255)	16.64 (3.279)	186 (85.6)	63 (17.2)	76 (24.4)	.....
0.00 (0.00)	2752	1.238 (4.685)	.....	.....	178 (80.8)	63 (16.9)	76 (24.2)	.....
32.52 (24.25)	2699	2.411 (9.126)	0.518 (0.315)	13.49 (2.657)	180 (81.9)	63 (16.9)	75 (23.6)	.....
70.49 (52.56)	2501	4.207 (15.926)	0.417 (0.253)	16.75 (3.301)	189 (87.2)	63 (17.2)	76 (24.2)	.....
16.39 (12.22)	2724	1.788 (6.767)	0.761 (0.463)	9.17 (1.806)	178 (81.1)	63 (17.2)	76 (24.4)	.....
48.31 (36.02)	2674	3.111 (11.778)	0.450 (0.274)	15.53 (3.059)	182 (83.3)	64 (17.8)	76 (24.4)	.....
Av 38.63 Av (28.81)	2668	2.768 (10.476)	0.500 (0.304)	13.96 (2.750)	182 (83.3)	63 (17.2)	76 (24.2)	28.78 (97.17)

DRAWBAR PERFORMANCE

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 (III-1) Gear											
60.77 (45.32)	4096 (18.22)	5.56 (8.95)	2499	5.90	4.118 (15.590)	0.473 (0.288)	14.76 (2.907)	190 (87.5)	59 (14.7)	75 (23.6)	29.00 (97.91)

75% of Pull at Maximum Power — Ten Hours 8th (III-1) Gear											
50.21 (37.44)	3113 (13.85)	6.05 (9.73)	2667	4.07	3.564 (13.491)	0.496 (0.301)	14.09 (2.775)	188 (86.4)	61 (16.2)	73 (22.8)	28.70 (96.90)

50% of Pull at Maximum Power — Two Hours 8th (III-1) Gear											
34.22 (25.52)	2075 (9.23)	6.18 (9.95)	2696	3.00	2.786 (10.547)	0.568 (0.346)	12.28 (2.419)	181 (82.8)	55 (12.8)	64 (17.8)	29.02 (97.98)

50% of Pull at Reduced Engine Speed — Two Hours 10th (III-2) Gear											
34.23 (25.52)	2074 (9.23)	6.19 (9.96)	1748	2.87	2.235 (8.459)	0.456 (0.277)	15.32 (3.017)	180 (82.2)	55 (12.8)	71 (21.7)	29.00 (97.91)

MAXIMUM POWER IN SELECTED GEARS

55.08 (41.07)	7323 (32.57)	2.82 (4.54)	2570	14.90	5th (I-4) Gear			181 (82.8)	52 (11.1)	56 (13.3)	28.98 (97.86)
57.92 (43.19)	6303 (28.03)	3.45 (5.55)	2499	10.93	6th (II-2) Gear			189 (86.9)	58 (14.4)	71 (21.7)	29.06 (98.13)
59.84 (44.62)	5132 (22.83)	4.37 (7.04)	2500	7.78	7th (II-3) Gear			189 (87.2)	58 (14.4)	72 (22.2)	29.05 (98.10)
61.52 (45.88)	4150 (18.46)	5.56 (8.95)	2498	5.87	8th (III-1) Gear			190 (87.8)	59 (15.0)	75 (23.9)	29.01 (97.96)
59.40 (44.29)	3088 (13.73)	7.21 (11.61)	2499	4.20	9th (II-4) Gear			190 (87.5)	59 (15.0)	73 (22.8)	29.04 (98.06)
59.72 (44.53)	2547 (11.33)	8.79 (14.15)	2499	3.38	10th (III-2) Gear			189 (86.9)	59 (15.0)	74 (23.3)	29.03 (98.03)

Department of Agricultural Engineering

Dates of Test: April 22 to May 7, 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) 0.8384 Fuel weight 6.981 lbs/gal (0.837 kg/l) Oil SAE 15W-40 API service classification SE, SF, CC, CD To motor 2.975 gal (11.261 l) Drained from motor 2.579 gal (9.762 l) Transmission and final drive lubricant API 303 hydraulic fluid Total time engine was operated 40.5 hours.

ENGINE: Make Fiat/IVECO Diesel Type four cylinder vertical Serial No. 8045.05*205-024124* Crankshaft lengthwise Rated rpm 2500 Bore and stroke 4.094" × 4.527" (104 mm × 115 mm) Compression ratio 17 to 1 Displacement 238.5 cu in (3908 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Fuel filter two paper elements Muffler vertical Cooling medium temperature control one thermostat.

CHASSIS: Type standard Serial No. *80-90/12*527470* Tread width rear 63" (1600 mm) to 82.7" (2100 mm) front 55.1" (1400 mm) to 74.8" (1900 mm) Wheel base 92.2" (2342 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 30.7" (781 mm) Vertical distance above roadway 38.2" (970 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 1.7 (2.7) third 2.0 (3.2) fourth 2.5 (4.0) fifth 3.2 (5.2) sixth 3.9 (6.3) seventh 4.8 (7.7) eighth 6.0 (9.6) ninth 7.6 (12.2) tenth 9.2 (14.8) eleventh 11.3 (18.2) twelfth 18.0 (28.9) reverse 2.8 (4.5), 4.3 (6.9), 5.2 (8.4), 8.4 (13.5), Clutch dry disc operated by foot pedal Brakes wet disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 134" (3.40 m) left 134" (3.40 m) (on concrete surface without brake) right 154" (3.91 m) left 154" (3.91 m) Turning space diameter (on concrete surface with brake applied) right 276" (7.01 m) left 276" (7.01 m) (on concrete surface without brake) right 316" (8.03 m) left 316" (8.03 m) Power take-off 540 rpm at 2199 engine rpm and 1000 rpm at 2381 engine rpm Unladen tractor mass 7130 lb (3234 kg).

LUGGING ABILITY IN 8th (III-1) GEAR

Crankshaft Speed rpm	2498	2256	1997	1748	1492	1246	998
Pull—lbs (kN)	4150 (18.46)	4320 (19.22)	4431 (19.71)	4630 (20.60)	4777 (21.25)	4818 (21.43)	4006 (17.82)
Increase in Pull %	0	4	7	12	15	16	-3
Power—Hp (kW)	61.52 (45.88)	57.69 (43.02)	52.25 (38.96)	47.61 (35.51)	41.78 (31.16)	35.16 (26.22)	23.75 (17.71)
Speed—Mph (km/h)	5.56 (8.95)	5.01 (8.06)	4.42 (7.12)	3.86 (6.21)	3.28 (5.28)	2.74 (4.40)	2.22 (3.58)
Slip %	5.87	6.19	6.32	6.58	7.09	7.09	5.80
TRACTOR SOUND LEVEL WITH CAB							dB(A)
Maximum Available Power—Two Hours							80.0
75% of Pull at Maximum Power—Ten Hours							81.0
50% of Pull at Maximum Power—Two Hours							81.0
50% of Pull at Reduced Engine Speed—Two Hours							74.5
Bystander in 12th (III-4) gear							86.0

TIRES, BALLAST AND WEIGHT

Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-30; 6; 16 (110)	With Ballast	Two 18.4-30; 6; 16 (110)	Without Ballast	Two 18.4-30; 6; 16 (110)
Ballast	—Liquid (each)	658 lb (298 kg)		None		None
	—Cast Iron (each)	390 lb (177 kg)		None		None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-16; 6; 40 (275)		Two 7.50-16; 6; 40 (275)		Two 7.50-16; 6; 40 (275)
Ballast	—Liquid (each)	None		None		None
	—Cast Iron (each)	30 lb (14 kg)		None		None
Height of Drawbar		20 in (510 mm)		20 in (510 mm)		20 in (510 mm)
Static Weight with Operator—Rear		7035 lb (3191 kg)		4940 lb (2241 kg)		4940 lb (2241 kg)
	—Front	2430 lb (1102 kg)		2370 lb (1075 kg)		2370 lb (1075 kg)
	—Total	9465 lb (4293 kg)		7310 lb (3316 kg)		7310 lb (3316 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2700 (18620)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	175 (79)	
Location	pump inlet	
	Maximum Lift Capacity	Lift Capacity for Transport
QUICK ATTACH	no	
CATEGORY	II	*not measured
LOAD lbs (kg)	4898 (2222)	
TIME sec	2.17	
HITCH POINT MOVEMENT in (mm)		
Lowest position	10.3 (262)	
Top of timed range	34.4 (874)	
Highest position	36.6 (930)	
LOAD CG MOVEMENT in (mm)		
Lowest position	10.2 (259)	
Top of timed range	36.6 (930)	
Highest position	39.9 (1013)	

*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 148°F (64.4°C). Six 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. **1563**, June 19, 1985.

LOUIS I. LEVITICUS

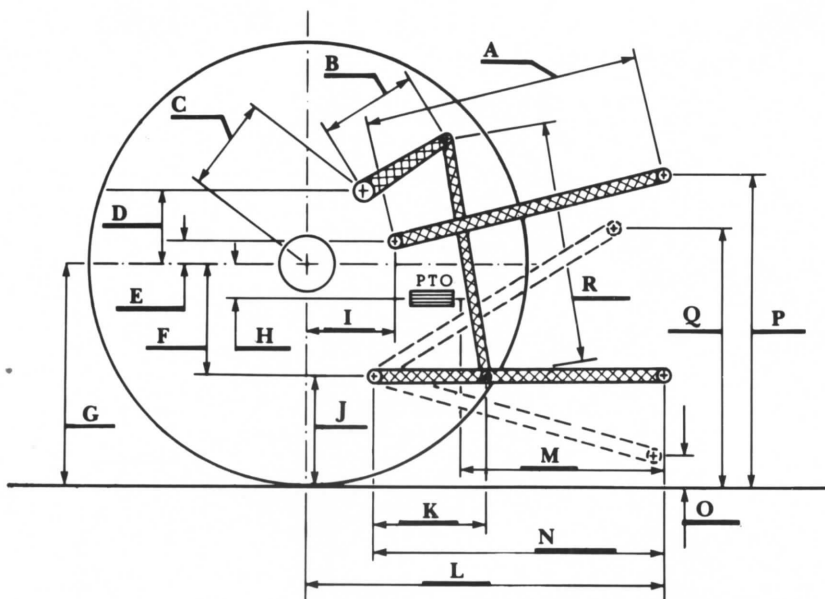
Engineer-in-Charge

K. VON BARGEN

L. L. BASHFORD

T. L. THOMPSON

Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	27.4	695
B	10.0	255
C	13.8	350
D	11.8	300
E	9.8	250
F	7.9	200
G	27.0	686
H	0.6	16
I	15.0	380
J	19.1	486
K	17.7	450
L	43.3	1100
M	23.2	590
N	37.8	960
O	8.0	203
P	38.1	968
Q	36.0	914
R	22.9	581



Hesston 80-90 Fiat Diesel

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