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Test 1353: Hesston Fiat 880 DT-5 and 880-5 Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1353 — HESSTON FIAT 880 DT-5 DIESEL ALSO HESTON FIAT 880-5 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—1038 rpm)									
81.32 (60.64)	2500	5.070 (19.192)	0.440 (0.268)	16.04 (3.160)	187 (86.2)	62 (16.8)	75 (23.9)	29.140 (98.401)	
Standard Power Take-Off Speed (1000 rpm)—One Hour									
80.95 (60.37)	2410	4.975 (18.831)	0.434 (0.264)	16.27 (3.206)	188 (86.6)	62 (16.7)	75 (23.9)	29.120 (98.334)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
70.80 (52.80)	2558	4.410 (16.692)	0.440 (0.268)	16.06 (3.163)	178 (81.4)	62 (16.7)	75 (23.9)	..... .....
0.00 (0.00)	2717	1.542 (5.837)	..... .....	..... .....	164 (73.6)	62 (16.7)	74 (23.3)	..... .....
36.25 (27.03)	2618	2.825 (10.694)	0.550 (0.335)	12.83 (2.528)	170 (76.7)	62 (16.7)	74 (23.6)	..... .....
81.23 (60.57)	2500	5.081 (19.233)	0.442 (0.269)	15.99 (3.150)	188 (86.7)	62 (16.9)	75 (23.9)	..... .....
18.57 (13.85)	2683	2.234 (8.458)	0.850 (0.517)	8.31 (1.637)	165 (73.9)	62 (16.7)	74 (23.6)	..... .....
53.35 (39.78)	2572	3.577 (13.540)	0.473 (0.288)	14.92 (2.938)	178 (80.8)	63 (17.2)	75 (23.9)	..... .....
Av Av	43.37 (32.34)	2608	3.278 (12.409)	0.534 (0.325)	13.23 (2.606)	174 (78.8)	62 (16.8)	75 (23.7)	29.113 (98.311)

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 (4 N) Gear											
67.64 (50.44)	4857 (21.61)	5.22 (8.40)	2500	6.57	5.009 (18.962)	0.523 (0.318)	13.50 (2.660)	183 (83.9)	64 (17.8)	76 (24.2)	29.015 (97.979)
75% of Pull at Maximum Power—Ten Hours 8th (4 N) Gear											
55.33 (41.26)	3789 (16.85)	5.48 (8.81)	2576	4.93	4.117 (15.585)	0.525 (0.320)	13.44 (2.648)	180 (82.2)	62 (16.7)	81 (27.1)	28.951 (97.763)
50% of Pull at Maximum Power—Two Hours 8th (4 N) Gear											
38.14 (28.44)	2541 (11.30)	5.63 (9.06)	2606	3.33	3.275 (12.396)	0.606 (0.369)	11.65 (2.295)	173 (78.1)	60 (15.3)	81 (26.9)	29.000 (97.929)
50% of Pull at Reduced Engine Speed—Two Hours 9th (1 H) Gear											
37.90 (28.26)	2529 (11.25)	5.62 (9.04)	1822	3.52	2.620 (9.916)	0.488 (0.297)	14.47 (2.850)	175 (79.2)	67 (19.2)	88 (30.8)	28.995 (97.912)
MAXIMUM POWER IN SELECTED GEARS											
62.73 (46.78)	7554 (33.60)	3.11 (5.01)	2558	14.87	6th (2 N) Gear			177 (80.6)	60 (15.6)	69 (20.6)	29.020 (97.996)
68.12 (50.80)	6380 (28.38)	4.00 (6.44)	2498	10.25	7th (3 N) Gear			186 (85.6)	58 (14.4)	78 (25.6)	29.050 (98.097)
70.27 (52.40)	5053 (22.48)	5.21 (8.39)	2500	6.67	8th (4 N) Gear			185 (85.0)	58 (14.4)	75 (23.9)	29.080 (98.199)
70.73 (52.74)	3476 (15.46)	7.63 (12.28)	2499	4.45	9th (1 H) Gear			187 (86.1)	59 (15.0)	79 (26.1)	29.040 (98.064)
69.36 (51.72)	2581 (11.48)	10.08 (16.22)	2500	3.26	10th (2 H) Gear			184 (84.2)	58 (14.4)	79 (26.1)	29.030 (98.030)

Department of Agricultural Engineering

Dates of Test: May 30—June 12, 1980

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 47.9 Specific gravity converted to
60°/60° (15°/15°) 0.8482 Fuel weight 7.062 lbs/gal
(0.846 kg/l) Oil SAE 20W-40 API service classi-
fication Mil-L-2104B EP To motor 2.847 gal
(10.776 l) Drained from motor 2.755 gal
(10.428 l) Transmission and final drive lubricant
Oliofiat AF 87 Front axle lubricant Oliofiat
AMBRA 20W-40 Total time engine was operated
43.0 hours.

ENGINE Make Fiat Dsl **Type** five cylinder
vertical **Serial No.** 8055-04-200-00-0005
Crankshaft lengthwise **Rated rpm** 2500 **Bore**
and stroke 4.055" × 4.331" (103 mm × 110 mm)
Compression ratio 17 to 1 **Displacement** 280 cu
in (4580 ml) **Starting system** 12 volt **Lubrication**
pressure **Air cleaner** two paper elements **Oil**
filter two full flow paper cartridges **Fuel filter**
two paper cartridges and one gauze screen **Muf-
fler** vertical **Cooling medium temperature con-
trol** one thermostat

CHASSIS: Type front wheel assist **Serial No.**
880DT/12/2-893199 **Tread width** rear 59.1"
(1500 mm) to 86.6" (2200 mm) front 67.3" (1710
mm) to 84.4" (2145 mm) **Wheel base** 95.3" (2420
mm) **Center of gravity** (without operator or bal-
last, with minimum tread, with fuel tank filled and
tractor serviced for operation) Horizontal distance
forward from center-line of rear wheels 35.0" (890
mm) Vertical distance above roadway 36.7" (933
mm) Horizontal distance from center of rear wheel
tread 0" (0 mm) to the right/left **Hydraulic control**
system direct engine drive **Transmission** Selec-
tive gear fixed ratio **Advertised speeds mph**
(km/h) first 0.9 (1.5) second 1.2 (2.0) third 1.5 (2.4)
fourth 1.9 (3.1) fifth 2.7 (4.4) sixth 3.5 (5.7)
seventh 4.4 (7.1) eighth 5.5 (8.9) ninth 7.9 (12.7)
tenth 10.3 (16.6) eleventh 12.9 (20.7) twelfth 16.1
(25.9) reverse 0.9 (1.4), 2.6 (4.1), 7.5 (12.0) **Clutch**
dual dry disc operated by foot pedal **Brakes** wet
disc hydraulically operated by two foot pedals
which can be locked together **Steering** hydrosta-
tic **Turning radius** (on concrete surface with
brake applied) right 197" (5.00 m) left 200" (5.08
m) (on concrete surface without brake) right 228"
(5.79 m) left 232" (5.89 m) **Turning space diame-
ter** (on concrete surface with brake applied) right
406" (10.31 m) left 412" (10.46 m) (on concrete
surface without brake) right 468" (11.89 m) left
476" (12.09 m) **Power take-off** 1000 rpm at 2410
engine rpm and 540 rpm at 2125 engine rpm.

LUGGING ABILITY IN 8th (4 N) GEAR

Crankshaft Speed rpm	2500	2252	1997	1746	1493	1246	995
Pull—lbs (kN)	5053 (22.48)	5464 (24.30)	5660 (25.18)	5800 (25.80)	5864 (26.08)	5903 (26.26)	5303 (23.59)
Increase in Pull %	0	8	12	15	16	17	5
Power—Hp (kW)	70.27 (52.40)	67.83 (50.58)	62.06 (46.27)	55.32 (41.25)	47.69 (35.56)	39.97 (29.81)	29.11 (21.70)
Speed—Mph (km/h)	5.21 (8.39)	4.66 (7.49)	4.11 (6.62)	3.58 (5.76)	3.05 (4.91)	2.54 (4.09)	2.06 (3.31)
Slip %	6.67	7.51	7.78	8.46	8.60	8.73	7.51

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	84.5	87.5
75% of Pull at Maximum Power—Ten Hours	—	85.5
50% of Pull at Maximum Power—Two Hours	—	84.0
50% of Pull at Reduced Engine Speed—Two Hours	—	80.0
Bystander in 12th (4 H) gear	—	88.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

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)	Cool- ing med	Temp. °F (°C) Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (4 N) Gear											
67.78 (50.54)	4685 (20.84)	5.42 (8.73)	2499	4.46	4.956 (18.761)	0.516 (0.314)	13.68 (2.694)	188 (86.4)	68 (20.0)	85 (29.2)	29.015 (97.979)

MAXIMUM POWER IN SELECTED GEARS

48.25 (35.98)	10598 (47.14)	1.71 (2.75)	2578	14.97	4th (4 L) Gear		170 (76.7)	59 (15.0)	67 (19.4)	29.030 (98.030)
70.62 (52.66)	6185 (27.51)	4.28 (6.89)	2500	5.72	7th (3 N) Gear		186 (85.6)	58 (14.4)	77 (25.0)	29.050 (98.057)
70.35 (52.46)	4857 (21.60)	5.43 (8.74)	2499	4.24	8th (4 N) Gear		186 (85.3)	58 (14.4)	76 (24.4)	29.060 (98.131)

TIRES, BALLAST AND WEIGHT

Rear Tires		With Ballast	Without Ballast
—No., size, ply & psi (kPa)	Two 18.4R34; 8; 20 (140)	Two 18.4R34; 8; 20 (140)	
—Liquid (each)	None	None	
—Cast Iron (each)	618 lb (280 kg)	None	
Front Tires		With Ballast	Without Ballast
—No., size, ply & psi (kPa)	Two 12.4R28; 8; 26 (180)	Two 12.4R28; 8; 26 (180)	
—Liquid (each)	None	None	
—Cast Iron (each)	788 lb (357 kg)	None	
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)
Static Weight with Operator—Rear		6755 lb (3064 kg)	5520 lb (2504 kg)
—Front		4805 lb (2180 kg)	3230 lb (1465 kg)
—Total		11560 lb (5244 kg)	8750 lb (3969 kg)

REPAIRS and ADJUSTMENTS: The manually operated governor control linkage required adjustment during the drawbar tests.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 151°F (65.9°C). Five 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 1353.

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



Hesston Fiat 880 DT-5 Diesel

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