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Test 1354: Hesston Fiat 980DT and 980 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1354 — HESSTON FIAT 980 DT DIESEL ALSO HESTON FIAT 980 DIESEL 16 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—996 rpm)								
91.12 (67.95)	2400	5.392 (20.412)	0.418 (0.254)	16.90 (3.329)	195 (90.7)	62 (16.6)	75 (23.8)	28.943 (97.737)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
81.48 (60.76)	2521	4.936 (18.686)	0.428 (0.260)	16.51 (3.252)	189 (87.2)	61 (16.1)	74 (23.3)	..... .....
0.00 (0.00)	2682	1.623 (6.143)	..... .....	..... .....	177 (80.6)	62 (16.4)	74 (23.6)	..... .....
42.05 (31.36)	2610	3.127 (11.835)	0.525 (0.319)	13.45 (2.649)	182 (83.1)	62 (16.7)	76 (24.4)	..... .....
91.70 (68.38)	2400	5.395 (20.423)	0.415 (0.253)	17.00 (3.348)	192 (88.9)	62 (16.7)	76 (24.4)	..... .....
21.49 (16.02)	2652	2.370 (8.973)	0.779 (0.474)	9.06 (1.786)	177 (80.6)	62 (16.7)	76 (24.7)	..... .....
61.95 (46.20)	2559	4.010 (15.180)	0.457 (0.278)	15.45 (3.043)	188 (86.9)	62 (16.7)	78 (25.3)	..... .....
Av Av	49.78 (37.12)	2570 (13.540)	3.577 (0.309)	0.507 (2.741)	13.92 (84.5)	184 (16.5)	62 (24.3)	76 (97.771)

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 12th (4 N) Gear											
74.93 (55.87)	5633 (25.06)	4.99 (8.03)	2400	7.11	5.257 (19.900)	0.495 (0.301)	14.25 (2.808)	193 (89.2)	57 (13.9)	65 (18.1)	29.105 (98.283)
75% of Pull at Maximum Power—Ten Hours 12th (4 N) Gear											
62.30 (46.46)	4363 (19.41)	5.36 (8.62)	2530	5.39	4.584 (17.354)	0.520 (0.316)	13.59 (2.677)	198 (92.1)	72 (22.4)	87 (30.3)	28.715 (96.966)
50% of Pull at Maximum Power—Two Hours 12th (4 N) Gear											
43.15 (32.18)	2906 (12.93)	5.57 (8.96)	2583	3.65	3.522 (13.332)	0.576 (0.351)	12.25 (2.413)	190 (87.8)	70 (20.8)	83 (28.1)	28.840 (97.388)
50% of Pull at Reduced Engine Speed—Two Hours 13th (1 H) Gear											
43.02 (32.08)	2913 (12.96)	5.54 (8.91)	1797	3.61	2.991 (11.324)	0.491 (0.299)	14.38 (2.833)	192 (88.9)	71 (21.4)	84 (28.9)	28.790 (97.220)
MAXIMUM POWER IN SELECTED GEARS											
68.29 (50.92)	8351 (37.15)	3.07 (4.93)	2511	14.65			10th (2 N) Gear	188 (86.4)	57 (13.9)	60 (15.6)	29.080 (98.199)
73.58 (54.87)	7218 (32.11)	3.82 (6.15)	2399	11.04			11th (3 N) Gear	199 (92.8)	68 (20.0)	77 (25.0)	28.850 (97.422)
77.42 (57.74)	5812 (25.85)	5.00 (8.04)	2398	6.83			12th (4 N) Gear	198 (91.9)	68 (20.0)	77 (25.0)	28.850 (97.422)
77.34 (57.67)	3967 (17.65)	7.31 (11.77)	2400	4.61			13th (1 H) Gear	202 (94.2)	68 (20.0)	77 (25.0)	28.850 (97.422)
75.83 (56.54)	2946 (13.11)	9.65 (15.53)	2402	3.65			14th (2 H) Gear	197 (91.7)	69 (20.6)	80 (26.7)	28.850 (97.422)

LUGGING ABILITY IN 12th (4 N) GEAR

Crankshaft Speed rpm	2398	2162	1915	1689	1432	1194	954
Pull—lbs (kN)	5812 (25.85)	6113 (27.19)	6193 (27.55)	6159 (27.40)	6166 (27.43)	6439 (28.64)	5779 (25.71)
Increase in Pull %	0	5	7	6	6	11	-1
Power—Hp (kW)	77.42 (57.74)	72.83 (54.31)	65.25 (48.65)	57.24 (42.69)	48.56 (36.21)	42.02 (31.34)	30.52 (22.76)
Speed—Mph (km/h)	5.00 (8.04)	4.47 (7.19)	3.95 (6.36)	3.49 (5.61)	2.95 (4.75)	2.45 (3.94)	1.98 (3.19)
Slip %	6.83	7.53	7.80	7.80	7.66	8.48	7.11

Department of Agricultural Engineering

Dates of Test: June 2-17, 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 (rating taken from oil company's
inspection data) **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** 2.987 gal
(11.306 l) **Drained from motor** 2.646 gal
(10.015 l) **Transmission and final drive lubricant**
Oliofiat AF 87 **Front axle lubricant** Oliofiat
AMBRA 20W-40 **Total time engine was operated**
48.0 hours.

ENGINE Make Fiat Diesel **Type** six cylinder
vertical **Serial No.** 8065-02*217-996175*
Crankshaft lengthwise **Rated rpm** 2400 **Bore
and stroke** 3.937" × 4.33" (100 mm × 110 mm)
Compression ratio 17 to 1 **Displacement** 316 cu
in (5178 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.**
980DT/16*702457* **Tread width** rear 59.1" (1500
mm) to 86.6" (2200 mm) front 67.3" (1710 mm) to
84.6" (2150 mm) **Wheel base** 99.6" (2530 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 38.4" (975
mm) Vertical distance above roadway 37.8" (960
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 0.3 (0.5) second 0.4 (0.6) third 0.5 (0.8)
fourth 0.6 (1.0) fifth 0.9 (1.4) sixth 1.2 (1.9)
seventh 1.4 (2.3) eighth 1.8 (2.9) ninth 2.6 (4.2)
tenth 3.4 (5.5) eleventh 4.2 (6.8) twelfth 5.3 (8.5)
thirteenth 7.6 (12.2) fourteenth 9.9 (15.9) fif-
teenth 12.4 (19.9) sixteenth 15.5 (24.9) reverse 0.3
(0.5), 0.9 (1.4), 2.5 (4.0), 7.2 (11.5) **Clutch** dual
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 201" (5.11 m) left 201" (5.11 m) (on
concrete surface without brake) right 232" (5.89 m)
left 230" (5.84 m) **Turning space diameter** (on
concrete surface with brake applied) right 414"
(10.51 m) left 414" (10.51 m) (on concrete surface
without brake) right 476" (12.09 m) left 472" (11.99
m) **Power take-off** 996 rpm at 2400 engine rpm
and 540 rpm at 2125 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or
adjustments.

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	86.5	86.5
75% of Pull at Maximum Power—Ten Hours	—	84.0
50% of Pull at Maximum Power—Two Hours	—	82.0
50% of Pull at Reduced Engine Speed—Two Hours	—	82.0
Bystander in 16th (4 H) gear	—	86.5

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 12th (4 N) Gear											
76.32 (56.91)	5539 (24.64)	5.17 (8.31)	2400	5.04	5.310 (20.101)	0.491 (0.299)	14.37 (2.831)	194 (90.0)	59 (15.0)	70 (20.8)	29.115 (98.317)

MAXIMUM POWER IN SELECTED GEARS

71.25 (53.13)	11264 (50.11)	2.37 (3.82)	2503	14.88	9th (1 N) Gear			191 (88.3)	58 (14.4)	61 (16.1)	29.080 (98.199)
79.86 (59.55)	7345 (32.67)	4.08 (6.56)	2399	6.35	11th (3 N) Gear			201 (93.6)	68 (20.0)	77 (25.0)	28.850 (97.422)
78.37 (58.44)	5659 (25.17)	5.19 (8.36)	2400	4.59	12th (4 N) Gear			201 (93.9)	65 (18.3)	73 (22.8)	28.860 (97.456)

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4R34; 8; 20 (140)	Two 18.4R34; 8; 20 (140)
	—Liquid (each)	900 lb (408 kg)	None
	—Cast Iron (each)	300 lb (136 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 12.4R28; 8; 26 (180)	Two 12.4R28; 8; 26 (180)
	—Liquid (each)	None	None
	—Cast Iron (each)	698 lb (317 kg)	None
Height of Drawbar		22.5 in (570 mm)	22.5 in (570 mm)
Static Weight with Operator—Rear		7820 lb (3547 kg)	5420 lb (2458 kg)
		4825 lb (2189 kg)	3430 lb (1556 kg)
		12645 lb (5736 kg)	8850 lb (4014 kg)

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 145°F (62.6°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 **1354**.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



Hesston Fiat 980 DT Diesel