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## Test 1451: Hesston Fiat 1580DT Turbo and 1580 Turbo Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1451 — HESSTON 1580DT TURBO FIAT DIESEL ALSO HESSTON 1580 TURBO 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—1061 rpm)								
141.44 (105.47)	2200	8.374 (31.699)	0.413 (0.251)	16.89 (3.327)	178 (80.8)	67 (19.2)	75 (23.9)	29.243 (98.750)

Standard Power Take-off Speed (1000 rpm)—One Hour								
136.14 (101.52)	2075	7.878 (29.821)	0.403 (0.245)	17.28 (3.404)	178 (81.3)	67 (19.4)	74 (23.5)	29.210 (98.638)

## VARYING POWER AND FUEL CONSUMPTION—Two Hours

124.33 (92.71)	2276	7.666 (29.019)	0.430 (0.261)	16.22 (3.195)	177 (80.6)	67 (19.4)	74 (23.6)	.....
0.00 (0.00)	2438	2.626 (9.940)	.....	.....	174 (78.6)	67 (19.4)	74 (23.3)	.....
64.69 (48.24)	2368	5.113 (19.355)	0.551 (0.335)	12.65 (2.492)	176 (79.7)	68 (19.7)	74 (23.6)	.....
142.10 (105.96)	2200	8.419 (31.869)	0.413 (0.251)	16.88 (3.325)	180 (81.9)	68 (20.0)	75 (23.9)	.....
32.77 (24.44)	2399	3.852 (14.581)	0.819 (0.498)	8.51 (1.676)	174 (78.6)	68 (20.0)	75 (23.9)	.....
95.16 (70.96)	2322	6.349 (24.034)	0.465 (0.283)	14.99 (2.952)	177 (80.6)	68 (20.3)	75 (23.9)	.....
<b>Av 76.51</b> <b>Av (57.05)</b>	<b>2334</b>	<b>5.671</b> <b>(21.467)</b>	<b>0.517</b> <b>(0.314)</b>	<b>13.49</b> <b>(2.658)</b>	<b>176</b> <b>(80.0)</b>	<b>68</b> <b>(19.8)</b>	<b>75</b> <b>(23.7)</b>	<b>29.183</b> <b>(98.548)</b>

## 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 7th (M3) Gear											
122.32 (91.21)	8395 (37.34)	5.46 (8.79)	2200	5.09	8.321 (31.500)	0.474 (0.288)	14.70 (2.896)	179 (81.4)	58 (14.4)	68 (20.0)	29.075 (98.182)
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
99.03 (73.84)	6377 (28.37)	5.82 (9.37)	2311	3.64	7.317 (27.698)	0.515 (0.313)	13.53 (2.666)	176 (79.8)	48 (8.7)	53 (11.4)	29.159 (98.466)
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
68.29 (50.93)	4251 (18.91)	6.02 (9.70)	2362	2.41	5.954 (22.539)	0.608 (0.370)	11.47 (2.259)	175 (79.2)	44 (6.7)	47 (8.1)	29.285 (98.891)
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
68.38 (50.99)	4251 (18.91)	6.03 (9.71)	1498	2.41	4.645 (17.583)	0.473 (0.288)	14.72 (2.900)	175 (79.4)	51 (10.6)	58 (14.4)	29.275 (98.857)

## MAXIMUM POWER IN SELECTED GEARS

109.18 (81.41)	15342 (68.24)	2.67 (4.29)	2268	14.86	4th (L4) Gear			176 (80.0)	47 (8.3)	49 (9.4)	29.120 (98.334)
121.01 (90.24)	13271 (59.03)	3.42 (5.50)	2198	9.37	5th (M1) Gear			180 (81.9)	55 (12.8)	61 (16.1)	29.110 (98.300)
123.93 (92.41)	10435 (46.41)	4.45 (7.17)	2200	6.43	6th (M2) Gear			179 (81.7)	54 (12.2)	59 (15.0)	29.110 (98.300)
124.15 (92.58)	8502 (37.82)	5.48 (8.81)	2201	5.01	7th (M3) Gear			178 (80.8)	51 (10.6)	56 (13.3)	29.120 (98.334)
123.24 (91.90)	6936 (30.85)	6.66 (10.72)	2200	4.04	8th (M4) Gear			178 (81.1)	56 (13.3)	62 (16.7)	29.110 (98.300)
121.67 (90.73)	5187 (23.07)	8.80 (14.16)	2199	3.13	9th (H1) Gear			177 (80.6)	57 (13.9)	64 (17.8)	29.110 (98.300)

## Department of Agricultural Engineering

Dates of Test: September 13-23, 1982

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

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel  
Cetane No. 46.6 (rating taken from oil company's  
inspection data) Specific gravity converted to 60°/  
60° (15°/15°) 0.8371 Fuel weight 6.970 lbs/gal  
(0.835 kg/l) Oil SAE 30 API service classifica-  
tion SE-SF/CC-CD To motor 4.047 gal (15.321 l)  
Drained from motor 3.438 gal (13.014 l) Trans-  
mission and final drive lubricant API 303 Total  
time engine was operated 38.5 hours.

**ENGINE:** Make Fiat Diesel Type six cylinder  
vertical with turbocharger Serial No.  
OM8365.25.501\*750869 Crankshaft lengthwise  
Rated rpm 2200 Bore and stroke 4.528" × 5.118"  
(115 mm × 130 mm) Compression ratio 15.5 to 1  
Displacement 494 cu in (8102 ml) Starting system  
12 volt Lubrication pressure Air cleaner two  
paper elements with centrifugal precleaner Oil  
filter one full flow cartridge Oil cooler engine  
coolant heat exchanger for crankcase oil Fuel fil-  
ter one felt element and one paper cartridge  
Muffler vertical Cooling medium temperature  
control one thermostat.

**CHASSIS:** Type front wheel assist with duals  
Serial No. 1580 DT/12\*742411\* Tread width  
rear 64.6" (1640 mm) to 121" (3075 mm) front 74.8"  
(1900 mm) to 86.6" (2200 mm) Wheel base 113.6"  
(2885 mm) Center of gravity (without operator or  
ballast, with minimum tread, with fuel tank filled  
and tractor serviced for operation) Horizontal dis-  
tance forward from center-line of rear wheels  
37.2" (945 mm) Vertical distance above roadway  
42.5" (1080 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 **Adver-**  
**tised speeds mph (km/h)** first 1.5 (2.5) second 1.9  
(3.1) third 2.3 (3.7) fourth 2.8 (4.5) fifth 3.5 (5.7)  
sixth 4.4 (7.1) seventh 5.4 (8.6) eighth 6.5 (10.4)  
ninth 8.5 (13.6) tenth 10.6 (17.1) eleventh 12.9  
(20.7) twelfth 15.5 (25.0) reverse 3.6 (5.8), 4.5  
(7.2), 5.5 (8.8), 6.6 (10.6) **Clutch** single dry disc  
hydraulically actuated and operated by foot pedal  
**Brakes** multiple wet disc hydraulically operated by  
two foot pedals which can be locked together  
**Steering** hydrostatic **Turning radius** (on concrete  
surface with brake applied) right 225" (5.72 m) left  
233" (5.91 m) (on concrete surface without brake)  
right 265" (6.72 m) left 267" (6.77 m) **Turning**  
**space diameter** (on concrete surface with brake  
applied) right 467" (11.87 m) left 482" (12.25 m)  
(on concrete surface without brake) right 546"  
(13.87 m) left 550" (13.97 m) **Power take-off** 540  
rpm at 1950 engine rpm and 1000 rpm at 2075  
engine rpm.

### LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2201	1972	1754	1537	1306	1111
Pull—lbs (kN)	8502 (37.82)	9040 (40.21)	9406 (41.84)	9609 (42.74)	9533 (42.40)	8646 (38.46)
Increase in Pull %	0	6	11	13	12	2
Power—Hp (kW)	124.15 (92.58)	117.72 (87.79)	108.70 (81.06)	97.06 (72.37)	81.79 (60.99)	63.51 (47.36)
Speed—Mph (km/h)	5.48 (8.81)	4.88 (7.86)	4.33 (6.97)	3.79 (6.10)	3.22 (5.18)	2.75 (4.43)
Slip %	5.01	5.33	5.49	5.65	5.65	5.17

### TRACTOR SOUND LEVEL WITH CAB

	Front Wheel Drive dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	82.0	81.0
75% of Pull at Maximum Power—Ten Hours		81.0
50% of Pull at Maximum Power—Two Hours		80.0
50% of Pull at Reduced Engine Speed—Two Hours		76.5
Bystander in 12th (H4) gear		88.0

### 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)	Temp. °F (°C) Cool- ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Available Power—Two Hours 7th (M3) Gear</b>											
123.05 (91.76)	8283 (36.84)	5.57 (8.97)	2200	3.82	8.321 (31.500)	0.471 (0.287)	14.79 (2.913)	178 (81.1)	60 (15.6)	70 (21.1)	29.020 (97.996)

### MAXIMUM POWER IN SELECTED GEARS

108.16 (80.65)	18187 (80.90)	2.23 (3.59)	2273	14.71	3rd (L3) Gear			178 (80.8)	44 (6.7)	44 (6.7)	29.120 (98.334)
125.09 (93.28)	10302 (45.83)	4.55 (7.33)	2199	4.84	6th (M2) Gear			177 (80.3)	53 (11.7)	58 (14.4)	29.120 (98.334)
124.27 (92.67)	8365 (37.21)	5.57 (8.97)	2200	3.78	7th (M3) Gear			176 (80.0)	50 (10.0)	55 (12.8)	29.120 (98.334)

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 14 (95)	Four 20.8-38; 8; 14 (95)
Ballast	—Liquid (each inner)	1150 lb (522 kg)	None
	—Cast Iron (each)	None	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 18 (125)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	80 lb (36 kg)	None
<b>Height of Drawbar</b>		23 in (585 mm)	23 in (585 mm)
<b>Static Weight with Operator—Rear</b>		13440 lb (6096 kg)	11140 lb (5053 kg)
Front		5620 lb (2549 kg)	5460 lb (2477 kg)
Total		19060 lb (8645 kg)	16600 lb (7530 kg)



The Agricultural Experiment Station  
Institute of Agriculture and Natural Resources  
University of Nebraska—Lincoln  
Irvin T. Omtvedt, Dean and Director

**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 or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 122°F (50.0°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. 1451.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
W. E. SPLINTER  
L. L. BASHFORD  
Board of Tractor Test Engineers