9-19-1985

Test 1575: Deutz-Fahr DX 4.70 Diesel and Deutz-Allis 7085 Diesel (15-Speed)

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1575—DEUTZ-FAHR DX 4.70 DIESEL ALSO DEUTZ ALLIS 7085 DIESEL

15 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—1039 rpm)								
85.18 (63.52)	2300	5.162 (19.540)	0.425 (0.258)	16.50 (3.251)	189 (87.0)	66 (19.0)	75 (23.8)	29.15 (98.44)
Standard Power Take-off Speed (1000 rpm) — One Hour								
84.35 (62.90)	2215	4.993 (18.900)	0.415 (0.252)	16.89 (3.328)	191 (88.2)	66 (19.0)	75 (23.8)	29.15 (98.44)
VARYING POWER AND FUEL CONSUMPTION — Two Hours								
74.25 (55.37)	2358	4.561 (17.264)	0.431 (0.262)	16.28 (3.207)	178 (81.1)	66 (18.9)	75 (23.6)	....
0.00 (0.00)	2474	1.198 (4.535)	....	....	156 (68.9)	66 (18.6)	74 (23.3)	....
37.66 (28.08)	2395	2.858 (10.819)	0.532 (0.324)	13.18 (2.596)	162 (71.9)	66 (18.9)	77 (24.7)	....
85.46 (63.73)	2301	5.185 (19.629)	0.425 (0.259)	16.48 (3.247)	184 (84.4)	67 (19.2)	77 (25.0)	....
19.04 (14.20)	2420	1.947 (7.369)	0.717 (0.436)	9.78 (1.927)	154 (67.5)	66 (18.9)	75 (23.6)	....
56.07 (41.81)	2374	3.667 (13.879)	0.459 (0.279)	15.29 (3.012)	168 (75.6)	67 (19.2)	75 (23.9)	....
Av 45.41	**2387**	**3.236**	**0.500**	**14.03**	**167**	**66**	**75**	**29.11**
Av (33.86)		***(12.249)***	***(0.304)***	***(2.765)***	***(74.9)***	***(18.9)***	***(24.0)***	***(98.30)***

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)
Maximum Available Power — Two Hours 8th (3M) Gear											
73.23 (54.61)	5346 (23.78)	5.14 (8.27)	2301	4.65	5.084 (19.246)	0.487 (0.296)	14.40 (2.837)	189 (87.2)	74 (23.1)	84 (28.6)	28.84 (97.39)
75% of Pull at Maximum Power — Ten Hours 8th (3M) Gear											
58.58 (43.68)	4097 (18.22)	5.36 (8.63)	2366	3.19	4.256 (16.109)	0.509 (0.310)	13.76 (2.712)	175 (79.6)	73 (22.9)	83 (28.2)	28.81 (97.27)
50% of Pull at Maximum Power — Two Hours 8th (3M) Gear											
39.72 (29.62)	2732 (12.15)	5.45 (8.77)	2379	2.06	3.309 (12.524)	0.584 (0.355)	12.00 (2.365)	164 (73.1)	73 (22.5)	81 (26.9)	28.62 (96.65)
50% of Pull at Reduced Engine Speed — Two Hours 11th (2H) Gear											
39.73 (29.62)	2731 (12.15)	5.45 (8.78)	1477	2.01	2.660 (10.068)	0.469 (0.286)	14.94 (2.942)	180 (82.2)	74 (23.3)	84 (28.6)	28.61 (96.61)
MAXIMUM POWER IN SELECTED GEARS											
64.67 (48.22)	10502 (46.71)	2.31 (3.72)	2345	13.05	3rd (3L) Gear			172 (77.5)	67 (19.4)	74 (23.3)	28.85 (97.42)
71.93 (53.64)	9507 (42.29)	2.84 (4.57)	2300	10.39	4th (1M) Gear			169 (76.1)	67 (19.4)	70 (21.1)	28.63 (96.68)
74.73 (55.73)	8071 (35.90)	3.47 (5.59)	2299	8.06	5th (4L) Gear			169 (75.8)	67 (19.4)	71 (21.7)	28.63 (96.68)
74.43 (55.50)	7024 (31.24)	3.97 (6.39)	2298	6.59	6th (2M) Gear			171 (76.9)	68 (20.0)	72 (22.2)	28.63 (96.68)
73.72 (54.97)	6340 (28.20)	4.36 (7.02)	2298	5.84	7th (5L) Gear			174 (78.6)	68 (20.0)	73 (22.8)	28.63 (96.68)
74.62 (55.64)	5463 (24.30)	5.12 (8.24)	2300	5.00	8th (3M) Gear			177 (80.6)	70 (21.1)	75 (23.9)	28.63 (96.68)
74.16 (55.30)	4496 (20.00)	6.19 (9.96)	2297	3.83	9th (1H) Gear			179 (81.7)	70 (21.1)	76 (24.4)	28.64 (96.71)
75.13 (56.02)	3725 (16.57)	7.56 (12.17)	2300	3.11	10th (4M) Gear			182 (83.3)	70 (21.1)	77 (25.0)	28.64 (96.71)
72.42 (54.01)	3219 (14.32)	8.44 (13.58)	2299	2.71	11th (2H) Gear			182 (83.1)	71 (21.7)	78 (25.6)	28.64 (96.71)

Department of Agricultural Engineering

Dates of Test: September 10 to 19, 1985

Manufacturer: KLOCKNER-HUMBOLDT-DEUTZ AG, 5000 Cologne 80, West Germany

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.9 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8422 **Fuel weight** 7.012 lbs/gal *(0.840 kg/l)* **Oil SAE** 15W-40 **API service classification** CD-SF **To motor** 3.189 gal *(12.071 l)* **Drained from motor** 1.646 gal *(6.232 l)* **Transmission lubricant** SAE 15W-40 engine oil **Front axle lubricant** SAE 90 EP transmission oil **Total time engine was operated** 42.5 hours.

ENGINE: Make Klockner-Humboldt-Deutz Diesel **Type** four cylinder vertical with turbocharger **Serial No.** 7014970 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.02″ × 4.92″ *(102 mm × 125 mm)* **Compression ratio** 15.5 to 1 **Displacement** 249 cu in *(4085 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element and one felt element **Oil filter** one full flow cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** variable speed fan controlled by exhaust temperature sensor.

CHASSIS: Type front wheel assist **Serial No.** 7435 1636 **Tread width** rear 63″ *(1600 mm)* to 78.7″ *(2000 mm)* front 63″ *(1600 mm)* to 70.9″ *(1800 mm)* **Wheel base** 94.5″ *(2400 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 32.5″ *(825 mm)* Vertical distance above roadway 37.0″ *(939 mm)* Horizontal distance from center of rear wheel tread 0.5″ *(13 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.6 *(2.5)* second 2.1 *(3.3)* third 2.6 *(4.2)* fourth 3.2 *(5.1)* fifth 3.8 *(6.1)* sixth 4.3 *(6.9)* seventh 4.6 *(7.4)* eighth 5.4 *(8.7)* ninth 6.4 *(10.3)* tenth 7.8 *(12.5)* eleventh 8.7 *(14.0)* twelfth 9.6 *(15.5)* thirteenth 10.9 *(17.6)* fourteenth 16.2 *(26.1)* fifteenth 19.5 *(31.3)* reverse 3.0 *(4.8)*, 4.0 *(6.4)*, 5.0 *(8.1)*, 7.3 *(11.7)*, 9.0 *(14.5)* **Clutch** single dry disc operated by foot pedal **Brakes** caliper disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 152″ *(3.87 m)* left 151″ *(3.83 m)*(on concrete surface without brake) right 178″ *(4.53 m)* left 178″ *(4.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 331″ *(8.42 m)* left 328″ *(8.34 m)*(on concrete surface

LUGGING ABILITY IN 8th (3M) GEAR

Crankshaft Speed rpm	2300	2069	1833	1610	1379	1151
Pull—lbs *(kN)*	5463 *(24.30)*	5874 *(26.13)*	6179 *(27.49)*	6231 *(27.72)*	6022 *(26.79)*	5590 *(24.87)*
Increase in Pull %	0	8	13	14	10	2
Power—Hp *(kW)*	74.62 *(55.64)*	71.79 *(53.54)*	66.71 *(49.75)*	59.06 *(44.04)*	49.01 *(36.54)*	38.15 *(28.45)*
Speed—Mph *(km/h)*	5.12 *(8.24)*	4.58 *(7.38)*	4.05 *(6.52)*	3.55 *(5.72)*	3.05 *(4.91)*	2.56 *(4.12)*
Slip %	5.00	5.38	5.69	5.69	5.54	5.08

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Disengaged dB(A)	Engaged dB(A)
Maximum Available Power—Two Hours	79.5	78.5
75% of Pull at Maximum Power—Ten Hours		79.5
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		75.0
Bystander in 14th (4H) gear	84.0	

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

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 (3M) Gear											
72.06 *(53.73)*	5464 *(24.31)*	4.95 *(7.96)*	2299	7.52	5.127 *(19.408)*	0.499 *(0.303)*	14.05 *(2.769)*	183 *(83.9)*	70 *(20.8)*	78 *(25.3)*	28.84 *(97.39)*
MAXIMUM POWER IN SELECTED GEARS											
61.43 *(45.81)*	8417 *(37.44)*	2.74 *(4.40)*	2350	14.74	4th (1M) Gear			169 *(75.8)*	68 *(20.0)*	75 *(23.9)*	28.84 *(97.39)*
73.84 *(55.06)*	5599 *(24.91)*	4.95 *(7.96)*	2299	7.38	8th (3M) Gear			173 *(78.3)*	69 *(20.6)*	74 *(23.3)*	28.63 *(96.68)*
73.72 *(54.97)*	4594 *(20.44)*	6.02 *(9.68)*	2299	5.82	9th (1H) Gear			180 *(81.9)*	70 *(21.1)*	77 *(25.0)*	28.64 *(96.71)*
74.24 *(55.36)*	3778 *(16.81)*	7.37 *(11.86)*	2299	4.91	10th (4M) Gear			181 *(82.5)*	70 *(21.1)*	77 *(25.0)*	28.64 *(96.71)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-38; 6; 16 *(110)*	Two 18.4-38; 6; 16 *(110)*
Ballast	—Liquid (each)	1037 lb *(470 kg)*	None
	—Cast Iron (each)	105 lb *(48 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 6; 16 *(110)*	Two 13.6-28; 6; 16 *(110)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	648 lb *(294 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator	—Rear	8965 lb *(4066 kg)*	6680 lb *(3030 kg)*
	—Front	4695 lb *(2130 kg)*	3400 lb *(1542 kg)*
	—Total	13660 lb *(6196 kg)*	10080 lb *(4572 kg)*

without brake) right 383″ *(9.74 m)* left 382″ *(9.70 m)* **Power take-off** 540 rpm at 2192 engine rpm and 1000 rpm at 2215 engine rpm **Unladen tractor mass** 9900 lb *(4491 kg)*.

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 inlet was maintained at 108°F *(42.5°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The pull in 3rd (3L) gear was limited to avoid tractor bouncing. The cooling air temperature was measured in the airstream between the two rearmost cylinders.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1575,** October 30,1985.

Report reissued. Supplemental sales permit for Deutz Allis 7085 Diesel, December 1986.

LOUIS I. LEVITICUS
Engineer-in-Charge

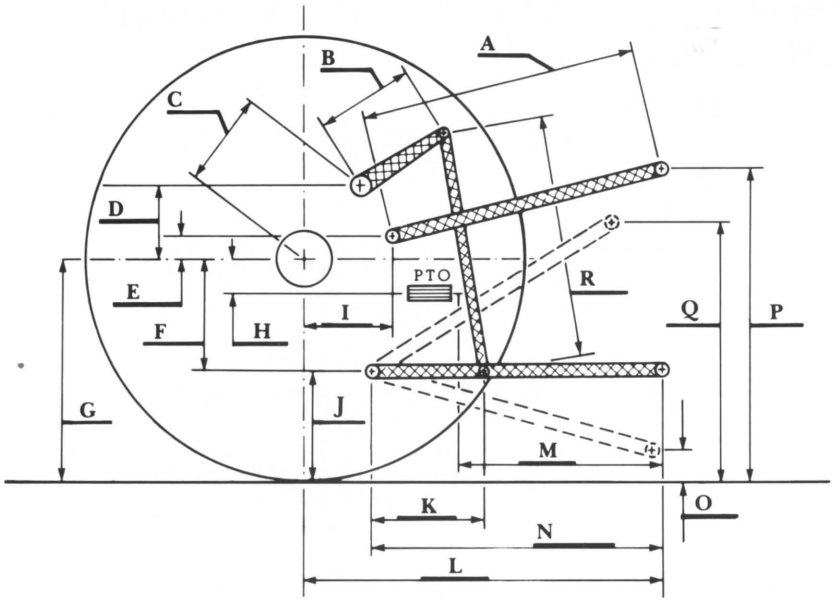
K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi *(kPa)* 2600 *(17930)*
Location remote outlet
Hydraulic oil temperature °F *(°C)* 151 *(66)*
Location dipstick

	Maximum Lift Capacity (With one boost cylinder)		(With optional 2nd boost cylinder)		Lift Capacity for Transport
QUICK ATTACH	no		no		
CATEGORY	II		II		*not measured
LOAD lbs *(kg)*	5404	*(2451)*	7170	*(3252)*	
TIME sec	2.62		3.34		
HITCH POINT MOVEMENT in *(mm)*					
Lowest position	12.1	*(307)*	12.2	*(310)*	
Top of timed range	36.1	*(917)*	36.2	*(919)*	
Highest position	36.4	*(925)*	36.5	*(927)*	
LOAD CG MOVEMENT in *(mm)*					
Lowest position	11.8	*(300)*	12.1	*(307)*	
Top of timed range	37.8	*(960)*	38.0	*(965)*	
Highest position	38.2	*(970)*	38.2	*(970)*	

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



Hitch Dimensions as Tested — No Load

	inch	*mm*
A	27.8	*705*
B	12.6	*320*
C	16.9	*428*
D	16.2	*412*
E	7.8	*197*
F	10.2	*260*
G	31.2	*793*
H	6.5	*164*
I	14.7	*374*
J	21.0	*533*
K	22.4	*568*
L	42.8	*1087*
M	22.1	*562*
N	37.0	*940*
O	8.0	*203*
P	40.0	*1016*
Q	34.5	*876*
R	33.3	*845*

Deutz-Fahr DX 4.70 Diesel

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