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Test 1305: Deutz DX-90 Diesel 15-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1305 — DEUTZ DX-90 DIESEL ALSO DEUTZ-FAHR DX-90 DIESEL 15 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—1111 rpm)									
84.47 * (62.99)	2300	5.196 (19.670)	0.428 (0.260)	16.26 (3.202)	air cooled	62 (16.5)	75 (23.8)	29.013 (97.974)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
80.82 (60.26)	2071	4.912 (18.595)	0.423 (0.257)	16.45 (3.241)	air cooled	62 (16.4)	75 (24.1)	29.040 (98.064)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
73.11 (54.51)	2348	4.372 (16.550)	0.416 (0.253)	16.72 (3.294)	air cooled	62 (16.4)	75 (23.9)	..... .....
0.00 (0.00)	2454	1.281 (4.847)	..... .....	..... .....	air cooled	62 (16.7)	75 (23.9)	..... .....
37.58 (28.02)	2404	2.738 (10.364)	0.507 (0.308)	13.73 (2.704)	air cooled	62 (16.4)	75 (23.9)	..... .....
86.10 (64.21)	2301	5.316 (20.124)	0.430 (0.261)	16.20 (3.191)	air cooled	61 (16.1)	75 (23.9)	..... .....
18.98 (14.15)	2428	1.953 (7.393)	0.716 (0.436)	9.72 (1.914)	air cooled	62 (16.4)	75 (23.9)	..... .....
55.69 (41.53)	2375	3.527 (13.351)	0.441 (0.268)	15.79 (3.110)	air cooled	61 (16.1)	75 (23.9)	..... .....
Av Av	45.24 (33.74)	2385 (12.105)	3.198 (0.299)	0.492 (0.299)	14.15 (2.787)	air cooled	61 (16.3)	75 (23.9)	29.063 (98.143)

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 9th (1S) Gear											
69.95 (52.16)	5294 (23.55)	4.95 (7.97)	2299	7.81	5.066 (19.177)	0.504 (0.307)	13.81 (2.720)	air cooled	60 (15.6)	67 (19.4)	28.660 (96.781)
75% of Pull at Maximum Power—Ten Hours 9th (1S) Gear											
57.50 (42.87)	4157 (18.49)	5.19 (8.35)	2361	6.02	4.085 (15.464)	0.494 (0.301)	14.07 (2.772)	air cooled	60 (15.8)	70 (21.2)	28.918 (97.652)
50% of Pull at Maximum Power—Two Hours 9th (1S) Gear											
40.05 (29.87)	2783 (12.38)	5.40 (8.68)	2407	4.05	3.234 (12.241)	0.562 (0.342)	12.39 (2.440)	air cooled	58 (14.2)	61 (15.8)	28.750 (97.084)
50% of Pull at Reduced Engine Speed—Two Hours 12th (5Z) Gear											
39.82 (29.69)	2761 (12.28)	5.41 (8.70)	1517	3.98	2.623 (9.929)	0.458 (0.279)	15.18 (2.990)	air cooled	58 (14.4)	64 (17.5)	28.725 (97.000)
MAXIMUM POWER IN SELECTED GEARS											
52.37 (39.05)	8786 (39.08)	2.24 (3.60)	2353	14.78	4th (1Z) Gear			air cooled	60 (15.6)	70 (21.1)	28.650 (96.747)
68.41 (51.02)	8723 (38.80)	2.94 (4.73)	2299	14.32	5th (4L) Gear			air cooled	60 (15.6)	69 (20.6)	28.640 (96.713)
69.52 (51.84)	7618 (33.88)	3.42 (5.51)	2298	12.46	6th (2Z) Gear			air cooled	52 (11.1)	68 (20.0)	29.070 (98.165)
69.66 (51.95)	6949 (30.91)	3.76 (6.05)	2300	10.81	7th (5L) Gear			air cooled	52 (11.1)	67 (19.4)	29.080 (98.199)
71.41 (53.25)	6153 (27.37)	4.35 (7.00)	2300	9.24	8th (3Z) Gear			air cooled	52 (11.1)	66 (18.9)	29.090 (98.233)
72.74 (54.24)	5533 (24.61)	4.93 (7.93)	2298	8.20	9th (1S) Gear			air cooled	51 (10.6)	65 (18.3)	29.100 (98.266)
74.19 (55.32)	4260 (18.95)	6.53 (10.51)	2300	6.12	10th (4Z) Gear			air cooled	52 (11.1)	68 (20.0)	29.070 (98.165)
73.65 (54.92)	3542 (15.76)	7.80 (12.55)	2300	4.94	11th (2S) Gear			air cooled	52 (11.1)	68 (20.0)	29.060 (98.131)
73.22 (54.60)	3374 (15.01)	8.14 (13.10)	2299	4.66	12th (5Z) Gear			air cooled	52 (11.1)	68 (20.0)	29.060 (98.131)

Department of Agricultural Engineering

Dates of Test: April 18-25 1979

Manufacturer: KLOCKNER-HUMBOLDT
-DEUTZ, AG 5, Cologne 80, West Germany.

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 49.0 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8357 Fuel weight 6.958 lbs/gal (0.834 kg/l) Oil SAE 30 API service classification SB/SE-CA/CD To motor 3.555 gal (13.456 l) Drained from motor 2.883 gal (10.912 l) Transmission and final drive lubricant SAE 20W20 Total time engine was operated 46.0 hours

ENGINE: Make Deutz Diesel Type five cylinder vertical Serial No. 6027267 Crankshaft lengthwise Rated rpm 2300 Bore and stroke 3.94" × 4.72" (100 mm × 120 mm) Compression ratio 17 to 1 Displacement 287 cu in (4710 ml) Cranking system 12 volt Lubrication pressure Air cleaner two paper elements with centrifugal precleaner Oil filter one paper cartridge Oil cooler radiator for crankcase oil, radiator for hydraulic oil Fuel filter two paper cartridges Muffler vertical Cooling medium temperature control air cooled.

CHASSIS: Type standard Serial No. 7618 0434 Tread width 63.0" (1600 mm) to 78.7" (2000 mm) front 58.1" (1476 mm) to 77.8" (1976 mm) Wheel base 100.7" (2558 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 33.5" (851 mm) Vertical distance above roadway 37.8" (962 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 1.3 (2.1) second 2.0 (3.3) third 2.5 (4.0) fourth 2.7 (4.3) fifth 3.6 (5.8) sixth 4.1 (6.6) seventh 4.4 (7.1) eighth 5.0 (8.1) ninth 5.6 (9.1) tenth 7.3 (11.8) eleventh 8.6 (13.9) twelfth 9.0 (14.4) thirteenth 10.6 (17.0) fourteenth 15.5 (25.0) fifteenth 18.6 (30.0) reverse 3.3 (5.3), 5.0 (8.1), 6.2 (10.0), 9.0 (14.4), 11.0 (17.7) Clutch single dry disc operated by foot pedal Brakes double dry disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 153.5" (3.90 m) left 148.7" (3.78 m) (on concrete surface without brake) right 170.4" (4.33 m) left 165.7" (4.21 m) Turning space diameter (on concrete surface with brake applied) right 316.4" (8.04 m) left 306.9" (7.80 m) (on concrete surface without brake) right 350.2" (8.90 m) left 340.8" (8.66 m) Power take-off 1000 rpm at 2071 engine rpm and 540 rpm at 2057 engine rpm.

LUGGING ABILITY IN 9th (1S) GEAR

Crankshaft Speed rpm	2298	2069	1840	1606	1379	1142
Pull—lbs (kN)	5533 (24.61)	5866 (26.10)	6164 (27.42)	6128 (27.26)	5999 (26.68)	5770 (25.66)
Increase in Pull %	0	6	11	11	8	4
Power—Hp (kW)	72.74 (54.24)	69.00 (51.45)	64.13 (47.82)	55.72 (41.55)	46.90 (34.97)	37.49 (27.96)
Speed—Mph (km/h)	4.93 (7.93)	4.41 (7.10)	3.90 (6.28)	3.41 (5.49)	2.93 (4.72)	2.44 (3.92)
Slip %	8.20	8.78	9.30	9.17	9.05	8.65

TRACTOR SOUND LEVEL WITH CAB

	EUROPEAN MADE CAB dB(A)	AMERICAN MADE CAB dB(A)
Maximum Available Power—Two Hours	81.5	83.5
75% of Pull at Maximum Power—Ten Hours	81.0	80.0
50% of Pull at Maximum Power—Two Hours	80.0	80.5
50% of Pull at Reduced Engine Speed—Two Hours	78.0	79.5
Bystander in 15th (5S) gear	—	89.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires		
—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast		
—Liquid (each)	815 lb (370 kg)	None
—Cast Iron (each)	720 lb (327 kg)	None
Front Tires		
—No., size, ply & psi (kPa)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)
Ballast		
—Liquid (each)	None	None
—Cast Iron (each)	70 lb (32 kg)	None
Height of Drawbar	24.5 in (620 mm)	24.5 in (620 mm)
Static Weight with Operator—Rear	9700 lb (4400 kg)	6630 lb (3007 kg)
—Front	3450 lb (1565 kg)	3310 lb (1502 kg)
—Total	13150 lb (5965 kg)	9940 lb (4509 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 code or official Nebraska test procedure. Temperature at injection pump return was 170°F (76.9°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h).

NOTE: Supplemental permit for Deutz-Fahr DX-90 granted November 1982.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1305**.

LOUIS I. LEVITICUS
Engineer-in Charge

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



Deutz DX-90 Diesel