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Test 1400: Big Bud 525/50 Diesel 9-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1400 — BIG BUD 525/50 DIESEL 9 SPEED

DRAWBAR PERFORMANCE

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 3rd (L3) Gear											
406.48 (303.11)	26984 (120.03)	5.65 (9.09)	2100	4.04	27.340 (103.493)	0.471 (0.287)	14.87 (2.929)	179 (81.4)	73 (22.8)	84 (28.9)	28.930 (97.692)
75% of Pull at Maximum Power—Ten Hours 3rd (L3) Gear											
345.77 (257.84)	21462 (95.47)	6.04 (9.72)	2223	3.06	24.750 (93.690)	0.502 (0.305)	13.97 (2.752)	177 (80.6)	71 (21.9)	86 (29.8)	28.885 (97.540)
50% of Pull at Maximum Power—Two Hours 3rd (L3) Gear											
232.40 (173.30)	13995 (62.25)	6.23 (10.02)	2267	2.01	19.350 (73.248)	0.584 (0.355)	12.01 (2.366)	173 (78.1)	73 (22.8)	81 (26.9)	28.890 (97.557)
50% of Pull at Reduced Engine Speed—Two Hours 5th (L5) Gear											
233.97 (174.47)	14049 (62.49)	6.25 (10.05)	1652	1.93	15.605 (59.071)	0.467 (0.284)	14.99 (2.954)	173 (78.3)	75 (23.9)	88 (31.1)	28.875 (97.507)

MAXIMUM POWER IN SELECTED GEARS

399.17 (297.66)	42216 (187.79)	3.55 (5.71)	2099	9.20	1st (L1) Gear		178 (81.1)	72 (22.2)	85 (29.4)	28.920 (97.659)
413.44 (308.30)	35554 (158.15)	4.36 (7.02)	2101	5.72	2nd (L2) Gear		178 (81.1)	72 (22.2)	85 (29.4)	28.930 (97.692)
421.49 (314.30)	28011 (124.60)	5.64 (9.08)	2097	4.16	3rd (L3) Gear		179 (81.7)	73 (22.8)	85 (29.4)	28.930 (97.692)
419.34 (312.70)	23303 (103.66)	6.75 (10.86)	2100	3.28	4th (L4) Gear		179 (81.4)	71 (21.7)	85 (29.4)	28.920 (97.659)
418.20 (311.85)	19919 (88.60)	7.87 (12.67)	2100	2.63	5th (L5) Gear		179 (81.7)	71 (21.7)	85 (29.4)	28.910 (97.625)
416.39 (310.50)	16655 (74.08)	9.38 (15.09)	2099	2.30	6th (L6) Gear		179 (81.7)	72 (22.2)	86 (30.0)	28.910 (97.625)

MAXIMUM PULL IN 3rd (L3) GEAR (TORQUE CONVERTER MODE)

301.93 (225.15)	44927 (199.85)	2.52 (4.06)	2077	14.75	3rd (L3) Gear		182 (83.1)	74 (23.3)	83 (28.3)	28.890 (97.557)
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LUGGING ABILITY IN 3rd (L3) GEAR

Crankshaft Speed rpm	2097	1886	1684	1467	2113	2087
Pull—lbs (kN)	28011 (124.60)	31071 (138.21)	33963 (151.08)	35054 (155.93)	38360 (170.63)	43377 (192.95)
Increase in Pull %	0	11	21	25	37	55
Power—Hp (kW)	421.49 (314.30)	417.75 (311.51)	404.56 (301.68)	362.25 (270.36)	344.70 (257.04)	323.73 (241.41)
Speed—Mph (km/h)	5.64 (9.08)	5.04 (8.11)	4.47 (7.19)	3.88 (6.24)	3.37 (5.42)	2.80 (4.50)
Slip %	4.16	4.63	5.41	5.72	6.78	10.67

TRACTOR SOUND LEVEL W/CAB

	dB(A)
Maximum Available Power—Two Hours	74.0
75% of Pull at Maximum Power—Ten Hours	74.5
50% of Pull at Maximum Power—Two Hours	75.5
50% of Pull at Reduced Engine Speed—Two Hours	74.0
Bystander in 6th (L6) gear	94.0

TIRES, BALLAST AND WEIGHT

Rear Tires		Tested Without Ballast	
Ballast	—No., size, ply & psi (kPa) —Liquid (each) —Cast Iron (each)	Four 30.5L-32; 10; inner 14 (95) outer 12 (85)	None
Front Tires	—No., size, ply & psi (kPa) —Liquid (each) —Cast Iron (each)	Four 30.5L-32; 10; inner 16 (110) outer 14 (95)	None
Height of Drawbar		17.5 in (445 mm)	
Static Weight with Operator—Rear		21260 lb (9644 kg)	
Front		30660 lb (13907 kg)	
Total		51920 lb (23551 kg)	

Department of Agricultural Engineering

Dates of Test: June 29 to July 9, 1981.

Manufacturer: BIG BUD TRACTORS, INC.,
Box 1111, Havre, Montana 59501

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8418 **Fuel weight** 7.009 lbs/gal (0.840 kg/l) **Oil** SAE 15W-40 **API service classification** SB/SE-CA/CD **To motor** 8.760 gal (33.160 l) **Drained from motor** 7.567 gal (28.644 l) **Transmission lubricant** SAE 10 hydraulic transmission oil **Hydraulic oil** Union ISO VG 46 or equivalent **Final drive lubricant** SAE 80W-140 **Total time engine was operated** 36.0 hours.

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 31121666 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 6.25" × 6.25" (158.8 mm × 158.8 mm) **Compression ratio** 15.5 to 1 **Displacement** 1150 cu in (18845 ml) **Starting system** 24 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Air compressor** direct engine drive **Oil filter** two full flow cartridges and one bypass element **Oil cooler** engine coolant heat exchangers for crankcase and torque converter oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** four wheel drive with duals **Serial No.** CT35C30511157 **Tread width** rear 91" (2310 mm) to 159.5" (4050 mm) front 91" (2310 mm) to 159.5" (4050 mm) **Wheel base** 150" (3810 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 88.5" (2250 mm) Vertical distance above roadway 47.5" (1205 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 6 range power shift with torque converter and automatic lockup **Advertised speeds mph (km/h)** first 3.8 (6.1) second 4.5 (7.2) third 5.7 (9.2) fourth 6.8 (10.9) fifth 7.9 (12.6) sixth 9.3 (15.0) seventh 9.8 (15.7) eighth 14.7 (23.7) ninth 20.2 (32.6) reverse 3.8 (6.1), 9.8 (15.7) **Clutch** none **Brakes** expanding shoe pneumatically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 325" (8.26 m) left 325" (8.26 m) **Turning space diameter** (on concrete surface without brake) right 680" (17.28 m) left 680" (17.28 m) **Power take-off** none.

REPAIRS and ADJUSTMENTS: During the limber up period, the hydraulic steering suction line came in contact with the drive line and wore through. It was replaced and secured.

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 was 134°F (56.7°C). Six gears were chosen between 15% slip and 10 mph (16.1 km/h). The transmission shifted to torque converter mode after the third step of the lugging run, resulting in increased engine speed.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1400.**

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Big Bud 525/50 Diesel