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Test 1346: Allis-Chalmers 7010 Power Shift Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1346

ALLIS CHALMERS 7010 POWER SHIFT 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—1021 rpm)									
106.72 (79.58)	2300	7.018 (26.565)	0.464 (0.282)	15.21 (2.996)	191 (88.3)	56 (13.3)	75 (23.8)	28.880 (97.523)	
Standard Power Take-Off Speed (1000 rpm)—One Hour									
106.33 (79.29)	2253	6.889 (26.078)	0.458 (0.278)	15.43 (3.040)	192 (88.7)	56 (13.3)	75 (24.0)	28.880 (97.523)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
97.02 (72.35)	2462	6.822 (25.826)	0.497 (0.302)	14.22 (2.802)	188 (86.7)	56 (13.6)	75 (23.9)	..... .....
0.00 (0.00)	2556	2.506 (9.488)	..... .....	..... .....	176 (80.0)	56 (13.3)	75 (23.9)	..... .....
49.53 (36.94)	2506	4.575 (17.319)	0.652 (0.397)	10.83 (2.133)	186 (85.3)	56 (13.1)	76 (24.2)	..... .....
108.91 (81.21)	2300	7.048 (26.678)	0.457 (0.278)	15.45 (3.044)	192 (88.9)	55 (12.8)	75 (23.9)	..... .....
24.91 (18.58)	2533	3.543 (13.411)	1.004 (0.611)	7.03 (1.385)	178 (81.1)	54 (12.5)	75 (23.9)	..... .....
73.43 (54.76)	2482	5.633 (21.323)	0.542 (0.330)	13.04 (2.568)	189 (87.2)	55 (12.8)	76 (24.4)	..... .....
Av Av	58.97 (43.97)	2473 (19.007)	5.021 (0.366)	0.601 (2.313)	11.74 (84.9)	185 (13.0)	55 (24.0)	75 (97.473)	28.865

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 7th (2 F) Gear											
89.10 (66.44)	5480 (24.38)	6.10 (9.81)	2300	6.93	7.169 (27.136)	0.568 (0.346)	12.43 (2.448)	187 (86.1)	48 (8.6)	58 (14.2)	28.610 (96.612)
75% of Pull at Maximum Power—Ten Hours 7th (2 F) Gear											
75.43 (56.25)	4217 (18.76)	6.71 (10.80)	2476	4.83	6.645 (25.153)	0.622 (0.378)	11.35 (2.236)	185 (84.9)	49 (9.2)	59 (14.9)	28.905 (97.608)
50% of Pull at Maximum Power—Two Hours 7th (2 F) Gear											
52.08 (38.83)	2836 (12.61)	6.89 (11.08)	2501	3.37	5.434 (20.570)	0.737 (0.448)	9.58 (1.888)	183 (83.9)	51 (10.3)	61 (15.8)	28.550 (96.409)
50% of Pull at Reduced Engine Speed—Two Hours 9th (3 F) Gear											
51.64 (38.51)	2809 (12.49)	6.89 (11.09)	1815	3.25	4.301 (16.282)	0.588 (0.358)	12.01 (2.365)	181 (82.8)	54 (11.9)	64 (17.8)	28.540 (96.375)
MAXIMUM POWER IN SELECTED GEARS											
76.99 (57.41)	9516 (42.33)	3.03 (4.88)	2452	14.91	3rd (3 S) Gear			182 (83.3)	45 (7.2)	51 (10.6)	28.950 (97.760)
85.83 (64.01)	8884 (39.52)	3.62 (5.83)	2300	14.12	4th (4 S) Gear			187 (85.8)	46 (7.8)	55 (12.8)	28.660 (96.781)
91.08 (67.91)	8060 (35.85)	4.24 (6.82)	2300	10.80	5th (1 F) Gear			188 (86.4)	46 (7.8)	55 (12.8)	28.670 (96.814)
84.61 (63.09)	6622 (29.46)	4.79 (7.71)	2300	8.21	6th (5 S) Gear			187 (86.1)	45 (7.2)	54 (12.2)	28.680 (96.848)
91.61 (68.32)	5623 (25.01)	6.11 (9.83)	2300	6.78	7th (2 F) Gear			187 (86.1)	45 (7.2)	53 (11.7)	28.680 (96.848)
86.35 (64.39)	5239 (23.30)	6.18 (9.95)	2301	6.42	8th (6 S) Gear			187 (86.1)	45 (7.2)	54 (12.2)	28.680 (96.848)
91.45 (68.20)	3989 (17.74)	8.60 (13.84)	2300	4.71	9th (3 F) Gear			187 (86.1)	46 (7.8)	56 (13.3)	28.650 (96.747)

Department of Agricultural Engineering

Dates of Test: May 2—14, 1980

Manufacturer: ALLIS CHALMERS CORPORATION, P.O. Box 512, Milwaukee, Wisconsin 53201

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 30 API service classification** SE-CD **To motor** 3.285 gal (12.434 l) **Drained from motor** 3.060 gal (11.582 l) **Transmission and final drive lubricant** A.C. Power fluid 821 **Total time engine was operated** 33.0 hours.

ENGINE Make Allis Chalmers **Dsl Type** six cylinder vertical with turbocharger **Serial No.** 4907332 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.875" × 4.25" (98.4 mm × 107.9 mm) **Compression ratio** 16.25 to 1 **Displacement** 301 cu in (4932 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: Type standard **Serial No.** 7010 S 1636 **Tread width** rear 64" (1626 mm) to 97" (2464 mm) front 60" (1524 mm) to 91" (2311 mm) **Wheel base** 106" (2692 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 30.3" (770 mm) Vertical distance above roadway 38.1" (968 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 with partial (6) range operator controlled power shift **Advertised speeds mph (km/h)** first 1.8 (2.9) second 2.5 (4.0) third 3.5 (5.6) fourth 4.4 (7.1) fifth 4.9 (7.9) sixth 5.4 (8.7) seventh 6.8 (11.0) eighth 6.8 (11.0) ninth 9.3 (15.0) tenth 11.8 (19.0) eleventh 14.6 (23.5) twelfth 18.4 (30.0) reverse 2.9 (4.7), 7.9 (12.7) **Clutch** multiple wet disc hydraulically 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 148" (3.77 m) left 148" (3.76 m) (on concrete surface without brake) right 168" (4.26 m) left 168" (4.26 m) **Turning space diameter** (on concrete surface with brake applied) right 308" (7.82 m) left 307" (7.80 m) (on concrete surface without brake) right 346" (8.79 m) left 346" (8.79 m) **Power take-off** 1000 rpm at 2253 engine rpm and 540 rpm at 2230 engine rpm.

LUGGING ABILITY IN 7th (2 F) GEAR

Crankshaft Speed rpm	2300	2071	1840	1609	1376	1148
Pull—lbs (kN)	5623 (25.01)	6256 (27.83)	6683 (29.73)	7011 (31.19)	6808 (30.29)	5836 (25.96)
Increase in Pull %	0	11	19	25	21	4
Power—Hp (kW)	91.61 (68.32)	90.93 (67.80)	85.68 (63.89)	78.21 (58.32)	65.12 (48.56)	47.21 (35.20)
Speed—Mph (km/h)	6.11 (9.83)	5.45 (8.77)	4.81 (7.74)	4.18 (6.73)	3.59 (5.77)	3.03 (4.88)
Slip %	6.78	7.64	8.35	8.77	8.49	7.22

TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	77.5
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	75.0
Bystander in 11th (5 F) gear	88.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires		
—No., size, ply & psi (kPa)	Two 18.4-38; 8; 18 (125)	Two 18.4-38; 8; 18 (125)
Ballast	575 lb (261 kg)	None
—Liquid (each)	None	None
—Cast Iron (each)	None	None
Front Tires		
—No., size, ply & psi (kPa)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)
Ballast	None	None
—Liquid (each)	None	None
—Cast Iron (each)	None	None
Height of Drawbar	20.5 in (520 mm)	20.5 in (520 mm)
Static Weight with Operator—Rear	9270 lb (4205 kg)	8120 lb (3683 kg)
—Front	3470 lb (1574 kg)	3255 lb (1476 kg)
—Total	12740 lb (5779 kg)	11375 lb (5159 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 was 140°F (60.0°C). Seven 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 **1346**.

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



Allis Chalmers 7010 Power Shift Dsl