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Test 1261: Allis-Chalmers 7045 Power Director Diesel

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1261

ALLIS-CHALMERS 7045 POWER DIRECTOR DIESEL

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—1021 rpm)								
146.18 *(109.00)*	2300	10.133 *(38.357)*	0.480 *(0.292)*	14.43 *(2.842)*	200 *(93.1)*	56 *(13.6)*	75 *(23.9)*	28.920 *(97.659)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
146.46 *(109.22)*	2253	10.019 *(37.925)*	0.474 *(0.288)*	14.62 *(2.880)*	201 *(93.8)*	59 *(15.2)*	75 *(24.0)*	28.915 *(97.642)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
129.70 *(96.72)*	2401	9.365 *(35.449)*	0.500 *(0.304)*	13.85 *(2.728)*	196 *(90.8)*	61 *(16.1)*	76 *(24.2)*	....
0.00 *(0.00)*	2566	3.578 *(13.544)*	....	....	181 *(82.8)*	60 *(15.8)*	74 *(23.6)*	....
67.78 *(50.54)*	2505	6.454 *(24.431)*	0.659 *(0.401)*	10.50 *(2.069)*	188 *(86.9)*	61 *(16.1)*	76 *(24.2)*	....
146.46 *(109.22)*	2301	10.136 *(38.368)*	0.479 *(0.292)*	14.45 *(2.847)*	200 *(93.6)*	62 *(16.7)*	76 *(24.2)*	....
34.33 *(25.60)*	2538	5.029 *(19.036)*	1.015 *(0.617)*	6.83 *(1.345)*	183 *(83.9)*	62 *(16.7)*	75 *(23.9)*	....
99.81 *(74.43)*	2466	7.901 *(29.907)*	0.548 *(0.333)*	12.63 *(2.489)*	192 *(89.2)*	62 *(16.7)*	75 *(23.9)*	....
Av 79.68 *Av (59.42)*	**2463**	**7.077** *(26.789)*	**0.615** *(0.374)*	**11.26** *(2.218)*	**190** *(87.9)*	**61** *(16.3)*	**75** *(24.0)*	**28.897** *(97.580)*

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 8th (4SL) Gear											
122.90 *(91.64)*	8974 *(39.92)*	5.14 *(8.26)*	2300	5.13	10.107 *(38.259)*	0.570 *(0.346)*	12.16 *(2.395)*	199 *(92.5)*	58 *(14.4)*	74 *(23.3)*	28.760 *(97.118)*
75% of Pull at Maximum Power—Ten Hours 8th (4SL) Gear											
101.45 *(75.65)*	6902 *(30.70)*	5.51 *(8.87)*	2430	3.75	8.898 *(33.681)*	0.607 *(0.370)*	11.40 *(2.246)*	189 *(87.2)*	57 *(13.9)*	65 *(18.3)*	28.828 *(97.348)*
50% of Pull at Maximum Power—Two Hours 8th (4SL) Gear											
70.00 *(52.20)*	4608 *(20.50)*	5.70 *(9.17)*	2479	2.45	7.201 *(27.259)*	0.713 *(0.433)*	9.72 *(1.915)*	187 *(86.1)*	61 *(16.1)*	79 *(25.8)*	28.720 *(96.983)*
50% of Pull at Reduced Engine Speed—Two Hours 12th (2FL) Gear											
70.10 *(52.27)*	4620 *(20.55)*	5.69 *(9.16)*	1715	2.91	5.541 *(20.974)*	0.547 *(0.333)*	12.65 *(2.492)*	182 *(83.3)*	46 *(7.8)*	48 *(8.9)*	28.930 *(97.692)*
MAXIMUM POWER IN SELECTED GEARS											
82.12 *(61.24)*	15430 *(68.64)*	2.00 *(3.21)*	2480	14.97	2nd (1SH) Gear			183 *(83.6)*	45 *(7.2)*	46 *(7.8)*	28.910 *(97.625)*
124.61 *(92.92)*	10263 *(45.65)*	4.55 *(7.33)*	2300	6.13	7th (3SL) Gear			194 *(89.7)*	51 *(10.6)*	63 *(17.2)*	28.840 *(97.388)*
125.83 *(93.83)*	9198 *(40.92)*	5.13 *(8.26)*	2299	5.26	8th (4SL) Gear			193 *(89.2)*	48 *(8.9)*	59 *(15.0)*	28.850 *(97.422)*
124.44 *(92.79)*	8173 *(36.35)*	5.71 *(9.19)*	2298	4.61	9th (3SH) Gear			194 *(90.0)*	52 *(11.1)*	65 *(18.3)*	28.820 *(97.321)*
127.84 *(95.33)*	6813 *(30.30)*	7.04 *(11.32)*	2300	3.71	11th (5SL) Gear			194 *(90.0)*	53 *(11.7)*	67 *(19.4)*	28.810 *(97.287)*
124.83 *(93.08)*	6166 *(27.43)*	7.59 *(12.22)*	2301	3.38	12th (2FL) Gear			194 *(90.0)*	54 *(12.2)*	69 *(20.6)*	28.800 *(97.253)*

Department of Agricultural Engineering

Dates of Test: October 12 to 25, 1977

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 50.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8318 **Fuel weight** 6.926 lbs/gal *(0.832 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 4.094 gal *(15.497 l)* **Drained from motor** 3.450 gal *(13.060 l)* **Transmission and final drive lubricant** Allis-Chalmers Power Fluid 821 **Total time engine was operated** 46.5 hours

ENGINE Make Allis-Chalmers Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 70-00012 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.25″ × 5.00″ *(108.0 mm × 127.0 mm)* **Compression ratio** 16 to 1 **Displacement** 426 cu in *(6974 ml)* **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** primary and safety paper elements with centrifugal precleaner **Oil filter** two full flow screw-on paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil and radiator for transmission and hydraulic oil **Fuel filter** snap-on paper cartridge **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: Type standard with duals **Serial No.** 7045 1008 **Tread width** rear 66″ *(1676 mm)* to 123″ *(3124 mm)* front 62″ *(1575 mm)* to 90″ *(2286 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 28.5″ *(724 mm)* Vertical distance above roadway 38.7″ *(983 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 (2) range operator controlled power shift **Advertised speeds mph *(km/h)*** first 1.8 *(2.9)* second 2.2 *(3.5)* third 3.5 *(5.6)* fourth 3.9 *(6.3)* fifth 4.4 *(7.1)* sixth 4.8 *(7.7)* seventh 4.8 *(7.7)* eighth 5.4 *(8.7)* ninth 6.0 *(9.7)* tenth 6.7 *(10.8)* eleventh 7.3 *(11.7)* twelfth 7.8 *(12.6)* thirteenth 9.0 *(14.5)* fourteenth 9.7 *(15.6)* fifteenth 10.8 *(17.4)* sixteenth 12.0 *(19.3)* seventeenth 13.3 *(21.4)* eighteenth 14.9 *(24.0)* nineteenth 16.2 *(26.1)* twentieth 20.1 *(32.3)* reverse 3.3 *(5.3)*, 4.1 *(6.6)*, 7.3 *(11.7)*, 9.0 *(14.5)* **Clutch** multiple wet disc power actuated and operated by foot pedal **Brakes** multiple wet disc power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on

LUGGING ABILITY IN RATED GEAR 8th (4SL)

Crankshaft Speed rpm	2299	2066	1841	1609	1380	1145
Pull—lbs *(kN)*	9198 *(40.92)*	9918 *(44.12)*	10500 *(46.71)*	10851 *(48.27)*	10810 *(48.08)*	9955 *(44.28)*
Increase in Pull %	0	8	14	18	18	8
Power—Hp *(kW)*	125.83 *(93.83)*	121.19 *(90.37)*	113.98 *(84.99)*	101.77 *(75.89)*	87.14 *(64.98)*	67.26 *(50.15)*
Speed—Mph *(km/h)*	5.13 *(8.26)*	4.58 *(7.37)*	4.07 *(6.55)*	3.52 *(5.66)*	3.02 *(4.87)*	2.53 *(4.08)*
Slip %	5.26	5.89	6.21	6.68	6.68	5.89

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	76.5
50% of Pull at Reduced Engine Speed—Two Hours	74.0
Bystander in 19th (5FL) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 20.8-38; 8; 14 *(100)*	Four 20.8-38; 8; 14 *(100)*
Ballast	—Liquid (each)	1080 lb *(490 kg)*	None
	—Cast Iron (each)	80 lb *(36 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.00-16; 8; 40 *(280)*	Two 11.00-16; 8; 40 *(280)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	50 lb *(23 kg)*	None
Height of drawbar		19 in *(480 mm)*	19 in *(480 mm)*
Static weight with operator—rear		15080 lb *(6840 kg)*	10440 lb *(4736 kg)*
front		3900 lb *(1769 kg)*	3795 lb *(1721 kg)*
total		18980 lb *(8609 kg)*	14235 lb *(6457 kg)*

concrete surface with brake applied) right 145.5″ *(3.70 m)* left 143″ *(3.63 m)* (on concrete surface without brake) right 198.9″ *(5.05 m)* left 195.6″ *(4.97 m)* **Turning space diameter** (on concrete surface with brake applied) right 295″ *(7.49 m)* left 291.1″ *(7.39 m)* (on concrete surface without brake) right 420.3″ *(10.68 m)* left 415.3″ *(10.55 m)* **Power take-off** 1000 rpm at 2253 engine rpm.

REPAIRS and ADJUSTMENTS: Lower cab door window was found to be loose during sound test on the maximum available drawbar test. The sound test was rerun after repair.

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 164°F *(73.1°C)*. Six gears were chosen between 15% slip and 15 mph *(24.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1261.**

LOUIS I. LEVITICUS
Engineer-in Charge

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Allis-Chalmers 7045 Power Director Diesel

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