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Test 1230: Allis-Chalmers 5040 Diesel

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1230 — ALLIS-CHALMERS 5040 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—659 rpm)								
40.05 *(29.87)*	2401	2.858 *(10.820)*	0.500 *(0.304)*	14.01 *(2.760)*	190 *(87.8)*	56 *(13.2)*	75 *(23.8)*	28.950 *(97.760)*
Standard Power Take-off Speed (540 rpm)—One Hour								
36.69 *(27.36)*	1966	2.371 *(8.975)*	0.453 *(0.275)*	15.47 *(3.048)*	190 *(87.9)*	56 *(13.5)*	75 *(23.9)*	28.920 *(97.659)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
35.42 *(26.41)*	2500	2.381 *(9.012)*	0.471 *(0.286)*	14.88 *(2.931)*	184 *(84.2)*	56 *(13.6)*	75 *(23.9)*	....
0.00 *(0.00)*	2594	1.058 *(4.004)*	....	....	176 *(80.0)*	57 *(13.9)*	76 *(24.7)*	....
18.19 *(13.56)*	2568	1.563 *(5.916)*	0.602 *(0.366)*	11.64 *(2.293)*	178 *(81.1)*	56 *(13.3)*	74 *(23.6)*	....
40.08 *(29.89)*	2400	2.835 *(10.731)*	0.496 *(0.301)*	14.14 *(2.785)*	191 *(88.3)*	56 *(13.3)*	75 *(23.9)*	....
9.15 *(6.82)*	2582	1.250 *(4.733)*	0.958 *(0.583)*	7.32 *(1.441)*	176 *(80.0)*	57 *(13.9)*	75 *(23.9)*	....
27.00 *(20.13)*	2537	1.918 *(7.262)*	0.498 *(0.303)*	14.07 *(2.772)*	180 *(81.9)*	57 *(13.9)*	76 *(24.2)*	....
Av 21.64 *Av (16.14)*	**2530**	**1.834** *(6.943)*	**0.594** *(0.361)*	**11.80** *(2.324)*	**181** *(82.6)*	**57** *(13.7)*	**75** *(24.0)*	**28.953** *(97.771)*

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 7th (1-H) Gear											
35.23 *(26.27)*	2642 *(11.75)*	5.00 *(8.05)*	2400	5.97	2.801 *(10.604)*	0.557 *(0.339)*	12.58 *(2.477)*	175 *(79.2)*	43 *(5.8)*	55 *(12.8)*	29.245 *(98.756)*
75% of Pull at Maximum Power—Ten Hours 7th (1-H) Gear											
28.73 *(21.42)*	2015 *(8.96)*	5.35 *(8.61)*	2523	4.31	2.255 *(8.537)*	0.550 *(0.334)*	12.74 *(2.510)*	169 *(75.9)*	37 *(2.6)*	46 *(7.9)*	29.147 *(98.425)*
50% of Pull at Maximum Power—Two Hours 7th (1-H) Gear											
19.75 *(14.73)*	1346 *(5.99)*	5.50 *(8.86)*	2566	3.21	1.891 *(7.159)*	0.671 *(0.408)*	10.44 *(2.057)*	167 *(75.0)*	24 *(−4.3)*	25 *(−3.8)*	29.250 *(98.773)*
50% of Pull at Reduced Engine Speed—Two Hours 8th (2-H) Gear											
19.99 *(14.91)*	1361 *(6.06)*	5.51 *(8.86)*	1420	3.21	1.427 *(5.403)*	0.500 *(0.304)*	14.00 *(2.759)*	166 *(74.2)*	28 *(−2.4)*	29 *(−1.8)*	29.255 *(98.790)*
MAXIMUM POWER IN SELECTED GEARS											
30.71 *(22.90)*	4837 *(21.52)*	2.38 *(3.83)*	2511	14.73	5th (2-L) Gear			169 *(76.1)*	34 *(1.1)*	34 *(1.1)*	29.190 *(98.570)*
34.89 *(26.02)*	3373 *(15.00)*	3.88 *(6.24)*	2400	7.72	6th (3-L) Gear			174 *(78.9)*	43 *(6.1)*	58 *(14.4)*	29.230 *(98.705)*
35.86 *(26.74)*	2687 *(11.95)*	5.00 *(8.05)*	2401	5.74	7th (1-H) Gear			175 *(79.4)*	43 *(6.1)*	58 *(14.4)*	29.230 *(98.705)*
34.20 *(25.50)*	1377 *(6.12)*	9.32 *(14.99)*	2400	3.03	8th (2-H) Gear			175 *(79.4)*	43 *(6.1)*	58 *(14.4)*	29.230 *(98.705)*

Department of Agricultural Engineering

Dates of Test: October 27 to November 5, 1976

Manufacturer: UZINA TRACTORUL (UTB), Brasov, Romania

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 51.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° *(15.6°/15.6°)*** 0.8414 **Fuel weight** 7.006 lbs/gal *(0.841 kg/l)* **Oil SAE** 30 **API service classification** SE-CD **To motor** 1.672 gal *(6.329 l)* **Drained from motor** 1.329 gal *(5.031 l)* **Transmission and final drive lubricant** Allis-Chalmers 821 Power Fluid **Total time engine was operated** 44 hours

ENGINE Make Uzina Tractorul (UTB) Diesel **Type** 3 cylinder vertical **Serial No.** 72429 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.74″ × 4.33″ *(95.0 mm × 110.0 mm)* **Compression ratio** 17 to 1 **Displacement** 143 cu in *(2339 ml)* **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** dry paper element **Oil filter** full flow spin-on cartridge **Fuel filter** primary and secondary paper elements **Muffler** vertical **Cooling medium temperature control** thermostat

CHASSIS: Type standard **Serial No.** 460915 **Tread width** rear 52″ *(1321 mm)* to 75″ *(1905 mm)* front 51″ *(1295 mm)* to 78″ *(1981 mm)* **Wheel base** 75.5″ *(1918 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 27.0″ *(685 mm)* Vertical distance above roadway 28.8″ *(733 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 0.5 *(0.8)* second 0.9 *(1.4)* third 1.4 *(2.2)* fourth 1.5 *(2.4)* fifth 2.7 *(4.3)* sixth 4.2 *(6.8)* seventh 5.3 *(8.5)* eighth 9.6 *(15.6)* ninth 15.2 *(24.5)* reverse 0.7 *(1.1)*, 2.2 *(3.5)*, 7.8 *(12.6)* **Clutch** two stage dry disc operated by foot pedal **Brakes** band and drum operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 115″ *(2.92 m)* left 115.4″ *(2.93 m)* (on concrete surface without brake) right 126″ *(3.20 m)* left 126″ *(3.20 m)* **Turning space diameter** (on concrete surface with brake applied) right 239″ *(6.07 m)* left 240″ *(6.09 m)* (on concrete surface without brake) right 260″ *(6.62 m)* left 261″ *(6.63 m)* **Power take-off** 540 rpm at 1966 engine rpm.

LUGGING ABILITY IN RATED GEAR 7th (1-H)

Crankshaft Speed rpm	2401	2159	1912	1680	1434	1191
Pull—lbs *(kN)*	2687 *(11.95)*	2854 *(12.69)*	3044 *(13.54)*	3135 *(13.95)*	3212 *(14.29)*	3197 *(14.22)*
Increase in Pull %	0	6	13	17	20	19
Power—Hp *(kW)*	35.86 *(26.74)*	34.10 *(25.43)*	32.09 *(23.93)*	28.93 *(21.58)*	25.27 *(18.85)*	20.87 *(15.56)*
Speed—Mph *(km/h)*	5.00 *(8.05)*	4.48 *(7.21)*	3.95 *(6.36)*	3.46 *(5.57)*	2.95 *(4.75)*	2.45 *(3.94)*
Slip %	5.74	6.41	6.74	6.96	7.18	7.29

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	95.5
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	90.5
Bystander in 9th (3-H) gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 6; 18 *(120)*	Two 13.6-28; 6; 18 *(120)*
Ballast	—Liquid (each)	430 lb *(195 kg)*	None
	—Cast Iron (each)	600 lb *(272 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6.00-16; 6; 40 *(280)*	Two 6.00-16; 6; 40 *(280)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb *(27 kg)*	None
Height of drawbar		18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static weight with operator—	rear	4670 lb *(2118 kg)*	2610 lb *(1184 kg)*
	front	1570 lb *(712 kg)*	1450 lb *(658 kg)*
	total	6240 lb *(2830 kg)*	4060 lb *(1842 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 144°F *(62.2°C)*. Four 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 **1230.**

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Allis-Chalmers 5040 Diesel

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