

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 1982

Test 1445: Allis-Chalmers 6140 Diesel 10-Speed

Tractor Museum

University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

Museum, Tractor, "Test 1445: Allis-Chalmers 6140 Diesel 10-Speed" (1982). *Nebraska Tractor Tests*. 1760.
<http://digitalcommons.unl.edu/tractormuseumlit/1760>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA TRACTOR TEST 1445 — ALLIS CHALMERS 6140 DIESEL 10 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—594 rpm)								
41.08 (30.63)	2500	3.142 (11.894)	0.553 (0.324)	13.08 (2.575)	184 (84.6)	74 (23.2)	76 (24.2)	28.820 (97.321)

Standard Power Take-off Speed (541 rpm)—One Hour								
38.04 (28.37)	2277	2.825 (10.694)	0.518 (0.315)	13.47 (2.653)	181 (82.8)	73 (22.7)	75 (23.7)	28.830 (97.355)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

36.36 (27.11)	2602	2.882 (10.910)	0.553 (0.336)	12.62 (2.485)	175 (79.4)	72 (22.2)	74 (23.1)	.....
0.00 (0.00)	2731	1.157 (4.380)	.....	.....	166 (74.4)	72 (22.2)	74 (23.3)	.....
18.75 (13.98)	2682	1.923 (7.279)	0.715 (0.435)	9.75 (1.921)	170 (76.9)	72 (22.2)	75 (23.9)	.....
40.28 (30.04)	2504	3.132 (11.856)	0.542 (0.330)	12.86 (2.534)	181 (82.8)	72 (22.2)	74 (23.6)	.....
9.45 (7.05)	2708	1.531 (5.795)	1.130 (0.688)	6.17 (1.217)	166 (74.7)	72 (21.9)	75 (23.9)	.....
27.69 (20.65)	2644	2.366 (8.956)	0.596 (0.363)	11.71 (2.306)	172 (77.8)	72 (22.2)	74 (23.6)	.....
Av 22.09 Av (16.47)	2645	2.165 (8.195)	0.684 (0.416)	10.20 (2.010)	172 (77.7)	72 (22.2)	74 (23.6)	28.847 (97.411)

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 (2H) Gear

33.31 (24.84)	2402 (10.68)	5.20 (8.37)	2501	6.61	3.065 (11.602)	0.642 (0.390)	10.87 (2.141)	181 (82.8)	65 (18.3)	76 (24.2)	29.065 (98.148)
------------------	-----------------	----------------	------	------	-------------------	------------------	------------------	---------------	--------------	--------------	--------------------

75% of Pull at Maximum Power—Ten Hours 7th (2H) Gear

27.17 (20.26)	1838 (8.18)	5.54 (8.92)	2616	4.90	2.649 (10.028)	0.680 (0.414)	10.25 (2.020)	177 (80.4)	69 (20.5)	79 (25.9)	29.075 (98.182)
------------------	----------------	----------------	------	------	-------------------	------------------	------------------	---------------	--------------	--------------	--------------------

50% of Pull at Maximum Power—Two Hours 7th (2H) Gear

18.79 (14.01)	1226 (5.45)	5.75 (9.25)	2668	3.34	2.115 (8.006)	0.785 (0.478)	8.88 (1.750)	174 (78.9)	68 (19.7)	81 (26.9)	29.060 (98.131)
------------------	----------------	----------------	------	------	------------------	------------------	-----------------	---------------	--------------	--------------	--------------------

50% of Pull at Reduced Engine Speed—Two Hours 8th (3H) Gear

18.79 (14.01)	1226 (5.45)	5.75 (9.25)	2219	3.28	1.846 (6.988)	0.685 (0.417)	10.18 (2.005)	173 (78.3)	68 (20.0)	82 (27.5)	29.035 (98.047)
------------------	----------------	----------------	------	------	------------------	------------------	------------------	---------------	--------------	--------------	--------------------

MAXIMUM POWER IN SELECTED GEARS

22.54 (16.81)	4768 (21.21)	1.77 (2.85)	2643	14.85	4th (4L) Gear			170 (76.7)	63 (17.2)	65 (18.3)	29.000 (97.929)
32.30 (24.09)	4097 (18.22)	2.96 (4.76)	2498	12.34	5th (5L) Gear			179 (81.7)	64 (17.8)	72 (22.2)	29.060 (98.131)
33.00 (24.61)	3434 (15.27)	3.60 (5.80)	2500	9.62	6th (1H) Gear			178 (81.1)	64 (17.8)	71 (21.7)	29.050 (98.097)
33.97 (25.33)	2451 (10.90)	5.20 (8.36)	2500	6.61	7th (2H) Gear			175 (79.4)	62 (16.7)	66 (18.9)	29.010 (97.962)
33.84 (25.24)	2002 (8.90)	6.34 (10.20)	2502	5.35	8th (3H) Gear			177 (80.6)	63 (17.2)	69 (20.6)	29.030 (98.030)
32.22 (24.03)	1248 (5.55)	9.69 (15.59)	2500	3.46	9th (4H) Gear			177 (80.6)	63 (17.2)	70 (21.1)	29.040 (98.064)

Department of Agricultural Engineering

Dates of Test: August 30-September 8, 1982

Manufacturer: TOYOSHA COMPANY, LTD.,
55, Joshoji-16, Kadoma City, Osaka 571 Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 46.6 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8376 Fuel weight 6.974 lbs/gal (0.836 kg/l) Oil SAE 30 API service classification SE/SF-CC/CD To motor 1.845 gal (6.984 l) Drained from motor 1.427 gal (5.402 l) Transmission and final drive lubricant Allis Chalmers Power Fluid 821 Total time engine was operated 41.0 hours.

ENGINE: Make Toyosha Diesel Type three cylinder vertical Serial No. 3S233A00159 Crankshaft lengthwise Rated rpm 2500 Bore and stroke 3.858" × 4.055" (98 mm × 103 mm) Compression ratio 23 to 1 Displacement 142 cu in (2330 ml) Starting system 12 volt Lubrication pressure Air cleaner one paper element Oil filter one full flow cartridge Fuel filter one paper element Muffler vertical Cooling medium temperature control one thermostat.

CHASSIS: Type standard Serial No. 6140-1084* Tread width rear 54" (1372 mm) to 84" (2134 mm) front 51.4" (1305 mm) to 74.7" (1897 mm) Wheel base 77.9" (1980 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 27.7" (703 mm) Vertical distance above roadway 27.7" (704 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 0.8 (1.3) second 1.1 (1.9) third 1.4 (2.2) fourth 2.0 (3.3) fifth 3.5 (5.6) sixth 4.1 (6.6) seventh 5.7 (9.2) eighth 6.9 (11.1) ninth 10.3 (16.6) tenth 17.7 (28.5) reverse 1.4 (2.2), 7.1 (11.4) Clutch single dry disc operated by foot pedal Brakes wet disc operated by two foot pedals which can be locked together Steering power assist Turning radius (on concrete surface with brake applied) right 120" (3.05 m) left 121" (3.07 m) (on concrete surface without brake) right 137" (3.48 m) left 137" (3.48 m) Turning space diameter (on concrete surface with brake applied) right 255" (6.48 m) left 257" (6.53 m) (on concrete surface without brake) right 288" (7.32 m) left 288" (7.32 m) Power take-off 541 rpm at 2277 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (2H) GEAR

Crankshaft Speed rpm	2500	2256	2003	1759	1512	1249
Pull—lbs (<i>kN</i>)	2451 (10.90)	2567 (11.42)	2722 (12.11)	2804 (12.47)	2753 (12.25)	2609 (11.61)
Increase in Pull %	0	5	11	14	12	6
Power—Hp (<i>kW</i>)	33.97 (25.33)	31.99 (23.85)	29.98 (22.35)	27.06 (20.18)	22.84 (17.03)	17.95 (13.38)
Speed—Mph (<i>km/h</i>)	5.20 (8.36)	4.67 (7.52)	4.13 (6.65)	3.62 (5.82)	3.11 (5.01)	2.58 (4.15)
Slip %	6.61	7.06	7.40	7.62	7.62	7.17

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	98.0
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	94.0
Bystander in 10th (5H) gear	86.0

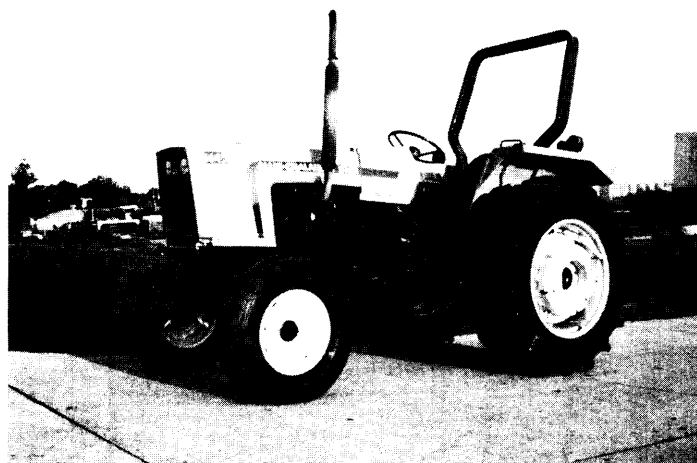
TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires	Two 14.9-28; 4; 14 (95)	Two 14.9-28; 4; 14 (95)
—No., size, ply & psi (<i>kPa</i>)		
Ballast	680 lb (308 kg)	None
—Liquid (each)		
—Cast Iron (each)	158 lb (72 kg)	None
Front Tires	Two 7.50-16; 4; 32 (220)	Two 7.50-16; 4; 32 (220)
—No., size, ply & psi (<i>kPa</i>)		
Ballast	None	None
—Liquid (each)		
—Cast Iron (each)	30 lb (14 kg)	None
Height of Drawbar	20 in (510 mm)	20 in (510 mm)
Static Weight with Operator—Rear	4610 lb (2091 kg)	2935 lb (1331 kg)
Front	1585 lb (719 kg)	1525 lb (692 kg)
Total	6195 lb (2810 kg)	4460 lb (2023 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 139°F (59.4°C). Six 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 No. 1445.

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Allis Chalmers 6140 Diesel