

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

1-1-1978

## Test 1293: Fiat 420 Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

---

Nebraska Tractor Test Lab, "Test 1293: Fiat 420 Diesel" (1978). *Nebraska Tractor Tests*. 1612.  
<https://digitalcommons.unl.edu/tractormuseumlit/1612>

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 1293 — FIAT 420 DIESEL

## 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—623 rpm)									
41.34 (30.83)	2200	2.825 (10.695)	0.473 (0.288)	14.63 (2.883)	198 (92.2)	60 (15.4)	75 (23.8)	29.420 (99.347)	
Standard Power Take-off Speed (540 rpm)—One Hour									
37.45 (27.93)	1908	2.529 (9.574)	0.468 (0.284)	14.81 (2.917)	199 (92.8)	60 (15.3)	75 (23.9)	29.410 (99.313)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
36.10 (26.92)	2262	2.314 (8.760)	0.444 (0.270)	15.60 (3.073)	184 (84.2)	59 (15.0)	74 (23.6)	..... .....	
0.00 (0.00)	2364	0.832 (3.149)	..... .....	..... .....	174 (79.2)	58 (14.7)	75 (23.9)	..... .....	
18.50 (13.79)	2317	1.395 (5.282)	0.522 (0.318)	13.26 (2.612)	176 (80.0)	58 (14.7)	74 (23.3)	..... .....	
41.55 (30.99)	2200	2.856 (10.810)	0.476 (0.289)	14.55 (2.867)	198 (92.2)	59 (15.0)	75 (23.9)	..... .....	
9.35 (6.97)	2342	1.062 (4.019)	0.786 (0.478)	8.81 (1.735)	174 (79.2)	59 (15.0)	75 (23.9)	..... .....	
27.41 (20.44)	2290	1.820 (6.890)	0.460 (0.280)	15.06 (2.967)	178 (81.1)	59 (15.0)	75 (23.9)	..... .....	
<b>Av</b> <b>Av</b>	<b>22.15</b> <b>(16.52)</b>	<b>2296</b>	<b>1.713</b> <b>(6.485)</b>	<b>0.535</b> <b>(0.326)</b>	<b>12.93</b> <b>(2.547)</b>	<b>181</b> <b>(82.6)</b>	<b>59</b> <b>(14.9)</b>	<b>75</b> <b>(23.8)</b>	<b>29.350</b> <b>(99.111)</b>

## DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med		
<b>Maximum Available Power—Two Hours 4th Gear</b>										
36.01 (26.85)	2385 (10.61)	5.66 (9.11)	2201	3.06	2.708 (10.252)	0.521 (0.317)	13.30 (2.619)	188 (86.7)	53 (11.7)	28.575 (96.493)
<b>75% of Pull at Maximum Power—Ten Hours 4th Gear</b>										
29.60 (22.07)	1877 (8.35)	5.92 (9.52)	2279	2.15	2.127 (8.051)	0.497 (0.303)	13.92 (2.742)	175 (79.6)	44 (6.4)	28.893 (97.567)
<b>50% of Pull at Maximum Power—Two Hours 4th Gear</b>										
20.07 (14.97)	1250 (5.56)	6.02 (9.69)	2306	1.68	1.625 (6.151)	0.560 (0.341)	12.35 (2.433)	175 (79.2)	46 (7.5)	28.975 (97.844)
<b>50% of Pull at Reduced Engine Speed—Two Hours 5th Gear</b>										
20.35 (15.18)	1265 (5.63)	6.03 (9.71)	1338	1.50	1.444 (5.468)	0.491 (0.299)	14.09 (2.775)	176 (79.7)	48 (8.6)	28.985 (97.878)
<b>MAXIMUM POWER IN SELECTED GEARS</b>										
20.81 (15.51)	5299 (23.57)	1.47 (2.37)	2299	14.59			1st Gear	175 (79.2)	43 (6.1)	28.950 (97.760)
34.58 (25.79)	5064 (22.52)	2.56 (4.12)	2202	10.18			2nd Gear	186 (85.3)	53 (11.7)	28.640 (96.713)
36.88 (27.50)	3192 (14.20)	4.33 (6.97)	2202	4.15			3rd Gear	190 (87.5)	52 (11.1)	28.680 (96.848)
37.71 (28.12)	2501 (11.12)	5.65 (9.10)	2200	3.15			4th Gear	186 (85.3)	48 (8.9)	28.770 (97.152)
35.49 (26.46)	1343 (5.97)	9.91 (15.95)	2198	1.65			5th Gear	186 (85.3)	53 (11.7)	28.660 (96.781)
<b>LUGGING ABILITY IN RATED GEAR 4th</b>										
Crankshaft Speed rpm			2200	1981	1764	1544	1320	1102		
Pull—lbs (kN)			2501 (11.12)	2595 (11.54)	2692 (11.98)	2757 (12.26)	2780 (12.37)	2694 (11.99)		
Increase in Pull %			0	4	8	10	11	8		
Power—Hp (kW)			37.71 (28.12)	35.19 (26.24)	32.47 (24.21)	29.07 (21.68)	25.05 (18.68)	20.28 (15.12)		
Speed—Mph (km/h)			5.65 (9.10)	5.09 (8.18)	4.52 (7.28)	3.95 (6.36)	3.38 (5.44)	2.82 (4.54)		
Slip %			3.15	3.27	3.39	3.51	3.62	3.39		

Department of Agricultural Engineering

Dates of Test: October 18-30, 1978

Manufacturer: Zelezarna Store, Store Pri Celju —  
63220 Store — Slovenja — Jugoslavija

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel  
Cetane No. 50.4 (rating taken from oil company's  
typical inspection data) **Specific gravity converted**  
**to 60°60° (15°/15°)** 0.8315 **Fuel weight** 6.923 lbs/  
gal (0.832 kg/l) **Oil** SAE 20W-40 **API service**  
**classification** MIL-L-2104 B EP **To motor** 1.564  
gal (5.920 l) **Drained from motor** 1.491 gal (5.643  
l) **Transmission and final drive lubricant** SAE  
20W-40 **Total time engine was operated** 42.5  
hours.

**ENGINE:** Make UZINA TRACTORUL (UTB)  
Type 3 cylinder vertical **Serial No.** \*111739  
**Crankshaft** lengthwise **Rated rpm** 2200 **Bore and**  
**stroke** 3.74" x 4.33" (95 mm x 110 mm) **Compres-**  
**sion ratio** 17.0 to 1 **Displacement** 143 cu in (2339  
ml) **Cranking System** 12 volt **Lubrication** pres-  
sure **Air cleaner** oil bath with centrifugal pre-  
cleaner **Oil filter** one full flow paper cartridge  
**Fuel filter** one paper element **Muffler** vertical  
**Cooling medium temperature control** thermostat.

**CHASSIS:** Type standard **Serial No.** \*11539\*  
**Tread width** rear 51.4" (1305 mm) to 67.1" (1705  
mm) front 47.2" (1200 mm) to 66.9" (1700 mm)  
**Wheel base** 74.8" (1900 mm) **Center of gravity**  
(without operator or ballast, with minimum tread,  
with fuel tank filled and tractor serviced for opera-  
tion) Horizontal distance forward from center-line  
of rear wheels 28.2" (715 mm) Vertical distance  
above roadway 28.2" (715 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 **Ad-**  
**vertised speeds mph (km/h)** first 1.6 (2.7) second  
2.9 (4.6) third 4.5 (7.3) fourth 5.8 (9.4) fifth 10.1  
(16.3) sixth 16.0 (25.8) reverse 2.0 (3.3), 7.2 (11.6)  
**Clutch** double dry disc operated by foot pedal  
**Brakes** contracting band operated by two foot ped-  
als which can be locked together **Steering** me-  
chanical **Turning radius** (on concrete surface with  
brake applied) right 121" (3.07 m) left 124" (3.16 m)  
(on concrete surface without brake) right 134"  
(3.41 m) left 138" (3.52 m) **Turning space diameter**  
(on concrete surface with brake applied) right 248"  
(6.30 m) left 255" (6.48 m) (on concrete surface  
without brake) right 275" (6.98 m) left 283" (7.20 m)  
**Power take-off** 540 rpm at 1908 engine rpm.

**REPAIRS and ADJUSTMENTS:** During the  
preliminary PTO test the fan was replaced. During  
final inspection the walls of cylinder 1 and 3 were  
found to be scratched.

**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  
153°F (67.4°C). Five gears were chosen between  
15% slip and 10 mph (16.1 km/h).

TRACTOR SOUND LEVEL WITHOUT CAB		dB(A)
Maximum Available Power—Two Hours		98.0
75% of Pull at Maximum Power—Ten Hours		95.5
50% of Pull at Maximum Power—Two Hours		94.5
50% of Pull at Reduced Engine Speed—Two Hours		91.5
Bystander in 6th gear		88.0
<b>TIRES, BALLAST AND WEIGHT</b>		
<b>Rear Tires</b>		
—No., size, ply & psi (kPa)	Two 13.6R 28; 6; 20 (140)	Two 13.6R 28; 6; 20 (140)
Ballast	325 lb (147 kg)	None
—Cast Iron (each)	600 lb (272 kg)	None
<b>Front Tires</b>		
—No., size, ply & psi (kPa)	Two 6.00-16; 6; 28 (195)	Two 6.00-16; 6; 28 (195)
Ballast	None	None
—Cast Iron (each)	132 lb (60 kg)	None
<b>Height of Drawbar</b>		
	16 in (405 mm)	16 in (405 mm)
<b>Static Weight with Operator—Rear</b>		
—Front	4490 lb (2036 kg)	2640 lb (1197 kg)
—Total	1545 lb (701 kg)	1280 lb (581 kg)
	6035 lb (2737 kg)	3920 lb (1778 kg)

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1293**.

L. I. LEVITICUS

Engineer-in-Charge

G. W. STEINBRUEGGE

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



**Fiat 420 Diesel**