

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 1996

Test 1721: Agcostar 8425 Diesel 18-Speed (Cummins Engine)

Tractor Museum

University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

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



Part of the [Applied Mechanics Commons](#)

Museum, Tractor, "Test 1721: Agcostar 8425 Diesel 18-Speed (Cummins Engine)" (1996). *Nebraska Tractor Tests*. 2030.

<https://digitalcommons.unl.edu/tractormuseumlit/2030>

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 OECD TRACTOR TEST 1721—SUMMARY 216
AGCOSTAR 8425 DIESEL
18 SPEED
(CUMMINS ENGINE)

DRAWBAR PERFORMANCE
(UNBALLASTED TRACTOR)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kWh)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—11th (5L) Gear									
346.61 (258.47)	17236 (76.67)	7.54 (12.14)	2095	3.05	0.448 (0.273)	15.65 (3.08)	183 (84)	68 (20)	29.12 (98.61)
75% of Pull at Maximum Power—11th (5L) Gear									
274.88 (204.98)	12942 (57.57)	7.97 (12.82)	2193	2.24	0.482 (0.293)	14.55 (2.87)	182 (83)	69 (21)	29.10 (98.54)
50% of Pull at Maximum Power—11th (5L) Gear									
185.09 (138.02)	8621 (38.35)	8.05 (12.96)	2200	1.51	0.560 (0.340)	12.51 (2.47)	180 (82)	69 (21)	29.10 (98.54)
75% of Pull at Reduced Engine Speed—13th (6L) Gear									
275.09 (205.13)	12793 (56.90)	8.06 (12.98)	1568	2.15	0.429 (0.261)	16.36 (3.24)	182 (83)	69 (21)	29.10 (98.54)
50% of Pull at Reduced Engine Speed—13th (6L) Gear									
184.82 (137.82)	8671 (38.57)	7.99 (12.86)	1544	1.51	0.466 (0.283)	15.06 (2.98)	181 (83)	70 (21)	29.10 (98.54)
MAXIMUM POWER IN SELECTED GEARS									
7th (3L) Gear									
305.00 (227.44)	30096 (133.87)	3.80 (6.12)	2160	9.40	0.498 (0.303)	14.08 (2.77)	181 (83)	59 (15)	29.15 (98.71)
8th (3H) Gear									
333.44 (248.64)	28595 (127.19)	4.37 (7.04)	2099	8.37	0.467 (0.284)	15.02 (2.96)	182 (83)	61 (16)	29.16 (98.75)
9th (4L) Gear									
347.82 (259.37)	26597 (118.31)	4.90 (7.89)	1987	6.99	0.450 (0.274)	15.60 (3.07)	182 (83)	63 (17)	29.15 (98.71)
10th (4H) Gear									
364.45 (271.77)	24637 (109.59)	5.55 (8.93)	1886	5.40	0.430 (0.262)	16.31 (3.21)	183 (84)	64 (18)	29.14 (98.68)
11th (5L) Gear									
368.40 (274.71)	20942 (93.15)	6.60 (10.62)	1851	4.11	0.422 (0.257)	16.63 (3.28)	184 (84)	65 (18)	29.13 (98.65)
12th (5H) Gear									
377.85 (281.76)	18761 (83.45)	7.55 (12.15)	1796	3.41	0.408 (0.248)	17.17 (3.38)	184 (84)	66 (19)	29.13 (98.65)
13th (6L) Gear									
371.24 (276.84)	14847 (66.04)	9.38 (15.09)	1831	2.60	0.417 (0.254)	16.80 (3.31)	185 (85)	68 (20)	29.12 (98.61)

Location of Test: Tractor Testing Laboratory,
University of Nebraska, Lincoln, Nebraska 68583-
0832

Dates of Test: October 1-22, 1996

Manufacturer: AGCO CORPORATION, 123 W.
Sycamore St., Coldwater OH 45828

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane
No. 50.6 Specific gravity converted to 60°/60°
F (15°/15°C) 0.8422 Fuel weight 7.012 lbs/gal
(0.840 kg/l) Oil SAE 15W-40 API service
classification CE-II, CD To motor 7.994 gal
(30.262 l) Drained from motor 7.494 gal (28.366 l)
Transmission and final drive lubricant SAE 90
Gear Lube, GL-1 Hydraulic lubricant AGCO
Power-fluid 821 XL Total time engine was
operated 21.0 hours.

ENGINE: Make Cummins Diesel **Type** six
cylinder vertical with turbocharger and intercooler
Serial No. 11802611 **Crankshaft** lengthwise **Rated**
engine speed 2100 **Bore and stroke** (as specified)
5.5" × 6.0" (139.7 mm × 152.4 mm) **Compression**
ratio 16.5 to 1 **Displacement** 855 cu in (14013 ml)
Starting system 12 volt **Lubrication** pressure **Air**
cleaner two paper elements and aspirator **Oil filter**
one full flow cartridge **Oil cooler** engine coolant heat
exchanger for crankcase oil, radiator for transmission
oil, radiator for hydraulic and steering oil **Fuel filter**
one paper element **Muffler** vertical **Cooling**
medium temperature control thermostat.

ENGINE OPERATING PARAMETERS: Fuel
rate: 143.0-158.0 lb/h (65.0-72.0 kg/h) **High idle:**
2150-2250 rpm **Turbo boost** nominal 21.6-28.0 psi
(149-193 kPa) as measured 21.6 psi (149 kPa)

CHASSIS: Type four wheel drive with duals **Serial**
No. *100111RC* **Tread width** rear 76.6" (1946
mm) and 133.5" (3390 mm) front 76.6" (1946 mm) and
133.5" (3390 mm) **Wheel base** 137.1" (3482 mm)
Hydraulic control system direct engine drive
Transmission selective gear fixed ratio **Nominal**
travel speeds mph (km/h) first 1.24 (1.98) second
1.46 (2.34) third 2.09 (2.45) fourth 2.45 (3.92) fifth 2.96
(4.73) sixth 3.47 (5.55) seventh 4.09 (6.54) eighth 4.79
(7.66) ninth 5.60 (8.86) tenth 6.56 (10.56) eleventh
7.82 (12.59) twelfth 9.19 (14.79) thirteenth 11.06 (17.80)
fourteenth 12.98 (20.89) fifteenth 15.32 (24.66)
sixteenth 17.92 (28.85) seventeenth 20.83 (33.53)
eighteenth 24.54 (39.26) reverse 1.31 (2.10), 4.70
(7.52) **Clutch** dual dry disc actuated by foot pedal
Brakes caliper disc hydraulically operated by foot
pedal **Steering** hydrostatic and articulated **Power**
take-off None **Unladen tractor mass** 29485 lb
(13373 kg)

**DRAWBAR PERFORMANCE
(BALLASTED TRACTOR)
MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
6th (2H) Gear									
265.33 (197.86)	35497 (157.90)	2.80 (4.51)	2188	8.75	0.550 (0.335)	12.75 (2.51)	181 (83)	56 (13)	28.93 (97.97)
7th (3L) Gear									
335.84 (250.44)	34144 (151.88)	3.69 (5.94)	2072	7.96	0.457 (0.278)	15.35 (3.02)	182 (83)	58 (14)	28.92 (97.93)
8th (3H) Gear									
352.62 (262.95)	30992 (137.86)	4.27 (6.87)	1999	5.82	0.437 (0.266)	16.04 (3.16)	183 (84)	59 (15)	28.92 (97.93)
9th (4L) Gear									
364.17 (271.56)	28236 (125.60)	4.84 (7.78)	1915	4.63	0.424 (0.258)	16.53 (3.26)	183 (84)	60 (16)	28.92 (97.93)
10th (4H) Gear									
372.13 (277.50)	25663 (114.15)	5.44 (8.75)	1824	3.85	0.413 (0.251)	16.99 (3.35)	184 (84)	63 (17)	28.91 (97.90)
11th (5L) Gear									
373.52 (278.53)	21447 (95.40)	6.53 (10.51)	1818	3.05	0.411 (0.250)	17.07 (3.36)	185 (85)	64 (18)	28.91 (97.90)
12th (5H) Gear									
382.80 (285.46)	18578 (82.64)	7.73 (12.44)	1826	2.42	0.402 (0.244)	17.45 (3.44)	184 (84)	65 (18)	28.90 (97.87)
13th (6L) Gear									
371.09 (276.72)	14898 (66.27)	9.34 (15.03)	1818	2.06	0.419 (0.255)	16.75 (3.30)	185 (85)	66 (19)	28.88 (97.80)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 114° F (46°C). The drawbar pull in 7th (3L) gear (unballasted tractor) and 6th (2H) gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from a test conducted under the OECD Code II Restricted Standard Test Code procedure.

NOTE: The performance figures on this report apply to AGCOSTAR 8425 tractors equipped with a Cummins Diesel engine.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1721**, Summary 216, November 8, 1996.

LOUIS I. LEVITICUS
Engineer-in-Charge

L. L. BASHFORD
R.D. GRISSO
M.F. KOCHER
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At 75% load in 9th (4L) Gear	80.5
Bystander in 18th (8H) Gear	95.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires —No., size, ply & psi (kPa)	Four 20.8R42; **, inner 14 (95) outer 12 (85)	Four 20.8R42; **, inner 14 (95) outer 12 (85)
Ballast —Liquid (total)	6468 lb (2934 kg)	None
Front Tires —No., size, ply & psi (kPa)	Four 20.8R42; **, inner 14 (95) outer 12 (85)	Four 20.8R42; **, inner 14 (95) outer 12 (85)
Ballast —Liquid (total)	None	None
Height of Drawbar	24.5 in (625 mm)	25.0 in (635 mm)
Static Weight with Operator —Rear	16748 lb (7597 kg)	10280 lb (4663 kg)
—Front	19370 lb (8786 kg)	19370 lb (8786 kg)
—Total	36118 lb (16383 kg)	29650 lb (13449 kg)

The following test results were obtained by connecting to the tractors transfer case output shaft.

DYNAMOMETER PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kWh)	Hp.hr/gal (kWh/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—2100 rpm)					
396.34 (295.55)	2100	22.22 (84.10)	0.393 (0.239)	17.84 (3.51)	
Maximum Power (2 hours)					
426.76 (318.24)	1800	22.08 (83.60)	0.363 (0.221)	19.32 (3.81)	
VARYING POWER AND FUEL CONSUMPTION					
396.34 (295.55)	2100	22.22 (84.10)	0.393 (0.239)	17.84 (3.51)	Air temperature
349.06 (260.29)	2177	20.54 (77.74)	0.413 (0.251)	17.00 (3.35)	75°F (24°C)
265.42 (197.93)	2206	17.03 (64.46)	0.450 (0.274)	15.59 (3.07)	Relative humidity
176.98 (131.97)	2201	13.13 (49.72)	0.520 (0.317)	13.47 (2.65)	34%
97.96 (65.60)	2201	9.20 (34.82)	0.733 (0.446)	9.56 (1.88)	Barometer
2.09 (1.56)	2201	4.79 (18.14)	16.043 (9.758)	0.44 (0.09)	29.33"Hg (99.33 kPa)

Maximum Torque 1463 lb.-ft. (1983 Nm) at 1300 rpm
 Maximum Torque Rise 47.6%
 Torque rise at 1700 rpm 33%

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: No 3 Point Hitch lift system available

Quick Attach: NA

Maximum Force Exerted Through Whole Range: NA

i) Opening pressure of relief valve: NA

Sustained pressure with pump stalled: 2520 psi (174 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed:

35.6 GPM (134.8 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

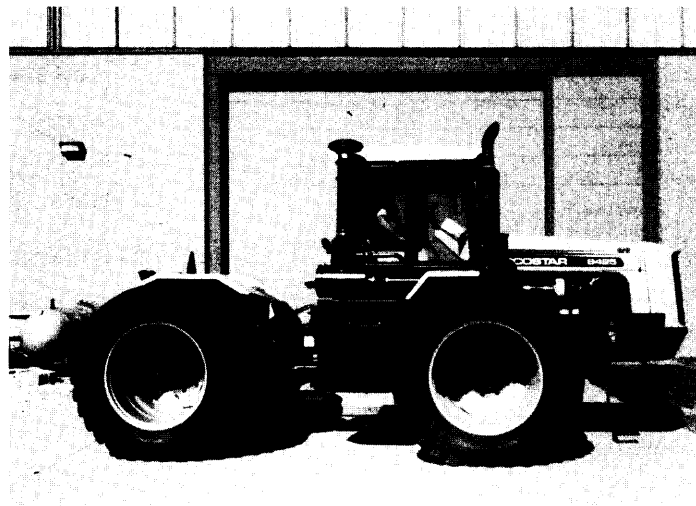
33.4 GPM (126.4 l/min)

Delivery pressure:

2200 psi (152 bar)

Power:

42.8 HP (31.9 kW)



AGCOSTAR 8425 DIESEL

**Agricultural Research Division
 Institute of Agriculture and Natural Resources
 University of Nebraska—Lincoln
 Darrell Nelson, Dean and Director**