

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

2013

Nebraska Summary: S925 Challenger MT525D

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, 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](#)

Laboratory, Nebraska Tractor Test, "Nebraska Summary: S925 Challenger MT525D" (2013). *Nebraska Tractor Tests*. 2971.

<https://digitalcommons.unl.edu/tractormuseumlit/2971>

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.

SUMMARY OF OECD TEST 2791-NEBRASKA SUMMARY 925 CHALLENGER MT525D AP6 DIESEL 24 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kWh)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1034 rpm)						
119.2 (88.9)	2099	7.14 (27.04)	0.418 (0.254)	16.70 (3.29)	0.31 (1.16)	
Standard Power Take-off Speed (1001 rpm)						
130.3 (97.2)	2031	7.49 (28.35)	0.401 (0.244)	17.40 (3.43)	0.37 (1.39)	
Maximum Power (1 hour)						
131.8 (98.3)	1999	7.55 (28.56)	0.399 (0.243)	17.47 (3.44)	0.34 (1.29)	

VARYING POWER AND FUEL CONSUMPTION

119.2 (88.9)	2099	7.14 (27.04)	0.418 (0.254)	16.70 (3.29)	0.31 (1.16)	Air temperature
102.5 (76.4)	2120	6.37 (24.11)	0.434 (0.264)	16.09 (3.17)	0.26 (1.00)	73°F (23°C)
77.4 (57.7)	2128	5.18 (19.59)	0.467 (0.284)	14.95 (2.94)	0.23 (0.86)	Relative humidity
51.5 (38.4)	2132	3.98 (15.07)	0.539 (0.328)	12.94 (2.55)	0.17 (0.63)	46%
25.7 (19.2)	2142	2.90 (10.99)	0.786 (0.478)	8.87 (1.75)	0.11 (0.41)	Barometer
--	2154	1.84 (6.96)	--	--	--	29.7" Hg (100.6 kPa)

Maximum torque - 445.6 lb.-ft. (604.1 Nm) at 1200 rpm
 Maximum torque rise - 49.3%
 Torque rise at 1700 engine rpm - 33%
 Power increase at 1999 engine rpm - 10.6%

DRAWBAR PERFORMANCE (Unballasted - Front Drive Engaged) 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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)
Maximum Power—12th(3A) Gear							
98.0 (73.1)	7240 (32.2)	5.08 (8.17)	2100	4.4	0.459 (0.279)	15.13 (2.98)	181 (83)
75% of Pull at Maximum Power—12th(3A) Gear							
73.9 (55.1)	5355 (23.8)	5.18 (8.33)	2125	3.5	0.501 (0.305)	13.86 (2.73)	181 (83)
50% of Pull at Maximum Power—12th(3A) Gear							
49.8 (37.1)	3540 (15.7)	5.28 (8.49)	2137	2.1	0.589 (0.358)	11.83 (2.33)	183 (84)
75% of Pull at Reduced Engine Speed—14th(3B) Gear							
74.4 (55.5)	5370 (23.9)	5.19 (8.36)	1776	3.4	0.449 (0.273)	15.48 (3.05)	181 (83)
50% of Pull at Reduced Engine Speed—14th(3B) Gear							
50.3 (37.5)	3570 (15.9)	5.28 (8.49)	1782	2.1	0.503 (0.306)	13.81 (2.72)	181 (83)

Location of tests: IRSTEА, Centre d'Antony, 1 rue Pierre-Gilles de Gennes CS 10030 Antony, 92163, Cedex, France

Dates of tests: November, 2012 to July, 2013

Manufacturer: AGCO S.A. BP 307, Avenue Blaise Pascal, 60026 Beauvais, France

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.838 **Fuel weight** 6.98 lbs/gal (0.836 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.10 lbs/gal (1.091 kg/l) **Oil SAE 15W40 API service classification** CJ-4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 15W/40 **Front axle lubricant** BP Terrac Tractan 9 15W/40

ENGINE: Make Sisu AGCO Power Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler and SCR (selective catalyst reduction) exhaust treatment **Serial No.** W00421 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.252" x 4.724" (108.0 mm x 120.0 mm) **Compression ratio** 17.4 to 1 **Displacement** 402 cu in (6596 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium** temperature control thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** B 262 901 **Tread width** rear 52.8" (1340 mm) to 87.8" (2230 mm) front 52.8" (1340 mm) to 87.8" (2230 mm) **Wheelbase** 113.2" (2875 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 0.96 (1.55) second 1.16 (1.86) third 1.36 (2.19) fourth 1.63 (2.63) fifth 1.92 (3.09) sixth 2.31 (3.72) seventh 2.60 (4.19) eighth 3.13 (5.03) ninth 3.67 (5.91) tenth 4.42 (7.11) eleventh 5.19 (8.36) twelfth 5.29 (8.51) thirteenth 6.25 (10.06) fourteenth 6.35 (10.22) fifteenth 7.46 (12.00) sixteenth 8.97 (14.44) seventeenth 10.55 (16.98) eighteenth 12.19 (19.62) nineteenth 12.70 (20.44) twentieth 14.65 (23.58) twenty-first 17.20 (27.68) twenty-second 20.69 (33.30) twenty-third 24.33 (39.16) twenty-fourth 24.86 (40.00) electronically limited reverse 0.96 (1.55), 1.16 (1.86), 1.36 (2.19), 1.63 (2.63), 1.92 (3.09), 2.31 (3.72), 2.60 (4.19), 3.13 (5.03), 3.67 (5.91), 4.42 (7.11), 5.19 (8.36), 5.29 (8.51), 6.25 (10.06), 6.35 (10.22), 7.46 (12.00), 8.97 (14.44), 10.55 (16.98), 12.19 (19.62), 12.70 (20.44), 14.65 (23.58), 17.20 (27.68), 20.69 (33.30), 24.33 (39.16), 24.86 (40.00) electronically limited

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Engaged)
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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
6th(1F) Gear									
66.9 (49.9)	13060 (58.1)	1.92 (3.09)	2121	14.6	0.543 (0.331)	12.79 (2.52)	181 (83)	39 (4)	30.1 (102.0)
7th(2A) Gear									
77.1 (57.5)	12770 (56.8)	2.26 (3.64)	2090	12.4	0.498 (0.303)	13.96 (2.75)	181 (83)	39 (4)	30.1 (102.0)
8th(2B) Gear									
91.1 (67.9)	12995 (57.8)	2.63 (4.23)	2033	13.2	0.446 (0.272)	15.58 (3.07)	181 (83)	39 (4)	30.1 (102.0)
9th(2C) Gear									
98.4 (73.4)	11600 (51.6)	3.18 (5.12)	2001	9.2	0.422 (0.257)	16.45 (3.24)	181 (83)	39 (4)	30.1 (102.0)
10th(2D) Gear									
103.1 (76.9)	9770 (43.5)	3.96 (6.37)	2008	6.3	0.423 (0.258)	16.42 (3.24)	181 (83)	39 (4)	30.1 (102.0)
11th(2E) Gear									
108.9 (81.2)	8695 (38.7)	4.70 (7.56)	2000	5.0	0.437 (0.266)	15.89 (3.13)	187 (86)	39 (4)	30.1 (102.0)
12th(3A) Gear									
108.1 (80.6)	8475 (37.7)	4.78 (7.70)	2000	4.8	0.443 (0.270)	15.68 (3.09)	181 (83)	39 (4)	30.1 (102.0)
13th(2F) Gear									
111.7 (83.3)	7330 (32.6)	5.71 (9.20)	2006	4.3	0.427 (0.260)	16.29 (3.21)	183 (84)	39 (4)	30.1 (102.0)
14th(3B) Gear									
109.3 (81.5)	7060 (31.4)	5.81 (9.34)	1998	4.0	0.435 (0.264)	15.99 (3.15)	185 (85)	39 (4)	30.1 (102.0)
15th(3C) Gear									
109.7 (81.8)	5980 (26.6)	6.88 (11.07)	2003	3.6	0.431 (0.262)	16.11 (3.17)	183 (84)	39 (4)	30.1 (102.0)
16th(3D) Gear									
109.6 (81.7)	4960 (22.1)	8.30 (13.36)	1997	2.9	0.431 (0.262)	16.14 (3.18)	185 (85)	39 (4)	30.1 (102.0)
17th(3E) Gear									
105.0 (78.3)	4025 (17.9)	9.78 (15.74)	1997	2.5	0.446 (0.271)	15.58 (3.07)	185 (85)	39 (4)	30.1 (102.0)
18th(3F) Gear									
95.5 (71.2)	3145 (13.9)	11.39 (18.33)	2000	2.0	0.466 (0.284)	14.90 (2.94)	185 (85)	39 (4)	30.1 (102.0)

Clutch multiple wet disc operated by foot pedal
Brakes multiple wet disc hydraulically operated by two foot pedals that can be locked together
Steering hydrostatic **Power take-off** 540 rpm at 1980 engine rpm or 1000 rpm at 2030 engine rpm
Unladen tractor mass 14770 lb (6700 kg)

NOTE: The data on this summary was obtained from OECD report 2791 conducted on the Massey Ferguson 7615 Dyna 6 Diesel.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's power bulge claim of 15 hp. This tractor did not meet the manufacturer's remote hydraulic flow claim of 29 GPM (110 lpm) nor three point hitch lift claim of 12500 lbs. The manufacturer's remote hydraulic flow claim of 39 GPM (150 lpm) for optional pump was not verified. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2791**, Nebraska Summary 925, May 12, 2014.

Roger M. Hoy
 Director

M.F. Kocher
 J.D. Luck
 P.J. Jasa
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front wheel drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 10th (2D) gear	69.0	68.0
Bystander		--

TIRES, BALLAST AND WEIGHT

Rear Tires - No., size, ply & psi(kPa)
Front Tires - No., size, ply & psi(kPa)
Height of Drawbar
Static Weight with operator - Rear
 - Front
 - Total

Tested without ballast

Two 20.8R38;**,14(100)
 Two 16.9R28;**,15(105)
 19.7 in (500 mm)
 8090 lb (3670 kg)
 6845 lb (3105 kg)
 14935 lb (6775 kg)

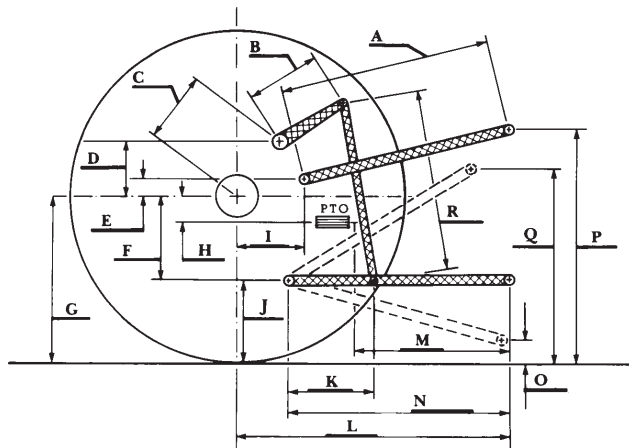
HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

- Maximum force exerted through whole range: 8925 lbs (39.7 kN)
- i) Sustained pressure of the open relief valve: 2845 psi (196 bar)
two outlet sets combined
- ii) Pump delivery rate at minimum pressure: 28.6 GPM (108.3 l/min)
- iii) Pump delivery rate at maximum
hydraulic power: 26.6 GPM (100.6 l/min)
Delivery pressure: 1930 psi (133 bar)
Power: 29.9 HP (22.3 kW)
single outlet set
- ii) Pump delivery rate at minimum pressure: 28.8 GPM (109.0 l/min)
- iii) Pump delivery rate at maximum
hydraulic power: 25.7 GPM (97.2 l/min)
Delivery pressure: 1915 psi (132 bar)
Power: 28.7 HP (21.4 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.7	728
B	11.6	295
C	13.9	354
D	19.1	330
E	13.0	201
F	11.0	280
G	34.4	875
H	2.0	50
I	15.5	394
J	23.4	595
K	21.7	550
L	43.3	1101
M	24.6	626
N	37.0	940
O	7.7	195
P	47.4	1205
Q	35.8	909
R	30.7	780