

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

2012

Nebraska Summary: S906 Challenger MT555D

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: S906 Challenger MT555D" (2012). *Nebraska Tractor Tests*. 3025.

<https://digitalcommons.unl.edu/tractormuseumlit/3025>

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 2758-NEBRASKA SUMMARY 906 CHALLENGER MT555D AUTOPOWER VI 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/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1049 rpm)						
145.5 (108.5)	2101	8.73 (33.06)	0.419 (0.255)	16.66 (3.28)	0.35 (1.32)	
Standard Power Take-off Speed (1000 rpm)						
162.0 (120.8)	1999	9.18 (34.76)	0.395 (0.241)	17.64 (3.48)	0.46 (1.73)	
Maximum Power (1 hour)						
169.9 (126.7)	1950	9.39 (35.55)	0.386 (0.235)	18.09 (3.56)	0.48 (1.82)	

VARYING POWER AND FUEL CONSUMPTION

145.5 (108.5)	2101	8.73 (33.06)	0.419 (0.255)	16.66 (3.28)	0.35 (1.32)	Air temperature
124.0 (92.5)	2116	7.57 (28.65)	0.426 (0.259)	16.39 (3.23)	0.31 (1.16)	72°F (22°C)
93.6 (69.8)	2128	6.06 (22.95)	0.452 (0.275)	15.44 (3.04)	0.26 (0.97)	Relative humidity
62.5 (46.6)	2137	4.61 (17.44)	0.515 (0.313)	13.55 (2.67)	0.18 (0.70)	70%
31.1 (23.2)	2146	3.27 (12.36)	0.731 (0.445)	9.53 (1.88)	0.13 (0.51)	Barometer
--	2155	1.99 (7.53)	--	--	--	30.1" Hg (102.0 kPa)

Maximum torque - 568.6 lb.-ft. (771.0 Nm) at 1100 rpm
 Maximum torque rise - 56.4%
 Torque rise at 1700 engine rpm - 41%
 Power increase at 1950 engine rpm - 16.7%

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/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—11th(3A) Gear									
123.8 (92.3)	9175 (40.9)	5.06 (8.14)	2103	7.5	0.454 (0.276)	15.33 (3.02)	185 (85)	66 (19)	29.8 (101.0)
75% of Pull at Maximum Power—11th(3A) Gear									
94.3 (70.3)	6820 (30.5)	5.18 (8.34)	2125	5.8	0.475 (0.289)	14.62 (2.88)	183 (84)	66 (19)	29.8 (101.0)
50% of Pull at Maximum Power—11th(3A) Gear									
64.5 (48.1)	4575 (20.4)	5.29 (8.51)	2142	3.9	0.535 (0.325)	12.99 (2.56)	181 (83)	66 (19)	29.8 (101.0)
75% of Pull at Reduced Engine Speed—13th(3B) Gear									
94.5 (70.5)	6835 (30.4)	5.19 (8.35)	1765	5.9	0.415 (0.253)	16.75 (3.30)	185 (85)	66 (19)	29.8 (101.0)
50% of Pull at Reduced Engine Speed—13th(3B) Gear									
65.2 (48.6)	4575 (20.3)	5.34 (8.60)	1773	3.2	0.459 (0.279)	15.13 (2.98)	183 (84)	66 (19)	29.8 (101.0)

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

Dates of tests: September - October, 2012

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.** W00405 **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 069 901 **Tread width** rear 52.8" (1340 mm) to 87.8" (2230 mm) front 52.8" (1340 mm) to 87.8" (2230 mm) **Wheelbase** 117.8" (2993 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 1.03 (1.65) second 1.23 (1.98) third 1.44 (2.32) fourth 1.74 (2.80) fifth 2.04 (3.29) sixth 2.46 (3.96) seventh 2.77 (4.45) eighth 3.32 (5.35) ninth 3.90 (6.28) tenth 4.70 (7.56) eleventh 5.29 (8.52) twelfth 5.52 (8.89) thirteenth 6.37 (10.25) fourteenth 6.65 (10.70) fifteenth 7.48 (12.03) sixteenth 8.99 (14.47) seventeenth 10.58 (17.02) eighteenth 12.02 (19.35) nineteenth 12.73 (20.48) twentieth 14.45 (23.26) twenty-first 16.97 (27.31) twenty-second 20.42 (32.86) twenty-third 24.01 (38.64) twenty-fourth 24.86 (40.00) electronically limited reverse 1.03 (1.65), 1.23 (1.98), 1.44 (2.32), 1.74 (2.80), 2.04 (3.29), 2.46 (3.96), 2.77 (4.45), 3.32 (5.35), 3.90 (6.28), 4.70 (7.56), 5.29 (8.52), 5.52 (8.89), 6.37 (10.25), 6.65 (10.70), 7.48 (12.03), 8.99 (14.47) 10.58 (17.02), 12.02 (19.35), 12.73 (20.48), 14.45 (23.26), 16.97 (27.31), 20.42 (32.86), 24.01 (38.64), 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 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									
86.5 (64.5)	14835 (66.0)	2.19 (3.52)	2123	14.4	0.533 (0.324)	13.05 (2.57)	181 (83)	59 (15)	29.8 (101.0)
7th(2A) Gear									
99.1 (73.9)	14790 (65.8)	2.51 (4.04)	2120	13.0	0.495 (0.301)	14.06 (2.77)	181 (83)	61 (16)	29.8 (101.0)
8th(2B) Gear									
112.1 (83.6)	14455 (64.3)	2.91 (4.68)	2028	10.9	0.454 (0.276)	15.33 (3.02)	181 (83)	61 (16)	29.8 (101.0)
9th(2C) Gear									
119.5 (89.1)	13265 (59.0)	3.38 (5.44)	1954	9.9	0.431 (0.262)	16.14 (3.18)	181 (83)	61 (16)	29.8 (101.0)
10th(2D) Gear									
135.2 (100.8)	12410 (55.2)	4.08 (6.57)	1950	8.9	0.420 (0.255)	16.55 (3.26)	181 (83)	64 (18)	29.8 (101.0)
11th(3A) Gear									
147.6 (110.1)	11755 (52.3)	4.71 (7.58)	1954	8.1	0.413 (0.251)	16.85 (3.32)	185 (85)	66 (19)	29.8 (101.0)
12th(2E) Gear									
143.4 (106.9)	11060 (49.2)	4.86 (7.80)	1951	7.5	0.422 (0.257)	16.45 (3.24)	185 (85)	66 (19)	29.8 (101.0)
13th(3B) Gear									
146.3 (109.1)	9645 (42.9)	5.69 (9.16)	1951	7.1	0.415 (0.253)	16.75 (3.30)	187 (86)	66 (19)	29.8 (101.0)
14th(2F) Gear									
143.4 (106.9)	9105 (40.5)	5.90 (9.50)	1955	5.9	0.424 (0.258)	16.40 (3.23)	187 (86)	66 (19)	29.8 (101.0)
15th(3C) Gear									
145.8 (108.7)	8185 (36.4)	6.68 (10.75)	1950	4.8	0.416 (0.253)	16.70 (3.29)	187 (86)	66 (19)	29.8 (101.0)
16th(3D) Gear									
144.7 (107.9)	6710 (29.8)	8.09 (13.02)	1958	4.0	0.429 (0.261)	16.20 (3.19)	187 (86)	66 (19)	29.8 (101.0)
17th(3E) Gear									
138.3 (103.1)	5440 (24.2)	9.53 (15.38)	1946	3.2	0.446 (0.271)	15.58 (3.07)	189 (87)	66 (19)	29.8 (101.0)

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 1890 engine rpm or 1000 rpm at 2050 engine rpm
Unladen tractor mass 17690 lb (8025 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The data on this summary was obtained from OECD report 2758 conducted on the Massey Ferguson 7619 Dyna 6 Diesel.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. 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. 2758, Nebraska Summary 906, January 23, 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 620/70R42;**,14(100)
 Two 480/70R30;**,16(110)
 22.4 in (570 mm)
 10205 lb (4630 kg)
 7650 lb (3470 kg)
 17855 lb (8100 kg)

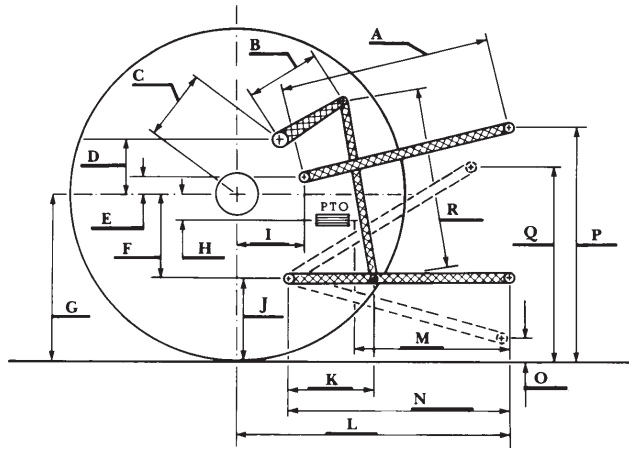
HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: None

OECD Static test

- Maximum force exerted through whole range: 14410 lbs (64.1 kN)
- i) Sustained pressure of the open relief valve: 2760 psi (190 bar)
two outlet sets combined
- ii) Pump delivery rate at minimum pressure: 29.7 GPM (112.6 l/min)
- iii) Pump delivery rate at maximum
 hydraulic power: 26.7 GPM (100.9 l/min)
 Delivery pressure: 2220 psi (153 bar)
 Power: 34.5 HP (25.7 kW)
single outlet set
- ii) Pump delivery rate at minimum pressure: 27.1 GPM (102.7 l/min)
- iii) Pump delivery rate at maximum
 hydraulic power: 23.9 GPM (90.5 l/min)
 Delivery pressure: 2005 psi (138 bar)
 Power: 28.0 HP (20.9 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	30.3	770
B	15.7	400
C	20.7	525
D	19.1	485
E	8.3	210
F	12.2	310
G	36.4	925
H	2.0	50
I	17.7	450
J	24.2	615
K	21.8	554
L	47.2	1200
M	22.0	560
N	37.1	942
O	8.7	220
P	51.2	1300
Q	38.8	985
R	36.3	923