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January 1996

## Test 1716: Belarus 900, 905, 920 and 925 Diesel 18-Speed

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1716—SUMMARY 211

## BELARUS 925 DIESEL

### ALSO BELARUS 900, 905 and 920 DIESEL

### 18 SPEED

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

**Dates of Test:** September 12-23, 1996

**Manufacturer:** Minsk Tractor Works, 29  
Dolgobrodskaya Minsk, Belarus 220668

**FUEL OIL AND TIME:** Fuel No. 2 Diesel  
**Cetane No.** 53.9 **Specific gravity converted to 60°/60° F (15°/15°C)** 0.8422 **Fuel weight** 7.012 lbs/gal (0.840 kg/l) **Oil SAE 10W30 API service classification** SH/CG-4 **To motor** 2.944 gal (11.144 l) **Drained from motor** 2.622 gal (9.943 l) **Transmission and final drive lubricant** SAE 80W90 gear lubricant **Front axle lubricant** SAE 80W90 gear lubricant **Hydraulic lubricant** SAE 10 **Total time engine was operated** 22.5 hours.

**ENGINE:** Make MTZ Diesel **Model** D-243  
**Type** four cylinder vertical with turbocharger **Serial No.** 198810 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** (as specified) 4.331" × 4.921" (110.0 mm × 125.0 mm) **Compression ratio** 16.0 to 1 **Displacement** 290 cu in (4750 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** paper element **Oil filter** full flow centrifugal **Oil cooler** radiator for crankcase oil **Fuel filter** two paper elements **Muffler** none **Exhaust** vertical **Cooling medium temperature control** one thermostat.

**ENGINE OPERATING PARAMETERS: fuel rate:** 36.8-38.8 lb/h (16.7-17.6 kg/h) **high idle:** 2325-2375 rpm **Turbo boost** nominal 11.0 psi (76 kPa) as measured 10.0 psi (69 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** 404869 **Tread width** rear 60.0" (1524 mm) to 82.7" (2100 mm) front 59.5" (1510 mm) to 70.9" (1800 mm) **Wheel base** 96.5" (2450 mm) **Hydraulic control system** direct engine drive with throwout lever (engaged during test) **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.28 (2.06) second 1.69 (2.72) third 2.19 (3.52) fourth 2.88 (4.63) fifth 3.71 (5.97) sixth 4.56 (7.34) seventh 4.91 (7.90) eighth 5.40 (8.69) ninth 6.03 (9.70) tenth 6.32 (10.17) eleventh 7.14 (11.49) twelfth 7.76 (12.49) thirteenth 8.35 (13.43) fourteenth 9.19 (14.79) fifteenth 10.26 (16.51) sixteenth 12.15 (19.55) seventeenth 17.09 (27.50) eighteenth 22.60 (36.37) reverse 2.63 (4.24), 3.49 (5.62) 4.42 (7.12) 5.95 (9.57) **Clutch** single dry disc operated by foot pedal **Brakes** dry disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2075 engine rpm or 1000 rpm at 2310 engine rpm **Unladen tractor mass** 8510 lb (3860 kg).

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed (PTO speed—952 rpm)</b>					
92.37 (68.88)	2200	5.40 (20.45)	0.410 (0.249)	17.10 (3.37)	

#### VARYING POWER AND FUEL CONSUMPTION

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Conditions
92.37 (68.88)	2200	5.40 (20.45)	0.410 (0.249)	17.10 (3.37)	Air temperature
81.48 (60.76)	2279	4.79 (18.14)	0.412 (0.251)	17.00 (3.35)	75°F (24°C)
61.26 (45.68)	2294	3.81 (14.41)	0.436 (0.265)	16.09 (3.17)	Relative humidity
41.17 (30.70)	2312	2.91 (11.01)	0.496 (0.302)	14.15 (2.79)	56%
20.75 (15.47)	2331	2.05 (7.79)	0.694 (0.422)	10.10 (1.99)	Barometer
0.78 (0.58)	2354	1.33 (5.02)	11.983 (7.289)	0.59 (0.12)	29.03"Hg (98.31 kPa)

Maximum Torque 270 lb.-ft. (366 Nm) at 1600 rpm

Maximum Torque Rise 22.5%

Torque rise at 1800 engine rpm 17%

#### DRAWBAR PERFORMANCE (Unballasted—Front Drive in Automatic mode) 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) cooling med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—9th(4H) Gear</b>									
85.40 (63.68)	5544 (24.66)	5.78 (9.30)	2204	4.88	0.447 (0.272)	15.69 (3.09)	179 (81)	66 (19)	29.04 (98.34)
<b>75% of Pull at Maximum Power—9th(4H) Gear</b>									
67.25 (50.15)	4152 (18.47)	6.07 (9.78)	2283	3.59	0.476 (0.289)	14.75 (2.90)	169 (76)	68 (20)	29.04 (98.34)
<b>50% of Pull at Maximum Power—9th(4H) Gear</b>									
45.72 (34.09)	2766 (12.30)	6.20 (9.97)	2302	2.43	0.527 (0.320)	13.31 (2.62)	159 (71)	70 (21)	29.04 (98.34)
<b>75% of Pull at Reduced Engine Speed—12th(7L) Gear</b>									
67.35 (50.23)	4151 (18.46)	6.09 (9.79)	1785	3.82	0.455 (0.277)	15.41 (3.04)	178 (81)	71 (22)	29.03 (98.31)
<b>50% of Pull at Reduced Engine Speed—12th(7L) Gear</b>									
45.71 (34.09)	2773 (12.33)	6.18 (9.95)	1791	2.66	0.473 (0.288)	14.81 (2.92)	164 (73)	71 (22)	29.03 (98.31)

**DRAWBAR PERFORMANCE**  
(Unballasted—Front Drive in Automatic mode)  
**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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th(3L) Gear									
77.25 (57.60)	8775 (39.03)	3.30 (5.31)	2206	11.88	0.494 (0.300)	14.21 (2.80)	168 (76)	62 (17)	28.69 (97.16)
6th(4L) Gear									
83.09 (61.96)	7301 (32.47)	4.27 (6.87)	2205	7.28	0.461 (0.280)	15.23 (3.00)	174 (79)	61 (16)	29.02 (98.27)
7th(3H) Gear									
84.70 (63.16)	6888 (30.64)	4.61 (7.42)	2201	6.50	0.451 (0.274)	15.56 (3.06)	173 (78)	62 (17)	29.04 (98.34)
8th(5L) Gear									
84.20 (62.79)	6157 (27.39)	5.13 (8.25)	2203	5.70	0.453 (0.275)	15.48 (3.05)	175 (79)	65 (18)	29.04 (98.34)
9th(4H) Gear									
85.40 (63.68)	5544 (24.66)	5.78 (9.30)	2204	4.88	0.447 (0.272)	15.69 (3.09)	179 (81)	66 (19)	29.04 (98.34)
10th(6L) Gear									
82.72 (61.68)	5083 (22.61)	6.10 (9.82)	2213	4.58	0.461 (0.280)	15.21 (3.00)	179 (81)	68 (20)	29.03 (98.31)
11th(5H) Gear									
82.67 (61.65)	4493 (19.99)	6.90 (11.10)	2200	4.05	0.461 (0.280)	15.23 (3.00)	181 (83)	69 (21)	29.02 (98.27)
12th(7L) Gear									
81.41 (60.71)	4051 (18.02)	7.54 (12.13)	2203	3.59	0.465 (0.283)	15.09 (2.97)	181 (83)	69 (21)	29.02 (98.27)
13th(6H) Gear									
82.36 (61.42)	3792 (16.87)	8.15 (13.12)	2210	3.44	0.461 (0.280)	15.21 (3.00)	180 (82)	69 (21)	29.02 (98.27)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Automatic dB(A)	2WD dB(A)
At 75% load in 9th(4H) Gear	90.0	89.0
Bystander in 18th(9H) Gear	—	91.5

**TIRES AND WEIGHT**

**Rear Tires**—No., size, ply & psi (kPa)  
**Front Tires**—No., size, ply & psi (kPa)

**Tested Without Ballast**

Two 16.9R38; 8; 16 (110)  
Two 13.6R20; 6; 20 (140)

**Height of Drawbar**

20.0 in (510 mm)

**Static Weight with Operator**—Rear  
—Front  
—Total

5766 lb (2615 kg)  
2908 lb (1319 kg)  
8674 lb (3934 kg)

**REPAIRS AND ADJUSTMENTS:** The transmission shifting linkage was adjusted prior to the maximum drawbar pull tests.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet manufacturers claim of 11.8 GPM (44.7 l/m) hydraulic flow. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 148° F (64° C). The performance figures on this summary were taken from a test conducted under the OECD Code II restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor No. **1716**, Summary 211, October 16, 1996.

LOUIS I. LEVITICUS  
Engineer-in-Charge

L.L. BASHFORD  
R.D. GRISSO  
M.F. KOCHER

Board of Tractor Test Engineers

**DRAWBAR PERFORMANCE**  
**(Unballasted—Front Drive in 2WD mode)**  
**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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—9th(4H) Gear</b>									
84.38 (62.92)	5587 (24.85)	5.66 (9.11)	2205	6.63	0.451 (0.274)	15.54 (3.06)	175 (79)	66 (19)	29.04 (98.34)
<b>75% of Pull at Maximum Power—9th(4H) Gear</b>									
67.49 (50.32)	4218 (18.76)	6.00 (9.66)	2290	4.72	0.477 (0.290)	14.72 (2.90)	167 (75)	68 (20)	29.04 (98.34)
<b>50% of Pull at Maximum Power—9th(4H) Gear</b>									
46.02 (34.32)	2815 (12.52)	6.13 (9.87)	2304	3.35	0.524 (0.319)	13.38 (2.64)	159 (70)	69 (21)	29.04 (98.34)
<b>75% of Pull at Reduced Engine Speed—12th(7L) Gear</b>									
67.59 (50.40)	4222 (18.78)	6.00 (9.66)	1782	4.87	0.451 (0.274)	15.56 (3.07)	182 (83)	70 (21)	29.04 (98.34)
<b>50% of Pull at Reduced Engine Speed—12th(7L) Gear</b>									
45.95 (34.26)	2812 (12.51)	6.13 (9.87)	1793	3.35	0.466 (0.283)	15.06 (2.97)	164 (73)	71 (22)	29.03 (98.31)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
5th(3L) Gear									
63.52 (47.37)	7224 (32.13)	3.30 (5.31)	2281	14.53	0.524 (0.319)	13.39 (2.64)	162 (72)	64 (18)	28.67 (97.09)
6th(4L) Gear									
77.39 (57.71)	7132 (31.72)	4.07 (6.55)	2198	11.15	0.489 (0.298)	14.33 (2.82)	172 (78)	63 (17)	28.68 (97.12)
7th(3H) Gear									
81.09 (60.47)	6964 (30.98)	4.37 (7.03)	2214	11.66	0.476 (0.290)	14.73 (2.90)	164 (73)	61 (16)	29.03 (98.31)
8th(5L) Gear									
82.64 (61.63)	6184 (27.51)	5.01 (8.07)	2208	7.90	0.462 (0.281)	15.18 (2.99)	170 (77)	63 (17)	29.04 (98.34)
9th(4H) Gear									
84.38 (62.92)	5587 (24.85)	5.66 (9.11)	2205	6.63	0.451 (0.274)	15.54 (3.06)	175 (79)	66 (19)	29.04 (98.34)
10th(6L) Gear									
83.84 (62.52)	5255 (23.38)	5.98 (9.63)	2213	6.27	0.459 (0.279)	15.28 (3.01)	173 (78)	67 (19)	29.03 (98.31)
11th(5H) Gear									
82.59 (61.59)	4522 (20.11)	6.85 (11.02)	2212	5.02	0.461 (0.280)	15.22 (3.00)	177 (80)	69 (21)	29.02 (98.27)
12th(7L) Gear									
81.51 (60.79)	4108 (18.27)	7.44 (11.98)	2202	4.57	0.463 (0.281)	15.15 (2.99)	176 (80)	69 (21)	29.02 (98.27)
13th(6H) Gear									
82.43 (61.47)	3838 (17.07)	8.05 (12.96)	2203	4.19	0.461 (0.280)	15.22 (3.00)	175 (79)	69 (21)	29.02 (98.27)

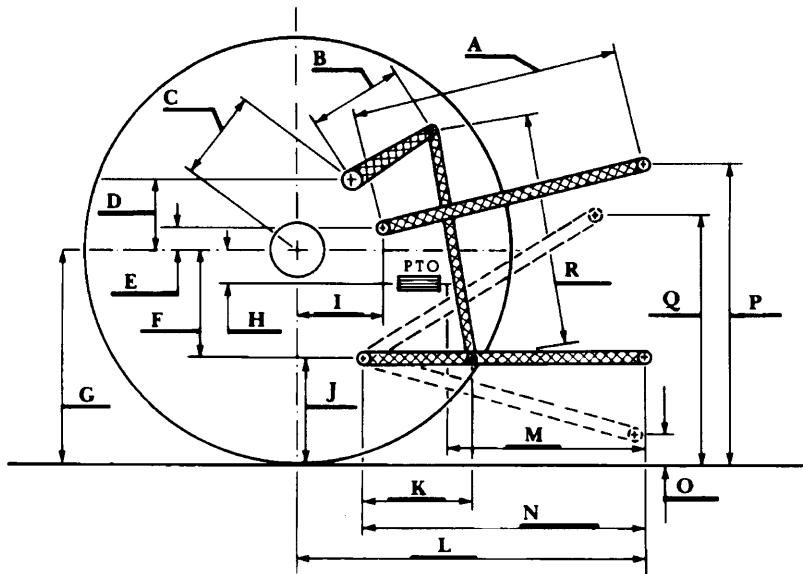
## THREE POINT HITCH PERFORMANCE (OECD Static Test)

### CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range:	3125 lbs	(13.9 kN)
i) Opening pressure of relief valve:	NA	
Sustained pressure with relief valve open:	2710 psi	(187 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	10.9 GPM	(41.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	8.1 GPM	(30.7 l/min)
Delivery pressure:	2440 psi	(168 bar)
Power:	11.5 HP	(8.6 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	22.0	559
B	10.2	266
C	17.3	439
D	10.6	270
E	6.0	152
F	10.4	264
G	27.4	695
H	4.8	122
I	19.0	483
J	17.0	431
K	18.2	462
L	38.9	988
M	22.5	572
N	31.7	805
O	8.0	203
P	41.0	1041
Q	31.8	806
R	17.8	452



**Belarus 925 Diesel**

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