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1996

Nebraska Summary: S219 New Holland 8770

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SUMMARY OF OECD TEST 1648/1–NEBRASKA SUMMARY 219A
BUHLER VERSATILE 2160 DIESEL
16 SPEED

Location of Test: Prairie Agricultural Machinery Institute (PAMI), Portage La Prairie, Manitoba, Canada

Dates of Test: July - August 1996.

Manufacturer: Buhler Versatile Inc., 1260 Clarence Ave., Winnepeg, Manitoba, Canada R3C 4E8

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F** ***(15°/15°C)*** 0.8544 **Fuel weight** 7.114 lbs/gal *(0.8526 kg/l)* **Oil SAE** 15W40 **API service classification** CF-4 **Transmission and hydraulic lubricant** ESN-M2C134 fluid **Front axle lubricant** ESN-M2C134 fluid

ENGINE: Make New Holland Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** VH601084 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.40" x 5.00" *(111.8 mm x 127.0 mm)* **Compression ratio** 17.5 to 1 **Displacement** 456 cu in *(7480 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 hydraulic and transmission oil **Fuel filter** one cartridge **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** D409192 **Tread width** rear 60.0" *(1524 mm)* to 124.0" *(3150 mm)* front 60.0" *(1524 mm)* to 88.0" *(2235 mm)* **Wheelbase** 122.6" *(3115 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph** ***(km/h)*** first 1.77 *(2.85)* second 2.09 *(3.37)* third 2.45 *(3.94)* fourth 2.81 *(4.52)* fifth 3.32 *(5.34)* sixth 3.88 *(6.24)* seventh 4.57 *(7.35)* eighth 5.34 *(8.59)* ninth 6.31 *(10.15)* tenth 7.38 *(11.88)* eleventh 8.46 *(13.61)* twelfth 10.00 *(16.09)* thirteenth 11.69 *(18.81)* fourteenth 13.77 *(22.16)* fifteenth 16.27 *(26.19)* sixteenth 19.04 *(30.64)* reverse 2.39 *(3.85)*, 2.83 *(4.55)*, 3.31 *(5.32)*, 3.79 *(6.10)*, 4.47 *(7.20)*, 5.24 *(8.43)*, 6.16 *(9.92)*, 7.29 *(11.73)*, 8.53 *(13.72)* **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically actuated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 1903 engine rpm **Unladen tractor mass** 19285 lb *(8748 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1103 rpm)					
164.8 *(122.9)*	2100	9.90 *(37.47)*	0.427 *(0.260)*	16.65 *(3.28)*	
Standard Power Take-off Speed (1000 rpm)					
179.4 *(133.8)*	1903	10.04 *(38.01)*	0.398 *(0.242)*	17.87 *(3.52)*	
Maximum Power (2 hours)					
185.9 *(138.7)*	1700	9.96 *(37.71)*	0.381 *(0.232)*	18.65 *(3.67)*	
VARYING POWER AND FUEL CONSUMPTION					
164.8 *(122.9)*	2100	9.90 *(37.47)*	0.427 *(0.260)*	16.65 *(3.28)*	Air temperature
145.6 *(108.6)*	2184	9.14 *(34.59)*	0.447 *(0.272)*	15.94 *(3.14)*	81°F *(27°C)*
110.8 *(82.6)*	2215	7.47 *(28.27)*	0.480 *(0.292)*	14.82 *(2.92)*	Relative humidity
75.1 *(56.0)*	2250	5.72 *(21.66)*	0.542 *(0.330)*	13.12 *(2.58)*	73%
38.0 *(28.3)*	2275	4.13 *(15.62)*	0.773 *(0.471)*	9.21 *(1.82)*	Barometer
3.1 *(2.3)*	2294	2.59 *(9.82)*	5.951 *(3.620)*	1.20 *(0.24)*	28.86" Hg *(97.74 kPa)*

Maximum Torque - 632.2 lb.-ft. *(857.2 Nm)* at 1380 rpm
Maximum Torque Rise - 53.4%
Torque rise at 1700 engine rpm - 39%

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—9th Gear									
142.3 *(106.1)*	8440 *(37.54)*	6.32 *(10.17)*	2102	2.3	0.487 *(0.296)*	14.62 *(2.88)*	186 *(86)*	70 *(21)*	29.32 *(99.29)*
75% of Pull at Maximum Power—9th Gear									
111.4 *(83.1)*	6315 *(28.09)*	6.62 *(10.65)*	2187	1.8	0.539 *(0.328)*	13.20 *(2.60)*	185 *(85)*	70 *(21)*	29.32 *(99.29)*
50% of Pull at Maximum Power—9th Gear									
76.2 *(56.8)*	4225 *(18.80)*	6.76 *(10.88)*	2222	1.2	0.613 *(0.373)*	11.60 *(2.29)*	184 *(84)*	70 *(21)*	29.32 *(99.29)*
75% of Pull at Reduced Engine Speed—10th Gear									
111.6 *(83.2)*	6330 *(28.15)*	6.61 *(10.64)*	1865	1.6	0.467 *(0.284)*	15.23 *(3.00)*	185 *(85)*	75 *(24)*	29.31 *(99.24)*
50% of Pull at Reduced Engine Speed—10th Gear									
75.9 *(56.6)*	4225 *(18.79)*	6.74 *(10.84)*	1890	1.1	0.523 *(0.318)*	13.60 *(2.68)*	181 *(83)*	75 *(24)*	29.31 *(99.24)*

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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					6th Gear				
140.8 *(105.0)*	18635 *(82.89)*	2.83 *(4.56)*	1764	15.0	0.508 *(0.309)*	14.01 *(2.76)*	185 *(85)*	68 *(20)*	29.32 *(99.29)*
					7th Gear				
158.1 *(117.9)*	16625 *(73.96)*	3.57 *(5.74)*	1702	5.9	0.446 *(0.271)*	15.99 *(3.15)*	186 *(86)*	68 *(20)*	29.32 *(99.29)*
					8th Gear				
160.4 *(119.6)*	14135 *(62.87)*	4.26 *(6.85)*	1702	5.0	0.439 *(0.267)*	16.19 *(3.19)*	186 *(86)*	68 *(20)*	29.32 *(99.29)*
					9th Gear				
163.9 *(122.2)*	12085 *(53.76)*	5.09 *(8.18)*	1701	3.1	0.432 *(0.263)*	16.45 *(3.24)*	185 *(85)*	68 *(20)*	29.32 *(99.29)*
					10th Gear				
162.5 *(121.2)*	10175 *(45.26)*	5.99 *(9.64)*	1702	2.3	0.434 *(0.264)*	16.40 *(3.23)*	185 *(85)*	68 *(20)*	29.32 *(99.29)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

NOTE: The data on this summary was obtained from OECD report 1648/1 conducted on the New Holland 8770 Diesel.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. The optional hydraulic flow rate claim of 55.0 GPM *(208 lpm)* was not tested for verification. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No.**1648/1** Nebraska Summary 219A, September 1, 2004.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
W.P. Campbell
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At 75% load in 10th gear	75.0
Bystander	--

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi *(kPa)*	Four 20.8R42;**; 8 *(55)*	Two 20.8R42;**;16 *(110)*
Ballast - Duals (total)	1950 lb *(884 kg)*	None
- Cast Iron (total)	185 lb *(84 kg)*	None
Front Tires - No., size, ply & psi *(kPa)*	Two 16.9R30;**;16 *(110)*	Two 16.9R30;**;12 *(83)*
Ballast - Liquid (total)	None	None
- Cast Iron (total)	745 lb *(337 kg)*	None
Height of Drawbar	19.5 in *(495 mm)*	19.7 in *(500 mm)*
Static Weight with operator - Rear	15015 lb *(6810 kg)*	13015 lb *(5904 kg)*
- Front	7315 lb *(3318 kg)*	6435 lb *(2919 kg)*
- Total	22330 lb *(10128 kg)*	19450 lb *(8823 kg)*

DRAWBAR PERFORMANCE

(Ballasted - 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—8th Gear									
141.6 *(105.6)*	9930 *(44.17)*	5.35 *(8.61)*	2100	2.6	0.489 *(0.298)*	14.52 *(2.86)*	187 *(86)*	77 *(25)*	29.11 *(98.59)*
75% of Pull at Maximum Power—8th Gear									
111.2 *(82.9)*	7445 *(33.11)*	5.60 *(9.01)*	2190	2.1	0.542 *(0.330)*	13.12 *(2.59)*	185 *(85)*	77 *(25)*	29.11 *(98.59)*
50% of Pull at Maximum Power—8th Gear									
75.7 *(56.4)*	4960 *(22.06)*	5.72 *(9.21)*	2226	1.7	0.620 *(0.377)*	11.47 *(2.26)*	185 *(85)*	77 *(25)*	29.11 *(98.59)*
75% of Pull at Reduced Engine Speed—9th Gear									
110.6 *(82.4)*	7440 *(33.09)*	5.57 *(8.97)*	1846	1.3	0.477 *(0.290)*	14.92 *(2.94)*	187 *(86)*	77 *(25)*	29.11 *(98.59)*
50% of Pull at Reduced Engine Speed—9th Gear									
75.6 *(56.4)*	4960 *(22.07)*	5.72 *(9.20)*	1884	0.8	0.534 *(0.325)*	13.33 *(2.63)*	183 *(84)*	77 *(25)*	29.11 *(98.59)*
MAXIMUM POWER IN SELECTED GEARS									
					4th Gear				
134.2 *(100.1)*	22915 *(101.92)*	2.20 *(3.53)*	1900	15.0	0.536 *(0.326)*	13.27 *(2.61)*	187 *(86)*	77 *(25)*	29.13 *(98.65)*
					5th Gear				
150.9 *(112.5)*	20980 *(93.32)*	2.70 *(4.34)*	1800	6.6	0.469 *(0.285)*	15.18 *(2.99)*	187 *(87)*	77 *(25)*	29.13 *(98.65)*
					6th Gear				
156.0 *(116.3)*	19170 *(85.28)*	3.05 *(4.91)*	1698	4.4	0.452 *(0.275)*	15.74 *(3.10)*	185 *(85)*	77 *(25)*	29.11 *(98.59)*
					7th Gear				
158.8 *(118.4)*	16345 *(72.70)*	3.64 *(5.86)*	1698	3.1	0.447 *(0.272)*	15.89 *(3.13)*	187 *(86)*	77 *(25)*	29.11 *(98.59)*
					8th Gear				
160.1 *(119.4)*	13930 *(61.96)*	4.31 *(6.94)*	1700	2.9	0.444 *(0.270)*	16.04 *(3.16)*	187 *(86)*	77 *(25)*	29.11 *(98.59)*
					9th Gear				
158.6 *(118.3)*	11660 *(51.86)*	5.10 *(8.21)*	1703	2.0	0.444 *(0.270)*	16.01 *(3.15)*	187 *(86)*	79 *(26)*	29.13 *(98.64)*
					10th Gear				
157.2 *(117.2)*	9840 *(43.76)*	5.99 *(9.64)*	1701	1.5	0.446 *(0.271)*	15.99 *(3.15)*	187 *(86)*	79 *(26)*	29.13 *(98.64)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II
Quick Attach: None

Maximum Force Exerted Through Whole Range:	12140 lbs *(54.0 kN)* (4" lift cylinders)
i) Opening pressure of relief valve:	NA
Sustained pressure of the open relief valve:	2785 psi *(192 bar)*
ii) Pump delivery rate at minimum pressure:	33.3 GPM *(126.1 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	30.1 GPM *(114.1 l/min)*
Delivery pressure:	2410 psi *(166 bar)*
Power:	42.3 HP *(31.6 kW)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. *(bar)*	2785 *(192)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	150 *(65)*
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test—System pressure 2510 psi *(173 Bar)* (4" lift cylinders)

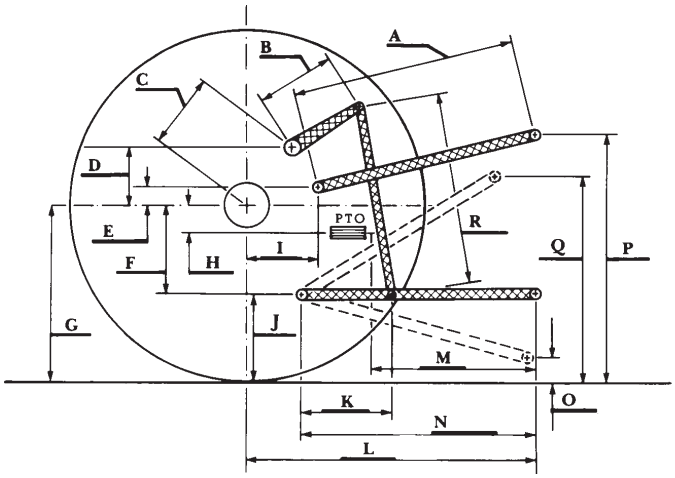
Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.4 *(390)*	23.2 *(590)*	31.1 *(790)*	35.7 *(908)*
Lift force on frame lb	15940	14640	14930	14660	13130
" " " " " " *(kN)*	*(70.9)*	*(65.1)*	*(66.4)*	*(65.2)*	*(58.4)*

ASAE Static Test—System pressure 2700 psi *(186 Bar)* (4" lift cylinders)

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.4 *(390)*	23.2 *(590)*	31.1 *(790)*	35.7 *(908)*
Lift force on frame lb	17160	15760	16070	15780	14140
" " " " " " *(kN)*	*(76.3)*	*(70.1)*	*(71.5)*	*(70.2)*	*(62.9)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test inch	OECD test *mm*	SAE test inch	SAE test *mm*
A	30.0	*763*	28.0	*711*
B	15.0	*380*	15.0	*380*
C	17.4	*443*	17.4	*443*
D	15.6	*395*	15.6	*395*
E	7.9	*200*	7.9	*200*
F	12.4	*315*	12.4	*315*
G	35.6	*905*	35.6	*905*
H	2.4	*62*	2.4	*62*
I	19.9	*505*	19.9	*505*
J	23.2	*590*	23.2	*590*
K	18.3	*465*	18.3	*465*
L	48.8	*1240*	48.8	*1240*
M	25.6	*650*	25.6	*650*
N	36.0	*915*	36.0	*915*
O	9.1	*230*	8.0	*203*
P	50.2	*1275*	45.3	*1150*
Q	39.0	*992*	38.4	*975*
R	34.6	*880*	34.9	*887*



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