PAMI

OECD NO. 1649/1 (Restricted Code)
1649/2 (Restricted Code)
Date of Approval: March 12, 1997

REPORT OF TEST IN ACCORDANCE WITH **OECD RESTRICTED CODE (CODE II)**
FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS



NEW HOLLAND 8670 POWERSHIFT MFWD
NEW HOLLAND G170 POWERSHIFT MFWD
30 km/h Version (4WD)

Manufactured by: New Holland Canada Ltd.
Versatile Farm Equipment Operations
Box 7300; 1260 Clarence Ave.
Winnipeg, Manitoba; Canada; R3C 4E8

Date of Test: July/August 1996

PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

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This report also pertains to the New Holland G170. For marketing purposes the New Holland 8670 can also be designated as the New Holland G170 in certain countries.

Manufacturer's Name and Address:	New Holland Canada, Ltd. Versatile Farm Equipment Operations Box 7300, 1260 Clarence Ave. Winnipeg, MB, Canada R3C 4E8
Location of tractor assembly plant:	Winnipeg, MB, Canada
Submitted for test by:	Manufacturer
Selected for test by:	Manufacturer, with agreement of the test station
Place of running in:	New Holland North America Inc. Test centre, New Holland, PA and Versatile Farm Equipment test track Sanford, Manitoba
Duration of running in:	60 Hours
Location of test:	PTO and hydraulic power lift tests carried out at, Prairie Agricultural Machinery Institute (PAMI), Portage la Prairie, MB; Canada. Drawbar performance and noise tests carried out at the manufacturers premises Versatile Farm Equipment test track Sanford, Manitoba and witnessed by D.J. May, P.Eng., Project Engineer and K.A Carmichael, Technical Services Manager, (PAMI -Portage la Prairie).

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

Make/Model/Type:	New Holland/8670/ Mechanical Front Wheel Drive, 30 km/h Version
Number of driving members:	2 or 4
Serial Nº:	D408516
1st Serial Nº:	Confidential

1.2 ENGINE

Make/Model/Type:	New Holland/675-TA-VT/Diesel, Turbocharged Air-to-air intercooled
Serial Nº:	VT518827

1.2.1 Cylinders

Number/disposition:	Six/in - line, vertical
Bore/Stroke:	111.8/127 mm (4.4/5.0 in)
Capacity:	7480 cm^3 (456 in^3)
Compression ratio:	17.5:1
Arrangement of valves:	Overhead
Cylinder liners:	None

1.2.2 Supercharging

Make/Model/Type:	Garret/GT35/Exhaust gas driven
Pressure:	132 kPa (39 in HG) max. at 2100 rpm

1.2.3 Fuel System

Fuel feed system:	In line injection pump
Make/model/type of fuel filters:	Racor/87840136/Cartridge
Capacity of fuel tank:	416 Litres (110 US Gallons)
Fuel Cooler:	None
Make/model/type of injection pump:	Bosch/87800972/"A" 2000 In-line
Serial Nº:	57213 08233
Pump Manufacturer's production rack setting:	115 ± 3 mm^3/stroke at 1050 pump rev/min
Flow rate (rated engine speed and full load):	29 ± 0.87 kg/h (63.9 ± 1.9 lb/h)
Fuel density:	0.840 kg/l at 15°C
Timing:	24 degrees BTDC static
Make/model/type of injectors:	Bosch/87841116/5 Hole Differential Needle
Injection pressure:	24.13 MPa (3500 psi)

1.2.4 Governor

Make/model/type:	Bosch/"RSV" All Speed/Mechanical
Governed range of speed:	750 to 2305 rev/min
Rated engine speed:	2100 rev/min
High idle speed range:	2280 ± 25 rev/min

1.2.5 Air cleaner

Pre-cleaner:	
Make/model/type:	Nelson/86011070/Aspirator
Location of air intake:	Through front grill
Main Cleaner:	
Make/model/type:	Nelson/9846495/Pleated Paper
Maintenance indicator:	Light on cab instrument cluster
Location of air intake:	Through Front Grill
Secondary Element:	Nelson/9846495/Pleated Paper

1.2.6 Lubrication system

Type of feed pump:	Gerotor, Full pressure, positive displacement
Type of filter:	Spin on/Paper Element
Number of filters:	One
Oil cooler:	Oil to water, plate type, engine mounted left side

1.2.7 Cooling system

Type of coolant:	50/50 water/glycol base anit-freeze
Type of pump:	Belt driven Centrifugal Vane Pump
Specification of fan:	Belt driven, Viscous fan speed control
Number of fan blades:	Eight
Fan diameter:	711 mm (28.0 in)
Coolant capacity:	26.5 litres (7 US Gallons)
Type of temperature control:	Thermostat
System Pressure:	90 kPa (13 psi)

1.2.8 Starting system

Make/model/type:	Delco Remy/37MT/300/Solenoid engaged
Starter motor power rating:	4.5 kW (6.0 hp)
Cold starting aid:	Engine coolant heater and ether spray to intake mainfold
Safety device:	PTO off, Park brake on, Transmission in neutral

1.2. 9 Electrical system

Voltage:	12 Volt, negative ground
Alternator:	
Make/model/type:	Delco Remy/21 SI/belt driven
Power:	12 Volt, 130 amp
Battery (number of accumulators):	Two,12 volt batteries in parallel (SAE Group 31) 950 cold cranking amps/battery at -18°C (SAE J537 rating)
Rating:	122 Ah at 20 hour rating/Battery

1.2.10 Exhaust system

Make/model/type:	Nelson/2483A/Aspirating
Location:	Under engine hood at cab end, mounted horizontally

1.3 TRANSMISSION TO WHEELS

1.3.1 Clutch (travel)

Make/Model/Type:	Funk/9300 series/Wet multi-plate clutch/Integral with transmission/oil cooled
Number of plates:	Fourteen
Diameter of plates:	150 mm
Method of operation:	Electronic/Hydraulic/Pedal actuated

1.3.2 Gear box

Make/Model/Type:	Funk/9300 Series/Direct drive, full power shift,
Arrangement:	Nine rotating counter shafts controlled by a single lever, oil cooled
Number of gears:	16 Forward, 9 Reverse, controlled by a single lever
Available options:	Creeper Gear Box
Oil Cooler:	Heat exchanger with air

1.3.3 Rear axle and final drives

Make/Model/Type:	New Holland/Crown wheel and pinion, differential and inboard reduction
Differential lock:	
Type:	Electro-hydraulic
Method of Engagement:	Switch in cab
Method of Disengagement:	Self-disengaging with brake pedal operation or switch

1.3.4 Front axle and final drives:

Make/Model/Type:	Dana/70 AG/Crown wheel and pinion, differential and planetary reduction with electro hydraulic engagement
Differential lock:	Not available

1.3.6 Total Ratios and travelling speeds

Gear No.	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed of 2100 RPM (km/h)
Forward		
1	254.171	2.66
2	215.068	3.15
3	183.786	3.68
4	160.441	4.22
5	135.758	4.99
6	116.013	5.84
7	98.558	6.87
8	84.309	8.03
9	71.339	9.49
10	60.961	11.11
11	53.217	12.72
12	45.032	15.03
13	38.481	17.59
14	32.691	20.71
15	27.661	24.47
16	23.639	28.63
Reverse		
3	188.277	3.60
4	159.310	4.25
5	136.138	4.97
6	118.845	5.70
7	100.562	6.73
8	85.934	7.88
9	73.004	9.27
10	61.772	10.95
11	52.789	12.82

*Tire dynamic radius of 855 mm. ISO 4251/1-1992
Number of revolutions of front wheels for one revolution of rear wheels: 1.32.

1.4 POWER TAKE-OFF

1.4.1 Main power take-off

Type:	Independent/wet/multi-plate
Method of engagement:	Electro-hydraulic/Modulated engagement/controlled from console
Number of shafts:	One at rear of tractor in vertical median plane
Method of changing power take-off shaft ends and speeds:	Reversible output shaft

1.4.1.1 Power take-off proportional to engine speed at 540 rev/min

Location:	Rear Mounted
Diameter of power take-off shaft end:	35 mm (1.375 in)
Number of splines in conformity with ISO 500/1991:	Six
Height above ground:	793 mm (with 20.8R38 tires - 855 mm dynamic radius)
Distance from the median plane of the tractor:	On centre line
Distance behind rear-wheel axis:	573 mm (22.5 in)
PTO speed at rated engine speed (2100 rev/min):	604 rev/min

Engine speed at standard power take-off speed:	1878 rev/min
Ratio of rotation speeds (engine speed/PTO speed):	3.478
Direction of rotation (viewed from behind tractor):	Clockwise

1000 rev/min

Location:	Rear of tractor in vertical median plane
Diameter of power take-off shaft end:	44.5 mm (1.75 in)
Number of splines in conformity with ISO 500/1991:	Twenty
Height above ground:	793 mm (with 20.8R38 tires - 855 mm dynamic radius)
Distance from the median plane of the tractor:	On centre line
Distance behind rear-wheel axis:	589.5 mm (23.2 in)
PTO speed at rated engine speed (2100 rev/min):	1103 rev/min
Engine speed at standard power take-off speed:	1903 rev/min
Ratio of rotation speeds (engine speed/PTO speed):	1.903
Direction of rotation (viewed from behind tractor):	Clockwise

1.4.1.2 Power take-off proportional to ground speed: None

1.4.2 Optional power take-off: None

1.5 POWER LIFT

Make/Model/Type:	New Holland/Cat 2,3 and 3N with draft and position control with Cat III quick coupler
Type of hydraulic system:	Closed centre, load sensing
Number/Type/Size of cylinders:	Two/Single acting/102 mm (4 in), length 200 mm (7.88 in)
Optional cylinders:	Diameter 89 mm (3.5 in), length 200 mm (7.88 in)
Type of linkage lock for transport:	Electro-hydraulic
Relief valve pressure setting (tolerance):	19.0 ± 0.3 MPa (2750 ± 50 psi)
Opening pressure of cylinder safety valve:	None
Lift pump type:	Variable displacement axial piston pump
Transmission between pump and engine:	Gear drive from engine output to hydraulic pump
Type and number of filters:	Synthetic media, screw on canister type, 2 filters
Site of oil reservoir:	Integral with transmission and Rear Axle
Type, number and location of tapping points:	Leverless, quick disconnect, four, located at rear of tractor
Maximum volume of oil available to external cylinders:	37.1 L (9.8 US Gallons)

1.6 THREE-POINT LINKAGE

Category: III, in conformity with category 3 of ISO 730/2-1982

Category adapter: Available as optional equipment

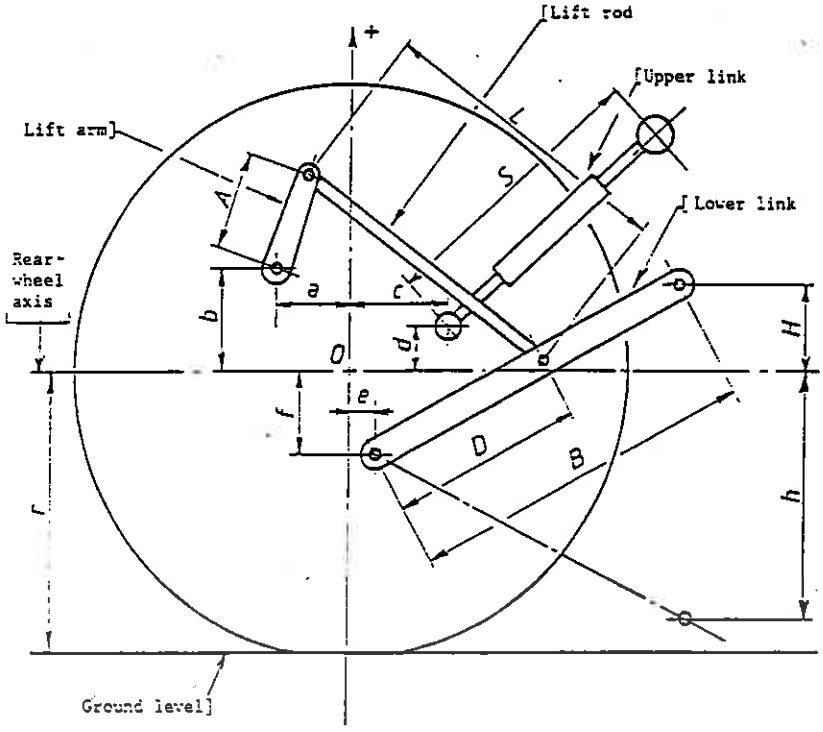


FIGURE 1.1 Lift Test - Linkage Geometry.

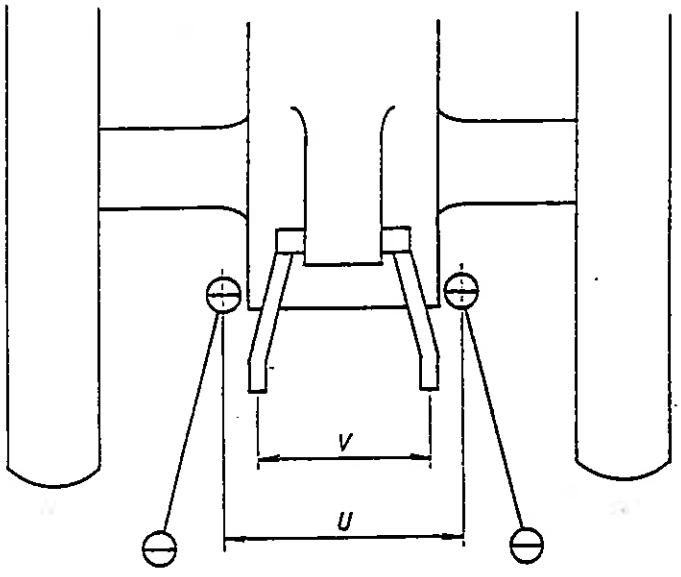


FIGURE 1.2 Lift Test - Linkage Geometry

Table 2.1 - Linkage geometry dimensions (when connected to standard frame)

		Dimension or range	Settings used in test				
			Main test 3.2.2	Small tires 4.2	Large tires 4.3	ASAE/SAE 4.4 & 4.5	Optional cylinders 4.6 & 4.7
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
Rear tire - radius index	(r)	855	855	820	920	855	855
Front tire - radius index	(r')	640	640	640	640	640	640
Length of lift arms	(A)	380	380	380	380	380	380
Length of Lower links	(B)	915	915	915	915	915	915
Distance of lift arm pivot point from rear wheel axis: horizontally	(a)	-200	-200	-200	-200	-200	-200
vertically	(b)	+395	395	395	395	395	395
Horizontal distance between the 2 lower link points	(u)	540	540	540	540	540	540
Horizontal distance between the 2 lift arm end points	(v)	637	637	637	637	637	637
Length of upper link	(s)	608 to 815	769	772	766	766	740
Distance of upper link pivot point from rear wheel axis: horizontally	(c)	505	505	505	505	505	505
vertically	(d)	200	200	200	200	200	200
Distance of lower link pivot point from rear wheel axis: horizontally	(e)	325	325	325	325	325	325
vertically	(f)	315	315	315	315	315	315
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	465	465	465	465	465	465
Length of lift rods	(L)	759 to 890	837	822	870	850	850
Height of lower hitch points relative to the rear-wheel axis: in low position	(h)	409 to 687	625	590	690	652	652
in high position	(H)	66 to 281	135	143	63	92	90
Height above ground of lower hitch points when locked in transport position (*)		Any height within lift range - Electro-hydraulic lock					

(*) Assuming r = tire dynamic radius index of 855 mm (ISO 4251/ - 1992)

1.7 SWINGING DRAWBAR

Type:	Sliding drawbar
Height above ground:	
Maximum:	545 mm (21.5 in)
Minimum:	448 mm (17.6 in)
Type of adjustment:	
Vertical:	Reverse bend
Horizontal:	manual slide
Distance of hitch point from rear wheel axis	
Horizontally:	1102 mm (43.4 in)
Distance of hitch point from power take-off shaft end:	
Vertical:	305 mm (12.0 in)
Horizontal:	508 mm (20.0 in)
Lateral adjustment (centre of clevis):	
Right-hand:	259 mm (10.2 in)
Left-hand:	259 mm (10.2 in)
Distance of pivot point from rear wheel axis, horizontally:	Forward 51 mm (2.0 in)
Diameter of drawbar pin hole:	41.0 mm (1.6 in)
Maximum vertical permissible load:	20.9 kN (4700 lb)

1.8 TRAILER HITCH: None

1.9 HOLED DRAWBAR

Number of holes:	Three
Distance between holes:	102 mm (4.0 in)
Hole diameter:	41 mm (1.6 in)
Thickness/width of the drawbar:	45/76 mm (1.8/3.0 in)
Height above ground:	
Minimum:	448 mm (17.6 in)
Maximum:	545 mm (21.5 in)
Horizontal distance to power take-off shaft end (rear):	508 mm (20.0 in)

1.10 STEERING

Make/Model/Type:	New Holland/Hydrostatic/Power steering
Method of operation:	Steering Wheel
Pump(s):	Pressure/Flow control/Piston Pump, on demand
Ram(s):	Two dual acting cylinders
Maximum working pressure:	17.24 MPa (2500 psi)

1.11 BRAKES

1.11.1 Service brake:

Make/Model/Type: New Holland/disk brakes (Multiple disk between differential and final drives)

Method of operation: Hydraulic Boosted, in cab pedals

Trailer Braking Take-off: Not available

1.11.2 Parking brake

Type: Rear axle - oil immersed, 3 disc

Method of operation: Mechanical, in cab control

1.12 WHEELS

Number:

Front: Two

Rear: Two, Four optional (duals)

Wheelbase: 3005 mm (118.3 in)

Track width adjustment:

	Minimum mm (in)	Maximum	Adjustment method
Front	1524 mm (60 in)	2235 mm (88 in)	Reversing wheels and offset lug rims
Rear	1524 mm (60 in)	3150 mm (124 in)	Sliding tapered hubs and reversible rims

1.13 PROTECTIVE STRUCTURE

Make/Model/Type: New Holland/Genesis 1/Safety Cab

Manufacturer's name and address: Crenlo
Rochester, Minn; USA

Protective device:

Cab/Frame/Rollguard/Other: ROPS Cab

Tiltable/Not Tiltable: Not Tiltable

OECD approval number: CSS - 0255/1 - 3

Date of approval: Nov 25, 1993

Modification certificate if any: MC/96/7149/0196
(under authority of Silsoe Research Institute)

1.14 SEAT

1.14.1 Driver's Seat

Make/Model/Type:	Sears/Generation 2000/SA12055-000E/Low Profile
Type of suspension:	Air spring with adjustable damper
Type of damping:	Hydraulic
Range of adjustment:	
Rotation:	30 deg (25 to right, 5 to left) 6 stops
Longitudinal:	178 mm (7.0 in)
Vertical:	76 mm (3.0 mm)
Optional and Passenger Seats:	Not available

1.15 LIGHTING

	Height of centre above ground mm	Size mm	Distance from out side edge to median plane of tractor mm
Headlights	1720	250 x 100	360
Sidelights	1025	150 x 80	780
Rear top	2905	150 x 80	490
Reflectors	1970	75 x 190	965
Rear fender	1925	150 x 80	600
Front cab	2905	150 x 80	300

2. TEST CONDITIONS

2.1 OVERALL DIMENSIONS

	Length (mm)	Width		Height at top of	
		minimum (mm)	maximum (mm)	protective structure (mm)	exhaust silencer (mm)
Unballasted	4853	2845		3067	3146
Ballasted	5252		3700	3067	3146

2.2 Ground clearance (unballasted): 458 mm

Clearance limiting part: Drawbar Cage

2.3 TRACTOR MASS

Mass with cab:

	Unballasted (kg)		Ballasted (kg)	
	Without driver	With driver	Without driver	With driver
Front	2703	2713	3208	3218
Rear	4919	4984	5923	5988
Total	7622	7697	9131	9206

2.4 BALLAST

	Weights	
	Number	Total Mass (kg)
Front Weights	7 weights (40 kg each) + bracket	374
Rear Wheels	Duals with hubs	788
Rear Weights	9 weights (38 kg each)	342
Test Equipment		5

2.5 TIRE SPECIFICATIONS

	Front	Rear
Tires:		
-make	Armstrong	Armstrong
-dimensions	14.9 R 28	20.8 R 38
-ply rating	3 star	2 star
-maximum load (tire manufacturer)	20.2 kN	35.8 kN
-maximum load (tractor manufacturer)	20.2 kN	35.8 kN
-inflation pressure (tire manufacturer)	207 kPa	165 kPa
-dynamic radius index	640 mm	855 mm
-chosen track width, inner tires	1855 mm	1645 mm
outer tires		3160 mm

2.7 OILS AND LUBRICATION

2.7.1 Capacity And Change Interval

	Capacity	Oil Change	Filter Change
Engine	21 L (5.5 US Gallons)	Every 300 Hours	Same
Transmission Final drive (rear) Rear Axle Hydraulic system Brakes Steering	117 L (30.9 US Gallons)	Every 900 Hours (or yearly)	Same
Front axle	12.3 L (3.25 US Gallons)	Every 1200 Hours	
Final drive (front)	3.2 L. (0.85 US Gallons)	Every 1200 Hours	

* Hydraulic system is common with transmission, final drive (rear), rear axle, brakes, and steering.

2.7.2 Specifications (SAE, API, Mil.L, ISO)

	Recommended	Used during the test
Engine oil . type: . viscosity: . classification:	New Holland 15W - 40 API CF - 4	Petro Canada 15W - 40 API CF - 4
Transmission oils . type: . viscosity: . classification:	New Holland @100C - min 9 c'stokes ESN - M2C134 - D	Esso Hydraul 56 Esn M2C134 - D
Hydraulic fluid	Same as transmission	Same as transmission
Final drive oil (rear)	Same as transmission	Same as transmission
Steering oil	Same as transmission	Same as transmission
Brake fluid	Same as transmission	Same as transmission
Front axle and hubs	Same as transmission	Same as transmission

2.7.3 Grease: Lithuim Base EP-high temperature
Number of lubrication points: 22

2.8 FUEL

Type: No.2, diesel in conformity with national standard.
Density at 15°C (60°F): 0.8525 gm/cm^3

3. COMPULSORY TEST RESULTS

3.1 MAIN POWER TAKE-OFF TEST

Date and location of tests: July 11, 1996
Prairie Agricultural Machinery Institute
Portage la Prairie, MB; CANADA

Dynamometer: AW Dynamometer Inc.
Water Brake Dynamometer

Power	Speed		Fuel Consumption			Specific Energy
	Engine	PTO	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
125.0	1800	946	29.5	34.65	236	3.61
3.1.2 POWER AT RATED ENGINE SPEED						
110.1	2100	1103	29.2	34.27	265	3.21
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)						
122.1	1903	1000	29.8	34.96	244	3.49
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
110.1	2100	1103	29.2	34.27	265	3.21
3.1.4.2 85% of torque obtained in 3.1.4.1						
96.6	2168	1139	26.9	31.49	278	3.07
3.1.4.3 75% of torque defined in 3.1.4.2						
73.7	2203	1158	22.0	25.75	298	2.86
3.1.4.4 50% of torque defined in 3.1.4.2						
49.9	2240	1177	17.0	19.91	340	2.51
3.1.4.5 25% of torque defined in 3.1.4.2						
25.3	2272	1194	12.9	15.09	508	1.68
3.1.4.6 unloaded						
3.6	2297	1207	9.0	10.50	2506	0.34
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
3.1.5.1 the torque corresponding to maximum power						
122.1	1903	1000	29.8	34.96	244	3.49
3.1.5.2 85% of torque obtained in 3.1.5.1						
111.9	2052	1078	29.0	34.04	259	3.29
3.1.5.3 75% of torque defined in 3.1.5.2						
85.7	2095	1101	23.5	27.52	274	3.11
3.1.5.4 50% of torque defined in 3.1.5.2						
58.3	2139	1124	18.2	21.36	312	2.73
3.1.5.5 25% of torque defined in 3.1.5.2						
29.6	2171	1141	13.1	15.38	443	1.93
3.1.5.6 unloaded						
3.4	2196	1154	8.0	9.33	2369	0.36

No load maximum engine speed:	2297	rev/min
Torque (equivalent crankshaft) at maximum power:	663.2	N-m
- at rated engine speed	500.8	N-m
- at standard power take-off speed	612.6	N-m
Maximum torque (equivalent crankshaft):	745.7	N-m at 1416 rev/min engine speed
Mean atmospheric conditions:		
- temperature:	20°C	
- pressure:	97.46 kPa	
- relative humidity:	64%	
Maximum temperatures:		
- coolant:	87°C	
- engine oil:	104°C	
- fuel:	63°C	
- engine air intake:	36°C	

3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: July 15, 1996
Prairie Agricultural Machinery Institute
Portage la Prairie, Manitoba; Canada

3.2.1 Hydraulic Power Tests

Sustained pressure with relief valve open: 19.1 MPa
Pump delivery rate at minimum pressure: 125.6 L/min

	Flow Rate	Pressure	Power
	l/min	MPa	kW
Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	94.6	17.2	27.1
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	116.2	16.2	31.4

Tapping point used for test: Dual remote hydraulic outlets
Temperature of hydraulic fluid: 65 ± 5°C
Opening and closing pressure of the unloading valve: Not applicable since this hydraulic system does not use an accumulator.

3.2.2 Power Lift Test

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	230 mm	177 mm
Vertical movement without load	760 mm	928 mm
Vertical movement with load	671 mm	819 mm
Maximum corrected force exerted through full range	63.6 kN	50.2 kN
Corresponding pressure of hydraulic fluid	17.2 MPa	17.2 MPa
Moment about rear-wheel axis	78.9 kNm	92.9 kNm
Maximum tilt angle of mast from vertical		13 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-363	-310	-300	-200	-100	0	+100	+200	+300	+361	+400	+456
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting of the hydraulic lift system												
at the hitch points in kN	--	63.6	63.7	66.2	69.1	71.8	73.8	75.1	75.5	75.3	--	--
Corresponding pressure:	17.2 MPa											
at the frame in kN	53.5	--	54.3	55.8	57.2	58.3	58.5	58.1	56.6	--	54.1	50.2
Corresponding pressure:	17.2 MPa											

3.3 DRAWBAR PERFORMANCE

Date of Tests: July 31, 1996
Location of Tests: Versatile Farm Equipment Operations Test Track
Sanford, MB; CANADA

Drawbar Height: 510 mm
Tire Pressure: Front: 110 kPa
Rear: 124 kPa

Gear and Range	Power	Drawbar Pull	Ground Speed	Engine Speed	Slip of Tires	Specific Fuel Consumption	Specific Energy	Temperatures			Atmospheric Conditions		
								Fuel	Coolant	Engine Oil	Temperature	Humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS													
F1	49.8	73.52	2.44	2216	14.9	412	2.07	62	84	104	22	73	98.75
F2	58.7	73.65	2.87	2199	15.0	386	2.21	61	84	104	22	73	98.75
F3	68.3	74.04	3.32	2177	15.0	379	2.25	62	85	105	22	73	98.75
F4	78.7	75.17	3.77	2158	15.0	360	2.37	61	85	106	22	73	98.75
F5	89.0	76.13	4.21	2041	15.1	334	2.55	61	85	107	22	73	98.75
F6	96.5	77.34	4.49	1858	15.0	313	2.73	59	85	106	22	73	98.75
F7	103.9	67.76	5.52	1801	8.3	287	2.98	62	86	105	24	62	99.20
F8	107.9	58.06	6.69	1802	6.0	279	3.06	62	86	106	24	61	99.22
F9	111.0	49.88	8.01	1800	3.8	270	3.15	62	85	106	23	62	99.23
F10	108.9	41.45	9.46	1801	2.8	273	3.12	61	86	108	22	69	99.25
3.3.2 FUEL CONSUMPTION													
3.3.2.1 in selected gear, at maximum power at rated speed													
F9	98.5	37.44	9.47	2102	2.6	298	2.86	62	86	107	23	62	99.23
3.3.2.1.1 75% of pull at maximum power at rated speed													
F9	77.5	28.08	9.93	2187	1.8	323	2.64	62	86	107	23	62	99.23
3.3.2.1.2 50% of pull at maximum power at rated speed													
F9	53.0	18.70	10.20	2230	1.2	374	2.28	62	84	106	23	62	99.23
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1													
F10	77.1	28.05	9.90	1866	1.8	287	2.97	61	85	104	25	54	99.12
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
F10	52.9	18.67	10.20	1909	1.1	324	2.63	62	83	103	25	54	99.12
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed													
F8	95.4	43.21	7.95	2101	4.2	306	2.79	62	85	108	24	61	99.22
3.3.2.2.1 75% of pull at maximum power at rated speed													
F8	75.2	32.40	8.36	2185	3.1	330	2.58	62	85	107	24	61	99.22
3.3.2.2.2 50% of pull at maximum power at rated speed													
F8	51.6	21.62	8.60	2228	2.2	382	2.23	62	84	106	24	61	99.22
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1													
F9	74.9	32.38	8.33	1844	2.3	288	2.96	62	85	104	25	54	99.12
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2													
F9	51.9	21.66	8.62	1891	1.5	316	2.70	62	83	103	25	54	99.12

4.0 OPTIONAL TESTS

4.1 BALLASTED DRAWBAR PERFORMANCE

Date of Tests: August 2, 1996
Location of Tests: Versatile Farm Equipment Operations Test Track
Sanford, MB; CANADA

Drawbar Height: 504 mm
Tire Pressure: Front: 138 kPa
Rear: 55 kPa

Gear and Range	Power	Drawbar Pull	Ground Speed	Engine Speed	Slip of Tires	Specific Fuel Consumption	Specific Energy	Temperatures			Atmospheric Conditions		
								Fuel	Coolant	Engine Oil	Temperature	Humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS													
F1	63.2	95.13	2.39	2188	15.0	378	2.26	61	85	105	26	60	98.25
F2	73.9	95.03	2.80	2171	15.1	366	2.33	61	86	106	26	60	98.25
F3	84.9	95.85	3.19	2106	15.0	352	2.42	59	86	106	26	63	98.29
F4	90.0	95.62	3.39	1958	15.0	330	2.59	60	86	106	26	63	98.29
F5	96.6	92.69	3.75	1801	13.5	309	2.76	59	85	107	26	63	98.29
F6	105.9	79.22	4.81	1800	5.3	284	3.00	61	86	107	27	57	98.19
F7	108.3	67.66	5.76	1799	3.5	276	3.09	61	86	107	27	57	98.19
F8	110.2	58.00	6.84	1799	3.1	271	3.15	61	87	109	27	57	98.19
F9	110.3	49.13	8.08	1800	2.2	270	3.15	60	86	108	26	60	98.25
F10	108.2	41.07	9.48	1798	1.7	275	3.10	60	86	109	26	60	98.25
3.3.2 FUEL CONSUMPTION													
3.3.2.1 in selected gear, at maximum power at rated speed													
F9	97.0	36.78	9.49	2101	1.6	304	2.81	61	86	108	27	57	98.19
3.3.2.1.1 75% of pull at maximum power at rated speed													
F9	75.6	27.60	9.86	2176	1.3	332	2.57	61	86	108	27	56	98.16
3.3.2.1.2 50% of pull at maximum power at rated speed													
F9	51.5	18.38	10.09	2218	0.8	381	2.24	61	85	106	27	56	98.16
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1													
F10	75.4	27.57	9.85	1858	1.1	289	2.95	61	86	105	27	56	98.16
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
F10	51.8	18.43	10.11	1898	0.7	327	2.61	60	84	104	27	56	98.16
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed													
F8	96.3	43.32	8.00	2101	2.9	304	2.80	61	86	110	27	57	98.19
3.3.2.2.1 75% of pull at maximum power at rated speed													
F8	75.4	32.51	8.35	2179	2.4	328	2.60	61	86	108	27	57	98.19
3.3.2.2.2 50% of pull at maximum power at rated speed													
F8	51.3	21.66	8.53	2220	2.1	382	2.23	61	85	107	27	57	98.19
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1													
F9	75.1	32.44	8.33	1841	1.4	283	3.01	60	85	106	27	56	98.16
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2													
F9	51.5	21.67	8.55	1882	1.0	316	2.70	60	84	103	27	56	98.16

4.2 POWER LIFT TEST (with 18.4 R38 tires - Dynamic Radius Index 820 mm)

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	230 mm	188 mm
Vertical movement without load	733 mm	929 mm
Vertical movement with load	658 mm	766 mm
Maximum corrected force exerted through full range	61.9 kN	50.4 kN
Corresponding pressure of hydraulic fluid	17.2 MPa	17.2 MPa
Moment about rear-wheel axis	76.8 kNm	93.2 kNm
Maximum tilt angle of mast from vertical		14 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-317	-300	-275	-200	-100	0	+100	+200	+300	+383	+400	+449
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting of the hydraulic lift system												
at the hitch points in kN	–	–	61.9	63.4	66.8	70.3	73.2	76.5	77.8	75.8	–	–
Corresponding pressure:						17.2 MPa						
at the frame in kN	52.7	52.8	–	55.8	57.4	58.6	59.0	57.9	55.3	–	51.3	50.4
Corresponding pressure:						17.2 MPa						

4.3 POWER LIFT TEST (with 710/70 R38 tires - Dynamic Radius Index 920 mm)

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	230 mm	174 mm
Vertical movement without load	753 mm	925 mm
Vertical movement with load	682 mm	817 mm
Maximum corrected force exerted through full range	61.0 kN	50.7 kN
Corresponding pressure of hydraulic fluid	17.2 MPa	17.2 MPa
Moment about rear-wheel axis	75.6 kNm	93.8 kNm
Maximum tilt angle of mast from vertical		10 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-431	-400	-375	-300	-200	-100	0	+100	+200	+300	+307	+368
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting of the hydraulic lift system												
at the hitch points in kN	–	–	61.0	63.4	67.7	71.4	72.4	73.7	74.4	73.9	73.8	–
Corresponding pressure:						17.2 MPa						
at the frame in kN	53.0	53.4	–	56.5	58.4	60.2	60.6	60.4	58.4	53.8	–	50.7
Corresponding pressure:						17.2 MPa						

4.4 POWER LIFT TEST (ASAE S349.2 with standard cylinders and 20.8 R38 tires-Nebraska Test)

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	203 mm	199 mm
Vertical movement without load	744mm	820 mm
Vertical movement with load	674 mm	709 mm
Maximum corrected force exerted through full range	65.6 kN	64.2 kN
Corresponding pressure of hydraulic fluid	18.6 MPa	18.6 MPa
Moment about rear-wheel axis	81.3 kNm	118.8 kNm
Maximum tilt angle of mast from vertical		7 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-341	-337	-300	-200	-100	0	+100	+200	+300	+337	+368
Corrected lifting forces											
at the hitch points in kN	–	65.6	66.6	71.1	74.3	76.9	79.3	80.8	81.6	80.6	–
Corresponding pressure:	18.6 MPa										
at the frame in kN	67.5	–	68.2	69.4	70.3	71.9	73.1	71.5	66.4	–	64.2
Corresponding pressure:	18.6 MPa										

4.5 POWER LIFT TEST (SAE J283 Jun 93, with standard cylinders and 20.8 R38 tires-Nebraska Test)

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	203 mm	199 mm
Vertical movement without load	744 mm	820 mm
Vertical movement with load	674 mm	709 mm
Maximum corrected force exerted through full range	60.7 kN	59.2 kN
Corresponding pressure of hydraulic fluid	17.2 MPa	17.2 MPa
Moment about rear-wheel axis	75.3 kNm	109.5 kNm
Maximum tilt angle of mast from vertical		7 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-341	-337	-300	-200	-100	0	+100	+200	+300	+337	+368
Corrected lifting forces											
at the hitch points in kN	–	60.7	61.5	65.7	68.7	70.9	73.2	74.6	75.4	74.5	–
Corresponding pressure:	17.2 MPa										
at the frame in kN	62.3	–	62.9	64.2	65.0	66.3	67.5	66.0	61.4	–	59.2
Corresponding pressure:	17.2 MPa										

4.6 POWER LIFT TEST (ASAE S349.2, with optional cylinders and 20.8 R38 tires-Nebraska Test)

Linkage settings for test - See Table 2.1 and Figures 2.1 and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	203 mm	203 mm
Vertical movement without load	742 mm	811 mm
Vertical movement with load	661 mm	698 mm
Maximum corrected force exerted through full range	49.0 kN	48.9 kN
Corresponding pressure of hydraulic fluid	18.6 MPa	18.6 MPa
Moment about rear-wheel axis	60.8 kNm	90.5 kNm
Maximum tilt angle of mast from vertical		6 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points										
mm	-337	-300	-200	-100	0	+100	+200	+300	+324	+361
Corrected lifting forces										
at the hitch points in kN	49.0	49.9	53.2	55.5	57.9	60.4	62.4	62.1	61.4	–
Corresponding pressure					18.6 MPa					
at the frame in kN	58.1	56.2	52.7	52.5	53.6	54.3	53.3	50.8	–	48.9
Corresponding pressure:					18.6 MPa					

4.7 POWER LIFT TEST (SAE J283 Jun 93, with optional cylinders and 20.8 R38 tires-Nebraska Test)

Linkage settings for test - See Table 2.1 and Figures 2.1and 2.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	203 mm	203 mm
Vertical movement without load	742 mm	811 mm
Vertical movement with load	661 mm	698 mm
Maximum corrected force exerted through full range	45.3 kN	45.2 kN
Corresponding pressure of hydraulic fluid	17.2 MPa	17.2 MPa
Moment about rear-wheel axis	56.2 kNm	83.6 kNm
Maximum tilt angle of mast from vertical		6 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points										
mm	-337	-300	-200	-100	0	+100	+200	+300	+324	+361
Corrected lifting forces										
at the hitch points in kN	45.3	46.1	49.1	51.2	53.5	55.7	57.7	57.4	56.7	–
Corresponding pressure					17.2 MPa					
at the frame in kN	53.7	51.9	48.7	48.5	49.5	50.1	49.2	46.9	–	45.2
Corresponding pressure:					17.2 MPa					

4.8 NOISE TESTS (Nebraska 75% Pull)

Date of tests:	July 31, 1996
Location of tests:	Versatile Farm Equipment Test Track Sanford, Manitoba; Canada
Sound level meter Make/Model/Type:	Bruel & Kjaer/Model T2236/Precision Integrating
Type of track:	Concrete
Noise at operator ear 75% pull at maximum power rated speed noise level:	75.0 dB(A)
Gear Number:	F10

5. REPAIRS

None

6. REMARKS

None

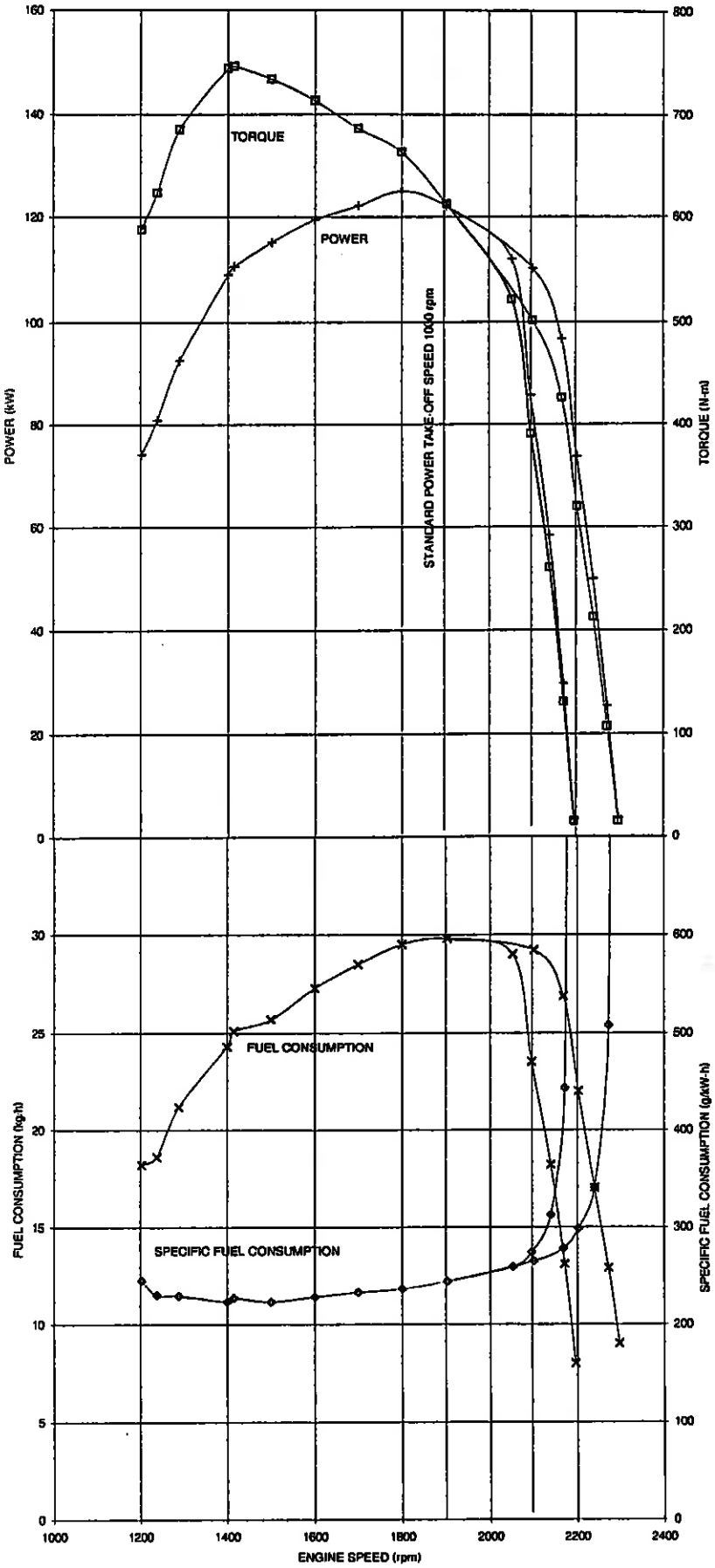
7. ANNEX (CURVES)

Tests carried out by: D.J. May, P.Eng., Project Engineer
K.A. Carmichael, Project Technologist

Signed: _____
Bruce Allen, P.Eng., MBA
Station Manager for the Director

Date: JAN 23, 1997

NEW HOLLAND 8670 TRACTOR



NEW HOLLAND 8670 TRACTOR

