



## **SILSOE RESEARCH INSTITUTE**

**Wrest Park, Silsoe,  
Bedford MK45 4HS**

**Report No:** OECD/7136/0196  
**OECD Approval No:** 1726 Restricted Code  
**Approval Date:** 31 December 1997

**Report on test in accordance with the OECD STANDARD CODE II (RESTRICTED CODE) for  
the Official Testing of Agricultural and Forestry Tractors**

**New Holland 8360/M135 Four-Wheel Drive Tractor with 18-speed Semi Power Shift Transmission (40 Km/h)**



**Manufactured by:** New Holland UK Ltd  
Basildon  
Essex  
United Kingdom

**Submitted for test by:** The manufacturer

**Report No:** 784

**Date:** October 1997



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**Tractor manufacturer's name and address:** New Holland UK Ltd  
Basildon, Essex, United Kingdom

**Location of tractor assembly:** Basildon, Essex

**Submitted for test by:** The manufacturer

**Selected for test by:** The manufacturer

**Place of running in:** Basildon, Essex

**Duration of running in:** 45 hours

**Location of test:** Silsoe Research Institute  
Wrest Park, Silsoe, United Kingdom

**I. SPECIFICATION OF TRACTOR**

**TRACTOR**

**Make:** New Holland  
**Model:** 8360/M135  
**Type:** Four wheel drive, unit construction  
**Serial No:** BX00084  
**1st Serial No:** 003361B

**ENGINE**

**Make:** New Holland  
**Model:** 675T/WL  
**Type:** 4 stroke direct injection turbo charged diesel  
**Serial No:** WL532885

**Cylinders**

**Number/disposition:** 6 vertical In-line  
**Bore/stroke:** 111.8 mm/127.0 mm  
**Capacity:** 7480 cm<sup>3</sup>  
**Compression ratio:** 17.5 :1  
**Arrangement of valves:** Overhead  
**Cylinder liners:** None, monobloc construction

**Supercharging**

**Make:** Garrett  
**Model:** GT 35  
**Type:** Exhaust driven  
**Pressure:** 30-34" Hg at rated speed/load

### Fuel system

Fuel feed system:	Wabco series 6000 or Purolator 'Facet' electric lift pump
Make, type and model of fuel filter:	Plastic strainer in tank and one disposable canister filter with sediment bowl and water separator plus secondary disposable canister filter between tank and injection pump
Capacity of fuel tank:	325 litres
Make, type and model of injection pump:	Bosch, 'VE' Rotary, 0 460 426 237
Serial No:	561 535219
Manufacturer's production setting of injection pump:	
Flow rate:	74.2-78.8 mm <sup>3</sup> per stroke at 1100 rev/min pump speed and full load
Timing:	Delivery starts 6° before T.D.C
Make, type and model of injectors:	Bosch, multihole, 0 432 191 650 nozzle
Injection pressure:	270-278 bar

### Governor

Make:	Bosch
Model:	None
Type:	Mechanical incorporated in fuel injection pump
Governed range of engine speed:	700 rev/min to 2420 rev/min
Rated engine speed:	2200 rev/min

### Air cleaner

Pre-cleaner:	None
Make:	Locker Air Maze or Donaldson
Type:	3 stage dry paper element with replaceable cartridge (Exhaust Aspirated - optional)
Model:	None
Location of air intake:	Under engine hood in front and above radiator
Maintenance indicator:	Warning light on instrument panel

Lubrication system

Type of feed pump:	Forced feed from eccentric rotor pump
Type of filter:	Metal mesh strainer in sump on suction line and full flow disposable canister on pressure line to engine
Number:	1

Cooling system

Type of coolant:	Water and antifreeze (50% solution)
Type of pump:	Belt driven centrifugal impeller
Specification of fan:	Thermal controlled with viscous clutch
Number of fan blades:	5
Fan diameter:	510 mm
Coolant capacity:	26.0 litres
Type of temperature control:	Thermostat with full flow bypass
System pressure:	100 kPa

Starting system

Make:	Bosch JF
Model:	JF
Type:	Electrical, positive engagement, solenoid operated
Starter motor power rating:	3.1/3.6 kW
Cold starting aid:	CAV Thermostart - Type 357-33
Safety device:	Starting operable when all gear levers are in neutral

Electrical system

Voltage:	12 V
Generator:	Alternator
Make:	Magneti Marcelli
Model:	MME A 127
Type:	Belt driven
Power:	70/100 amps at 6000 rev/min
Batteries:	2 CEAC lead acid, mounted on front support
Rating:	70/95 AH at 20 hours rating

Exhaust system

Make: Alcom

Model: None

Type: Underhood horizontal silencer with vertical stack pipe

Location: Left-hand side of engine, under bonnet

Height of outlet above ground: 2991 mm

**TRANSMISSION TO WHEELS**

Main clutch

Make: New Holland

Model: None

Type: Wet multiplate, in gearbox for travel only

Number of plates: 7

Diameter of plates: 160 mm

Method of operation: Mechanical/electro-hydraulic with pedal override

Gear box

Make: New Holland

Model: Range command (semi power shift)

Type: Electro/Hydraulic, synchromesh (range) operation. 6 powershift speeds with 3 ranges selected by 3 buttons on an adjustable lever mounted on the right hand console. Forward/reverse is actuated by a steering column mounted shuttle lever.

Number of gears: 18 forward, 6 reverse (40 Km/h)

Available options: 31 x 12 with creep (40 Km/h),  
17 x 6 (30 Km/h) 30 x 12 with creep (30 Km/h)



**Rear axle final drives**

<b>Make:</b>	<b>New Holland</b>
<b>Model:</b>	<b>None</b>
<b>Type:</b>	<b>Crown wheel and pinion with differential and inboard epicyclic reduction gear final drive</b>
<b>Differential lock:</b>	
<b>Type:</b>	<b>Mechanical</b>
<b>Method of engagement:</b>	<b>Electro-hydraulic actuation in response to signal from switch on right-hand control panel</b>
<b>Method of disengagement:</b>	<b>Via panel switch or in response to electrical signal from brakes on application</b>

**Front axle and final drives**

<b>Make:</b>	<b>New Holland</b>
<b>Model:</b>	<b>None</b>
<b>Type:</b>	<b>Crown wheel and pinion with differential and outboard epicyclic reduction gear final drives</b>
<b>Drive engagement:</b>	
<b>Type:</b>	<b>Multiplate clutch - located within the gearbox</b>
<b>Method of operation:</b>	<b>Electro-hydraulic actuation in response to signal from switch on the right hand control panel</b>
<b>Differential lock:</b>	
<b>Type:</b>	<b>Mechanical</b>
<b>Method of engagement:</b>	<b>Electro-hydraulic actuation in response to signal from switch on right-hand control panel</b>
<b>Method of disengagement:</b>	<b>Via panel switch or in response to electrical signal from brakes on application</b>

Total ratios and travelling speeds

Gear	Group No	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed:* 2200 rev/min km/h
<b>Forward</b>			
1	A	319.70	2.13
2	A	265.87	2.56
3	A	221.33	3.07
4	A	184.06	3.70
5	A	153.02	4.44
6	A	127.25	5.34
1	B	137.65	4.94
2	B	114.47	5.94
3	B	95.29	7.14
4	B	79.25	8.58
5	B	65.88	10.32
6	B	54.79	12.41
1	C	48.52	14.02
2	C	40.35	16.85
3	C	33.59	20.24
4	C	27.94	24.34
5	C	23.25	29.25
6	C	19.31	35.21
<b>Reverse</b>			
1	R	163.87	4.15
2	R	136.27	4.99
3	R	113.45	6.00
4	R	94.34	7.21
5	R	78.43	8.67
6	R	65.22	10.43

A = Low range B = Medium range C = High range

(\*) Calculated with a tyre dynamic radius index of 820 mm (ISO 4251/1-1992)

Number of revolutions of front wheels for one revolution of rear wheels: 1.327

## POWER TAKE-OFF

### Main power take-off

Type:	Independent
Method of engagement:	Electro - hydraulically operated multi-plate clutch in response to a signal from switch on the right-hand control panel
Number of shafts:	1 interchangeable shaft, 6 or 21 spline to ISO.500/1991
Method of changing power take-off speeds:	
Two speed	Shiftable, 540 or 1000 rev/min by lever on right-hand console

### Clutch

Make:	New Holland
Model:	None
Type:	Multiplate, wet
Number of plates:	6
Diameter of plates:	140.0 mm

### Two/three speed shiftable power take-off proportional to engine speed and with changeable shafts

540/750/1000 rev/min	540 rev/min	750 rev/min	1000 rev/min
Location:	Rear of tractor	Rear of tractor	Rear of tractor
Diameter of power take-off shaft:	34.9 mm	34.9 mm	34.9 mm
Number of splines:	6 or 21	6 or 21	6 or 21
Height above ground:	803 mm	803 mm	803 mm
Distance from the median plane of the tractor:	Central	Central	Central
Distance behind rear wheel axis:	602 mm	602 mm	602 mm
Pto speed at rated engine speed:	603	769	1037
Engine speed at standard power take-off speed:	1971	2145	2121
Ratio of rotation speeds:	3.65	2.86	2.12
Power restriction and maximum torque:	None	None	None
Direction of rotation (viewed from behind tractor):	Clockwise	Clockwise	Clockwise

### Power take-off proportional to ground speed

Travelling distance for one revolution of power take-off shaft	.355 m	.263 m	.194 m
Number of power take-off shaft revolutions for one revolution of rear driving wheels	15.4	19.6	26.5

**POWER LIFT - standard****Pump - standard**

<b>Make:</b>	<b>New Holland</b>
<b>Model:</b>	<b>None</b>
<b>Type:</b>	<b>Electro-hydraulic with solenoid valves, open centre for lift and drop</b>
<b>Type and number of cylinders:</b>	<b>1 single acting inside transmission housing plus the option of 1 or 2 single acting, externally mounted assistor rams (1 fitted for Test I, 2 fitted for Test II)</b>
<b>Type of linkage lock for transport:</b>	<b>Hydraulic</b>
<b>Relief valve pressure setting:</b>	<b>18.7 - 193 MPa</b>
<b>Opening pressure of cylinder safety valve:</b>	<b>19.3 MPa</b>
<b>Lift pump type:</b>	<b>Gear</b>
<b>Transmission between pump and engine:</b>	<b>Gear driven from pto shaft, independent of main and pto clutches</b>
<b>Type and number of filters:</b>	<b>2 disposable canister filters</b>
<b>Site of oil reservoir:</b>	<b>Rear axle housing</b>
<b>Type, number and position of tapping points:</b>	<b>1, 2, 3 or 4 remote couplers at rear of tractor</b>
<b>Maximum volume of oil available to external cylinders:</b>	<b>18 - 20 litres</b>

# THREE-POINT LINKAGE

Category:

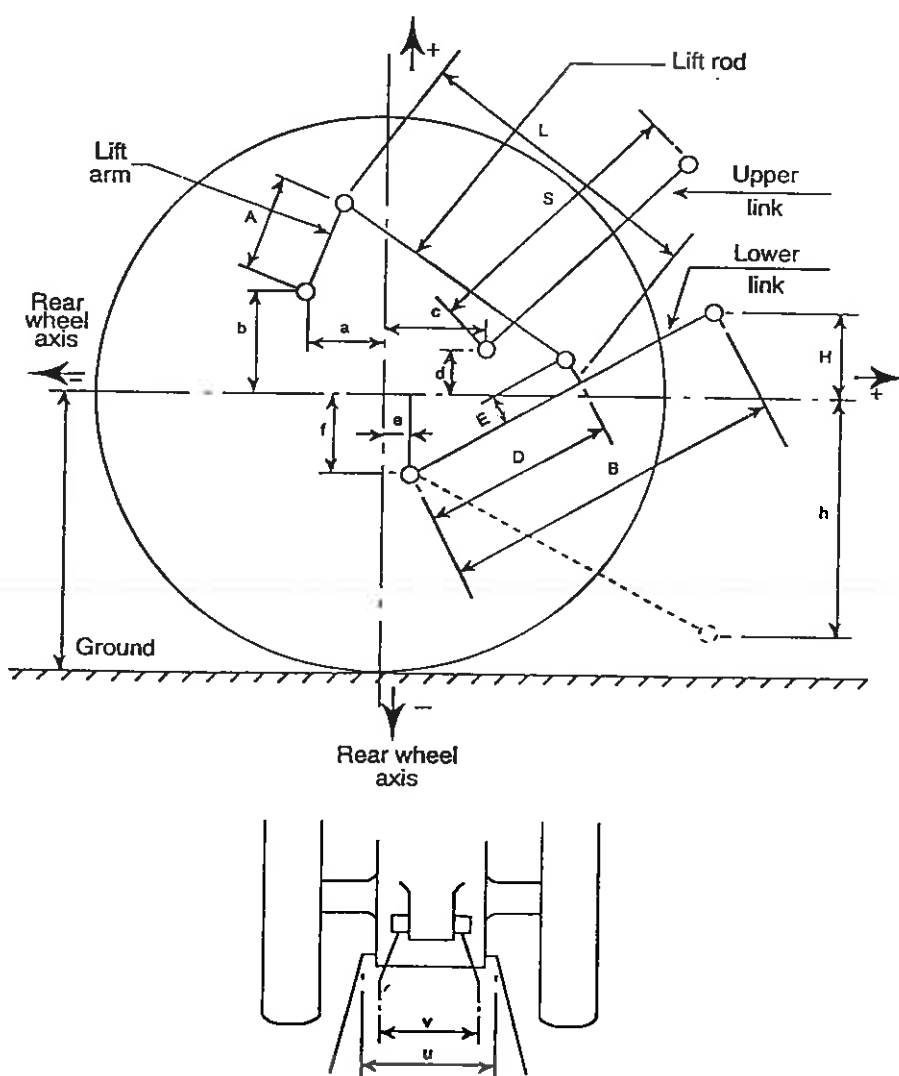
2 to ISO standard 730-1:1994

Category adaptor:

None

Controls:

Electronic draught/position control link.  
(Optional - draught or position control)  
Lower link sensing



**LIFT TEST**  
**Linkage geometry**

Fig 2.1

Table 2.1

Dimensions of linkage when attached to the standard frame (ISO 730-1: 1994 CAT 2)

			Dimensions or range	Settings used in main test	Settings used in optional test
Length of lift arms		(A)	230	230	230
Length of lower links		(B)	974	974	974
Distance of lift arm pivot point from rear wheel centre line:	horizontally:	(a)	156	156	156
	vertically:	(b)	362.5	362.5	362.5
Horizontal distance between the two lower link points:		(u)	544	544	544
Horizontal distance between the two lift arm end points:		(v)	560	560	560
Length of upper link:		(S)	652-942	754	768
Distance of upper link pivot point from rear wheel centre line:	horizontally:	(c)	430-455	455	430
	vertically:	(d)	208-275	208	275
Distance of lower link pivot point from rear wheel centre line:	horizontally:	(e)	220	220	220
	vertically:	(f)	250	250	250
Distance of lower link points to lift rod pivot points on lower link centre line:	horizontally:	(D)	435-504	435	504
	vertically:	(E)	on centre line	on centre line	on centre line
Length of lift rods:		(L)	635-780	740	780
ISO mast height			610	610	610
Height of lower hitch points (*) relative to the rear wheel centre line, situated 820 mm above the ground level:					
- in low position		(h)	250-744	627	600
- in high position		(H)	41-328	108	61
Height of lower hitch points when locked in transport position (*)			Any height within lift range (hydraulic transport lock)		

\* Assuming r = tyre dynamic radius index of 820 mm ISO 4251/1-1992

### SWINGING DRAWBAR

## Drawbar

**Type:**

## Clevis

Height above ground, unballasted maximum: \_\_\_\_\_  
minimum: \_\_\_\_\_

550 mm

440 mm

**Type of adjustment:**

### Inverting drawbar

Distance of hitch point from rear-wheel axis, horizontally:

845 mm, 960 mm, 1010 mm

**Distance of hitch point from power take-off shaft ends:**

**Vertically:**

256 mm, 363 mm

**Horizontally:**

243 mm, 358 mm, 408 mm

**Lateral adjustment from the (centre of clevis):**

Right-hand

172 mm, 208 mm, 220 mm

**Left-hand**

172 mm, 208 mm, 220 mm

**Distance of pivot point from rear axles horizontally:**

300 mm

**Width of clevis:**

68 mm

Diameter of drawbar pin hole:

33 mm

**Maximum vertical permissible load - Clevis uppermost:**  
**Clevis underneath**

**910 kg**

**1065 kg**

1630 kg

**Clevis underneath:**

**910 kg**

1065 kg

1135 kg

## Trailer Hitch

Type:

None fitted

### Linkage Drawbar

Type:

None fitted

### Front Towing Hitch

Type

None fitted

## STEERING

Make:	New Holland
Model:	None
Type:	Hydrostatic
Method of operation:	
Pump:	New Holland
Motor:	Danfoss OSPC-160-OR
Ram:	2, a balanced single acting cylinder operating each steering arm
Filter:	Integral with hydraulic power lift system
Working pressure:	166 - 178 bar

## BRAKES

### Service brake

Make:	New Holland
Model:	None
Type:	Oil-immersed single plate disc
Method of operation:	Hydraulic, independent on rear wheels (On 40 kph (4WD) models. When the service brakes are actuated the front wheel drive is automatically engaged)
Trailer braking take-off:	Hydraulic connector fitted to ISO 5676-1983

### Parking brake

Make:	New Holland
Type:	Fully independent three plate disc operating on bevel pinion shaft
Method of operation:	Hand lever with ratchet



## WHEELS

Number: 4

Front: 2 steering and driving

Rear: 2 driving

Wheelbase: 2723 mm

### Track settings

	Minimum mm	Maximum mm	Adjustment method
Front	1642	2359	Reversing wheels and offset lug rims
Rear	1630	2232	Reversing wheels and offset lug rims

## PROTECTIVE STRUCTURE

Make:	New Holland
Model:	New Holland SLTV 1
Type:	Cab safety frame
Manufacturer's name and address:	New Holland UK Ltd, Basildon
Protective device:	
Rollguard:	Safety Cab
Tiltable/Not tiltable:	Non tiltable
OECD approval number:	CSD-1398/1-12, 28 September 1994
New Holland M135	CSD1398/7
New Holland 8360	CSD1398/1

Original test and minor modification certificates under the responsibility of S.H. Statens Husdyrbrugsforsog  
Bygholm, Denmark

## DRIVERS SEAT

Make/Model/Type:	Grammar DS85H1/90A
Type of suspension:	Parallelogram suspension spring
Type of damping:	Double acting, hydraulic
Range of adjustment:	
Longitudinal:	± 75 mm
Vertical:	± 30 mm

### Passenger seat (optional)

Make:	New Holland
Type:	Soft plastic moulding, half folding, on LH side of inner fender. EEC approved to Directive 76/763/EEC-e110725

## LIGHTING

In accordance with EEC Directive 78/933/EEC

Unrestricted beam angle of headlight in plan view: 140°

	Height above ground to centre mm	Size mm	Distance from outside edge to median plane of tractor mm
Headlight	1380	150 x 90	200
Sidelights	1870	105 x 30	890
Rear lights	1835	50 x 50	845
Axle reflectors	805	100 x 35	665
Cab reflectors	1835	50 x 50	845

## II TEST CONDITIONS

### Overall dimensions

Length mm	Width		Height at top of	
	Minimum mm	Maximum mm	Protective structure mm	Exhaust pipe mm
4655	2135	2771	2830	2991

Ground clearance (unballasted tractor) 380 mm

Clearance-limiting part: Drawbar clevis in lowest position

Tractor mass (with safety cab)

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	2216	2230	--	--
Rear	3140	3201	--	--
Total	5356	5431	--	--

Tyres and track width specification

	Front	Rear
Tyres dimensions ply rating type	14.9 R 28 128A8 Radial	18.4 R 38 146A8 Radial
Maximum load (tyre manufacturer's), kg 30 km/h (40 km/h)	1925 (1800)	3210 (3000)
Maximum load (tractor manufacturer's), kg	1925 (1800)	3210 (3000)
Inflation pressure (tyre manufacturer's), Bar	1.6	1.6
Dynamic radius index	640	820
Chosen track width (manufacturer's nominal)	1730	1890

Oils and lubrication

## Capacity and change interval

	Capacity litre	Oil change hours	Filter change hours
Engine	19.0	300	300
Front axle differential	9.0	1200	None
Final drive (front) - per side	1.7	1200	None
Rear axle Dual command + CCLS	73	1200	300
Gearbox } Hydraulic system } Final drives (rear) } Steering }	Integral with rear axle		
Brakes	0.5	Top-up	None

Fuels and lubricants used in tests

Fuel

Type: Diesel oil to Class D, 1.5 to 5.5 cSt. Specific gravity: 0.8390 g/cm<sup>3</sup> at 15°C

<u>Oils</u>	<u>NH spec</u>	<u>Recommended</u>	<u>Used during test</u>
Engine oil			
Type:	NH 324B	SAE 10W/30	As recommended
Viscosity:		11.5 cSt at 100°C	
Classification:		API CF-4	
Transmission oils			
Type:	NH 410B	SAE 10W/30	As recommended
Viscosity:		9 cSt at 100°C	
Classification:		API GL-4	
Rear final drives			
Type:	NH 410B	SAE 10W/30	As recommended
Viscosity:		9 cSt at 100°C	
Classification:		API GL-4	
Front differential and final drives			
Type:	NH 410B	SAE 10W/30	As recommended
Viscosity:		9 cSt at 100°C	
Classification:		API GL-4	
Hydraulic brakes			
Type:	NH 610A	No equivalent	As recommended
Viscosity:		6 cSt at 100°C	
Classification:		No equivalent	
Hydraulic fluid			
Type:	NH 410B	SAE 10W/30	As recommended
Viscosity:		9 cSt at 100°C	
Classification:		API GL-4	
Steering oil			
Type:	NH 410B	SAE 10W/30	As recommended
Viscosity:		9 cSt at 100°C	
Classification:		API GL-4	
Grease points			
Recommended grease:	NH 720A	Lithium based	As recommended
Number of lubrication points:	14		

### III. TEST RESULTS

#### A. COMPULSORY TESTS

##### 1. MAIN POWER TAKE-OFF (1000)

Date and location of tests:

16 December 1996  
Silsoe Research Institute,  
Wrest Park, Silsoe, Bedford

Type of dynamometer:

Eddy Current, Borghi and Saveri

Power kW	Speed		Fuel consumption			Specific energy kWh/l
	Engine rev/min	P.T.O. rev/min	Hourly kg/h	l/h	Specific g/kWh	
1.1 MAXIMUM POWER - TWO HOUR TEST						
91.6	2000	943	22.47	26.79	246	3.42
1.2 POWER AT RATED ENGINE SPEED						
89.0	2201	1038	23.75	28.31	267	3.14
1.3 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)						
90.3	2121	1000	23.24	27.70	257	3.26
1.4 PART LOADS						
1.4.1 The torque corresponding to maximum power at rated engine speed						
89.0	2201	1038	23.75	28.31	267	3.14
1.4.2 85% of the torque defined in 1.4.1						
79.0	2301	1085	22.74	27.10	288	2.91
1.4.3 75% of the torque defined in 1.4.2						
59.9	2327	1097	18.59	22.16	311	2.70
1.4.4 50% of the torque defined in 1.4.2						
40.2	2347	1107	15.25	18.18	380	2.21
1.4.5 25% of the torque defined in 1.4.2						
20.2	2355	1111	11.64	13.87	576	1.46
1.4.6 Unloaded						
0	2387	1126	7.70	9.18	--	--

Power kW	Speed		Fuel consumption			Specific energy kWh/l
	Engine rev/min	P.T.O.	Hourly kg/h	l/h	Specific g/kWh	
1.5	PART LOADS AT STANDARD POWER TAKE-OFF SPEEDS (1000 ± 25 rev/min)					
1.5.1	The torque corresponding to maximum power					
90.3	2121	1000	23.24	27.70	257	3.26
1.5.2	85% of the torque obtained in 1.5.1					
79.9	2206	1040	21.68	25.84	271	3.09
1.5.3	75% of the torque obtained in 1.5.2					
60.7	2235	1054	17.67	21.06	291	2.88
1.5.4	50% of the torque obtained in 1.5.2					
40.8	2258	1065	14.42	17.19	354	2.37
1.5.5	25% of the torque obtained in 1.5.2					
20.6	2272	1072	10.86	12.94	526	1.59
1.5.6	Unloaded					
0	2301	1085	7.19	8.57	--	--

No load, maximum engine speed: 2387 rev/min

Torque (equivalent crankshaft) at maximum power: 437.3 Nm

Torque (equivalent crankshaft) at rated speed: 386.0 Nm

Maximum torque (equivalent crankshaft): 568.5 Nm  
(engine speed 1347 rev/min)

Mean atmospheric conditions:

- Temperature 26°C
- Pressure 1010 m bar
- Relative humidity 33%

Maximum temperatures:

- Coolant 86°C
- Engine oil 111°C
- Fuel 57°C
- Engine air intake 32°C

## 2. HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 5 February 1997

### 2.1 Hydraulic power test

Sustained pressure with relief valve open: 20.2 MPa

Pump delivery rate at minimum pressure: 97.3 l/min

	Flow rate l/min	Pressure MPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	77.2	18.2	23.42
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	91.0	17.5	26.54

Tapping point used for test:

Auxiliary service connection

Temperature of hydraulic fluid if different from  $65 \pm 5^\circ\text{C}$

-- °C

Opening pressure of the unloading valve:

-- MPa

Closing pressure of the unloading valve:

-- MPa



2.2 1. Power lift test - (To ISO 730-1:1994)  
1. Assistor ram fitted

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	193 mm	193 mm
Vertical movement	732 mm	892 mm
Maximum corrected force exerted through full range	32.1 kN	30.0 kN
Corresponding pressure of hydraulic fluid	18.2 MPa	18.2 MPa
Moment about rear-wheel axis	38.3 kNm	54.1 kNm
Maximum tilt angle of mast from vertical	—	12 degrees

**Linkage settings for test - see Table 2.1 and Figure 2.1**

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-437	-377	-300	-200	-100	0	100	200	300	355	460
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure delivered by the hydraulic system)											
at the hitch points kN	--	32.1	38.5	43.8	47.2	49.6	51.4	52.5	54.0	54.8	--
Corresponding pressure: 18.2 MPa											
at the frame kN	30.0	32.7	36.3	39.2	40.5	40.9	40.7	40.2	39.3	38.7	37.5
Corresponding pressure: 18.2 MPa											

2.2 II. Power lift test - (To ISO 730-1:1994)  
2. Assistor rams fitted

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	193 mm	193 mm
Vertical movement	732 mm	892 mm
Maximum corrected force exerted through full range	42.6 kN	37.1 kN
Corresponding pressure of hydraulic fluid	18.2 MPa	18.2 MPa
Moment about rear-wheel axis	50.9 kNm	66.9 kNm
Maximum tilt angle of mast from vertical	--	12 degrees

**Linkage settings for test – see Table 2.1 and Figure 2.1**

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-437	-377	-300	-200	-100	0	100	200	300	355	460
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure delivered by the hydraulic system)											
at the hitch points kN	—	42.6	50.0	56.4	60.7	64.5	67.6	70.2	72.7	73.6	—
Corresponding pressure: 18.2 MPa											
at the frame kN	37.1	41.4	45.4	49.8	52.0	53.3	53.8	53.2	52.9	52.3	51.1
Corresponding pressure: 18.2 MPa											

# DRAWBAR POWER AND FUEL CONSUMPTION TEST (UNBALLASTED TRACTOR), 4 WHEEL DRIVE

Date and Location of tests: 27 February 1997  
Silsoe Research Institute  
Wrest Park  
Silsoe  
Bedford MK45 4HS

Tyre inflation pressure  
(kPa)

Type of track: Concrete

Height of drawbar above ground

380 mm

Front

131

Rear

117

Gear and Range	Power	Drawbar Pull	Speed	Engine Speed	Slip of wheels or track	Spec Fuel cons	Spec energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Eng oil	Temp	Rel Humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	Deg C	Deg C	Deg C	Deg C	%	kPa
<b>3.1 MAXIMUM POWER IN TESTED GEARS</b>													
2A	38.0	58.9	2.32	2330	15.1	448	1.87	53	86	107	10	59	102.1
3A	45.5	59.0	2.77	2328	15.4	412	2.04	50	86	107	11	58	102.1
4A	54.7	58.1	3.39	2310	13.5	384	2.18	50	86	108	11	58	102.1
5A	66.0	57.9	4.11	2276	11.4	360	2.33	48	86	106	10	58	102.1
1B	71.7	56.6	4.56	2234	9.9	334	2.51	52	86	109	10	59	102.3
6A	71.4	55.5	4.63	2070	8.8	329	2.55	52	86	108	10	58	102.3
2B	75.3	54.2	5.00	2001	8.3	294	2.85	51	85	108	10	57	102.3
3B	77.6	45.0	6.20	2004	5.4	292	2.88	45	86	109	10	57	102.1
4B	75.5	36.0	7.55	2005	4.0	302	2.78	49	86	109	7	67	102.3
5B	76.8	30.3	9.14	2003	3.6	296	2.83	50	86	110	7	68	102.3
6B	73.9	24.1	11.06	2003	2.9	309	2.72	50	86	109	7	67	102.3
1C	77.8	22.3	12.53	2005	2.7	287	2.92	48	86	108	7	68	102.3
2C	75.5	18.0	15.12	2004	2.5	297	2.82	49	86	108	7	68	102.3
<b>2 FUEL CONSUMPTION</b>													
<b>2.1 In selected gear, at maximum power at rated speed</b>													
1C	74.6	19.5	13.77	2197	2.5	307	2.73	49	86	110	8	69	102.3
<b>2.1.1 75% of pull at maximum power at rated speed</b>													
1C	59.0	14.6	14.54	2310	2.0	366	2.29	51	86	109	10	59	102.1
<b>2.1.2 50% of pull at maximum power at rated speed</b>													
1C	39.6	9.7	14.76	2332	1.5	446	1.88	51	86	109	10	59	102.1
<b>3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1</b>													
2C	59.1	14.6	14.55	1921	2.0	313	2.68	51	84	107	10	59	102.1
<b>3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2</b>													
2C	39.9	9.7	14.78	1942	1.5	370	2.27	48	84	106	10	59	102.1
<b>2.2. In selected gear nearest to 7.5 km/h, at maximum power at rated engine speed</b>													
3B	75.1	39.3	6.87	2204	4.6	312	2.69	49	86	108	10	57	102.1
<b>3.2.2.1 75% of pull at maximum power at rated speed</b>													
3B	59.6	29.4	7.30	2314	3.4	344	2.44	48	86	108	10	57	102.1
<b>2.2.2 50% of pull at maximum power at rated speed</b>													
3B	40.6	19.7	7.43	2331	2.5	417	2.01	52	86	109	10	58	102.1
<b>2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1</b>													
4B	59.8	29.4	7.31	1925	3.5	308	2.73	47	85	107	10	58	102.1
<b>2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2</b>													
4B	40.8	19.7	7.45	1942	2.5	343	2.45	49	84	105	10	58	102.1

Maximum power limited by wheelslip

## TEST RESULTS

## B. SUPPLEMENTARY TESTS

## 2. POWER LIFT TESTS

## 2.2 I. Power lift test - (To manufacturers lift rod setting)

1. Assistor ram fitted

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	220 mm	220 mm
Vertical movement	661 mm	716 mm
Maximum corrected force exerted through full range	39.4 kN	40.8 kN
Corresponding pressure of hydraulic fluid	18.2 MPa	18.2 MPa
Moment about rear-wheel axis	47.0 kNm	73.6 kNm
Maximum tilt angle of mast from vertical		6 degrees

**Linkage settings for test - see Table 2.1 and Figure 2.1**

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-353	-350	-300	-200	-100	0	100	200	260	311	363
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure delivered by the hydraulic system)											
at the hitch points kN	--	39.4	42.7	49.7	53.9	56.3	57.7	58.4	58.7	59.1	—
Corresponding pressure:						18.2 MPa					
at the frame kN	40.8	40.8	43.5	28.2	50.0	50.4	49.7	48.2	47.3	46.0	45.4
Corresponding pressure:						18.2 MPa					

2.2 II. Power lift test - (To manufacturers lift rod setting)  
2. Assistor rams fitted

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	220 mm	220 mm
Vertical movement	661 mm	716 mm
Maximum corrected force exerted through full range	47.2 kN	48.4 kN
Corresponding pressure of hydraulic fluid	18.2 MPa	18.2 MPa
Moment about rear-wheel axis	56.4 kNm	87.3 kNm
Maximum tilt angle of mast from vertical	—	6 degrees

**Linkage settings for test - see Table 2.1 and Figure 2.1**

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-353	-350	-300	-200	-100	0	100	200	260	311	363
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure delivered by the hydraulic system)											
at the hitch points kN	--	47.2	55.1	62.2	68.1	72.5	75.9	78.0	79.3	79.8	--
Corresponding pressure: 18.2 MPa											
at the frame kN	48.4	50.0	54.0	60.4	63.9	64.8	65.0	64.3	63.2	62.0	58.5
Corresponding pressure: 18.2 MPa											

### 3. DRAWBAR POWER AND FUEL CONSUMPTION TEST (UNBALLASTED TRACTOR), 2 WHEEL DRIVE

Date and Location of tests: 26 February 1997  
Silsoe Research Institute  
Wrest Park  
Silsoe  
Bedford MK45 4HS

Tyre inflation pressure  
(kPa)

Type of track: Concrete

Height of drawbar above ground	Front	Rear
510 mm	131	117

Gear and Range	Power	Drawbar Pull	Speed	Engine Speed	Slip of wheels or track	Spec Fuel cons	Spec energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Eng oil	Temp	Rel Humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	Deg C	Deg C	Deg C	Deg C	%	kPa
<b>3.1 MAXIMUM POWER IN TESTED GEARS</b>													
3A*	34.2	44.3	2.78	2334	14.9	468	1.79	52	86	106	12	64	101.3
4A*	41.0	44.7	3.30	2328	15.6	429	1.96	52	86	107	11	66	101.3
5A	49.7	43.4	4.13	2309	11.6	449	1.87	53	86	108	10	66	101.3
1B	55.5	43.2	4.62	2313	11.2	377	2.22	52	87	107	10	64	101.3
6A	59.4	43.2	4.96	2285	10.7	388	2.16	54	86	109	10	65	101.4
2B	64.6	42.0	5.54	2271	9.7	360	2.33	55	86	110	10	64	101.4
3B	73.5	41.1	6.44	2145	7.5	318	2.64	49	86	108	13	64	101.3
4B	74.2	36.2	7.38	2001	5.6	304	2.76	47	85	107	11	67	101.3
5B	76.0	30.5	8.97	2001	4.5	298	2.81	47	86	108	11	67	101.3
6B	72.9	24.1	10.90	2002	3.5	308	2.72	52	86	109	12	66	101.3
1C	77.0	22.5	12.33	2002	3.3	295	2.84	50	86	108	11	66	101.3
2C	75.4	18.2	14.89	1997	2.7	302	2.78	51	86	108	12	66	101.3
<b>3.2 FUEL CONSUMPTION</b>													
<b>3.2.1 In selected gear, at maximum power at rated speed</b>													
1C	74.2	19.6	13.63	2203	3.0	323	2.59	50	87	108	12	66	101.3
<b>3.2.1.1 75% of pull at maximum power at rated speed</b>													
1C	58.7	14.7	14.37	2310	2.3	366	2.29	51	85	109	12	66	101.3
<b>3.2.1.2 50% of pull at maximum power at rated speed</b>													
1C	39.6	9.8	14.57	2324	1.7	422	1.99	52	86	108	12	67	101.3
<b>3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1</b>													
2C	58.8	14.8	14.34	1925	2.8	324	2.59	50	85	106	12	79	102.2
<b>3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2</b>													
2C	40.1	9.9	14.52	1934	1.9	410	2.05	50	84	105	12	77	101.2
<b>3.2.2 In selected gear nearest to 7.5 km/h, at maximum power at rated engine speed</b>													
3B	73.4	39.7	6.65	2201	6.8	325	2.58	48	86	108	12	64	101.3
<b>3.2.2.1 75% of pull at maximum power at rated speed</b>													
3B	59.5	29.8	7.18	2315	4.5	356	2.36	51	87	108	13	63	101.3
<b>3.2.2.2 50% of pull at maximum power at rated speed</b>													
3B	40.6	19.9	7.35	2332	2.9	411	2.04	52	85	108	13	63	101.3
<b>3.2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2</b>													
4B	59.4	29.8	7.17	1924	4.5	311	2.69	52	85	107	12	75	101.2
<b>3.2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2</b>													
4B	40.8	20.0	7.34	1940	3.1	364	2.31	51	85	105	12	75	101.3

\* Maximum power limited by wheelslip

**REPAIRS AND ADJUSTMENTS DURING TESTS:** None

**REMARKS:** None

**Test carried out by:** S J Devonshire

**Signed:**



P C Seward

Officer in charge of tests

**Signed:**



P C Seward  
Head of Test Engineering Group

for the Director

**Date:**

31/12/97

ANNEX 1    MAIN POWER TAKE-OFF CURVES

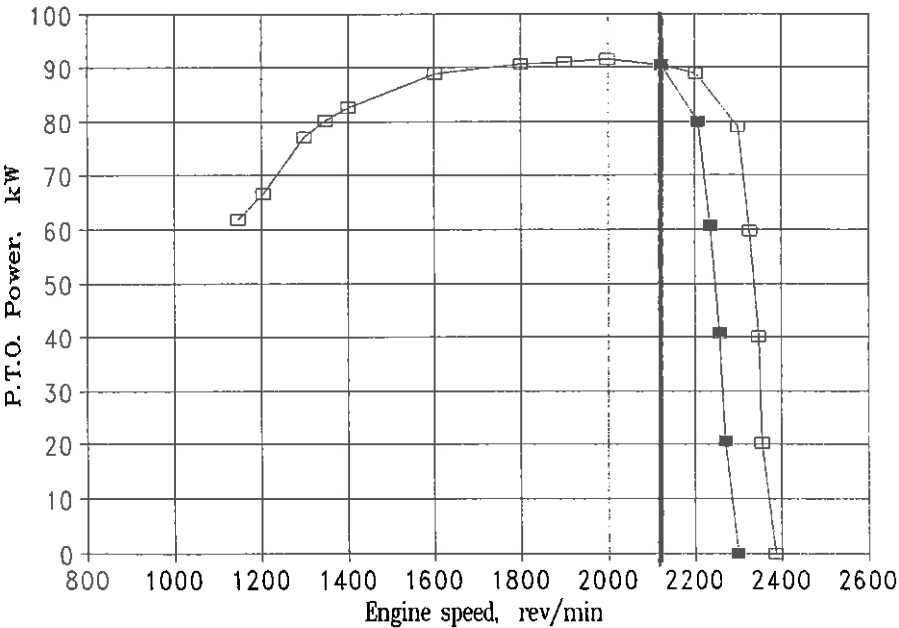
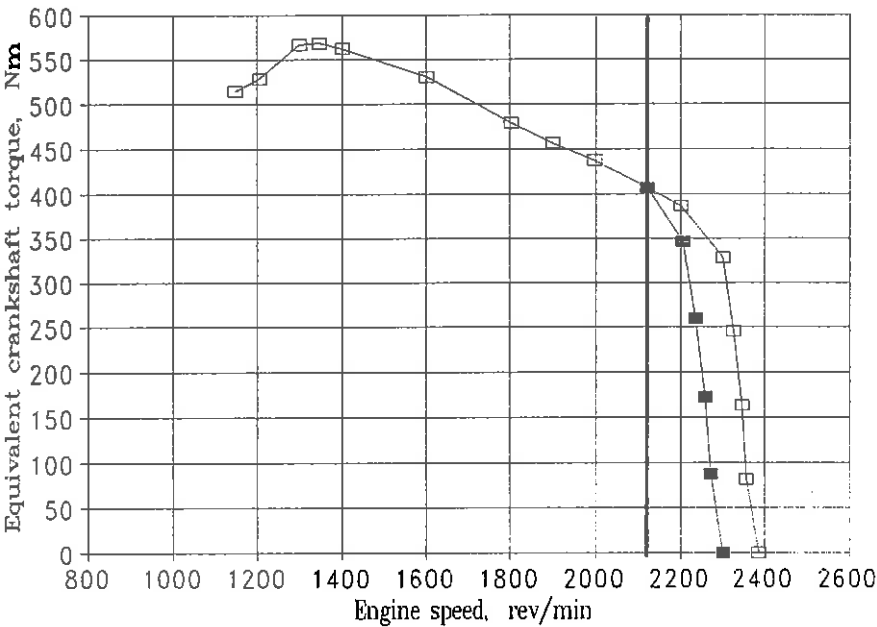
P.T.O. POWER TEST - NEW HOLLAND Ford 8360 FOUR WHEEL DRIVE (1000 rev/min)

Governor set for maximum power at rated speed  
 Governor set for maximum power at pto speed  
 Power take-off speed (1000 rev/min)

□

■

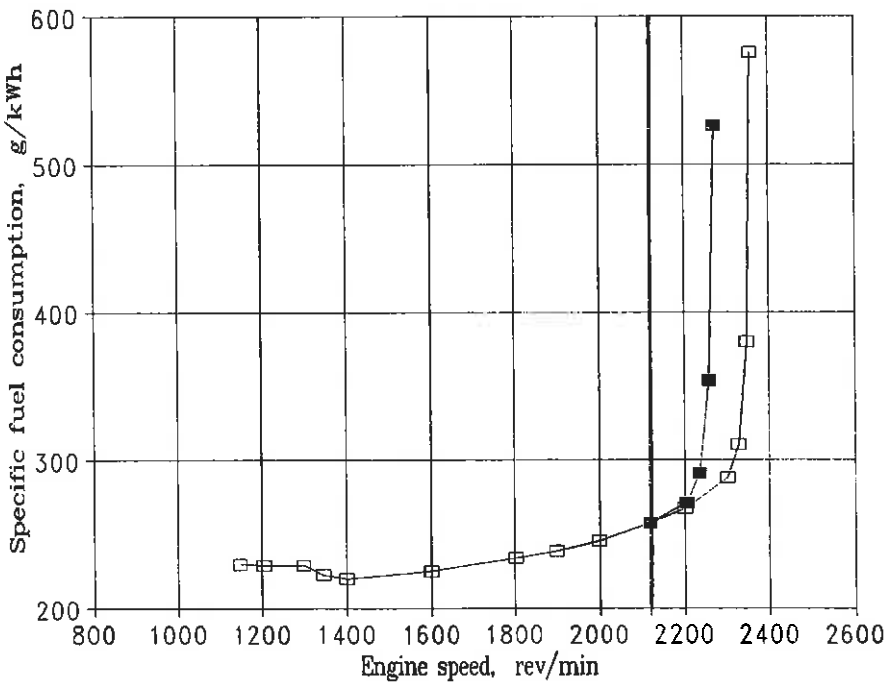
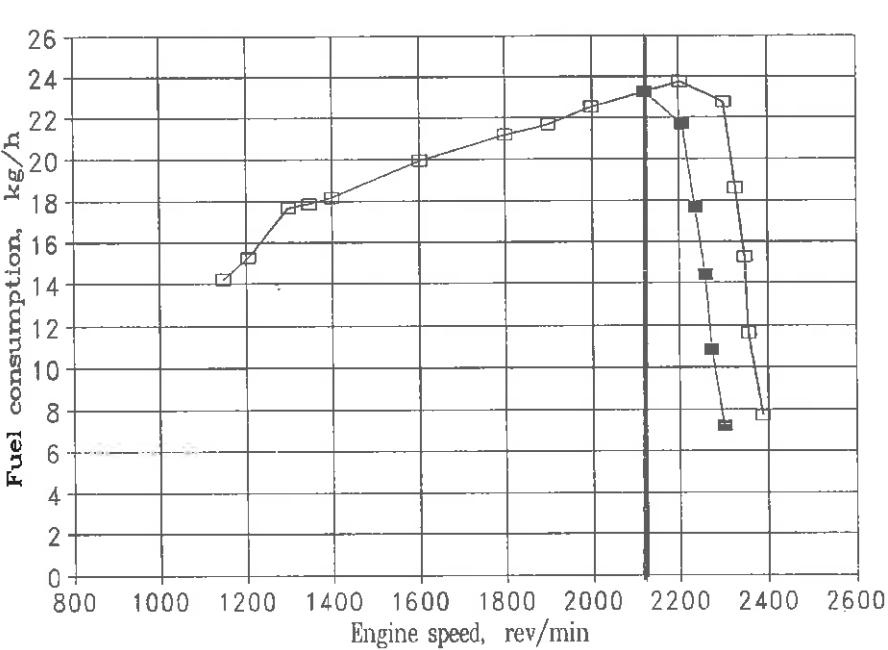
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**P.T.O. POWER TEST - NEW HOLLAND FORD 8360 FOUR WHEEL DRIVE (1000 rev/min)**

Governor set for maximum power at rated speed  
 Governor set for maximum power at pto speed  
 Power take-off speed (1000 rev/min)



**P.T.O. POWER TEST - NEW HOLLAND FORD 8360 FOUR WHEEL DRIVE (1000 rev/min)**

Governor set for maximum power at rated speed



Governor set for maximum power at pto speed

