SILSOE RESEARCH INSTITUTE
Wrest Park, Silsoe,
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Report No: R91/71307/OECD
OECD Approval No: 1342 Restricted Code
Approval Date: 20 December 1991

Test in accordance with the OECD Restricted Standard Code for the Official Testing of Agricultural Tractors

Ford New Holland 4130 (KA41) Four-Wheel Drive Tractor with 8-speed Synchromesh Transmission



Manufactured by: Ford New Holland Limited
Basildon
Essex
England

Submitted for test by: The manufacturer

Report No: 745

Date: July 1991

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Tractor manufacturer's name and address:	Ford New Holland Ltd Basildon, Essex, England
Location of tractor assembly:	Basildon, Essex, England
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer
Place of running in:	Basildon, Essex
Duration of running in:	92 hours
Location of test:	Silsoe Research Institute Wrest Park, Silsoe, England

I. SPECIFICATION OF TRACTOR

TRACTOR

Make:	Ford New Holland
Model:	4130 (KA41)
Type:	Four wheel drive
Serial No:	BC 71786
1st Serial No:	BC 24533

ENGINE

Make:	Ford New Holland
Model:	K201 CID NA
Type:	4 stroke direct injection diesel
Serial No:	K275540

Cylinders

Number/disposition:	3 vertical Inline
Bore/stroke:	111.8 mm/111.8 mm
Capacity:	3293 cm^3
Compression ratio:	16.3:1
Arrangement of valves:	Overhead
Cylinder liners:	None monobloc construction

Supercharging

Make:	None

Fuel system

Fuel feed system:	Gravity
Make, type and model of fuel filter:	Plastic strainer in tank and CAV paper element filter with sediment bowl and water trap between tank and injection pump
Capacity of fuel tank:	65.7 l
Make, type and model of injection pump:	Lucas CAV DPA-DSA 950
Serial No:	16304 JHG
Manufacturer's production setting of injection pump:	
. Flow rate:	68.9 - 73.1 mm^3 per stroke at 900 rev/min pump speed and full load
. Timing:	Delivery starts 16° before T.D.C.
Make, type and model of injectors:	CAV multihole JB 6801110 nozzle
Injection pressure:	233 - 243 Bar

Governor

Make:	CAV
Model:	None
Type:	Mechanical incorporated in fuel injection pump
Governed range of engine speed:	600 rev/min to 2400 rev/min
Rated engine speed:	2200 rev/min

Air cleaner

Pre-cleaner:	
. Make:	Ford New Holland
. Type:	Raincap
. Model:	None
. Location of air intake:	Above front bonnet
Main cleaner:	
. Make:	Locker Air Maze
. Type:	Dry paper element
. Model:	3 stage
. Location of air intake:	Under front bonnet, forward of 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 and full flow replaceable paper element
Number:	1

Cooling system

Type of coolant:	Water and antifreeze 50% solution
Type of pump:	Centrifugal impeller
Specification of fan:	Belt driven puller
Number of fan blades:	4
Fan diameter:	406 mm
Coolant capacity:	10.4 l
Type of temperature control:	Thermostat
System pressure:	48 kPa

Starting system

Make:	Lucas-MME
Model:	M127
Type:	Electrical, positive engagement, solenoid operated
Starter motor power rating:	2.8 kW
Cold starting aid:	CAV Thermostart
Safety device:	Only operable when gear levers in neutral

Electrical system

Voltage:	12 V
Generator:	
. Make:	Lucas-MME
. Model:	A 127-70
. Type:	Belt driven alternator
. Power:	70 amps at 6000 rev/min
Batteries:	Lucas lead acid
. Rating:	107 Ah at 20 hours rating

Exhaust system

Make:	Nelson Burgess
Model:	None
Type:	Vertical silencer
Location:	Above left-hand front cover
Height of outlet above ground:	2625 mm

TRANSMISSION TO WHEELS

Clutch

Make:	AP
Model:	None
Type:	Single dry plate
Number of plates:	1
Diameter of plates:	330 mm
Method of operation:	Mechanical pedal operated

Gear box

Make:	Ford New Holland
Model:	8 x 8 Synchromesh
Type:	Mechanical manual syncromesh operation, 4-speed and 2 ranges selected with two side mounted levers. Third side mounted lever selects forward or reverse for each combination
Number of gears:	8 forward, 8 reverse
Available options:	16 x 8 Dual power

Rear axle final drives

Make:	Ford New Holland
Model:	None
Type:	Crown wheel and pinion with differential and epicyclic reduction gear final drive

Differential lock:	
. Type:	Mechanical
. Method of engagement:	Mechanical pedal operated self-disengaging
<u>Front axle and final drives</u>	
Make:	Carraro
Model:	707/164
Type:	Crown wheel and pinion with differential and epicyclic reduction gear final drive
Differential lock:	
. Type:	Limited slip
. Method of engagement:	Automatic
. Method of disengagement:	Automatic

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
Forward			
1	L	238.82	2.41
2	L	161.17	3.58
3	L	105.79	5.45
4	L	72.04	8.00
1	H	67.72	8.51
2	H	45.70	12.61
3	H	30.00	19.21
4	H	20.43	28.21
Reverse			
1	L	240.05	2.40
2	L	162.00	3.56
3	L	106.34	5.42
4	L	72.41	7.96
1	H	68.07	8.47
2	H	45.94	12.55
3	H	30.15	19.12
4	H	20.53	28.08

L = Low range H = High range

(*) Calculated with a tyre dynamic radius index of 695 mm (ISO 4251/1-1984)

Number of revolutions of front wheels for one revolution of rear wheels: 1.3868

POWER TAKE-OFF

Main power take-off

Type:	Independent
Method of engagement:	Lever and hydraulically operated multi-plate clutch
Number of shafts:	1
Method of changing power take-off speeds:	None

Clutch

Make:	Ford New Holland
Model:	None
Type:	Multiplate, wet
Number of plates:	7
Diameter of plates:	133.4 mm

Power take-off proportional to engine speed

540 rev/min

Location:	Rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	6
Height above ground:	576 mm
Distance from the median plane of the tractor:	Central
Distance behind rear wheel axis:	415 mm
Pto speed at rated engine speed:	676 rev/min
Engine speed at standard power take-off speed:	1756 rev/min
Ratio of rotation speeds:	3.252:1
Power restriction and maximum torque:	None
Direction of rotation (viewed from behind tractor):	Clockwise

Optional two speed shiftable Power take-off

540 rev/min

Location:	Rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	6
Height above ground:	576 mm
Distance from the median plane of the tractor:	Central
Distance behind rear-wheel axis:	415 mm
PTO speed at rated engine speed:	676 and 818 rev/min
Engine speed at standard power take-off speed:	1451 rpm and 1756 rev/min
Ratio of rotation speeds:	2.687:1 and 3.252:1
Direction of rotation (viewed from behind tractor):	Clockwise

Optional Power take-off proportional to ground speed

540 rev/min

Travelling distance for 1 rev of the power take-off shaft:	268 mm
Number of power take-off shaft revolutions for one revolution of (rear) driving wheel:	16.32
Direction of rotation (viewed from behind tractor):	Clockwise

POWER LIFT

Make:	Sauer Sundstrand
Model:	None
Type:	Gear type, closed centre load sensing system
Type and number of cylinders:	1 located inside of transmission housing plus the option of additional 2 externally mounted, single acting; 2 fitted for test
Type of linkage lock for transport:	Hydraulic
Relief valve pressure setting:	17.6-18.3 MPa
Opening pressure of cylinder safety valve:	19.7 MPa
Lift pump type:	
Transmission between pump and engine:	Gear driven from pto shaft, independent of main and pto clutches
Type and number of filters:	1, replaceable paper element filter canister
Site of oil reservoir:	Rear axle housing
Type, number and location of tapping points:	1, from top of accessory cover and 1 from Quick Release coupling valve via closed centre load revising spool valve to ISO 5675
Maximum volume of oil available to external cylinders:	14.5 l

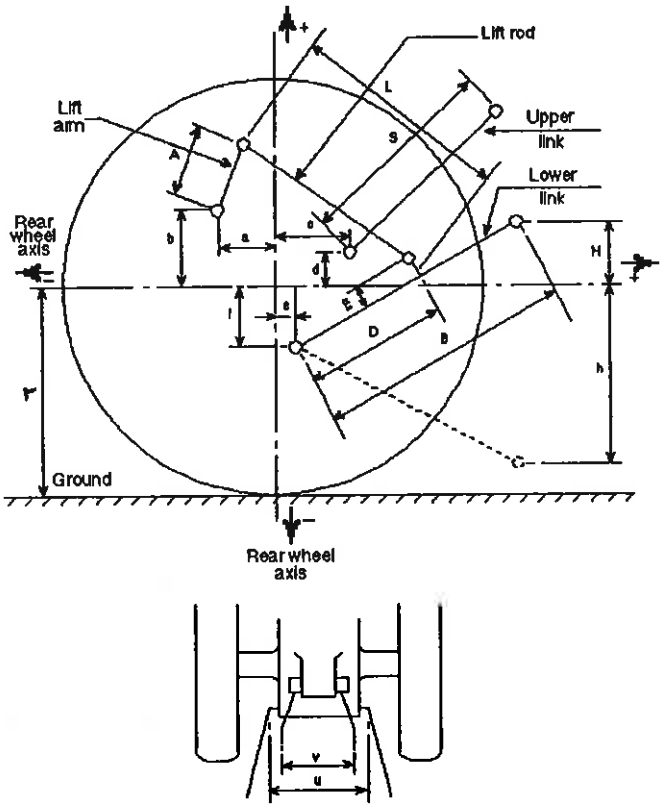
AUXILIARY HYDRAULIC SYSTEM

Make:	Sauer Sundstrand
Model:	None
Type:	Gear
Relief valve pressure setting:	17.6 - 20.0 MPa
Lift pump type:	--
Transmission between pump and engine:	Direct drive from camshaft
Type and number of filters:	1, replaceable paper element canister
Site of oil reservoir:	Rear Axle housing

Type and number of tapping points:		1, combines with main system quick release
Maximum volume of oil available to external cylinders:		14.5 l

THREE-POINT LINKAGE

Category:		2 to ISO standard 730/1-1977 (Main test)
	and	2 to ISO standard 730/1-1990 (Supplementary test)
Category adaptor:		None
Controls:		Draught or position control with top link sensing



LIFT TEST
Linkage geometry

Table 2.1

Dimensions of linkage when attached to the standard frame (ISO 730/3-1982 CAT 2)

			Dimensions or range	Setting used in main test (supplementary tests)			
				MAIN	(B1)	(B2)	(B3)
Length of lift arms:		(A)	254	254			
Length of lower links:		(B)	864	864			
Distance of lift arm pivot point from rear wheel centre line:	horizontally: vertically:	(a) (b)	203 257	203 257			
Horizontal distance between the two lower link points:		(u)	520	520			
Horizontal distance between the two lift arm end points:		(v)	546	546			
Length of upper link:		(S)	622 - 762	719	719	742	742
Distance of upper link pivot point from rear wheel centre line:	horizontally: vertically:	(c) (d)	222 or 262 191 or 153	222 191			
Distance of lower link pivot point from rear wheel centre line:	horizontally: vertically:	(e) (f)	68 203	68 203			
Distance of lower link points to lift rod pivot points on lower link centre line:	horizontally: vertically:	(D) (E)	480 on centre line	480 on centre line			
Length of lift rods:		(L)	720-774	768	743	768	743
Height of lower hitch points (*) relative to the rear wheel centre line, situated 695 mm above the ground level:							
- in low position		(h)	382 - 550	495	418	495	418
- in high position		(H)	176 - 270	163	205	163	205
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 695 mm ISO 4251/1-1984

SWINGING DRAWBAR	Drawbar as tested	Pick up hook
(Incorporated in automatic pick - up hitch with hook on opposite end selectable by reversing drawbar)		
Type:	Clevis	Hook
Height above ground, maximum:	456 mm	410 mm
minimum:	344 mm	--
Type of adjustment:	Inverting drawbar	None
Distance of hitch point from rear-wheel axis, horizontally:	637 mm - 807 mm	465 mm
Distance of hitch point form power take-off shaft ends:		
. Vertically:	120 mm - 232 mm	157 mm
. Horizontally:	222 mm - 392 mm	450 mm
Lateral adjustment (centre of clevis):		
. Right-hand:	51 mm - 280 mm	None
. Left-hand:	51 mm - 280 mm	None
Distance of pivot point from rear axles horizontally:	268 mm	--
Width of clevis:	64 mm	--
Diameter of drawbar pin hole:	27 mm	--
Maximum vertical permissible load:	1590 kg	1860 kg

TRAILER HITCH

Type: None fitted

LINKAGE DRAWBAR

Type: None fitted

FRONT TOWING HITCH

Type: None fitted

STEERING

Make:	Own make
Model:	None
Type:	Hydrostatic
Method of operation:	
. Pump:	Sauer Sundstrand
. Motor:	Danfoss OSPC-100-OR
. Ram:	Double acting balance cylinder acting on both steering arms
. Filter:	Replaceable paper element, integral with pump
Working pressure:	95 - 100 bar

BRAKES

Service brake

Make:	Girling
Model:	None
Type:	Oil-immersed multiplate discs
Method of operation:	Independent or combined pedal mechanical linkage
Trailer braking take-off:	None fitted

Parking brake

Type:	Mechanical linkage
Method of operation:	Hand lever with ratchet

WHEELS

Number: 4
- . Front: 2 steering and driving
- . Rear: 2 driving

Wheelbase: 2136 mm

Track width adjustment:

	Minimum, mm	Maximum, mm	Adjustment method
Front	1319	1926	Reversing wheels and offset lug rims
Rear	1515	2028	Reversing wheels and offset lug rims

PROTECTIVE STRUCTURE

Make: Sekura

Model: SEK 580 S90

Type: Safety cab

Manufacturer's name and address: Sekura Industries, Randers, Denmark

Protective device:
- . Rollguard: Safety cab
- . Tiltable/Not tiltable: Non tiltable

OECD approval number: CSS 0136/7

DRIVER'S SEAT

Make/Model/Type: Bostrom, Field master, Kab XH2

Type of suspension: Low frequency scissor, mechanical

Type of damping: Double acting, hydraulic

Range of adjustment:
- . Longitudinal: ± 75 mm
- . Vertical: ± 35 mm

LIGHTING

Unrestricted beam angle of headlight in plan view: 145°

	Height above ground of centre, mm	Size, mm	Distance from outside edge to median plane of tractor, mm
Headlight	955	127 dia	213
Sidelights	1450	70 x 70	737
Rear lights	1412	70 x 70	770
Axle reflectors	702	80 dia	491
Cab reflectors	1250	180 x 35	857

II. TEST CONDITIONS

Overall dimensions (overall width at 1620 measured front track)

Length mm	Width		Height at top of	
	Minimum mm	Maximum mm	Protective structure mm	Exhaust pipe mm
3688	1771	2457	2530	2625

Ground clearance (unballasted tractor) 285 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	1197	1203	--	--
Rear	2035	2102	--	--
Total	3232	3305	--	--

Tyres and track width specification

	Front	Rear
Tyres . dimensions . ply rating . type	11.2 R24 6 Goodyear	16.9 R30 6 Goodyear
Maximum load (tyre manufacturer's), kg	1045	1900
Maximum load (tractor manufacturer's), kg	1045	1900
Inflation pressure (tyre manufacturer's), Bar	1.8	1.3
Dynamic radius index	515	695
Chosen track width (manufacturer's nominal)	1620	1635

Oils and lubrication

Capacity and change interval

	Capacity l	Oil change h	Filter change h
Engine	6.6	300	300
Front axle	5.5	1200	None
Final drive (front)	1.8	1200	None
Gearbox	9.4	1200	1200
Rear axle	33.9	1200	300
Hydraulic system) Final drives (rear)) Brakes)	Integral with rear axle		
Steering	2.2	1200	1200

FUELS AND LUBRICANTS USED IN TESTS

Fuel

Type: Diesel oil with cetane index of 54.5 and kinematic viscosity of 2.9 cSt at 40°C within the specification limits of Class A2 British Standard 2869/1983.

Specific gravity: 0.8380 kg/l at 15°C

Oils	Recommended	Used during test
Engine oil		
Type:	SAE 15W/40	As recommended
Viscosity:	11.5 cSt at 100°C	
Classification:	L-2104-C	
Transmission oils		
Type:	SAE 80W	As recommended
Viscosity:	9 cSt at 100°C	
Classification:	L-2105	
Rear final drives		
Type:	SAE 80W	As recommended
Viscosity:	9 cSt at 100°C	
Classification:	L-2105	
Front differential and final drives		
Type:	SAE 80W	As recommended
Viscosity:	9 cSt at 100°C	
Classification:	L-2105	
Hydraulic brakes		
Type:	None	As recommended
Viscosity:		
Classification:		
Hydraulic fluid		
Type:	SAE 80W	As recommended
Viscosity:	9 cSt at 100°C	
Classification:	L-2105	
Steering oil		
Type:	ATF 200	As recommended
Viscosity:	7.0 cSt at 100°C	
Classification:	A.T.F. 200	
Recommended grease:	Lithium based	As recommended
Number of lubrication points:	13	

III. TEST RESULTS

A. COMPULSORY TEST RESULTS

1. MAIN POWER TAKE-OFF

Date and location of tests: 30 April 1991
Silsoe Research Institute,
Wrest Park, Silsoe, Bedford

Type of dynamometer: Water brake, Heenan & Froude

Power kW	Speed		Fuel consumption			Specific energy kWh/l
	Engine rev/min	P.T.O. rev/min	Hourly		Specific g/kWh	
			kg/h	l/h		
1.1 MAXIMUM POWER - TWO HOUR TEST						
37.7	2199	676	10.36	12.36	275	3.05
1.2 POWER AT RATED ENGINE SPEED						
37.7	2199	676	10.36	12.36	275	3.05
1.3 STANDARD POWER TAKE-OFF SPEED (540 ± 10 rev/min)						
33.9	1755	540	8.68	10.36	256	3.27
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine speed						
37.7	2199	676	10.36	12.36	275	3.05
1.4.2 85% of the torque defined in 1.4.1						
32.1	2234	687	8.98	10.71	279	3.00
1.4.3 75% of the torque defined in 1.4.2						
24.6	2262	696	7.39	8.82	300	2.79
1.4.4 50% of the torque defined in 1.4.2						
16.5	2269	698	5.86	6.99	356	2.35
1.4.5 25% of the torque defined in 1.4.2						
8.1	2283	702	4.42	5.28	545	1.54
1.4.6 Unloaded						
0	2302	708	3.30	3.94	--	--

Power kW	Speed		Fuel consumption			Specific energy kWh/1
	Engine rev/min	P.T.O. rev/min	Hourly		Specific g/kWh	
			kg/h	l/h		
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEEDS (± 10 rev/min)						
1.5.1 The torque corresponding to maximum power						
33.9	1755	540	8.68	10.36	256	3.27
1.5.2 85% of the torque obtained in 1.5.1						
29.8	1817	559	7.75	9.25	260	3.22
1.5.3 75% of the torque obtained in 1.5.2						
22.9	1862	572	6.30	7.52	275	3.05
1.5.4 50% of the torque obtained in 1.5.2						
15.7	1892	582	4.96	5.91	316	2.65
1.5.5 25% of the torque obtained in 1.5.2						
8.0	1913	588	3.58	4.28	450	1.86
1.5.6 Unloaded						
0	1951	600	2.45	2.92	--	--

No load, maximum engine speed: 2302 rev/min

Torque (equivalent crankshaft) at maximum power: 163.8 Nm

Maximum torque (equivalent crankshaft) (engine speed 1200 rev/min): 194.3 Nm

Mean atmospheric conditions:

- Temperature: 20°C
- Pressure: 1010 m bar
- Relative humidity: 42%

Maximum temperatures:

- Coolant: 88°C
- Engine oil: 105°C
- Fuel: 54°C
- Engine air intake: 27°C

2. HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 7 May 1991

2.1 Hydraulic power test

Sustained pressure with relief valve open: 17.7 MPa

Pump delivery rate at minimum pressure: 35.3 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	22.8	15.9	5.90
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	29.0	15.0	7.25

Tapping point used for test: Auxiliary service connection

Temperature of hydraulic fluid if different from 65 ± 5°C: -- °C

Opening pressure of the unloading valve: -- MPa

Closing pressure of the unloading valve: -- MPa

2.2 Power lift test

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	658 mm	799 mm
Maximum corrected force exerted through full range	17.2 kN	14.9 kN
Corresponding pressure of hydraulic fluid	15.9 MPa	15.9 MPa
Moment about rear-wheel axis	16.0 kNm	23.0 kNm
Maximum tilt angle of mast from vertical	--	11 degrees

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

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-333	292	200	100	0	50	100	200	330	366	466
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 lift system)											
at the hitch points kN	--	17.2	19.5	21.4	22.7	23.0	23.5	24.2	25.2	24.6	--
Corresponding pressure: 15.9 MPa											
at the frame kN	14.9	15.7	17.3	18.1	18.6	18.7	18.8	18.7	18.0	17.9	17.6
Corresponding pressure: 15.9 MPa											

3. DRAWBAR POWER AND FUEL CONSUMPTION TEST (UNBALLASTED TRACTOR)

Date of tests: 17 July 1991
Type of track: Concrete

	Tyre inflation pressure	
Height of drawbar above ground	Front	Rear
280 mm	83 kPa	83 kPa

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	°C	°C	°C	°C	%	kPa
3.1		MAXIMUM POWER IN TESTED GEARS											
*1L	17.7	29.8	2.14	2271	15.0	434	1.93	52	82	96	20	57	1011
*2L	26.1	29.9	3.14	2226	15.0	379	2.21	55	84	96	19	58	1011
3L	29.3	20.5	5.16	2201	7.0	355	2.36	53	85	98	18	66	1011
4L	28.2	13.1	7.73	2192	4.7	365	2.29	52	86	99	18	64	1011
1H	29.8	13.0	8.27	2201	4.6	348	2.40	54	85	100	19	55	1011
2H	27.9	8.1	12.43	2200	3.1	373	2.25	53	85	99	19	57	1011
3.2		FUEL CONSUMPTION											
3.2.1		In selected gear, at maximum power at rated speed											
1H	29.8	13.0	8.27	2201	4.6	348	2.40	54	85	100	19	55	1011
3.2.1.1		75% of pull at maximum power at rated speed											
1H	23.0	9.7	8.54	2252	3.6	379	2.21	55	84	100	19	58	1011
3.2.1.2		50% of pull at maximum power at rated speed											
1H	15.8	6.5	8.73	2279	2.7	450	1.86	54	83	100	19	59	1011
3.2.1.3		Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1											
2H	23.0	9.7	8.58	1525	3.5	334	2.51	56	86	98	19	62	1011
3.2.1.4		Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2											
2H	15.7	6.5	8.76	1542	2.5	361	2.32	56	83	96	19	59	1011
3.2.2		In selected gear nearest to 7.5 km/h, at maximum power at rated engine speed											
4L	28.2	13.1	7.73	2192	4.7	365	2.29	52	86	99	18	64	1011
3.2.2.1		75% of pull at maximum power at rated speed											
4L	21.7	9.7	8.02	2252	3.8	403	2.08	54	85	101	18	64	1011
3.2.2.2		50% of pull at maximum power at rated speed											
4L	14.7	6.5	8.20	2279	2.7	488	1.72	53	83	100	18	63	1011
3.2.2.3		Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1											
1H	21.5	9.7	8.04	2118	3.6	371	2.26	53	82	99	19	57	1011
3.2.2.4		Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2											
1H	14.5	6.4	8.22	2143	2.6	443	1.89	53	82	99	19	59	1011

* Maximum power limited by wheelslip

B. SUPPLEMENTARY POWER LIFT TESTS

1. Power lift test - To ISO 730/3-1982 but manufacturers lift rod setting

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	270 mm	270 mm
Vertical movement	623 mm	777 mm
Maximum corrected force exerted through full range	18.6 kN	16.0 kN
Corresponding pressure of hydraulic fluid	15.9 MPa	15.9 MPa
Moment about rear-wheel axis	17.3 kNm	24.7 kNm
Maximum tilt angle of mast from vertical	--	13 degrees

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

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	251	215	150	50	0	50	150	250	350	408	526
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 lift system)											
at the hitch points kN	--	18.6	20.1	21.9	22.6	23.3	24.1	24.7	25.4	24.3	--
Corresponding pressure: 15.90 MPa											
at the frame kN	16.0	16.6	17.7	18.6	18.9	19.1	19.1	18.9	18.4	18.2	17.2
Corresponding pressure: 15.90 MPa											

2. Power lift test - To ISO 730-1:1990

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	658 mm	874 mm
Maximum corrected force exerted through full range	17.2 kN	13.3 kN
Corresponding pressure of hydraulic fluid	15.9 MPa	15.9 MPa
Moment about rear-wheel axis	16.0 kNm	20.4 kNm
Maximum tilt angle of mast from vertical	--	15 degrees

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

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	368	292	200	100	0	50	150	250	350	366	504
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 lift system)											
at the hitch points kN	--	17.2	19.5	21.4	22.7	23.0	23.5	24.2	25.2	24.6	--
Corresponding pressure: 15.9 MPa											
at the frame kN	13.3	14.4	15.4	16.5	17.0	17.1	17.3	17.2	16.7	16.6	16.1
Corresponding pressure: 15.9 MPa											

3. Power lift test - To ISO 730-1:1990 but manufacturers lift rod setting

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	270 mm	270 mm
Vertical movement	623 mm	837 mm
Maximum corrected force exerted through full range	18.6 kN	14.5 kN
Corresponding pressure of hydraulic fluid	15.9 MPa	15.9 MPa
Moment about rear-wheel axis	17.3 kNm	22.4 kNm
Maximum tilt angle of mast from vertical	--	17 degrees

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

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	280	215	150	50	0	50	150	250	350	408	560
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 lift system)											
at the hitch points kN	--	18.6	20.1	21.9	22.6	23.3	24.1	24.7	25.4	24.3	--
Corresponding pressure: 15.9 MPa											
at the frame kN	14.5	15.5	16.5	17.2	17.4	17.5	17.7	17.6	17.3	17.0	16.1
Corresponding pressure: 15.9 MPa											

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

Test carried out by: E Nigro, S Devonshire

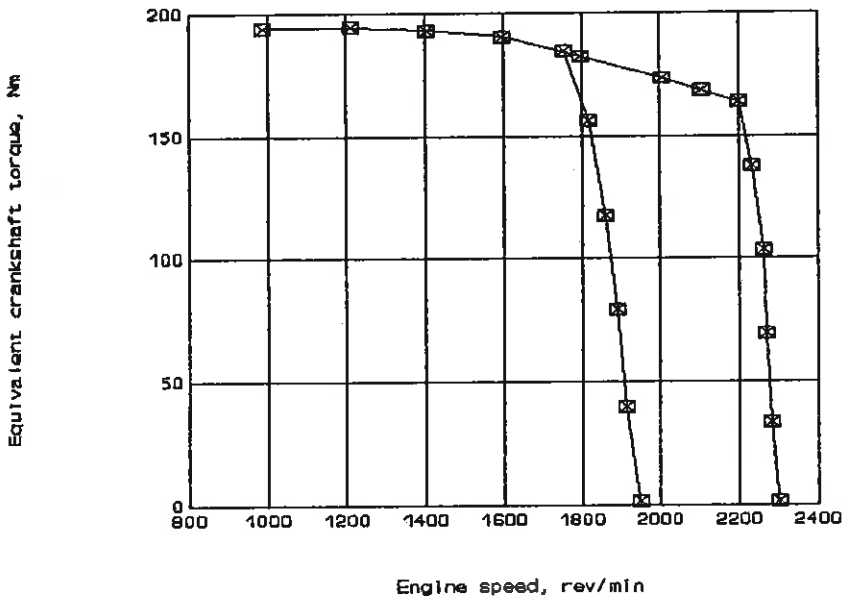
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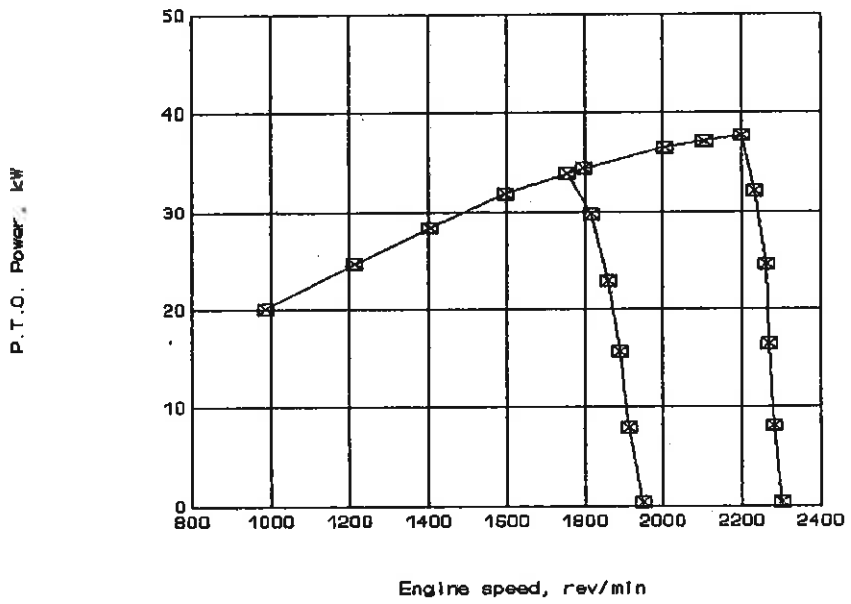
Signed: H M R Proctor — Head of Test Engineering Group

H M R Proctor — for the Director

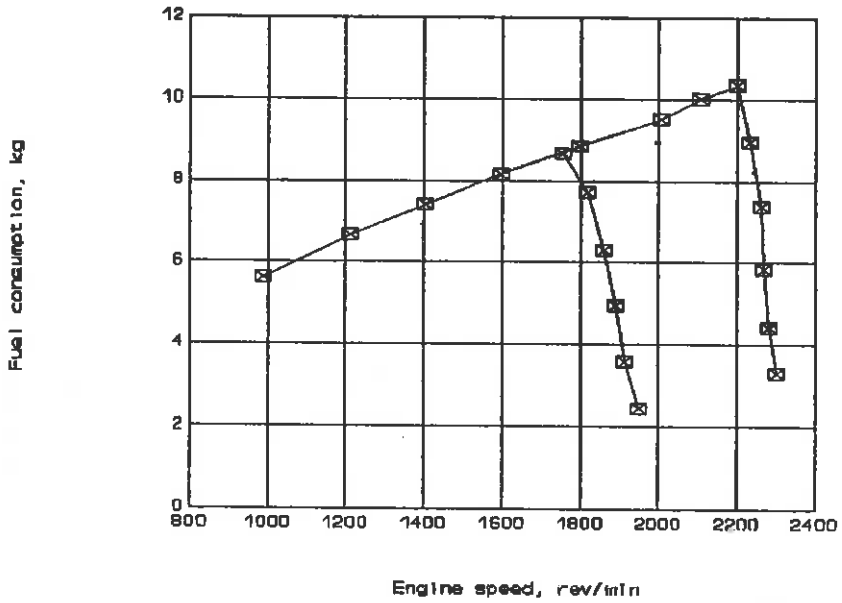
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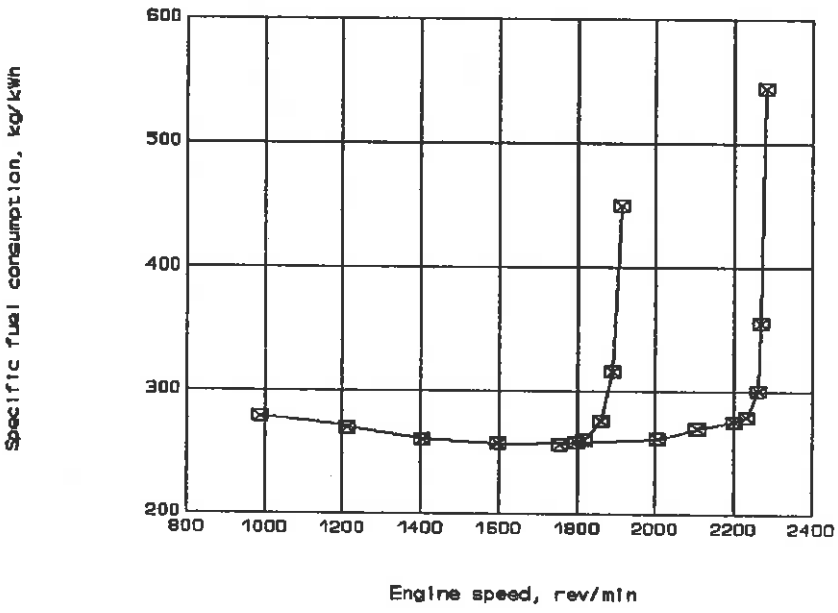
P.T.O. POWER TEST - FORD 4130 (4WD)





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