SILSOE RESEARCH INSTITUTE
Wrest Park, Silsoe,
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Report No: R93/71675/OECD
OECD Approval No: 1477 Restricted Code
Approval Date: 1 September 1993

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

Massey-Ferguson 342 Four-Wheel Drive Tractor with 8-speed Transmission



Manufactured by: Massey-Ferguson Tractors Limited
Banner Lane
Coventry
West Midlands CV4 9GF
England

Submitted for test by: The manufacturer

Report No: 763

Date: June 1993

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Tractor manufacturer's name and address:	Massey-Ferguson Tractors Limited Banner Lane, Coventry, West Midlands, CV4 9GF
Location of tractor assembly:	Coventry, England
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer with the agreement of the testing station
Place of running in:	Coventry
Duration of running in:	89 hours
Location of test:	Silsoe Research Institute Wrest Park, Silsoe, England

I. SPECIFICATION OF TRACTOR

TRACTOR

Make:	Massey-Ferguson
Model:	MF-342 with 8-speed transmission
Type:	Four wheel drive, unit construction
Serial No:	9204 B05211
1st Serial No:	9204 B05211

ENGINE

Make:	Perkins
Model:	D3152
Type:	4 stroke, direct injection, diesel, turbocharged
Serial No:	CE31160 U908249W
Ist Serial No:	CE31160 U795916N

Cylinders

Number/disposition:	3 vertical In-line
Bore/stroke:	91.5 mm/127 mm
Capacity:	2505 cm^3
Compression ratio:	16.5:1
Arrangement of valves:	Overhead
Cylinder liners:	Dry

Fuel system

Fuel feed system:	ISKRA mechanical feed pump
Make, type and model of fuel filter:	CAV paper, element filter with transparent sediment bowl
Capacity of fuel tank:	68 litres
Make, type and model of injection pump:	CAV distributor, DPA Type 651 Perkins 2643B133CW/5/2470
Serial No:	03424ALG
Manufacturer's production setting of injection pump:	10.31 to 10.95 l/hr
. Flow rate	52.5 ± 3% mm^3/stroke at 2250 rev/min engine speed at full load and 45°C pump inlet temperature
. Timing	Delivery starts 16° before T.D.C. static
. Timing advance	4° start retard, all in by 750 rpm
Make, type and model of injectors:	CAV 4-hole, D52816Z0 Code EE
Injection pressure:	193 MPa, initial setting, 177 MPa on resetting

Governor

Make:	CAV
Model:	Not applicable
Type:	Mechanical incorporated in injection pump
Governed range of engine speed:	750 ± 50 to 2430 ± 45 rpm
Rated engine speed:	2250 rev/min

Air cleaner

Pre-cleaner:	None
Main cleaner:	
. Make	Donaldson
. Type	2 stage, dry paper element
. Model	FL6-06 - 5337
. Location of air intake	Under bonnet in front of radiator
Maintenance indicator:	Warning light on instrument panel

Lubrication system

Type of feed pump:	Forced feed from eccentric rotor pump
Type of filter:	Full flow replaceable element
Number:	1

Cooling system

Type of coolant:	Water or water and antifreeze solution
Type of pump:	Centrifugal
Specification of fan:	Belt driven puller
Number of fan blades:	2
Fan diameter:	394 mm
Coolant capacity:	9.8 litres
Type of temperature control:	Thermostat
System pressure:	75 kPa

Starting system

Make:	Magneti Marelli
Model:	M127
Type:	Electrical, pre-engaged, solenoid operated
Starter motor power rating:	2.8 kW
Cold starting aid:	ISKRA induction heater 12V
Safety device:	Operable only when high/low gear lever and pto selector are in neutral position

Electrical system

Voltage:	12
Generator:	Alternator
. Make	Massey-Ferguson Powerpart
. Model	A 127-70
. Type	Belt driven
. Power	0.84 kW
Batteries:	1 M-F Powerpart, type 372 lead acid maintenance free
. Rating	420 CCA rating or equivalent 70 Ah at 20 hour rating

Exhaust system

Make:	Nelson Burgess
Model:	MF85
Type:	Oval baffle silencer
Location:	Vertical on left hand side
Height of outlet above ground:	2382 mm

TRANSMISSION TO WHEELS

Clutch

Make:	LUK
Model:	None
Type:	Dry for transmission only
Number of plates:	1
Diameter of plates:	305 mm
Method of operation:	Mechanical by pedal

Gear box

Make:	M-F
Model:	None
Type:	Mechanical, manual operation, 4 forward and 1 reverse speeds with high/low range selector. Synchromesh selection 3rd and 4th gear only in main gear box
Number of gears:	8 forward, 2 reverse
Available options:	8 speed shuttle, creep option available on 2WD only

Rear axle final drives

Make:	Own make
Model:	None
Type:	Crown wheel and pinion

Differential lock:	
. Type	Mechanical dog clutch on differential gears
. Method of engagement	Pedal operated
. Method of disengagement	Pedal operated

Front axle and final drives

Make:	GKN Comaxle
Model:	AG65
Type:	Crown wheel and pinion with differential and outboard epicyclic reduction gear final drives
Differential lock:	
. Type	None

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:* 2250 rev/min km/h
Forward			
1	L	198.026	2.74
2	L	135.018	4.02
3	L	98.852	5.49
4	L	73.646	7.37
1	H	49.506	10.97
2	H	33.754	16.08
3	H	24.713	21.97
4	H	18.411	29.49
Reverse			
R	L	145.403	3.73
R	H	36.350	14.93

L = Low range H = High range

(*) Calculated with a tyre dynamic radius index of 640 mm (ISO 4251/1-1984)
Number of revolutions of front wheels for one revolution of rear wheels: 1.445

POWER TAKE-OFF

Main power take-off

Type:	Independent
Method of engagement:	By hand lever hydraulically engaging wet multi-plate clutch
Number of shafts:	1
Method of changing power take-off speeds:	None

Clutch

Make:	Own make
Model:	None
Type:	Hydraulically actuated wet multiplate
Number of plates:	7
Diameter of plates:	128 mm

Power take-off proportional to engine speed
(Main Test)

540 rev/min

Location:	Rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	6 to ISO 500
Height above ground:	519 mm
Distance from the median plane of the tractor:	Central
Distance behind rear wheel axis:	296 mm
Pto speed at rated engine speed:	679 rev/min
Engine speed at standard power take-off speed:	1789 rev/min
Ratio of rotation speeds:	3.3125
Power restriction and maximum torque:	ISO recommendation 48 kW
Direction of rotation (viewed from behind tractor):	Clockwise

POWER LIFT

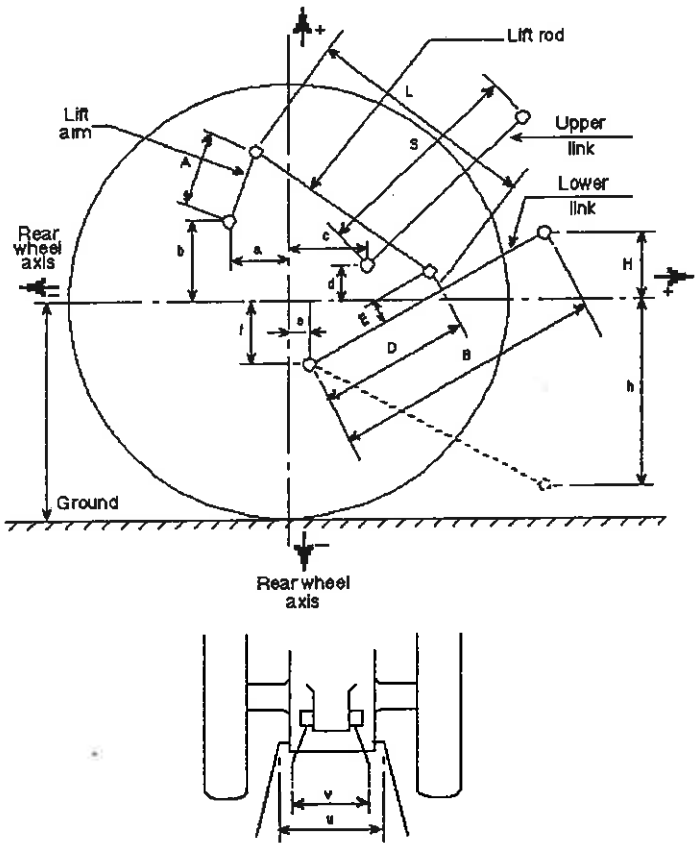
Make:	Massey-Ferguson
Model:	None
Type:	Hydraulic, with inlet suction control closed system
Type and number of cylinders:	1 single acting, internal
Type of linkage lock for transport:	Hydraulic
Relief valve pressure setting:	21.4 - 24.0 MPa
Opening pressure of cylinder safety valve:	None fitted
Lift pump type:	4 cylinder, piston
Transmission between pump and engine:	Driven from PTO shaft independent of main clutch
Type and number of filters:	Full flow with metal mesh strainer, 1
Site of oil reservoir:	Transmission housing
Type, number and location of tapping points:	One on centre housing top cover, a valve allows flow to spool valves and quick release couplings
Maximum volume of oil available to external cylinders:	20 litres

AUXILIARY HYDRAULIC SYSTEM

Make:	Eaton Hydraulics Limited
Model:	None
Type:	Gear
Relief valve pressure setting:	17.0 - 20.6 MPa
Lift pump type:	Gear
Transmission between pump and engine:	Engine mounted in tandem with steering pump
Type and number of filters:	Metal mesh strainer and Parker Hannifin replaceable canister in shared circuit with steering system
Site of oil reservoir:	Main transmission housing
Type and number of tapping points:	2 quick release couplings with own spool valve and separate return to ISO Standard. A valve allows combination with main system up to auxiliary relief valve pressure
Maximum volume of oil available to external cylinders:	20 litres

THREE-POINT LINKAGE

Category:	1 or 2 to ISO standard 730-1:1990
Category adaptor:	Interchangeable balls
Controls:	Draught or position control with top link sensing



LIFT TEST
Linkage geometry

Fig 2.1

Table 2.1

Dimensions of linkage when attached to the standard frame (ISO 730-1:1990 CAT 2)

			Dimensions or range	Setting used in Main Test
Length of lift arms:		(A)	267 mm	267 mm
Length of lower links:		(B)	959 mm	959 mm
Distance of lift arm pivot point from rear wheel centre line:	horizontally: vertically:	(a) (b)	196 mm 233 mm	196 mm 233 mm
Horizontal distance between the two lower link points:		(u)	492 mm	492 mm
Horizontal distance between the two lift arm end points:		(v)	534 mm	534 mm
Length of upper link:		(S)	681 - 831 mm	765 mm
Distance of upper link pivot point from rear wheel centre line:	horizontally: vertically:	(c) (d)	186, 200, 216 mm 205, 171, 132 mm	186 mm 205 mm
Distance of lower link pivot point from rear wheel centre line:	horizontally: vertically:	(e) (f)	32 mm forward 212 mm	32 mm 212 mm
Distance of lower link points to lift rod pivot points on lower link centre line:	horizontally: vertically:	(D) (E)	428 mm on centre line	428 mm 0 mm
Length of lift rods:		(L)	600 - 635 mm	620 mm
Height of lower hitch points (*) relative to the rear wheel centre line, situated 640 mm above the ground level:				
- in low position		(h)	430 mm 523 mm	480 mm
- in high position		(H)	190 mm 270 mm	250 mm
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 640 mm ISO 4251/1-1984

SWINGING DRAWBAR

Type:	Clevis
Height above ground, maximum:	489 mm
minimum:	288 mm
Type of adjustment:	Inverting drawbar and clevis
Distance of hitch point from rear-wheel axis, horizontally:	539 - 654 - 704 mm
Distance of hitch point from power take-off shaft ends:	
. Vertically:	30 - 231 mm
. Horizontally:	243 - 358 - 408 mm
Lateral adjustment (centre of clevis):	
. Right-hand:	200 mm drawbar in, 232 mm, 250 mm out
. Left-hand:	200 mm drawbar in, 232 mm, 250 mm out
Distance of pivot point from rear axles horizontally:	130 mm forward
Width of clevis:	65 mm
Diameter of drawbar pin hole:	26 mm
Maximum vertical permissible load:	7.6 kN

TRAILER HITCH

Type:	None fitted

LINKAGE DRAWBAR

Type:	None fitted

FRONT TOWING HITCH

Type:	Clevis in front weight frame
Vertical height to centre of clevis:	521 mm
Width of clevis:	63 mm
Diameter of pin hole:	33 mm

STEERING

Make:	Own make
Model:	None
Type:	Hydrostatic
Method of operation:	
. Pump	Eaton gear type mounted on engine in tandem with auxiliary hydraulic system pump
. Motor	Danfoss OSPC-100-ON
. Ram	1 double acting operating both track rods
. Filter	1 replaceable canister in shared circuit with auxiliary hydraulics
Working pressure:	14.0 MPa

BRAKES

Service brake

Make:	Girling
Model:	None
Type:	Oil-immersed multiplate discs, 6 per side
Method of operation:	Independent on rear wheels or combined pedal giving compensated actuation
Trailer braking take-off:	None fitted

Parking brake

Type:	Mechanical via cable
Method of operation:	Hand lever with ratchet

WHEELS

Number:	4
. Front	2 steering and driving
. Rear	2 driving
Wheelbase:	2124 mm

Track width adjustment:

	Minimum, mm	Maximum, mm	Adjustment method
Front	1321	1410	By reversing wheels
Rear	1402	1803	By reversing wheels and offset lug rims

PROTECTIVE STRUCTURE

Make:	GKN Sankey Industrial Products
Model:	Lo-Line 041 632 520 002
Type:	Safety cab
Manufacturer's name and address:	GKN Sankey Industrial Productions, Hadley Castle Works, P O Box 86, Telford TF1 4RE
Protective device:	
. Rollguard	Safety cab
. Tiltable/Not tiltable	Non tiltable
OECD approval number:	CSS 0257/9 (Massey-Ferguson 342 Narrow Axle (4WD) with seat KAB XH2/U4)

DRIVER'S SEAT

Make/Model/Type:	KAB XH2/U4
Type of suspension:	Spring
Type of damping:	Hydraulic
Range of adjustment:	
. Longitudinal	140 mm
. Vertical	60 mm

LIGHTING

Unrestricted beam angle of headlight in plan view:

	Height above ground to centre, mm	Size, mm	Distance from outside edge to median plane of tractor, mm
Headlight	1058	90 x 150	220
Sidelights	1502	30 x 110	710
Rear lights	1544	85 x 65	710
Axle reflectors	601	80 dia	488
Cab reflectors	1544	42 x 50	735

II. TEST CONDITIONS

Overall dimensions (overall width at 1410 measured front track)

Length mm	Width		Height at top of	
	Minimum mm	Maximum mm	Protective structure mm	Exhaust pipe mm
3556	1802	2203	2417	2382

Ground clearance (unballasted tractor) 220 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	1106	1124	--	--
Rear	1537	1594	--	--
Total	2643	2718	--	--

Tyres and track width specification

	Front	Rear
Tyres . dimensions . ply rating . type	 9.5 x 20 A8 Radial	 14.9 x 28 A8 Radial
Maximum load (tyre manufacturer's), kg	825	1800
Maximum load (tractor manufacturer's), kg	825* 468	1443 1800*
Inflation pressure (tyre manufacturer's), bar	2.1	1.6
Dynamic radius index, mm	445	640
Chosen track width (manufacturer's nominal), mm	1410	1520

* Maximum vehicle weight 4536 kg, therefore, maximum 1800 kg rear, limits front to 468 kg. Maximum 825 kg front, limits rear to 1443 kg.

Oils and lubrication

Capacity and change interval

	Capacity l	Oil change h	Filter change h
Engine	5.7	250	250
Front axle	3.8	1000	None
Final drive (front)	0.6 per side	1000	None
Gearbox	46	1000	250
Rear axle) Hydraulic system) Final drives (rear)) Steering)	Common with gearbox		
Brakes	--	Top-up	None

Fuels and lubricants used in tests

Fuel

Drawbar Test:	Type:	Diesel oil with cetane index of 54.5 and kinematic viscosity of 2.9 cSt at 40°C.
	Specific gravity:	0.8380 kg/l at 15°C
PTO Test:	Type:	Diesel oil with cetane index of 50 and kinematic viscosity of 3.246 cSt at 40°C.
	Specific:	0.8571 kg/l at 15°C

Oils	Recommended	Used during test
Engine oil		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Transmission oils		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Rear final drives		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Front differential and final drives		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Hydraulic brakes		
Type:	Mineral	As recommended
Viscosity:	7.2 cSt at 50°C	
Classification:	M-F CMS 1151A	
Hydraulic fluid		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Steering oil		
Type:	SAE 15W/30	As recommended
Viscosity:	54 cSt at 50°C	
Classification:	MIL-L-2104-C	
Recommended grease:	Consistency 2 lithium	As recommended
Number of lubrication points:	13	

III. TEST RESULTS

A. COMPULSORY TEST RESULTS

1. MAIN POWER TAKE-OFF (540)

Date and location of tests: 27 May 1993
Silsoe Research Institute,
Wrest Park, Silsoe, Bedford

Type of dynamometer: Eddy Current, Borghi & Saveri

Power kW	Speed		Fuel consumption			Specific energy kWh/l
	Engine rev/min	P.T.O. rev/min	Hourly kg/h	Hourly l/h	Specific g/kWh	
1.1 MAXIMUM POWER - TWO HOUR TEST						
30.8	2250	679	9.24	10.78	299	2.86
1.2 POWER AT RATED ENGINE SPEED						
30.8	2250	679	9.24	10.78	299	2.86
1.3 STANDARD POWER TAKE-OFF SPEED (540 ± 10 rev/min)						
28.3	1784	539	7.67	8.94	271	3.16
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine speed						
30.8	2250	679	9.24	10.78	299	2.86
1.4.2 85% of the torque defined in 1.4.1						
26.9	2310	697	8.08	9.42	300	2.85
1.4.3 75% of the torque defined in 1.4.2						
20.6	2362	713	6.69	7.80	324	2.64
1.4.4 50% of the torque defined in 1.4.2						
13.9	2395	723	5.43	6.33	389	2.20
1.4.5 25% of the torque defined in 1.4.2						
7.1	2421	731	4.14	4.83	588	1.46
1.4.6 Unloaded						
0	2437	736	3.26	3.80	--	--

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	
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEEDS (540 ± 10 rev/min)						
1.5.1 The torque corresponding to maximum power						
28.3	1784	539	7.67	8.94	271	3.16
1.5.2 85% of the torque obtained in 1.5.1						
26.2	1945	587	7.06	8.23	269	3.19
1.5.3 75% of the torque obtained in 1.5.2						
20.3	2006	605	5.75	6.71	283	3.02
1.5.4 50% of the torque obtained in 1.5.2						
13.8	2047	618	4.46	5.20	323	2.66
1.5.5 25% of the torque obtained in 1.5.2						
7.0	2079	628	3.34	3.89	476	1.80
1.5.6 Unloaded						
0	2102	635	2.29	2.67	--	--

No load, maximum engine speed: 2437 rev/min

Torque (equivalent crankshaft) at maximum power: 130.8 Nm

Maximum torque (equivalent crankshaft)
(engine speed 1403 rev/min): 158.4 Nm

Mean atmospheric conditions:

- Temperature 20°C
- Pressure 999 m bar
- Relative humidity 52%

Maximum temperatures:

- Coolant 80°C
- Engine oil 87°C
- Fuel 59°C
- Engine air intake 27°C

2. HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 2 June 1993

2.1 Hydraulic power test

Sustained pressure with relief valve open: 23.4 MPa

Pump delivery rate at minimum pressure: 20.0 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	16.9	21.1	5.94
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	17.1	21.0	5.98

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 - (To ISO 730-1:1990)

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	160 mm	160 mm
Vertical movement	730 mm	960 mm
Maximum corrected force exerted through full range	16.9 kN	14.8 kN
Corresponding pressure of hydraulic fluid	21.1 MPa	21.1 MPa
Moment about rear-wheel axis	15.7 kNm	22.7 kNm
Maximum tilt angle of mast from vertical	--	21 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	-318	-268	-175	-80	0	50	150	250	350	462	642
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	--	16.9	18.7	20.2	21.1	21.7	22.8	23.8	24.0	25.8	--
Corresponding pressure: 21.1 MPa											
at the frame kN	14.8	15.1	15.9	16.5	16.8	16.9	17.0	17.1	16.9	16.4	15.7
Corresponding pressure: 21.1 MPa											

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

Date and location of tests: 4 June 1993
Silsoe Research Institute
Wrest Park
Silsoe

Type of track: Concrete

	Tyre inflation pressure (kPa)	
Height of drawbar above ground	Front	Rear
260 mm	83	83

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
3.1 MAXIMUM POWER IN TESTED GEARS													
1L*	17.2	25.3	2.44	2353	14.6	420	1.99	51	76	80	22	35	101.3
2L	23.7	23.2	3.68	2240	7.8	345	2.43	53	77	73	23	33	101.4
3L	25.1	17.2	5.27	2260	4.2	361	2.32	49	77	76	18	50	101.4
4L	25.0	12.6	7.14	2249	2.7	346	2.42	53	77	77	19	41	101.4
1H	25.7	8.7	10.68	2242	1.9	359	2.34	53	77	76	19	25	101.4
2H	24.3	5.5	15.78	2242	1.3	384	2.18	53	77	74	19	29	101.4
3.2 FUEL CONSUMPTION 3.2.1 In selected gear, at maximum power at rated speed													
1H	25.7	8.7	10.68	2242	1.9	359	2.34	53	77	76	19	25	101.4
3.2.1.1 75% of pull at maximum power at rated speed													
1H	20.0	6.5	11.05	2307	1.3	370	2.26	47	75	71	20	33	101.4
3.2.1.2 50% of pull at maximum power at rated speed													
1H	13.7	4.3	11.39	2364	0.9	449	1.87	48	75	71	20	32	101.4
3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1													
2H	19.6	6.4	11.05	1572	1.3	293	2.86	51	76	71	20	35	101.4
3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2													
2H	14.4	4.6	11.37	1611	1.0	315	2.66	51	76	70	20	34	101.4
3.2.2 In selected gear nearest to 7.5 km/h, at maximum power at rated engine speed													
4L	25.0	12.6	7.14	2249	2.7	346	2.42	53	77	77	19	41	101.4
3.2.2.1 75% of pull at maximum power at rated speed													
4L	19.6	9.5	7.42	2322	2.1	373	2.25	52	77	77	19	39	101.4
3.2.2.2 50% of pull at maximum power at rated speed													
4L	13.4	6.3	7.64	2373	1.4	439	1.91	51	76	76	19	36	101.4
3.2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1													
1H	19.7	9.5	7.43	1562	2.0	286	2.93	53	75	77	20	37	101.4
3.2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2													
1H	13.6	6.4	7.64	1594	1.2	311	2.69	50	75	73	20	34	101.4

* Maximum power limited by wheelslip

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

Date and location of tests: 8 June 1993
Silsoe Research Institute
Wrest Park
Silsoe

Type of track: Concrete

Height of drawbar above ground	Tyre inflation pressure (kPa)	
	Front	Rear
460 mm	83	83

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
4.1	MAXIMUM POWER IN TESTED GEARS												
2L*	18.1	18.3	3.55	2346	15.2	389	2.15	58	77	86	28	44	100.9
3L*	23.8	18.3	4.68	2270	15.5	373	2.25	60	77	85	28	44	100.9
4L	26.2	13.5	6.98	2253	5.4	328	2.55	59	78	82	25	50	101.0
1H	26.7	9.1	10.61	2253	3.3	329	2.55	60	80	79	25	50	101.0
2H	25.1	5.7	15.76	2255	2.1	346	2.42	60	80	77	25	48	101.0
3.2	FUEL CONSUMPTION												
3.2.1	In selected gear, at maximum power at rated speed												
1H	26.7	9.1	10.61	2253	3.3	329	2.55	60	80	79	25	50	101.0
3.2.1.1	75% of pull at maximum power at rated speed												
1H	21.2	6.9	11.11	2337	2.3	359	2.33	58	77	78	25	49	101.0
3.2.1.2	50% of pull at maximum power at rated speed												
1H	14.0	4.4	11.42	2384	1.6	419	2.00	57	77	79	25	50	101.0
3.2.1.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1												
2H	20.9	6.8	11.11	1600	2.8	297	2.82	62	81	74	28	43	100.9
3.2.1.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2												
2H	13.9	4.4	11.47	1636	1.8	299	2.80	62	78	74	28	40	100.9
3.2.2	In selected gear nearest to 7.5 km/h, at maximum power at rated engine speed												
4L	26.2	13.5	6.98	2253	5.4	328	2.55	59	78	82	25	50	101.0
3.2.2.1	75% of pull at maximum power at rated speed												
4L	20.7	10.1	7.39	2344	3.7	353	2.38	59	78	83	26	46	101.0
3.2.2.2	50% of pull at maximum power at rated speed												
4L	14.2	6.7	7.63	2388	2.4	404	2.08	59	77	82	26	46	101.0
3.2.2.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1												
1H	20.8	10.2	7.37	1575	3.9	291	2.88	63	80	77	28	40	100.9
3.2.2.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2												
1H	14.1	6.7	7.58	1599	2.7	299	2.80	62	78	76	28	42	100.9

*Maximum power limited by wheelslip and bounce

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

Test carried out by: S J Devonshire

Officer in charge: P C Seward

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

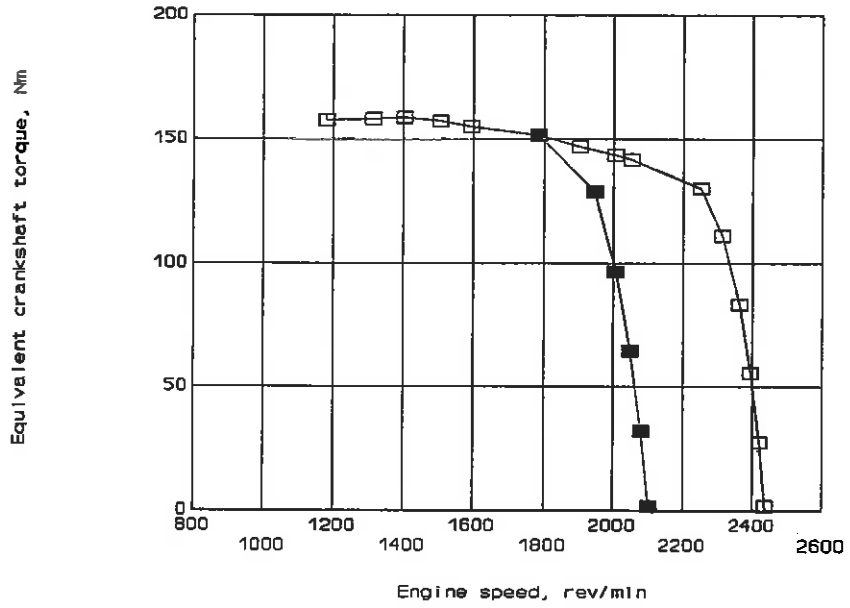
H M R Proctor — for the Director

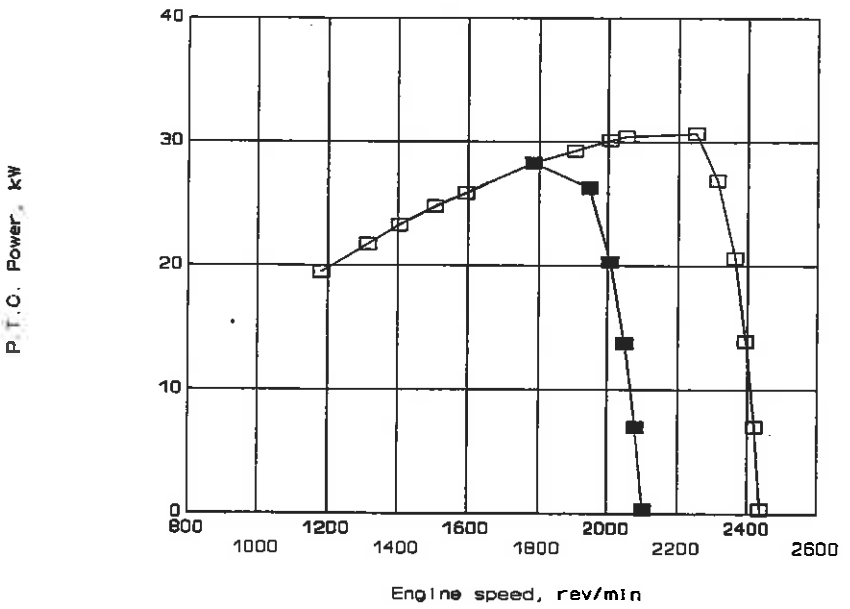
Date: 22/6/93

ANNEX I MAIN POWER TAKE OFF CURVES

P.T.O. POWER TEST - MASSEY FERGUSON 342, 4 WHEEL DRIVE

Governor set for maximum power at rated speed ⊠
Governor set for maximum power at pto speed ■

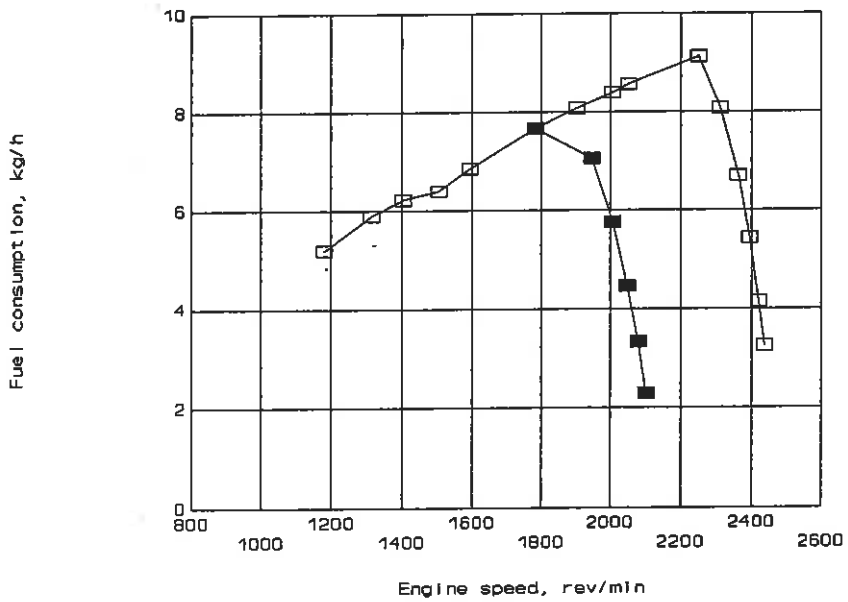


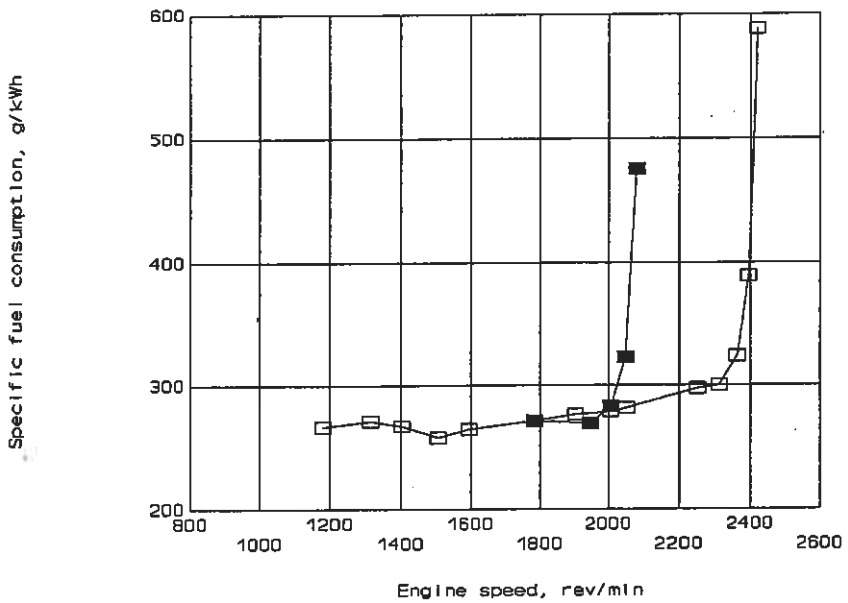


ANNEX I MAIN POWER TAKE OFF CURVES

P.T.O. POWER TEST - MASSEY FERGUSON 342, 4 WHEEL DRIVE

Governor set for maximum power at rated speed ⊠
Governor set for maximum power at pto speed ■





ANNEX I MAIN POWER TAKE OFF CURVES

P.T.O. POWER TEST - MASSEY FERGUSON 342, 4 WHEEL DRIVE

Governor set for maximum power at rated speed ⊠
Governor set for maximum power at pto speed ■

