CEMAGREF

CENTRE NATIONAL
DU MACHINISME AGRICOLE
DU GÉNIE RURAL
DES EAUX ET DES FORÊTS

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Division Tracteurs et Machines Agricoles

TEST REPORT N° 8243 — DATE 4th february 1991

OECD TEST OF AN AGRICULTURAL TRACTOR (RESTRICTED CODE) 50.12

Reference text : O.E.C.D code II



OECD Approval

N° 1295 Restricted Code

Date 23rd january 1991

Tested equipment	
Nature	: TRACTOR
Make	: MASSEY FERGUSON
Model	: B 106/2
Trade name	: 3120
Number of driving wheels	: 2
Type	: standard

Submitted for tests by	
Name	: MASSEY FERGUSON S.A.
Address	: avenue Blaise Pascal
	BP 307
	60026 BEAUVAIS CEDEX
Tel : 44.89.33.33	Telex : 140396 F

This test report may only be duplicated as a whole

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1. GENERALITIES

Tractor manufacturer's name and address : MASSEY FERGUSON S.A, BP 307 avenue Blaise Pascal 60026 BEAUVAIS

Submitted for tests by : MASSEY FERGUSON S.A.

Selected for tests by the manufacturer with the agreement of CEMAGREF

Place of running in : BEAUVAIS

Duration of running in : 20 h

Date of arrival of the equipment in CEMAGREF : 14th august 1990

2. SPECIFICATIONS

2.1 Tested tractor

Make : MASSEY FERGUSON
Model : B 106/2
Trade name : 3120
Number of driving wheels : 2
Type : standard
Serial number : R 092 048
1st serial number : R 092 048

2.2 Engine

2.2.1 Identification

Make : PERKINS
Model : 1006-6-LR
Type : 4 strokes - Direct injection diesel
Serial number : YA 31232 U 514938U

2.2.2 Cylinders

Number : 6
Disposition : vertical, in line
Bore/stroke : 100/127 mm
Capacity : 5985 cm^3
Compression ratio : 16,5/1
Arrangement of valves : Overhead
Cylinders liners : Dry

2.2.3 Supercharging

None

2.2.4 Fuel system

Fuel feed system : diaphragm fuel feed pump
Make, type and model of fuel filter : CAV 2FA S58 488130, dual element with water trap
Capacity of fuel tank : 190 l
Make, type and model of injection pump : CAV - 939 - DPA, rotative
Serial number : 01191 CHG
Manufacturer's setting of injection pump : 54-58 mm^3/cp
Injection pump timing : 22°
Make, type and model of injectors : CAV LRB 670 1418
Injection pressure : 220 bars

2.2.5 Governor

Make : CAV
Type : mechanical, incorporated into fuel injection pump
Model : DPA
Governed range of engine speed : 850 - 2310 rev/min

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2.2.6 Rated engine speed : 2200 rev/min

2.2.7 Air cleaner

Pre-cleaner : . Make : DONALDSON
. Type and model : cyclone, vertical
. Location : over bonnet

Main : . Make : DONALDSON
. Type and model : dry, ELB 08-0024
. Location : under bonnet, horizontal

Maintenance indicator : lamp on desk board

2.2.8 Lubrication system

Type of feed pump : gear
Total oil capacity including filter : 19 l
Oil change period : 400 h
Type and number of filter : 1 cartridge
Filter change period : 400 h
Recommended oil : see "fuel and lubricants used in test"

2.2.9 Cooling system

Type of coolant : water or water anti-freeze mixture
Type of pump : centrifugal
Description of fan
. Puller
. Number of fan blades : 7 (plastic)
. Fan diameter : 504 mm
Coolant capacity : 25 l
Type of temperature control : thermostatic
Surpressure system : 0,5 bar

2.2.10 Starting system

Safety device : switch operated by main clutch pedal
Make : LUCAS
Type and model : pre-engaged M 127
Power : 2,8 kW
Cold starting aid : CAV - Thermostart

2.2.11 Electrical system

Voltage : 12 V negative earth
Generator : alternator
. Make : MOTOROLA
. Type and model : 70 AMS
. Power : 840 W
Batteries
. Number : 2
. Rating : 80 Ah at 20 hours
. Cold starting capacity : 420 A for 60 s at - 18°C

2.2.12 Exhaust system

Make : LUCHAIRE
Type : perforated
Model : 86
Location : under bonnet with vertical stak pipe
Height of outlet above ground : 2774 mm

2.3 Transmission

2.3.1 Clutch (travel)

Mak : VALEO
Type : dry, single plate clutch
Number of plates : 1
Diameter of plates : 330 mm
Method of operation (for travel) : foot pedal

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2.3 Transmission (continued)

2.3.2 Gear box

Make : MASSEY FERGUSON
Type and model : basic gearbox to be manual (4 x 4 speeds) + speedshift + reverser
Arrangement : mechanically operated gear shift
Number of speeds : 32 forward and 32 reverse
Available option : creeper (64 forward and 64 reverse)

2.3.3 Rear axle and final drives

Make : MASSEY FERGUSON
Type and model : crown wheel and pinion and inboard epicyclic reduction
Differential lock :
- Type and model : mechanical hydraulically actuated
- Method of engagement : electrical switch
- Method of disengagement : when brake pedal is depressed

2.3.4 Front axle

Make : MASSEY FERGUSON
Type and model : telescopically adjustable

2.3.6 Total ratios and travelling speeds

Group	Gear	Number of engine revolutions for one revolution of driving wheels	Nominal travelling speed(*) at rated engine speed of 2200 rev/min (km/h)
AT	1	374,581	1,816
	2	314,108	2,165
	3	267,612	2,541
	4	226,997	2,996
AT (rear)	1	351,343	1,936
	2	294,623	2,308
	3	251,011	2,709
	4	212,915	3,194
AT + S	1	286,371	2,295
	2	248,525	2,737
	3	211,737	3,212
	4	179,602	3,787
AT + S (rear)	1	277,986	2,446
	2	233,108	2,917
	3	198,602	3,424
	4	168,461	4,037
BT	1	186,972	3,637
	2	156,787	4,338
	3	133,579	5,091
	4	113,306	6,002
BT (rear)	1	199,338	3,412
	2	167,157	4,069
	3	142,413	4,775
	4	120,800	5,630
BT + S	1	147,934	4,597
	2	124,052	5,482
	3	105,689	6,435
	4	89,649	7,586

A : slow - B : fast - T : Turtle - R : Rabbit - S : Speedshift

(*) Calculated with a tyre dynamic index of 820 mm (ISO 4251/1-1984)

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2.3.6 Total ratios and travelling speeds (continued)

Group	Gear	Number of engine revolutions for one revolution of driving wheels	Nominal travelling speed(*) at rated engine speed of 2200 rev/min (km/h)
BT + S (rear)	1	157,718	4,312
	2	132,256	5,142
	3	112,679	6,036
	4	95,578	7,116
AR	1	93,406	7,281
	2	78,326	8,683
	3	66,732	10,191
	4	56,604	12,810
AR (rear)	1	87,611	7,763
	2	73,467	9,257
	3	62,592	10,865
	4	53,093	12,810
AR + S	1	73,903	9,202
	2	61,972	10,974
	3	52,799	12,881
	4	44,786	15,185
AR + S (rear)	1	69,319	9,811
	2	58,128	11,700
	3	49,523	13,733
	4	42,007	16,190
BR	1	46,624	14,587
	2	39,097	17,395
	3	33,309	20,417
	4	28,254	24,071
BR (rear)	1	49,707	13,682
	2	41,682	16,316
	3	35,512	19,151
	4	30,123	22,577
BR + S	1	36,889	18,436
	2	30,934	21,986
	3	26,355	25,805
	4	22,355	30,423
BR + S (rear)	1	39,329	17,293
	2	32,979	20,622
	3	28,098	24,205
	4	23,833	28,535

A : slow - B : fast - T : Turtle - R : Rabbit - S : Speedshift

(*) Calculated with a tyre dynamic index of 820 mm (ISO 4251/1-1984)

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2.4 Main power take-off

2.4.1 General specifications

Type : rear independant power take-off (wet, hydraulic, multiplate clutch)

Engagement by lever with electrical switch located at the middle of the upper right hand side console

Number of shafts : 1

Method of changing power take-off speed : speed and spline change achieved by physically replacing the 540 rev/min shaft by the 1000 rev/min and vice-versa

2.4.2 Power take-off proportional to engine speed

540 rev/min

Location : at the rear of the tractor on vertical center plane
Diameter of power take-off shaft : 34,9 mm
Number of splines : 6 (in accordance with ISO R 900-1979)
Height above ground : 777 mm
Distance from the median plane of the tractor : 0 mm
Distance behind rear axle : 450 mm

Power take-off speed : 600 rev/min
for rated engine speed : 2200 rev/min

Engine speed : 1980 rev/min
for standard power take-off speed : 540 rev/min

Engine to power take-off ratio : 3,666
Power restriction : none
Direction of rotation (viewed facing driving end) : clockwise

1000 rev/min

Location : at the rear of the tractor on vertical center plane
Diameter of power take-off shaft : 34,9 mm
Number of splines : 21 (in accordance with ISO R 900-1979)
Height above ground : 777 mm
Distance from the median plane of the tractor : 0 mm
Distance behind rear axle : 450 mm

Power take-off speed : 1100 rev/min
for rated engine speed : 2200 rev/min

Engine speed : 2000 rev/min
for standard power take-off speed : 1000 rev/min

Engine to power take-off ratio : 2
Power restriction : none
Direction of rotation (viewed facing driving end) : clockwise

2.4.3 Power take-off proportional to ground speed :

Speed of shaft : both 540 and 1000 rev/min
Size of tyre : 18,4 - 38
Travelling distance for one revolution of power take-off shaft : 0,843 (540) - 0,460 (1000)
Number of power take-off shaft revolutions for one revolution of rear wheels : 5,6 (540) - 10,3 (1000)
Direction of rotation with forward gear engaged : clockwise

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2.5 Power lift

Make : MASSEY FERGUSON
Type : top link, electronic position, draft or mixed control, open center system
Type and number of cylinders : 2, single acting, diameter 66,67 mm
Type of linkage lock for transport : hydraulic lock
Relief valve pressure setting : 188 bars
Opening pressure of cylinder safety valve : 200 bars
Lift pump type : gear
Transmission between pump and engine : mechanical
Make and number of filters : 1 - PUROLATOR
Time between oil changes : 1200 h
Time between filter changes : 600 h
Oil capacity : 64 l
Site of oil tank : transmission housing
Type and number of tapping points : 2 - on lift cover
Maximum volume of oil available to external cylinders : 25 l
Recommended oil : see "fuel and lubricants used in test"

2.6 Three-point linkage

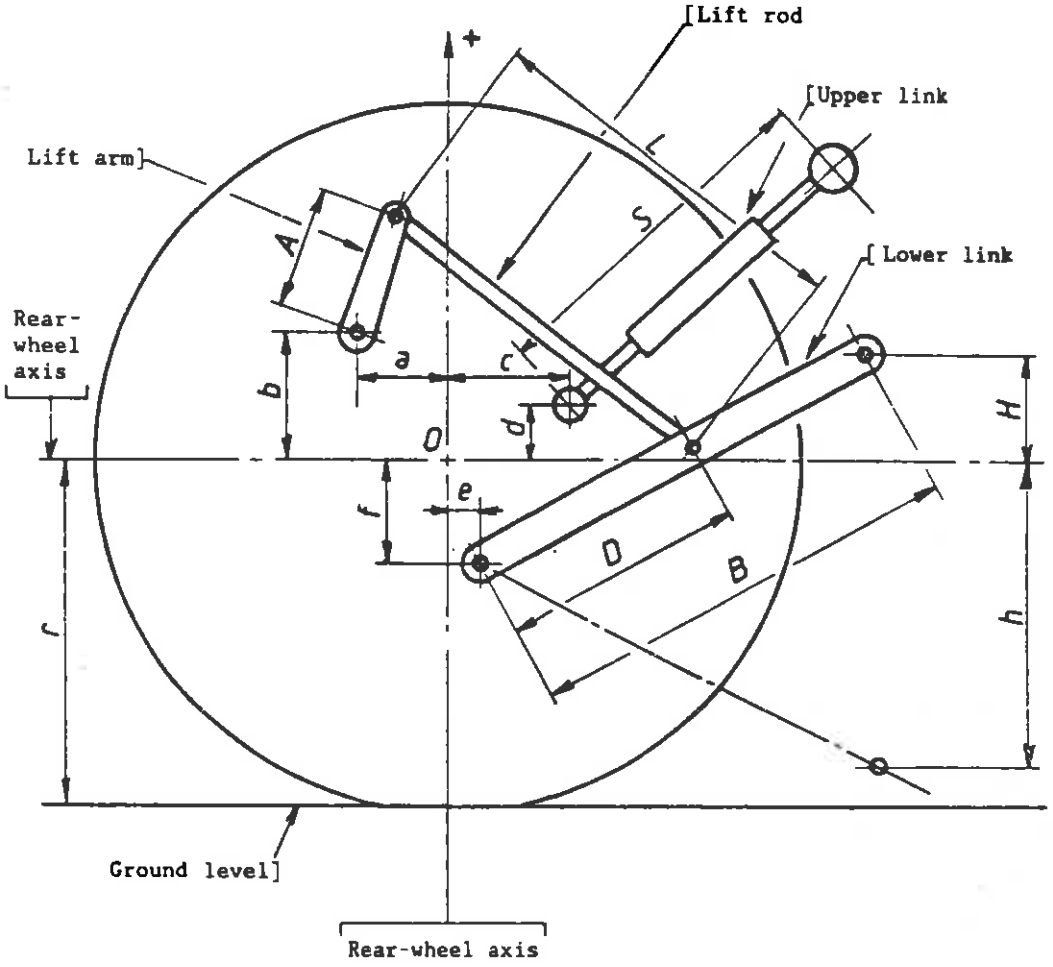
Category : II (in accordance with ISO 730/1-1977 art.II)
Category adapter : none
Controls : . position control by linear sensor measuring the rockshaft position
. draft control by pin sensors at each lower link

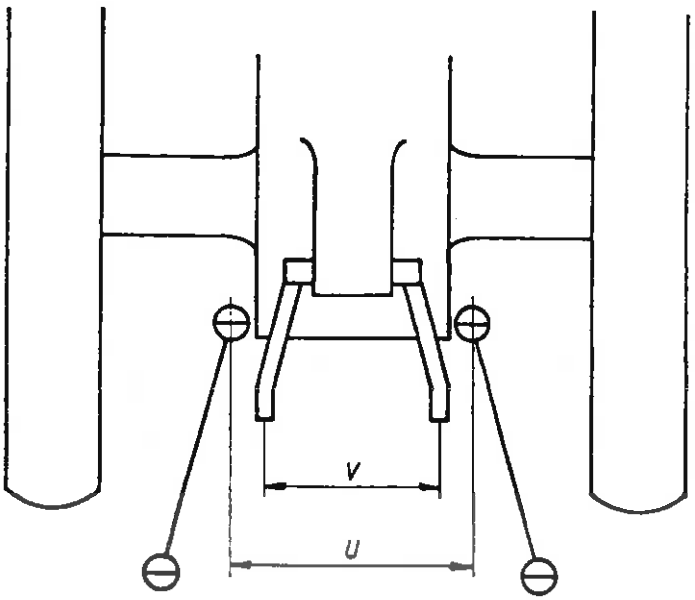
Linkage dimensions (mm)				Settings used for test
Rear tyres : dynamic index radius	18,4 - 38	(r)	820	
Front tyres : loaded radius	11,0 - 16	(r')	450	
Length of lift arms		(A)	266	
Length of lower links		(B)	940	
Distance of lift arm pivot point from rear wheels centre line	horizontally	(a)	128	
	vertically	(b)	330	
Horizontal distance between the two lower link points		(u)	580	
Horizontal distance between the two lift arm end points		(v)	604	
Length of upper link		(S)	from 590 to 750	680
Distance of upper link pivot point from rear wheels centre	horizontally	(c)	382	
	vertically	(d)	120|160|200	160
Distance of lower link pivot point from rear wheels centre	horizontally	(e)	100	
	vertically	(f)	260	
Distance of lower link points to lift rod pivot points on lower link		(D)	568	
Length of lift rods		(L)	from 680 to 745	745
Height of lower hitch points relative to the rear wheels centre				
- in low position		(h)	from 490 to 630	630
- in high position		(H)	from 12 to 118	12
Height of lower hitch points when locked in transport position			from 863 to 964	

(*) Assuming the dynamic index radius = 820 mm (ISO 4251/1-1984)

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2.7 Linkage geometry





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2.8 Swinging drawbar

Height above ground : . maximum : 538 mm
. minimum : 538 mm
Type of adjustment : none
Distance of hitch point from rear axle centre : 875 mm
Distance of hitch point from power take-off shaft end : . vertically : 234 mm
. horizontally : 400 mm
Lateral adjustment : 293 mm right and left hands
Distance of hitch point from rear axle horizontally : 106 mm
Diameter drawbar pin hole : 30 mm

2.9 Trailer hitch

Height above ground : . maximum : 945 mm
. minimum : 560 mm
Distance of hitch point from rear axle centre, horizontally : 619 mm
Distance of hitch point from power take-off shaft end :
. vertically above maximum : 223 mm
minimum : 162 mm
. horizontally : 144 mm
Diameter of pin hole : 33 mm
Maximum vertical permissible load : 17 kN

2.10 Linkage drawbar

Height above ground : . maximum : 964 mm
. minimum : 237 mm
Horizontal distance to power take-off shaft end : 565 mm
Number of holes : 9
Distance between holes : 80 mm
Hole diameter : 24 mm
Thickness and width of drawbar : 30 X 80 mm

2.11 Front towing hitch

Vertical height at centre of clevis : 851 mm
Width of clevis : 365 mm
Diameter of pin hole : 32 mm

2.12 Steering

Method of operation : hydrostatic steering system, gearbox housing mounted on gear pump
Make : DANFOSS steering unit
Model : OSPC - ON
Type : open center type with integral system relief valves, anti-shock end and anti-cavitation valves
Working pressure : 15,7 to 16,2 MPa
Oil capacity : 64 l
Oil change period : 1200 h
Filter change period : 600 h
Recommended oil : see "fuels and lubricants used in test"

2.13 Brakes

2.13.1 Service brake

Make : MASSEY FERGUSON and GIRLING
Model : oil-immersed, 652 cm² friction area on each brake
Type : single disk brake, hydraulic actuated Girling hydraulic master cylinder
MF hydraulic slave annular piston.
Method of operation : independant or dependant operation of twin pedals (which can be latched)

2.13.2 Parking brake

Make and type : SIRMAC - HUSCO
Method of operation : hand lever - cable and rod

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2.13.3 Trailer brake

Make : BOSCH
Type : hydraulically actuated valve to regulate oil flow and pressure to the trailer brakes proportional and progressive trailer/tractor braking effort is achieved by linking their services together via a sensive valve
Method of operation : automatic, as the right hand side tractor brake pedal is depressed
Maximum braking pressure : 130-150 bars
Maximum flow : 15 l/min

2.14 WHEELS

2.14.1 Number and location

- Front : 2 steering
- Rear : 2 driving

2.14.2 Wheelbase : 2696 mm

2.14.3 Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Front	1543	2333	Telescopic
Rear	1530	1950	Reversing wheels and off-set lug rims

2.17 Protective structure specifications

2.17.1 Specifications

Manufacturer's name : MASSEY FERGUSON S.A.
Trade name : 3000 B
Type of structure : . cab
. tiltable : no
CEMAGREF test : 8385
OECD approval number : CSD 1043/13

Description : the cab is made up from 3 major sub-assemblies, the plateform, side pillars and roof and the front pillars. These sub-assemblies are bolted together to form the complete cab structure

2.17.2 Driver's seat

Make : GRAMMER DS 85H/90 AR
Type of suspension : parallelogram
Type of damping : gas cylinder
Range of adjustment . longitudinal : 150 mm
. vertical : 60 mm

2.17.3 Miscellaneous

Passenger's seat : either factory fitted or as an accessory
Location : left of the operator
Number of places : 1

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2.18 Lighting

Unrestricted beam angle of head light in plan view in accordance with French regulation

	Height above ground of centre (mm)	Size (mm)	Distance from outside edge of tractor to centre at 2180 mm track width (mm)
Headlights	1208	167 x 107	1057
Sidelights	1720	120 x 80	460
Rearlights	1734	300 x 62	444
Reflectors	769	98 x 62	723

3. CONDITIONS DURING TEST

3.1 Overall dimensions

LENGTH m	WIDTH		HEIGHT	
	min m	max m	exhaust silencer m	at top of protective structure
4,323	1,899	2,399	2,774	2,774

3.2 Ground clearance : 457 mm limited by drawbar bracket

3.3 Tractor mass (kg)

(with or without driver but with tanks full and cab)

	Without driver kg	With driver kg
Front	1455	1475
Rear	2635	2690
Total	4090	4165

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3.4 Tyres and track width specifications

	Front	Rear	
Tyres :	GOOD YEAR	GOOD YEAR	
. dimensions	11.0-16	18.4-38	
. ply rating	8	8	
. type of casing	cross ply	cross ply	
. maximum load (tyre manufacturer's)	13	27	kN
. maximum load (tractor manufacturer's)	13	27	kN
. inflation pressure (tyre manufacturer's)	2,8	1,4	bar
. dynamic radius index	-	820	mm
Chosen track width :	1864	1530	mm

3.5 Recommended and used during test lubricants

Engine oil . Type . Viscosity . Classification	B.P SUPER TOU 10 W / 30 MIL L 2140- C
Transmission oils . Type . Viscosity . Classification	B.P AGROTANS 80 W / 90 GL 4
Hydraulic fluid . Type . Viscosity . Classification	B.P AGROTANS 80 W / 90 GL 4
Steering oil . Type . Viscosity . Classification	B.P AGROTANS 80 W / 90 GL 4

- Grease : B.P AGRICHARGE

. Number of lubrication points : 15

3.5 Fuel

. Type : Diesel Oil
. Gravity at 15°C : 0,851
. Viscosity : (NFT 60.100) : 4,84 cSt

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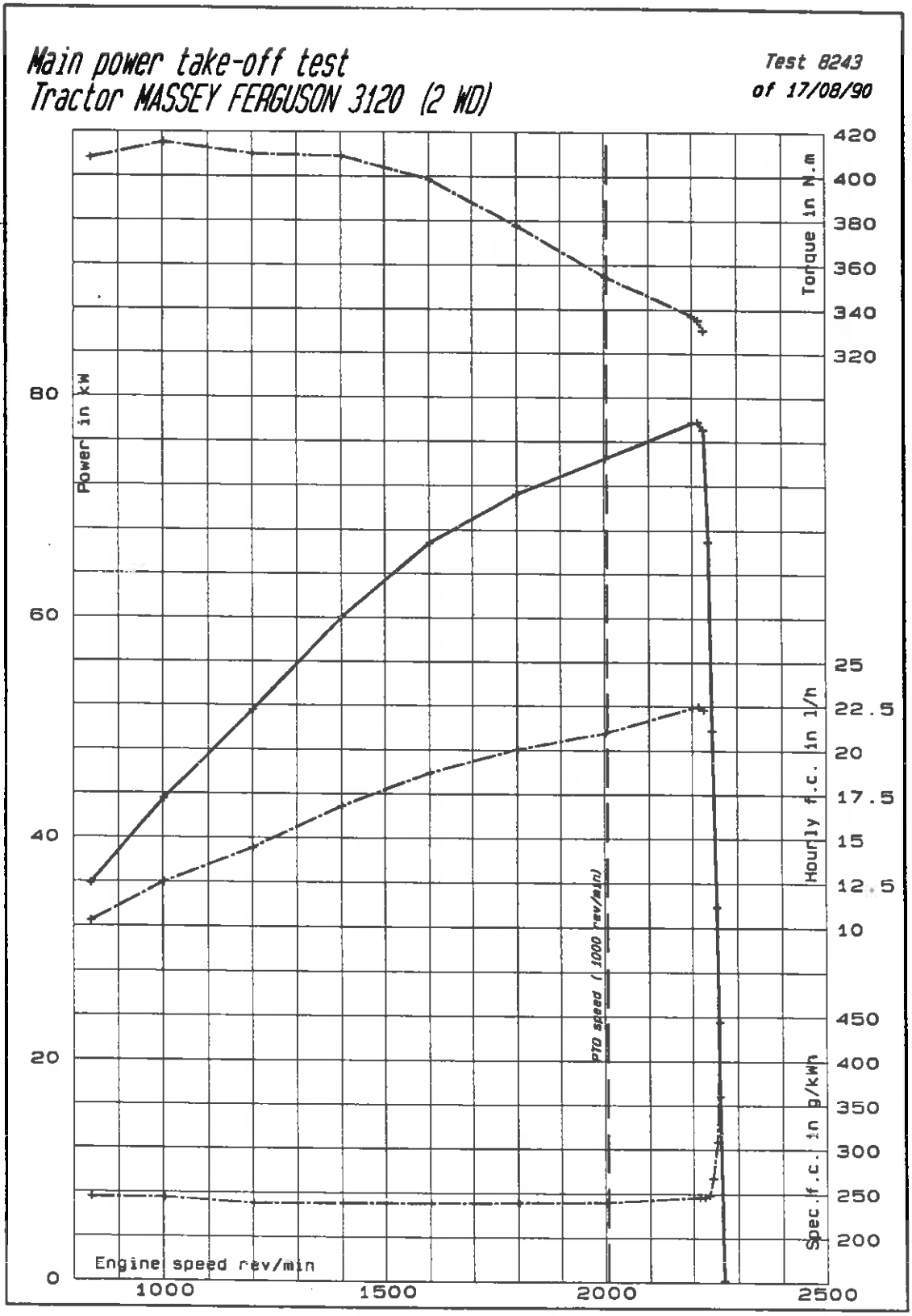
4. COMPULSORY TESTS RESULTS

4.1 Main power take-off performance

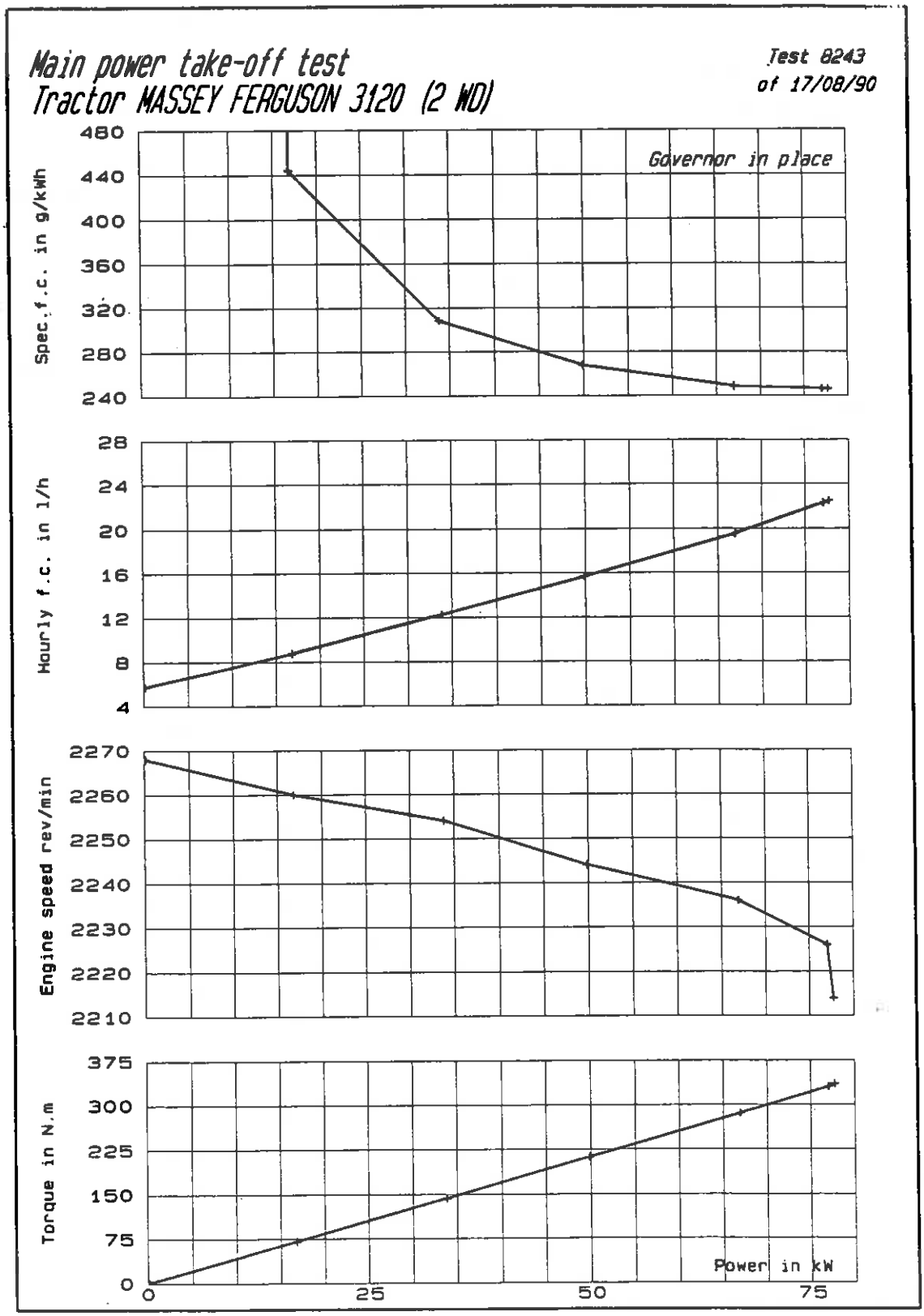
Location and date of tests : ANTONY, 17th august 1990
Type of dynamometer : SCHENCK W780

Power	Speed		Fuel consumption		Specific
	engine	power take-off	hourly	specific	energy
kW	rev/min		l/h	g/kWh	kWh/l
MAXIMUM POWER - TWO HOURS TEST					
77,7	2214	1107	22,50	246	3,46
MAXIMUM POWER AT RATED ENGINE SPEED					
77,7	2214	1107	22,50	246	3,46
PART LOADS (governor control being set for maximum power at rated engine speed) (1) Torque corresponding to 85% of the torque at maximum power at rated engine speed					
66,9	2236	1118	19,54	248	3,43
(2) 75% of the torque defined in (1)					
49,8	2244	1122	15,68	268	3,18
(3) 50% of the torque defined in (1)					
33,9	2254	1127	12,27	308	2,76
(4) 25% of the torque defined in (1)					
16,8	2260	1130	8,77	444	1,92
(5) Unloaded					
-	2268	1134	5,75	-	-
MAXIMUM POWER AT STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)					
74,4	2002	1001	20,99	240	3,55
PART LOADS (governor control being set for maximum power at standard power take-off speed) (6) Torque corresponding to 85% of the torque at maximum power at standard power take-off speed					
63,3	2006	1003	17,73	239	3,57
(7) 75% of the torque defined in (6)					
47,9	2016	1008	14,08	250	3,40
(8) 50% of the torque defined in (6)					
32,1	2028	1014	10,65	283	3,01
(9) 25% of the torque defined in (6)					
16,5	2040	1020	7,61	393	2,16
(10) Unloaded					
-	2056	1028	4,71	-	-

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Main power take-off test
Tractor MASSEY FERGUSON 3120 (2 WD)
Test 8243
of 17/08/90
Power in kW
Torque in N.m
Hourly f.c. in l/h
Spec.f.c. in g/kWh
PTO speed (1000 rev/min)
Engine speed rev/min
0
20
40
60
80
320
340
360
380
400
420
10
12.5
15
17.5
20
22.5
25
200
250
300
350
400
450
1000
1500
2000
2500

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Main power take-off test
Tractor MASSEY FERGUSON 3120 (2 WD)
Test 8243
of 17/08/90
Governor in place
Spec.f.c. in g/kWh
480
440
400
360
320
280
240
Hourly f.c. in l/h
28
24
20
16
12
8
4
Engine speed rev/min
2270
2260
2250
2240
2230
2220
2210
Torque in N.m
375
300
225
150
75
0
Power in kW
0
25
50
75

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4.1 Main power take-off performance (continued)

Other results

No load, maximum engine speed : 2268 rev/min

Equivalent crankshaft torque at maximum power at rated engine speed : 335,3 N.m

Maximum equivalent crankshaft torque : 415,2 N.m at 1002 rev/min

Mean atmospheric conditions

Temperature : 20 °C

Pressure : 1021 mbar

Relative humidity : 40 %

Maximum temperatures

Coolant : 96 °C

Engine oil : 99 °C

Fuel : 40 °C

Air intake : 25 °C

Fuel consumption at variyng load

Charge	Governor control being set for maximum power at rated engine speed		Governor control being set for maximum power at standard pto speed	
	at 85% (1)	at 50% of 85% (2)	at 85% (1)	at 50% of 85% (2)
Hourly consumption (l/h)	19,54	12,27	17,73	10,65
Standard specific consumption (g/kWh)	248	308	239	283

(1) 85% of the torque corresponding to maximum power for the position of the governor hand lever

(2) 50% of the torque defined in (1)

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4.2 Lifting force and hydraulic power

Date : 1st october 1990

4.2.1 Hydraulic power test

- Tapping point used for test : auxiliary service connection
- Sustained pressure with relief valve open : 186 bars
- Pump delivery rate at minimum pressure : 49,9 l/min

	Flow rate l/min	Pressure bars	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 percent of the actual relief valve pressure setting and corresponding hydraulic power	46,8	168	13,1
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	46,8	170	13,3

4.2.2 Power lift test

Hydraulic fluid : see "fuel and lubricants used in tests"

		at the hitch point	on the frame
Height of lower hitch point above ground in low position	mm	200	161
Vertical movement	mm	642	782
Maximum force exerted through full range	kN	35,7	28,6
Corresponding pressure of hydraulic fluid	bar	168	168
Moment about rear axle	kN.m	37,1	47,2
Maximum tilt angle of mast over range of lift	degree	/	10°

4.2.2 Power lift test

Lifting height (1)	mm	-399	-360	-250	-100	0	+100	+240	+282	+393
Lifting force (2)	at the hitch point kN	-	35,7	38,6	41,6	42,8	43,5	43,4	38,5	-
	at the frame kN	29,5	30,2	31,7	32,4	32,3	31,7	30,4	29,9	28,6

Corresponding pressure : 168 bars

(1) Lifting height relative to the horizontal plane including the lower link pivot points
(2) The values of force measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting or to maximum power delivered by the hydraulic system, whichever is lower.

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4.3 Drawbar performance (unballasted tractor)

Date and location of test : 12th september 1990, Antony

Type of track : Tarmacadam

Height of drawbar above ground : 0,94 m

Tyres	Front	Rear
. Size :	11.0 - 16	18.4 - 38
. Inflation pressure (bar) :	2,2	1,1

Atmospheric conditions :

. Temperature : 20°C
. Pressure : 1022 mbar
. Relative humidity : 52 %

Gear ratio	Travelling speed	Drawbar pull	Power	Engine speed	Wheelslip	Specific consumption	Specific energy	Temperatures		
	km/h	kN	kW	rev/min	%	g/kWh	kW/l	(1) °C	(2) °C	(3) °C
MAXIMUM POWER IN TESTED GEAR										
1 A T	1,63	32,8	14,8	2256	15	545	1,55	33	81	81
2 A T	1,95	32,2	17,5	2252	15	493	1,72	35	82	82
1 A T + S	2,10	31,2	18,2	2251	15	494	1,72	35	81	80
3 A T	2,27	32,0	20,2	2251	15	454	1,87	36	82	81
2 A T + S	2,47	31,3	21,4	2256	15	460	1,84	35	81	82
4 A T	2,68	31,8	23,7	2245	15	435	1,94	35	81	76
3 A T + S	2,86	31,7	25,2	2241	15	421	2,01	40	80	78
1 B T	3,23	31,7	28,5	2240	15	390	2,17	35	81	80
4 A T + S	3,36	32,0	29,8	2237	15	391	2,16	36	82	82
2 B T	3,88	31,8	34,3	2235	15	366	2,31	36	82	83
1 B T + S	4,09	31,9	36,2	2232	15	366	2,31	37	83	83
3 B T	4,56	31,6	40,0	2238	15	351	2,40	35	83	83
2 B T + S	4,86	31,9	43,0	2236	15	352	2,40	38	84	83
4 B T	5,39	30,8	46,2	2234	14	337	2,51	41	83	82
3 B T + S	5,74	31,6	50,5	2221	14	330	2,56	40	84	82
1 A R	6,45	31,2	56,0	2217	15	326	2,59	37	84	83
4 B T + S	6,66	31,0	57,5	2214	15	331	2,56	38	83	85
2 A R	7,94	28,4	62,6	2201	11	314	2,69	39	81	81
1 A R + S	8,56	26,7	63,5	2195	10	294	2,75	38	85	83
3 A R	9,58	24,6	65,4	2190	8	298	2,84	34	86	83
2 A R + S	10,43	22,6	65,5	2195	8	296	2,87	34	86	84
4 A R	11,52	21,0	67,1	2199	7	289	2,93	32	82	85
3 A R + S	12,38	19,3	66,5	2179	6	291	2,91	32	83	85
1 B R	14,12	17,0	66,6	2168	5	290	2,92	34	83	81
4 A R + S	14,80	16,6	68,3	2174	4	281	3,02	32	86	86
2 B R	17,01	14,1	66,8	2160	3	285	2,97	33	85	85

(1) Fuel temperature - (2) Coolant temperature - (3) Engine oil temperature

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4.3 Drawbar performance (unballasted tractor) (continued)

Gear ratio	Travelling speed km/h	Drawbar pull kN	Power kW	Engine speed rev/min	Wheelslip %	Specific consumption g/kWh	Specific energy kW/l	Temperatures (1) °C	(2) °C	(3) °C
TRANSMISSION AND FUEL CONSUMPTION CHARACTERISTICS (1) Maximum drawbar power in tested gear										
4 A R + S	14,80	16,6	68,3	2174	4	281	3,02	32	86	86
(2) 75% of pull at maximum power										
4 A R + S	15,38	12,4	53,0	2233	3	292	2,90	32	86	86
(3) 50% of pull at maximum power										
4 A R + S	12,72	8,4	36,6	2239	1	325	2,60	32	85	83
(4) Higher gear same pull as in (2) reduced engine speed										
2 B R	15,35	12,4	52,7	1937	3	278	3,04	33	85	85
(5) Higher gear as in (3) reduced engine speed										
2 B R	15,73	8,4	36,7	1955	1	300	2,82	33	85	84
(6) In selected gear nearest to 7,5 km/h										
4 B T + S	6,66	31,0	57,4	2214	15	331	2,56	38	83	85
(7) 75 % of pull at maximum power at rated engine speed										
4 B T + S	7,22	23,3	46,8	2225	9	324	2,61	38	83	85
(8) 50 % of pull at maximum power at rated engine speed										
4 B T + S	7,58	15,6	32,9	2236	5	357	2,37	38	82	82
(9) next higher gear at reduced engine speed; same pull and travelling speed as in (7)										
2 A R	7,20	23,2	46,4	1935	9	295	2,87	39	81	81
(10) next higher gear at reduced engine speed; same pull and travelling speed as in (8)										
2 A R	7,56	15,1	31,7	1950	5	319	2,65	39	81	81

(1) Fuel temperature - (2) Coolant temperature - (3) Engine oil temperature

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5. OPTIONAL TESTS RESULTS

5.2 Measurement of external noise level

Date of test : 19th october 1990
Type of sound level meter : BRUEL & KJAER 2209
Type of track : Tarmacadam
Gear : 4 B R + S
Travelling speed before acceleration : 24,3 km/h
Sound level : 87 dB(A)

6. REPAIRS AND ADJUSTMENTS DURING TESTS

none

Le Technicien chargé des essais	L'Ingénieur responsable des essais	Le Chef de la Division Tracteurs Travail du Sol
N.HOCQUEL	E.HUGO	J.F.GOUPILLON

- This test report was approved for publication by the requester of the test -