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° 8914

DATE 22th May 1992

OECD TEST OF AN AGRICULTURAL TRACTOR (RESTRICTED CODE) 50.12

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



OECD Approval

N° 1364 Restricted Code

Date 2nd April 1992

Tested equipment

Nature	: TRACTOR
Make	: MASSEY FERGUSON
Model	: B 610/2
Trade name	: 3670-2 (PS/4)
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

Phone : 44.89.33.33 Telex : 140396 F

This test report may only be duplicated as a whole

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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 : 10th october 1991

SPECIFICATIONS

2.1 Tested tractor

Make : MASSEY FERGUSON
Model : B 610/2
Trade name : 3670-2 (PS/4)
Number of driving wheels : 2
Type : standard
Serial number : S 176 128
1st serial number : S 176 128

2.2 Engine

2.2.1 Identification

Make : VALMET
Model : 620 DS
Type : 4 strokes - Direct injection diesel turbocharged
Serial number : A 1557

2.2.2 Cylinders

Number : 6
Disposition : vertical, in line
Bore/stroke : 108/120 mm
Capacity : 6590 cm^3
Compression ratio : 16,5/1
Arrangement of valves : overhead in line, 1/1 per cylinder
Cylinders liners : wet

2.2.3 Supercharging

Make : SCHWITZER
Model : turbo charger
Type : S2B, 7621 DAE/1.009
Supercharging pressure : 1,3 bar

2.2.4 Fuel system

Fuel feed system : piston fuel feed pump
Make, type and model of fuel filter : CAV 2 FASL 5863 B 045
Capacity of fuel tank : 260 l (315 l with auxiliary fuel tank)
Make, type and model of injection pump : BOSCH PES 6 A 95 D 320 RS 2806
Serial number : 06224039
Manufacturer's setting of injection pump
at rated engine speed and full load : 94-96 mm^3/stroke
Injection pump timing : 22±0,5° before TDC
Make, type and model of injectors : STANADYNE - HNS 781736 or NOZZLE - NBS 770620
Injection pressure : 230 bars

2.2.5 Governor

Make : BOSCH
Type : RVS, 500-1100 AOC 21782 R
Model : mechanical, incorporated into fuel injection pump
Governed range of engine speed : 1000 - 2370 rev/min

2.2.6 Rated engine speed : 2200 rev/min

2.2.7 Air cleaner

Pre-cleaner : . Make : DONALDSON
. Type and model : cyclone incorporated into main
. Location : under bonnet
. Location of air intake : in front of engine

Main : . Make : DONALDSON
. Type and model : dry, FLB12-0297
. Location : under bonnet

Maintenance indicator : lamp on desk board

2.2.8 Lubrication system

Type of feed pump : gear
Total oil capacity including filter : 21,2 l
Oil change period : 250 h
Type and number of filter : 1 cartridge
Filter change period : 250 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
. Belt driven (visco-static)
. Number of fan blades : 9
. Fan diameter : 560 mm
Coolant capacity : 29,7 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 : MAGNETI MARELLI
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 : VALEO
. Type and model : alternator 70 A
. Power : 840 W
Batteries
. Number : 2 (FULMEN 465 temperate climate - 505 cold climate)
. Cold starting capacity : 420 A for 60 s at -18°C (465)
550 A for 60 s at -18°C (505)

2.2.12 Exhaust system

Make : LUCHAIRE
Type : perforated
Model : 111
Location : under bonnet with vertical stack pipe
Height of outlet above ground : 2905 mm

2.3 Transmission

2.3.1 Clutch (travel)

Mak : VALEO
Type : dry, single plate clutch, pushed type
Number of plates : 1
Diameter of plates : 350 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 : mechanically operated gear shift, speed shift
Arrangement : 4 gears with four positions speed shift,
2 ranges and one reverse groupe
Number of speeds : 32 forward and 32 reverse gears
Available option : néant/none

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 : own
Type and model : telescopic

2.3.6 Total ratios and travelling speeds

Range	Gear	Overall gear ratios	Rated forward speed km/h (*)
T forward	1 A	300,734	2,538
	1 B	256,946	2,971
	1 C	217,681	3,507
	1 D	185,980	4,105
	2 A	198,158	3,852
	2 B	169,306	4,509
	2 C	143,433	5,322
	2 D	122,545	6,229
	3 A	138,711	5,503
	3 B	118,514	6,441
	3 C	100,403	7,603
	3 D	85,782	8,899
	4 A	101,910	7,491
	4 B	87,071	8,767
	4 C	73,766	10,348
	4 D	63,023	12,112
T reverse	1 A	306,999	2,487
	1 B	262,299	2,910
	1 C	222,216	3,435
	1 D	189,855	4,021
	2 A	202,286	3,774
	2 B	172,833	4,417
	2 C	146,422	5,213
	2 D	125,098	6,102

T : Turtle, A B C D : quadrupler positions

(*) Calculated for the rated engine speed 2200 rpm and dynamic index ratio of 20.8 R42 tyres : 920 mm

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2.3.6 Total ratios and travelling speeds

Gamme Range	Rapport de vitesse Gear	Démultiplication totale Overall gear ratios	Vitesse nominale d'avancement Rated forward speed km/h (*)
T reverse	3 A	141,600	5,391
	3 B	120,983	6,310
	3 C	102,495	7,448
	3 D	87,569	8,717
	4 A	104,033	7,338
	4 B	88,885	8,588
	4 C	75,303	10,137
	4 D	64,336	11,865
L avant forward	1 A	91,294	8,362
	1 B	78,002	9,787
	1 C	66,082	11,552
	1 D	56,458	13,521
	2 A	60,155	12,690
	2 B	51,396	14,852
	2 C	43,542	17,532
	2 D	37,201	20,520
	3 A	42,109	18,128
	3 B	35,977	21,218
	3 C	30,480	25,045
	3 D	26,041	29,314
	4 A	30,937	24,675
	4 B	26,432	28,880
	4 C	22,393	/
	4 D	19,132	/
L reverse	1 A	93,196	8,191
	1 B	79,627	9,587
	1 C	67,459	11,316
	1 D	57,634	13,245
	2 A	61,408	12,431
	2 B	52,467	14,549
	2 C	44,449	17,174
	2 D	37,976	20,101
	3 A	42,986	17,758
	3 B	36,727	20,786
	3 C	31,115	24,534
	3 D	26,583	28,716
	4 A	31,581	24,171
	4 B	26,983	28,290
	4 C	22,860	/
	4 D	19,531	/

L : rabbit, A B C D : quadrupler positions

(*) Calculated for the rated engine speed 2200 rpm and dynamic index ratio of 20.8 R42 tyres : 920 mm

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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 500-1979)
Height above ground : 767 mm with types 20.8-42
Distance from the median plane of the tractor : 0 mm
Distance behind rear axle : 550 mm

Power take-off speed : 596 rev/min
for rated engine speed : 2200 rev/min

Engine speed : 1993 rev/min
for standard power take-off speed : 540 rev/min

Engine to power take-off ratio : 3,69
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 500-1979)
Height above ground : 767 mm with types 20.8-42
Distance from the median plane of the tractor : 0 mm
Distance behind rear axle : 499 mm

Power take-off speed : 1053 rev/min
for rated engine speed : 2200 rev/min

Engine speed : 2090 rev/min
for standard power take-off speed : 1000 rev/min

Engine to power take-off ratio : 2,09
Power restriction : none
Direction of rotation (viewed facing driving end) : clockwise

2.4.3 Power take-off proportional to ground speed :

None

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2.5 Power lift

Make : MASSEY FERGUSON
Type : top link, electronic position, draft or mixed control, open centre system
Type and number of cylinders : 2, single acting, diameter 89 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 : 88 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 : 34 l
Recommended oil : see "fuel and lubricants used in test"

2.6 Three-point linkage

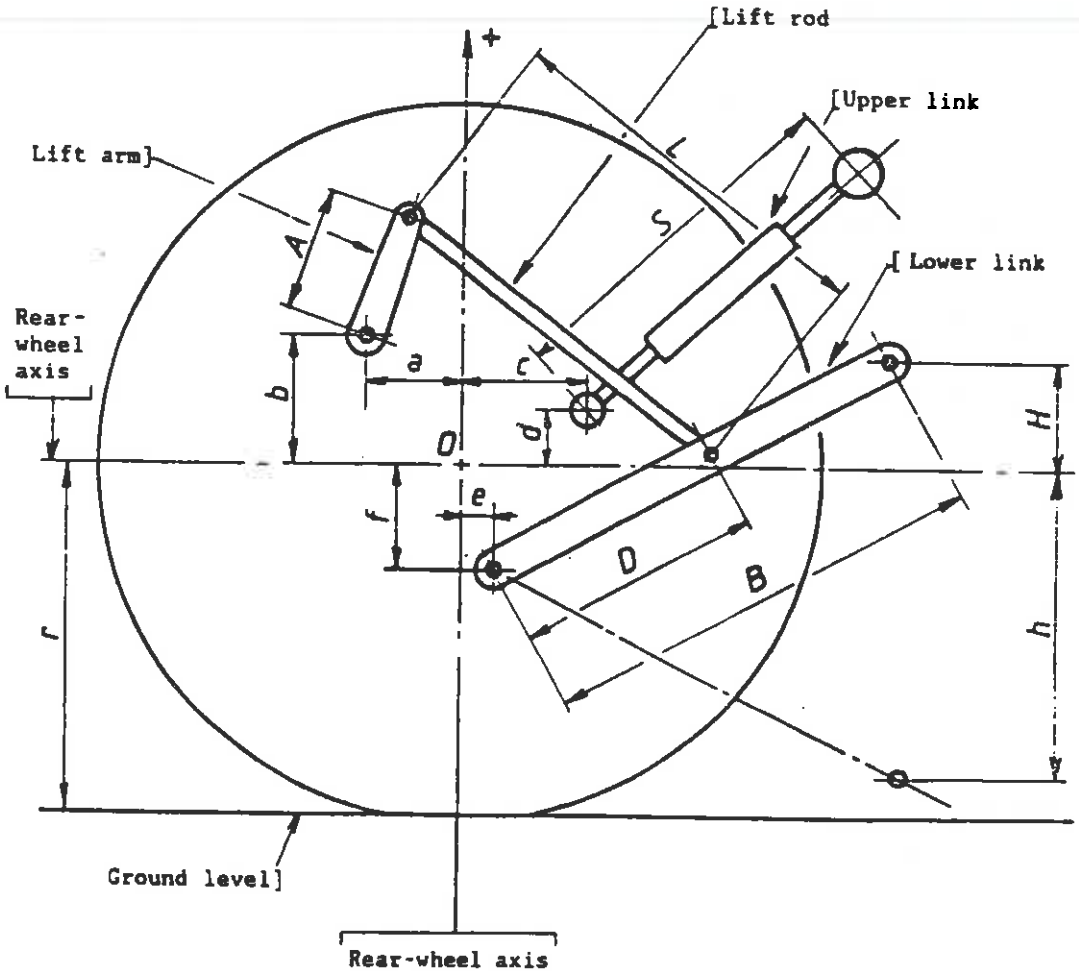
Category : II - III (in accordance with ISO 730/1-1977 art.II)
Category adapter : by changing the rockshafts
Controls : . position control by linear sensor measuring the rockshaft position
. draft control by pin sensors at each lower link

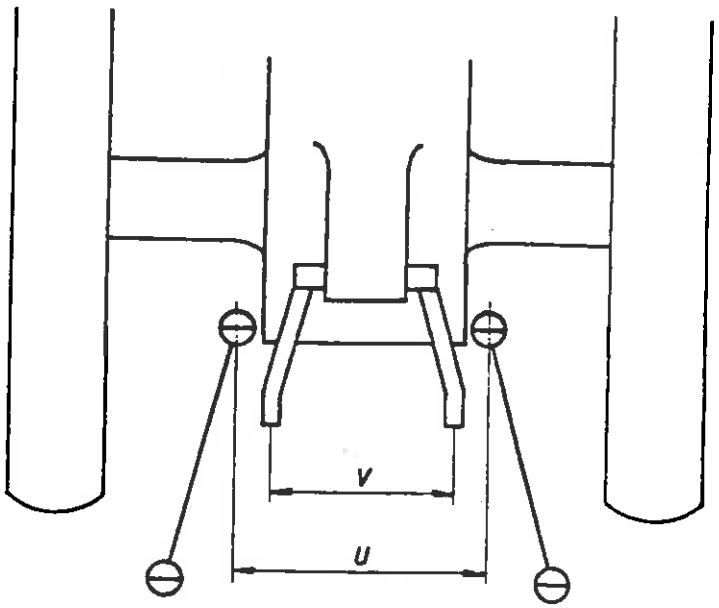
Linkage dimensions (mm)				Settings used for test
Rear tyres : dynamic index radius	20.8 - 42	(r)	920	
Front tyres : loaded radius	14L - 16.1	(r')	470	
Length of lift arms		(A)	362	
Length of lower links		(B)	975	
Distance of lift arm pivot point from rear wheels centre line	horizontally	(a)	185,8	
	vertically	(b)	431,8	
Horizontal distance between the two lower link points		(u)	511	
Horizontal distance between the two lift arm end points		(v)	610	
Length of upper link		(S)	from 740 to 830	790
Distance of upper link pivot point from rear wheels centre	horizontally	(c)	428	
	vertically	(d)	121|179|237	179
Distance of lower link pivot point from rear wheels centre	horizontally	(e)	224	
	vertically	(f)	300	
Distance of lower link points to lift rod pivot points on lower link		(D)	548|600	548
Length of lift rods		(L)	from 675 to 860	860
Height of lower hitch points relative to the rear wheels centre - in low position		(h)	from 274 to 693	657
- in high position		(H)	from -27 to 312	-27
Height of lower hitch points when locked in transport position (*)			from 892 to1204	

(*) Assuming the dynamic index radius = 892 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 : 596 mm
. minimum : 596 mm
Type of adjustment : none
Distance of hitch point from rear axle centre : 897 mm
Distance of hitch point from power take-off shaft end : . vertically : 297 mm
. horizontally : 347 mm (540 RPM) - 397 mm (1000 RPM)
Lateral adjustment : 306 mm right and left hands
Distance of pivot point from rear axle horizontally : 227 mm
Diameter drawbar pin hole : 30 mm
Maximum vertical permissible load : 15 kN

2.9 Trailer hitch

Height above ground : . maximum : 1007 mm
. minimum : 836 mm
Distance of hitch point from rear axle centre, horizontally : 751 mm
Distance of hitch point from power take-off shaft end :
. vertically above maximum : 240 mm
minimum : 69 mm
. horizontally : 200 mm (540 RPM) - 250 mm (1000 RPM)
Diameter of pin hole : 30 mm
Maximum vertical permissible load : 20 kN

2.10 Linkage drawbar

Height above ground : . maximum : 1185 mm
. minimum : 170 mm
Horizontal distance to power take-off shaft end : 640 mm (540 RPM) - 690 mm (1000 RPM)
Number of holes : 9
Distance between holes : 80 mm
Hole diameter : 25 mm
Thickness and width of drawbar : 30 X 80 mm

2.11 Front towing hitch

Vertical height at centre of clevis : 995 mm
Width of clevis : 60 mm
Diameter of pin hole : 30 mm

2.12 Steering

Method of operation : hydrostatic steering system, gear box housing mounted on gear pump
Make : DANFOSS steering unit
Model : OSPC - LS
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 : 88 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, 486,5 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 - 4 disks
Method of operation : hand lever - cable and rod

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 : 32 l/min

2.14 WHEELS

2.14.1 Number and location

. Front : 2 steering
. Rear : 2 driving

2.14.2 Wheelbase : 2940 mm

2.14.3 Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Front	1543	2333	Telescopic axle
Rear	1871	2125	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 D
Type of structure : . cab
. tiltable : no
CEMAGREF test : 8915
OECD approval number : CSS 077/10

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 2174 mm track width (mm)
Headlights	1282	167 x 107	950
Sidelights	1761	120 x 80	442
Rearlights	1830	300 x 62	316
Reflectors	742	98 x 62	561

3. CONDITIONS DURING TEST

3.1 Overall dimensions

LENGTH m	WIDTH		HEIGHT	
	min m	max m	exhaust silencer m	at top of protective structure
5,165	2,391	2,442	2,905	2,905

3.2 Ground clearance : 443 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	2175	2215
Rear	3955	3995
Total	6130	6210

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3.4 Tyres and track width specifications

	Front	Rear	
Tyres :	GOOD YEAR	GOOD YEAR	
. dimensions	14 L - 16.1	20.8-42	
. ply rating	6	10	
. type of casing	cross ply	cross ply	
. maximum load (tyre manufacturer's)	12,2	36,3	kN
. maximum load (tractor manufacturer's)	12,2	36,3	kN
. inflation pressure (tyre manufacturer's)	2,0	1,6	bar
. dynamic radius index	-	920	mm
Chosen track width :	2048	1922	mm

3.5 Recommended and used during test lubricants

Engine oil . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2140 C
Transmission oils . Type . Viscosity . Classification	B.P TERRAC CHARGE 10 W 30 MIL L 2140 C
Final drives oils . Type . Viscosity . Classification	B.P TERRAC TRANS 85 W 140
Hydraulic fluid . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2140 C
Steering oil . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2140 C

- Grease : B.P TERRAC CHARGE

. Number of lubrication points : 10

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 october 1991
Type of dynamometer : SCHENCK W 700

Power	Speed		Fuel consumption		Specific energy
	engine	power take-off	hourly	specific	
kW	rev/min		l/h	g/kWh	kWh/l
MAXIMUM POWER - TWO HOURS TEST					
114,5	2150	1028	31,03	230	3,70
MAXIMUM POWER AT RATED ENGINE SPEED					
113,9	2202	1053	31,15	233	3,66
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					
99,2	2248	1075	27,69	237	3,58
(2) 75% of the torque defined in (1)					
75,2	2277	1089	22,42	254	3,35
(3) 50% of the torque defined in (1)					
50,5	2308	1104	17,30	291	2,92
(4) 25% of the torque defined in (1)					
25,6	2330	1114	12,12	402	2,12
(5) Unloaded					
-	2350	1124	7,27	-	-
MAXIMUM POWER AT STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)					
114,2	2096	1002	30,67	228	3,73
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					
96,7	2130	1019	26,55	234	3,64
(7) 75% of the torque defined in (6)					
73,4	2158	1032	21,44	249	3,42
(8) 50% of the torque defined in (6)					
49,4	2184	1044	16,45	283	3,00
(9) 25% of the torque defined in (6)					
25,7	2213	1059	11,33	375	2,27
(10) Unloaded					
-	2234	1069	6,65	-	-

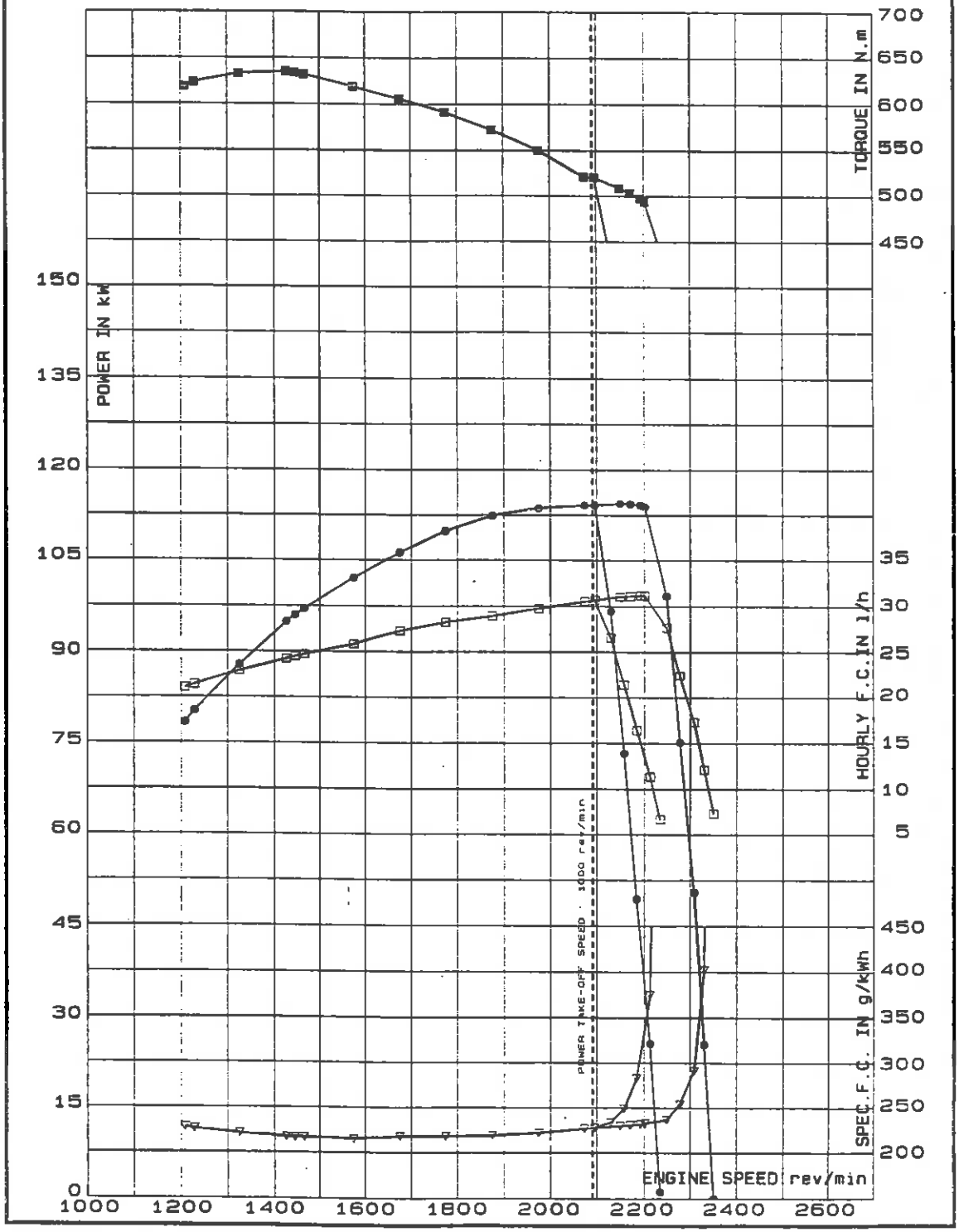
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MAIN POWER TAKE-OFF TEST

TEST : 8914

TRACTOR : MASSEY FERGUSON 3670 (2WD)

OF 17th october 1991



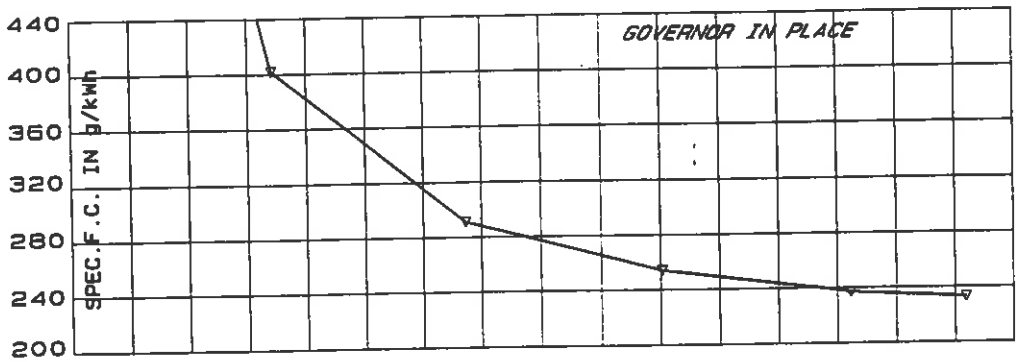
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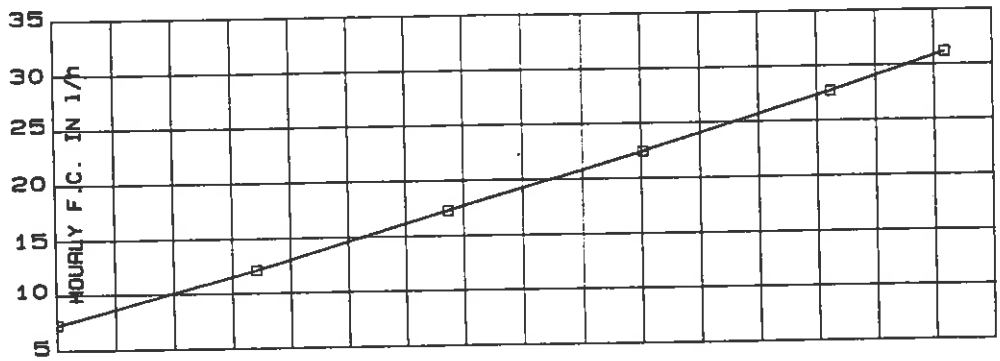
MAIN POWER TAKE-OFF TEST

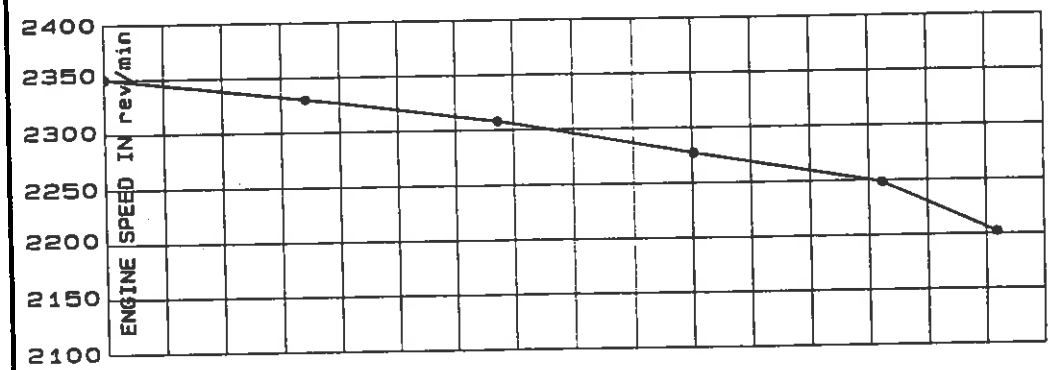
TEST : 8914

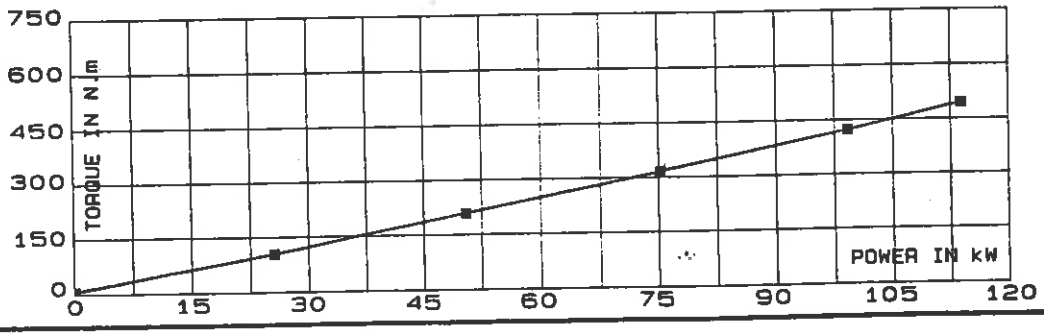
TRACTOR : MASSEY FERGUSON 3670 (2WD)

OF : 17th october 1991









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4.1 Main power take-off performance (continued)

Other results

No load, maximum engine speed : 2350 rev/min

Equivalent crankshaft torque at maximum power : 508,6 N.m

Equivalent crankshaft torque at maximum power at rated engine speed : 494 N.m

Maximum equivalent crankshaft torque : 635,3 N.m at 1426 rev/min

Mean atmospheric conditions

Temperature : 18 °C

Pressure : 1000 mbar

Relative humidity : 56 %

Maximum temperatures

Coolant : 85 °C

Engine oil : 102 °C

Fuel : 47 °C

Air intake : 23 °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)	27,69	17,30	26,55	16,45
Standard specific consumption (g/kWh)	237	291	234	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 : 22rd october 1992

4.2.1 Hydraulic power test

4.2.1.1 Hydraulique Pump (lift and auxiliary service connection number 3 and 4)

- Tapping point used for test : auxiliary service connection
- Sustained pressure with relief valve open : 190 bars
- Pump delivery rate at minimum pressure : 55,0 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	48,7	171	13,9
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	48,7	171	13,9

4.2.1.2 Hydraulique Pump (auxiliary service connection number 1 and 2)

- Tapping point used for test : auxiliary service connection
- Sustained pressure with relief valve open : 181 bars
- Pump delivery rate at minimum pressure : 40,0 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	37,2	163	10,1
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	37,2	163	10,1

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4.2 Lifting force and hydraulic power

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	235	197
Vertical movement	mm	630	714
Maximum force exerted through full range	kN	53,7	48,9
Corresponding pressure of hydraulic fluid	bar	171	171
Moment about rear axle	kN.m	63,7	87,8
Maximum tilt angle of mast over range of lift	degree	/	4,2°

4.2.2 Power lift test

Lifting height (1)	mm	-395	-357	-300	-200	-100	0	+100	+200	+273	+319
Lifting force (2)	at the hitch point kN	-	53,7	54,5	56,6	58,6	60,5	62,1	63,2	59,6	-
	at the frame kN	50,6	50,6	50,7	51,0	51,3	51,1	51,0	50,3	49,7	48,9

Corresponding pressure : 171 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 : 25th november 1991, Antony

Type of track : Tarmacadam

Height of drawbar above ground : 0,95 m

Tyres	Front	Rear
. Size :	14 L - 16.1	20.8 - 42
. Inflation pressure (bar) :	2,0	1,1

Atmospheric conditions :

. Temperature : 8°C
. Pressure : 1010 mbar
. Relative humidity : 63 %

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
MAXIMUM POWER IN TESTED GEAR										
1 T A	2,30	54,5	34,7	2329	15	421	2,02	33	81	87
1 T B	2,67	52,9	39,2	2323	15	389	2,19	38	79	97
1 T C	3,15	53,5	46,8	2310	15	369	2,31	39	81	98
2 T A	3,46	53,4	51,3	2311	15	349	2,44	40	82	99
1 T D	3,65	52,3	53,1	2298	15	350	2,43	40	82	99
2 T B	4,01	52,0	58,0	2297	15	332	2,56	39	81	99
2 T C	4,99	51,8	71,8	2277	12	302	2,82	40	83	101
3 T A	5,08	52,2	73,7	2279	12	294	2,89	43	82	101
2 T D	5,82	51,5	83,2	2262	10	290	2,93	42	81	102
3 T B	6,01	51,6	86,3	2263	10	282	3,02	41	83	104
4 T A	7,03	50,3	98,3	2238	8	273	3,11	39	82	101
3 T C	7,11	50,1	98,9	2219	8	273	3,12	40	82	101
1 L A	7,61	48,7	102,9	2153	7	263	3,24	38	80	100
4 T B	8,02	45,7	101,7	2137	6	262	3,25	39	81	104
3 T D	8,12	45,0	101,6	2127	6	263	3,24	40	80	101
1 L B	8,98	41,5	103,4	2122	5	255	3,33	43	81	104
4 T C	9,48	38,3	100,8	2108	5	261	3,26	38	80	102
1 L C	10,63	34,9	103,0	2104	4	257	3,31	42	82	103
4 T D	11,23	32,2	100,5	2110	4	261	3,26	42	81	103
2 L A	11,64	32,2	104,2	2089	4	251	3,39	43	80	102
1 L D	12,35	30,1	103,4	2074	3	253	3,37	40	81	102
2 L B	13,70	26,9	102,2	2086	3	257	3,32	42	80	101
2 L C	16,11	22,7	101,5	2061	3	257	3,31	37	80	100

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										
2 L A	11,64	32,2	104,2	2089	4	251	3,39	43	80	102
(2) 75% of pull at maximum power at rated engine speed										
2 L A	12,80	22,5	80,1	2266	3	276	3,08	43	80	101
(3) 50% of pull at maximum power at rated engine speed										
2 L A	13,14	15,0	54,7	2303	2	314	2,71	42	79	99
(4) next higher gear at reduced engine speed, same pull and travelling speed as in (2)										
1 L D	12,81	22,6	80,5	2128	3	265	3,21	40	81	102
(5) next higher gear at reduced engine speed, same pull and travelling speed as in (3)										
1 L D	13,08	14,9	54,2	2153	2	305	2,79	40	80	100
(6) next higher gear at reduced engine speed, same pull and travelling speed as in (2)										
2 L B	12,86	22,4	80,2	1943	3	256	3,33	42	80	101
(7) next higher gear at reduced engine speed, same pull and travelling speed as in (3)										
2 L B	13,14	15,0	54,9	1968	2	286	2,98	42	80	101
(8) Maximum drawbar power in selected gear nearest to 7,5 km/h										
4 T A	7,03	50,3	98,3	2238	8	273	3,11	39	82	101
(9) 75% of pull at maximum power										
4 T A	7,41	37,7	77,5	2273	5	283	3,01	39	82	101
(10) 50% of pull at maximum power										
4 T A	7,66	25,2	53,6	2306	3	319	2,66	39	82	101
(11) Higher gear at reduced engine speed; same pull and travelling speed as in (9)										
1 L A	7,45	37,5	77,6	2041	4	262	3,24	28	81	100
(12) Higher gear at reduced engine speed; same pull and travelling speed as in (10)										
1 L A	7,63	25,0	53,0	2057	3	286	2,97	37	80	99

(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 : 9th december 1991
Type of sound level meter : BRUEL & KJAER 2209
Type of track : Tarmacadam
Gear : 3 L D
Travelling speed before acceleration : 23,3 km/h
Sound level : 84 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 et Machines Agricoles
M.HOCQUEL	E.HUGO	J.F.GOUPILLON

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

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