CEMAGREF

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

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ivision Tracteurs et Machines Agricoles

TEST REPORT N° 9035 **DATE : 1st september 1992**

OECD TEST OF AN AGRICULTURAL TRACTOR (RESTRICTED CODE) 50.3

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



OECD Approval
N° 1380 Restricted Code
Date 28th august 1992

ested equipment	
ature	: TRACTOR
ake	: MASSEY FERGUSON
odel	: B 515/2
rade name	: 3655-2 PS/4 (3660 for N.A.O)
umber of driving wheels	: 2
ype	: standard

Submitted for tests by

Name : MASSEY FERGUSON S.A.
Address : avenue Blaise Pascal
BP 307
60026 BEAUVAIS CEDEX

Phone : 44.89.33.33 FAX : 44.89.34.18

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 : 23rd october 1991

SPECIFICATIONS

2.1 Tested tractor

Make : MASSEY FERGUSON
Model : B 515/2
Trade name : 3655-2 PS/4 (3660 for N.A.O)
Number of driving wheels : 2
Type : standard
Serial number : S 175 142
1st serial number : S 175 142

2.2 Engine

2.2.1 Identification

Make : PERKINS
Model : 1006-6 T4
Type : 4 strokes - Direct injection diesel turbocharged
Serial number : U 529 835 V

2.2.2 Cylinders

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

2.2.3 Supercharging

Make : AIRESEARCH (GARRET)
Model : turbo charger
Type : 452024
Supercharging pressure : 1,15 bar

2.2.4 Fuel system

Fuel feed system : piston fuel feed pump
Make, type and model of fuel filter : CAV 2 FAS 58488130, dual element with water trap
Capacity of fuel tank : 260 l (320 l with auxiliary fuel tank)
Make, type and model of injection pump : CAV, DPS 963, rotative
Serial number : 2643M022RK/3/2310
Manufacturer's setting of injection pump : 77 mm^3/stroke (at rated engine speed and full load)
Injection pump timing : 17° before TDC
Make, type and model of injectors : CAV, EGGI 680 1093
Injection pressure : 250 bars

2.2.5 Governor

Make : CAV
Type : DPA
Model : mechanical, incorporated into fuel injection pump
Governed range of engine speed : 1000 - 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 incorporated into main
. Location : under bonnet

Main : . Make : DONALDSON
. Type and model : dry, FLB10-0070
. Location : under bonnet

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 : 2 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
. 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 : electrical switch on clutch pedal
Make : LUCAS
Type and model : pre-engaged M 127
Power : 2,8 kW
Cold starting aid : thermostart

2.2.11 Electrical system

Voltage : 12 V negative earth
Generator : alternator
. Make : VALEO
. Type and model : alternator 70 A
. Power : 980 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 : 110
Location : under bonnet with vertical stak 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, speedshift
Arrangement : 4 gears with four positions speed shift,
2 ranges and one reverse groupe
Number of speeds : 32 forward gears and 32 reverse gears
Available option : 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 and final drive

Make : MASSEY FERGUSON
Type and model : telescopically adjustable
Driven : not driven

2.3.6 Total ratios and travelling speeds

Range	Gear	Overall gear ratios	Rated forward speed km/h (*)
T forward	1 A	282,634	2,509
	1 B	241,482	2,937
	1 C	204,580	3,466
	1 D	174,787	4,057
	2 A	186,232	3,808
	2 B	159,116	4,457
	2 C	134,801	5,261
	2 D	115,170	6,157
	3 A	130,362	5,440
	3 B	111,381	6,367
	3 C	94,361	7,515
	3 D	80,619	8,796
	4 A	95,776	7,404
	4 B	81,831	8,666
	4 C	69,326	10,229
	4 D	59,230	11,972
T reverse	1 A	306,994	2,310
	1 B	262,299	2,703
	1 C	222,216	3,191
	1 D	189,855	3,735
	2 A	202,286	3,506
	2 B	172,833	4,103
	2 C	146,422	4,843
	2 D	125,098	5,669
	3 A	141,600	5,008
	3 B	120,983	5,861
	3 C	102,495	6,919
	3 D	87,569	8,098
	4 A	104,033	6,816
	4 B	88,885	7,978
	4 C	75,303	9,417
	4 D	64,336	11,022

T : Turtle, A B C D : quadrupler positions
(*) Calculated for the rated engine speed 2200 rpm and dynamic index ratio of 20.8 - 38 tyres : 855 mm (ISO 4251/1-1984)

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2.3.6 Total ratios and travelling speeds

Range	Gear	Overall gear ratios	Rated forward speed km/h (*)
L avant forward	1 A	85,800	8,265
	1 B	73,307	9,676
	1 C	62,105	11,418
	1 D	53,060	13,364
	2 A	56,536	12,543
	2 B	48,303	14,681
	2 C	40,922	17,329
	2 D	34,962	20,282
	3 A	39,574	17,919
	3 B	33,812	20,972
	3 C	28,474	24,755
	3 D	24,474	28,975
	4 A	29,075	24,389
	4 B	24,842	28,546
	4 C	21,045	33,695
	4 D	17,981	39,438
L reverse	1 A	93,196	7,609
	1 B	79,627	8,906
	1 C	67,459	10,512
	1 D	57,634	12,304
	2 A	61,408	11,548
	2 B	52,467	13,516
	2 C	44,449	15,953
	2 D	37,976	18,673
	3 A	42,986	16,497
	3 B	36,727	19,308
	3 C	31,115	22,791
	3 D	26,583	26,675
	4 A	31,581	22,454
	4 B	26,983	26,280
	4 C	22,860	31,021
	4 D	19,531	36,308

L : rabbit, A B C D : quadrupler positions

(*) Calculated for the rated engine speed 2200 rpm and dynamic index ratio of 20.8 - 38 tyres : 855 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 500-1979)
Height above ground : 779 mm with types 20.8-38
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 : 779 mm with types 20.8-38
Distance from the median plane of the tractor : 0 mm
Distance behind rear axle : 498 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 : 3 - 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

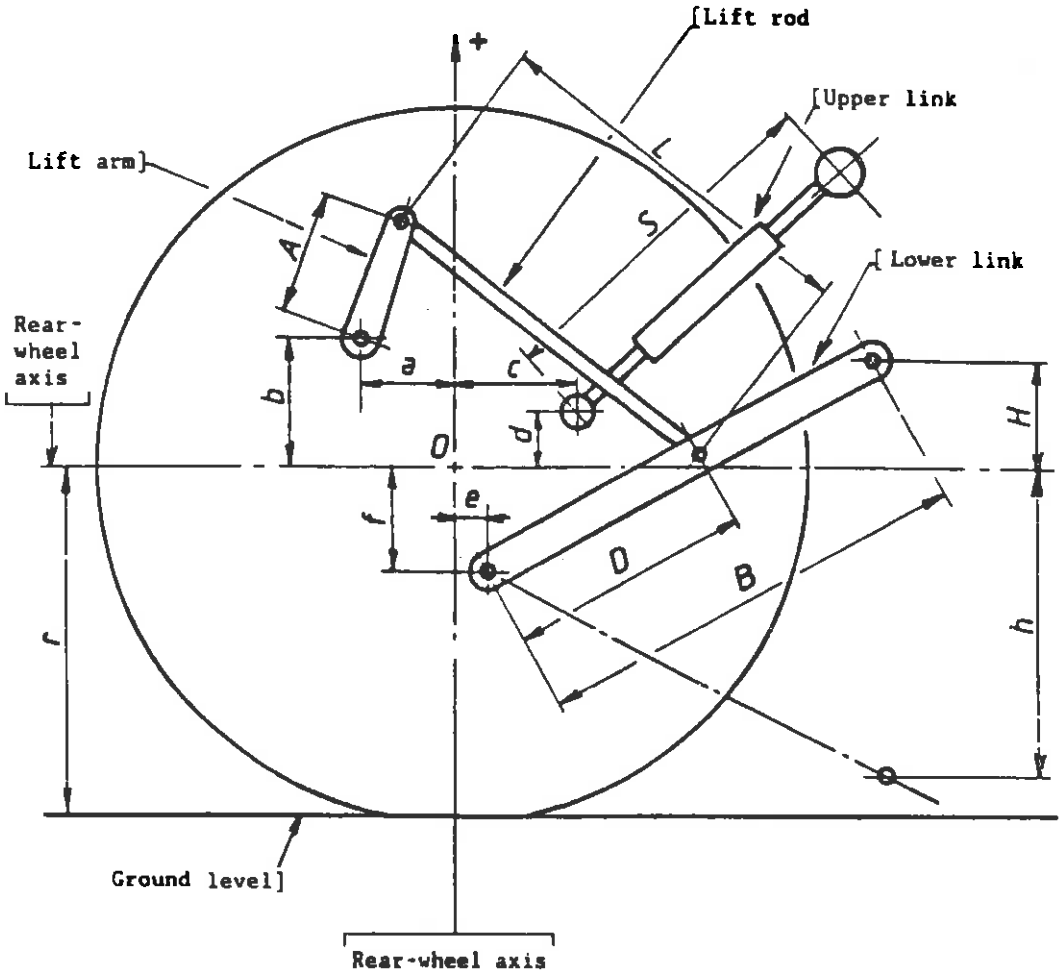
Category : II - III (in accordance with ISO 730/I-1977 art.II)
Category adapter : by changing the rockshafts
Controls : . position control by linear sensor measuring the rockshaft position
. draft control by pin sensors at each lower link

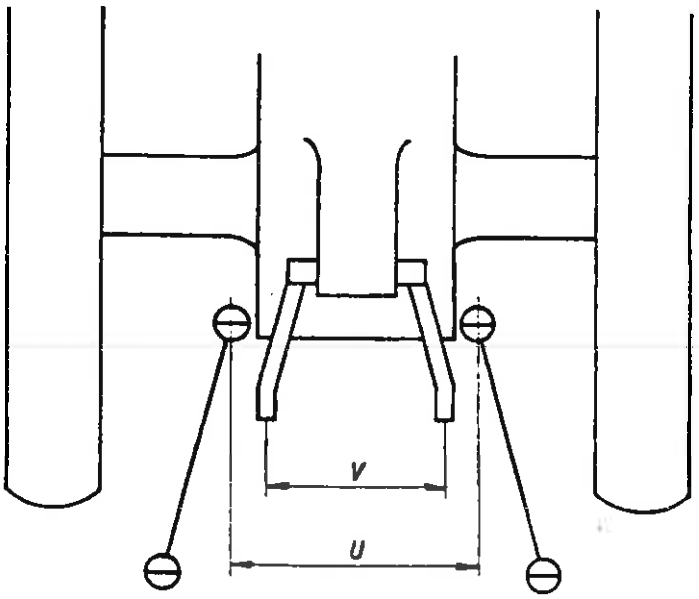
Linkage dimensions (mm)				Settings used for test
Rear tyres : dynamic index radius	20.8 - 38	(r)	855	
Front tyres : dynamic index radius	11.00 - 16	(r')	450	
Length of lift arms		(A)	362	
Length of lower links		(B)	975	
Distance of lift arm pivot point from rear wheels centre line	horizontally	(a)	185,8	
	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 666 to 786	750
Distance of upper link pivot point from rear wheels centre	horizontally	(c)	428	
	vertically	(d)	179|237	237
Distance of lower link pivot point from rear wheels centre	horizontally	(e)	225	
	vertically	(f)	-300	
Distance of lower link points to lift rod pivot points on lower link		(D)	525	
Length of lift rods		(L)	from 675 to 860	855
Height of lower hitch points relative to the rear wheels centre				
- in low position		(h)	from 324 to 722	665
- in high position		(H)	from 0 to 328	30
Height of lower hitch points when locked in transport position (*)			from 855 to1183	

(*) Assuming the dynamic index radius = 855 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 : 462 mm
. minimum : 462 mm
Type of adjustment : none
Distance of hitch point from rear axle centre, horizontally : 898 mm
Distance of hitch point from power take-off shaft end : . vertically : 234 mm
. horizontally : 355 mm (540 RPM) - 400 mm (1000 RPM)
Lateral adjustment : 250 mm right and left hands
Distance of pivot point from rear axle horizontally : 128 mm
Diameter drawbar pin hole : 32 mm
Maximum permissible load : .vertically 30 kN
.horizontally 100 kN

2.9 Trailer hitch

Height above ground : . maximum : 1000 mm
. minimum : 760 mm
Distance of hitch point from rear axle centre, horizontally : 749 mm
Distance of hitch point from power take-off shaft end :
. vertically above maximum : 240 mm
minimum : 1 mm
. horizontally : 201 mm (540 RPM) - 251 mm (1000 RPM)
Diameter of pin hole : 30 mm
Maximum vertical permissible load : 30 kN

2.10 Linkage drawbar

Height above ground : . maximum : 1183 mm
. minimum : 261 mm
Horizontal distance to power take-off shaft end : 650 mm (540 RPM) - 700 mm (1000 RPM)
Number of holes : 9
Distance between holes : 84 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 : 848 mm
Width of clevis : 340 mm
Diameter of pin hole : 32 mm

2.12 Steering

Method of operation : hydrostatic steering system, gear box 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 : 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, 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 - 4 disks
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 : 30 l/min

2.14 WHEELS

2.14.1 Number and location

. Front : 2 steering
. Rear : 2 driving

2.14.2 Wheelbase : 2777 mm

2.14.3 Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Front	1543	2333	Telescopic
Rear	1588	2180	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 C
Type of structure : . cab
. tiltable : no
CEMAGREF test : 7727
OECD approval number : CSS 057/18

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	1237	167 x 107	991
Sidelights	1775	120 x 80	410
Rearlights	1844	300 x 62	289
Reflectors	754	98 x 62	557

3. CONDITIONS DURING TEST

3.1 Overall dimensions

LENGTH m	WIDTH		HEIGHT	
	min m	max m	exhaust silencer m	at top of protective structure
4,649	2,088	2,488	2,905	2,905

3.2 Ground clearance : 428 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	1720	1725
Rear	3710	3765
Total	5430	5490

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3.4 Tyres and track width specifications

	Front	Rear	
Tyres :	GOOD YEAR	GOOD YEAR	
. dimensions	11.00 - 16	20.8 - 38	
. ply rating	8	8	
. type of casing	cross ply	cross ply	
. maximum load (tyre manufacturer's)	13,1	30	kN
. maximum load (tractor manufacturer's)	13,1	30	kN
. inflation pressure (tyre manufacturer's)	2,5	1,3	bar
. dynamic radius index	450	855	mm
Chosen track width :	1622	1850	mm

3.5 Oils and lubrication recommended and used during tests

Engine oil . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2104 D
Transmission oils . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2104 D
Final drives oils . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 MIL L 2104 D
Hydraulic fluid . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 API GL 4
Steering oil . Type . Viscosity . Classification	B.P TERRAC MANAGER 10 W 30 API GL 4

- Grease : B.P TERRAC CHARGE

. Number of lubrication points : 13

3.6 Fuel

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

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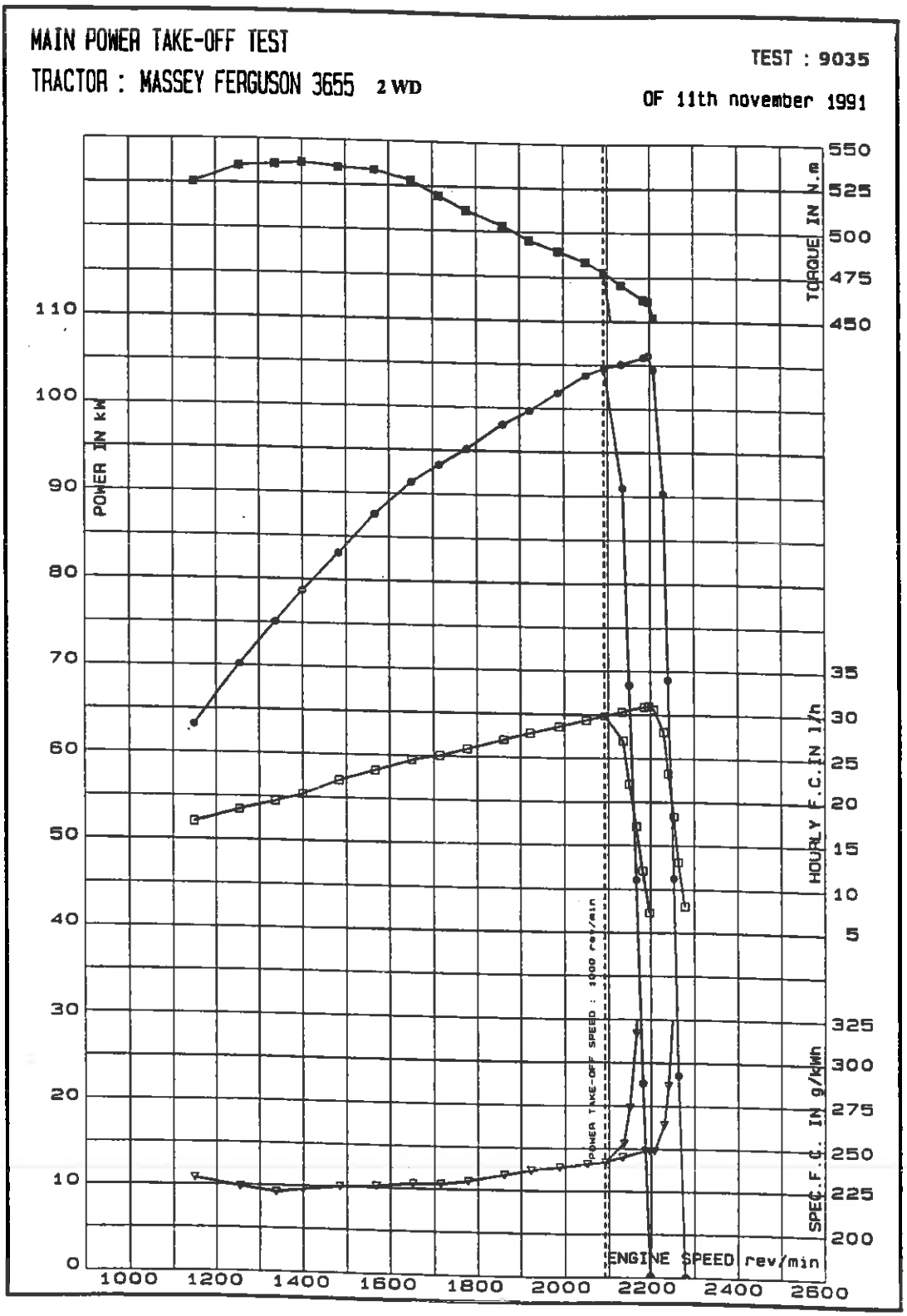
4. COMPULSORY TESTS RESULTS

4.1 Main power take-off performance

Location and date of tests : ANTONY, 11th november 1991
Type of dynamometer : SCHENCK W 700

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					
106,1	2196	1050	30,99	249	3,42
MAXIMUM POWER AT RATED ENGINE SPEED					
106,9	2196	1050	30,99	249	3,42
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					
90,3	2230	1067	28,01	264	3,22
(2) 75% of the torque defined in (1)					
69,0	2240	1071	23,27	287	2,97
(3) 50% of the torque defined in (1)					
46,3	2253	1078	18,37	338	2,52
(4) 25% of the torque defined in (1)					
23,6	2264	1083	13,13	474	1,79
(5) Unloaded					
-	2279	1090	8,07	-	-
MAXIMUM POWER AT STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)					
104,6	2092	1001	29,82	242	3,51
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					
90,9	2136	1022	27,00	253	3,37
(7) 75% of the torque defined in (6)					
68,4	2150	1028	22,06	274	3,10
(8) 50% of the torque defined in (6)					
46,1	2166	1036	17,19	317	2,68
(9) 25% of the torque defined in (6)					
22,7	2181	1043	12,12	455	1,87
(10) Unloaded					
-	2197	1051	7,32	-	-

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MAIN POWER TAKE-OFF TEST
TRACTOR : MASSEY FERGUSON 3655 2 WD
TEST : 9035
OF 11th november 1991
POWER IN kW
TORQUE IN N.m
HOURLY F.C.IN l/h
SPEC.F.C. IN g/kWh
ENGINE SPEED rev/min
POWER TAKE-OFF SPEED : 1000 rev/min
0
10
20
30
40
50
60
70
80
90
100
110
200
225
250
275
300
325
450
475
500
525
550
5
10
15
20
25
30
35
1000
1200
1400
1600
1800
2000
2200
2400
2600

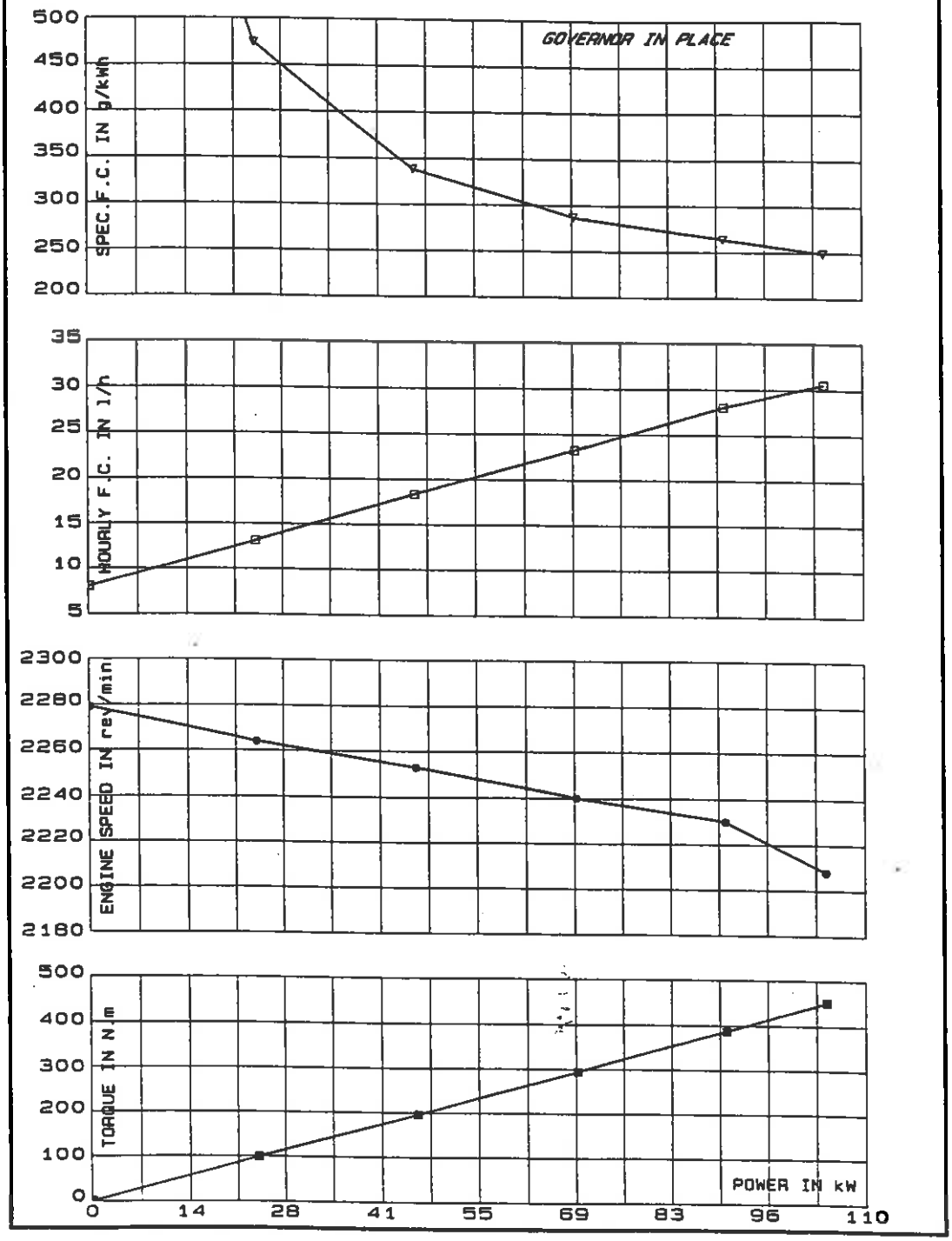
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MAIN POWER TAKE-OFF TEST

TRACTOR : MASSEY FERGUSON 3655 2 WD

TEST : 9035

OF : 11th november 1991



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4.1 Main power take-off performance (continued)

Other results

No load, maximum engine speed : 2279 rev/min

Equivalent crankshaft torque at maximum power : 461,3 N.m

Maximum equivalent crankshaft torque : 537,2 N.m at 1399 rev/min

Mean atmospheric conditions

Temperature : 22 °C

Pressure : 1016 mbar

Relative humidity : 53 %

Maximum temperatures

Coolant : 92 °C

Engine oil : 93 °C

Fuel : 29 °C

Air intake : 26 °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)	28,01	18,37	27,00	17,19
Standard specific consumption (g/kWh)	264	338	253	317

(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 : 29th january 1992

4.2.1 Hydraulic power test

4.2.1.1 Hydraulic pump (lift and auxiliary service connections number 1 and 2)

- Tapping point used for test : auxiliary service connection
- Sustained pressure with relief valve open : 188 bars
- Pump delivery rate at minimum pressure : 50,8 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	43,2	169	12,2
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	42,8	172	12,3

4.2.1.2 Hydraulic pump (auxiliary service connections number 3 and 4)

- Tapping point used for test : auxiliary service connection
- Sustained pressure with relief valve open : 188 bars
- Pump delivery rate at minimum pressure : 52,0 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	41,1	169	11,6
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	42,6	166	11,8

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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	190	204
Vertical movement mm	695	711
Maximum force exerted through full range kN	56,9	55,1
Corresponding pressure of hydraulic fluid bar	169	169
Moment about rear axle kN.m	68,3	99,7
Maximum tilt angle of mast over range of lift degree	/	2°

4.2.2 Power lift test

Lifting height (1)	mm	-365	-357	-300	-200	-100	0	+100	+200	+330	+354
Lifting force (2)	at the hitch point kN	56,9	57,2	57,3	60,0	61,6	63,3	64,6	65,8	65,9	-
	at the frame kN	-	61,9	60,7	60,9	60,4	59,7	59,0	57,0	55,3	55,1

Corresponding pressure : 169 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 : 8th january 1992, Antony

Type of track : Tarmacadam
Height of drawbar above ground : 0,95 m

Tyres	Front	Rear
. Size :	11.00 - 16	20.8 - 38
. Inflation pressure (bar) :	2,5	1,1

Atmospheric conditions :
. Temperature : 9°C
. Pressure : 1012 mbar
. Relative humidity : 58 %

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	2,26	49,3	31,0	2263	15	479	1,78	20	85	89
1 T B	2,64	48,7	35,7	2256	15	445	1,91	16	86	90
1 T C	3,13	48,0	41,6	2250	15	424	2,01	18	86	93
2 T A	3,43	47,6	45,3	2248	15	393	2,16	21	84	90
1 T D	3,66	48,1	48,9	2243	15	386	2,20	20	85	93
2 T B	3,98	48,1	53,1	2240	15	372	2,29	19	86	93
2 T C	4,69	47,9	62,4	2232	15	350	2,43	17	87	94
3 T A	4,82	47,1	63,2	2232	14	344	2,48	20	87	95
2 T D	5,56	46,7	72,1	2225	14	331	2,57	21	87	95
3 T B	5,77	46,7	74,8	2223	13	324	2,62	19	87	96
4 T A	6,71	46,3	86,3	2194	12	306	2,78	22	88	96
3 T C	6,89	44,9	85,9	2193	11	308	2,76	23	84	95
1 L A	7,65	41,7	88,6	2177	9	297	2,86	21	84	96
4 T B	8,12	39,4	88,8	2180	9	298	2,85	21	82	92
3 T D	8,26	38,3	87,9	2183	8	301	2,83	22	87	96
1 L B	9,12	35,5	89,9	2173	8	292	2,91	26	88	96
4 T C	9,76	33,0	89,4	2180	7	297	2,86	20	87	94
1 L C	10,96	29,3	89,1	2178	6	295	2,89	24	85	96
4 T D	11,48	27,3	87,0	2168	6	299	2,85	21	82	97
2 L A	12,04	26,7	89,3	2170	6	294	2,90	20	88	96
1 L D	12,89	24,8	88,7	2170	5	295	2,89	20	89	97
2 L B	14,19	22,5	88,8	2168	5	290	2,94	20	85	96
2 L C	16,72	18,5	85,8	2150	4	302	2,81	21	88	95

CEMAGREF

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										
1 L B	9,12	35,5	89,9	2173	8	292	2,91	26	88	96
(2) 75% of pull at maximum power at rated engine speed										
1 L B	9,53	26,6	70,3	2229	6	322	2,64	21	88	91
(3) 50% of pull at maximum power at rated engine speed										
1 L B	9,73	17,7	47,8	2244	5	370	2,30	21	87	90
(4) next higher gear at reduced engine speed, same pull and travelling speed as in (2)										
1 L C	9,55	26,5	70,3	1889	6	292	2,92	19	84	91
(5) next higher gear at reduced engine speed, same pull and travelling speed as in (3)										
1 L C	9,76	17,6	47,7	1903	4	337	2,52	20	84	90
(6) Maximum drawbar power in selected gear nearest to 7,5 km/h										
3 T C	6,89	44,9	85,9	2193	11	308	2,76	23	84	95
(7) 75% of pull at maximum power										
3 T C	7,29	33,8	68,5	2228	7	326	2,61	23	84	95
(8) 50% of pull at maximum power										
3 T C	7,50	22,2	46,3	2244	5	382	2,23	23	84	92
(9) Higher gear at reduced engine speed; same pull and travelling speed as in (7)										
1 L A	7,29	33,9	68,6	2023	7	296	2,87	21	84	90
(10) Higher gear at reduced engine speed; same pull and travelling speed as in (8)										
1 L A	7,51	22,3	46,6	2043	5	340	2,50	21	84	89

(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 january 1992
Type of sound level meter : BRUEL & KJAER 2209
Type of track : Tarmacadam
Gear : 4 L D
Travelling speed before acceleration : 30,8 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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