Test n° 6110
Date : april 1987

OECD approval n° : 1065 RESTRICTED CODE
Date of approval : 20th may 1987

MINISTERE DE L'AGRICULTURE

CENTRE NATIONAL DU MACHINISME AGRICOLE, DU GENIE RURAL, DES EAUX ET DES FORETS
Groupement d'Antony, Division Tracteurs Travail du Sol

OECD TEST OF AN AGRICULTURAL TRACTOR (RESTRICTED CODE)

Report on test in accordance with the OECD standard code for the official testing of agricultural tractors C(84) 163 (Final) appendix IV



Tested tractor

Make : MASSEY FERGUSON
Model : B 80/2
Trade name : 3070
Number of driving wheels : 2
Type : Standard

Submitted by :

Name : MASSEY FERGUSON S.A.
Address : avenue Blaise Pascal
60026 BEAUVAIS (FRANCE)
Phone : 44.89.33.33 Telex : 140396 F

CEMAGREF Division TSAN
BP 121 - 92164 ANTONY CEDEX
Phone : (1) 46.66.21.09 Telex : 204565 F

PRINCIPALES UNITÉS DU SYSTEME INTERNATIONAL (SI) ET AUTRES UNITÉS UTILISÉES LORS DES ESSAIS (d'après la norme ISO 1000-1981 réimprimée le 30.6.1983)

Grandeurs	*Unités SI*		*Multiples Unités SI*	*Unité hors SI figurant dans la norme*
	Nom	*Symbole*		
Unités SI de base				
longueur	mètre	m	km, cm	
masse	kilogramme	kg	g, mg	tonne 1 t = 10^3 kg
temps	seconde	s	ms, µs	heure 1 h = 60 min
intensité de courant électrique	ampère	A	kA, mA	minute 1 min = 60 s
température thermodynamique	kelvin	K		
Unités SI dérivées				
angle plan	radian	rad		1° = (π / 180) rad
fréquence	hertz	Hz	MHz, kHz	
force	newton	N	kN, mN	
pression	pascal	Pa	kPa	1 bar = 10^5 Pa
contrainte		Pa ou N/m^2	MPa ou N/mm^2	
énergie travail	joule	J	kJ	1 kW.h = 3,6 10^6 J
quantité de chaleur	joule	J	kJ	
puissance	watt	W	kW	
charge électrique	coulomb	C	kC	1 A.h = 3,6 10^3 C
potentiel électrique	volt	V	kV, mV	
capacité électrique	farad	F	mF	
résistance électrique	ohm	Ω	kΩ, mΩ	
conductance électrique	siemens	S	kS, mS	
température Celsius	degré Celsius	°C		t (°C) = T (K) − 273,15
Autres unités SI figurant dans la norme				
aire, superficie		m^2	cm^2	hectare 1 ha = 10^4 m^2
volume		m^3	cm^3	litre 1 l = 10^{-3} m^3
vitesse angulaire		rad/s		
vitesse		m/s		1 km/h = (1/3,6) m/s
accélération (1)		m/s^2		
fréquence de rotation		s^{-1}		tours par minute (tr/min)
masse volumique		kg/m^3	g/cm^3	t/m^3, kg/l, g/l
quantité de mouvement		kg.m/s		
moment cinétique		$kg.m^2/s$		
moment d'inertie		$kg.m^2$		
moment d'une force		N.m		
viscosité (dynamique)		Pa.s	mPa.s	1 cP = 1 mPa.s
viscosité cinématique		m^2/s	mm^2/s	1 cSt = 1 mm^2/s
intensité acoustique		W/m^2		
niveau de pression acoustique				décibel dB
Unités hors SI ne figurant pas dans la norme				
débit volumique		m^3/s		l/s, l/h, m^3/h
débit massique		kg/s		t/h
consommation spécifique de carburant		kg/J		g/(kW.h)

(1) *La valeur adoptée en 1901 comme «accélération normale de la pesanteur» est de 9,80665 m/s^2 (accélération de la pesanteur à 45° de latitude au niveau de la mer). Dans les applications courantes on prend généralement g = 9,8 ou 10 m/s^2 suivant la précision recherchée.*

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(CEMAGREF)

Groupement d'Antony - Division Tracteurs Travail du Sol

OECD TEST OF AN AGRICULTURAL TRACTOR (RESTRICTED CODE)

Report on test in accordance with OECD standard code for the official testing of agricultural tractors C(84) 163 (Final) appendix IV

Test n° 6110
Date : April 1987

TESTED TRACTOR

Make : MASSEY FERGUSON
Model : B 80/2
Trade name : 3070
Number of driving wheels : 2
Type : Standard

SUBMITTED BY

Name : MASSEY FERGUSON S.A.
Address : Avenue Blaise Pascal
60026 BEAUVAIS (FRANCE)
Phone : 44.89.33.33 - Telex : 140396 F

SUMMARY

1. Specification of tested tractor
2. Compulsory tests results
   2.1. Main power take-off performance
   2.2. Lifting force and hydraulic power
   2.3. Drawbar performance (unballasted tractor)
3. Optional tests results
   3.1. Measurement of external noise level

Annex : Main power take-off performance curves

This test report includes 23 pages of text and 2 pages of annex

CEMAGREF Division TSAN
BP 121 - 92164 ANTONY CEDEX
Phone : (1) 46.66.21.09 Telex : 204565 F

- Tractor manufacturer's name and address : MASSEY FERGUSON S.A.
  avenue Blaise Pascal 60026 BEAUVAIS (FRANCE)

- Submitted for test by : The manufacturer

- Selected for test by the manufacturer with the agreement of CEMAGREF

- Place of running in : BEAUVAIS

- Duration of running in : 20 hours

1. SPECIFICATION OF TRACTOR

TRACTOR

- Make : MASSEY FERGUSON
- Model : B 80/2
- Trade name : 3070
- Number of driving wheels : 2
- Type : Standard
- Serial number : U 290 023
- 1st serial number : U 079 028

ENGINE

- Make : PERKINS
- Model : AT4-236
- Type : 4 strokes, direct injection diesel
- Serial number : LJ 31153 U 109310 N

Cylinders

- Number : 4
- Disposition : vertical in line
- Bore/stroke : 98,4/127 mm
- Capacity : 3860 cm³
- Compression ratio : 15,5/1
- Arrangement of valves : overhead in line
- Cylinders liners : dry

Supercharging

- Make : GARRET AIR RESEARCH
- Model : turbo-compressor
- Type : M-TA-03
- Supercharging pressure : 0,65 bar

Fuel system

- Fuel feed system : diaphragm fuel feed pump
- Make, type and model of fuel filter : CAV V 7005 - 3064 - dual element with water trap
- Capacity of fuel tank : 190 l
- Make, type and model of injection pump : CAV 3343 F 520 - rotative
- Serial number : 01141 GDG
- Manufacturer's production setting of injection pump : 74-78 mm³/stroke (rated engine speed & full load)
- Injection pump timing : 16 ± 2° before T.D.C.
- Make, type and model of fuel injectors : CAV JB 680L-027 - 4 holes
- Injection pressure : 230 bars

Governor

- Make : CAV
- Type : Mechanical incorporated in fuel injection pump
- Governed range of engine speed : 1000 - 2420 rev/min

Rated engine speed 2200 rev/min

Air cleaner

- Pre-cleaner
  - . Make : DONALDSON
  - . Type : cyclone
  - . Model : vertical
  - . Location : over bonnet
- Main
  - . Make : DONALDSON
  - . Type : dry
  - . Model : ELB 08 - 0024
  - . Warning light on panel
  - . Location : under bonnet - horizontal

Lubrification system

- Type of feed pump : gear
- Total oil capacity including filter : 8,5 l
- Oil change period : 250 h
- Type of filter : cartridge
- Number : 1
- Filter change period : 250 h
- Recommended oil : see "fuel and lubricants used in test"

Cooling system

- Type of coolant : water or water anti-freeze mixture
- Type of pump : centrifugal
- Description of fan
  - . Type : puller
  - . Number of fan blades : 6
  - . Fan diameter : 457 mm
- Coolant capacity : 19,4 l
- Type of temperature control : thermostatic
- Surpressure system : 0,7 bar

Starting system

- Safety device : switch operated by main clutch pedal
- Make : LUCAS
- Type : pre-engaged
- Model and starter motor power rating : LUCAS M 127 - 2,8 kW
- Cold starting aid : CAV - Thermostart

Electrical system

- Voltage : 12 V - negative hearth
- Generator : alternator
  - . Make : MOTOROLA
  - . Model : 55 AMS
  - . Power : 660 W
- Batteries :
  - . Make : CHLORYDE 372
  - . Number : 2
  - . Rating : 420 A for 60 s at -18°C

Exhaust system

- Make : LUCHAIRE
- Type : perforated
- Model : 87
- Location : under bonnet with vertical stack pipe
- Height of outlet above ground : 2724 mm

STEERING WHEELS

- Number : 2
- Location : front axle
- Tyres : GOOD YEAR Dynatorque II
  - . Size : 10.0 - 16
  - . Ply rating : 8
  - . Type of casing : cross ply
  - . Maximum permissible load on each tyre : 11,6 kN (with inflation pressure : 300 kPa)
- Track widths (mm) : 1543 - 1622 - 1644 - 1724 - 1746 - 1826 - 1848 - 1927 - 1949 - 2028 - 2051 - 2130 - 2153 2231 - 2254 - 2333
- Method of adjustment : lugs

DRIVING WHEELS

- Number : 2
- Location : rear axle
- Tyres : GOOD YEAR DYNATORQUE II
  - . Size : 18.4 - 34
  - . Ply rating : 8
  - . Type of casing : cross ply
  - . Maximum permissible load on each tyre : 25,00 kN (with inflation pressure : 138 kPa)
- Track widths (mm) : 1510 - 1610 - 1710 - 1810
- Method of adjustment : helicoidal ramps

WHEELBASE : 2460 mm

TRANSMISSION

Clutch

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

Gear box

- Make : MASSEY FERGUSON
- Type : basic gear box to be manual (4 x 4 speeds)
- Arrangement : mechanicaly operated gear shift - multipower as an option
- Number of speeds : 16 forward and 16 reverse doubled with multipower
- Available option : creeper

Rear axle and final drive

- Make : own make
- Type : crown wheel and pinion and outboard epicyclic gear reduction
- Differential lock :
  - . Type : mechanical hydraulicaly actuated
  - . Method of engagement : electrical switch
  - . Method of disengagement : when brake pedal is depressed

Front axle

- Make : own make
- Type : telescopic

Transmission oils

- Capacity :
  - . Gear box and transmission housing)) 64 l
  - . Power lift)

- Change period : 1000 h
- Type of oil filter : removable cartridge in metallic filter elements
- Recommended oil : see "fuel and lubricants used in test"

Gear	Group N°	Number of engine revolution for 1 revolution of driving wheels	Nominal travelling speed at rated engine speed (km/h)
1	ST	347,825	1,836
2		291,672	2,190
3		248,497	2,570
4		210,783	3,030
AR 1		326,247	1,957
AR 2		273,578	2,334
AR 3		233,081	2,740
AR 4		197,707	3,230
1	ST + MP	275,202	2,321
2		230,773	2,767
3		196,613	3,248
4		166,773	3,829
AR 1		258,130	2,474
AR 2		216,457	2,950
AR 3		184,416	3,463
AR 4		156,428	4,083
1	FT	173,617	3,678
2		145,588	4,386
3		124,037	5,149
4		105,213	6,070
AR 1		185,100	3,450
AR 2		155,217	4,114
AR 3		132,241	4,829
AR 4		112,171	5,693
1	FT + MP	137,367	4,649
2		115,191	5,544
3		98,140	6,507
4		83,245	7,672
AR 1		146,453	4,361
AR 2		122,809	5,200
AR 3		104,630	6,104
AR 4		88,751	7,196

ST : Slow Turtle - FT : Fast Turtle - MP : MultiPower

(dynamic index radius : 770 mm)

Gear	Group N°	Number of engine revolution for 1 revolution of driving wheels	Nominal travelling speed at rated engine speed (km/h)
1	SR	86,734	7,363
2		72,731	8,781
3		61,695	10,306
4		52,561	12,150
AR 1		81,353	7,850
AR 2		68,220	9,361
AR 3		58,121	10,988
AR 4		49,300	12,954
1	SR + MP	68,625	9,306
2		57,546	11,098
3		49,028	13,026
4		41,587	15,356
AR 1		64,367	9,922
AR 2		53,976	11,832
AR 3		45,986	13,887
AR 4		39,007	16,372
1	FR	43,293	14,751
2		36,304	17,951
3		30,930	20,647
4		26,236	24,342
AR 1		46,157	13,836
AR 2		38,705	16,500
AR 3		32,976	19,366
AR 4		27,971	22,832
1	FR + MP	34,254	18,644
2		28,784	22,233
3		24,472	26,096
4		20,758	30,765
AR 1		36,520	17,487
AR 2		30,624	20,854
AR 3		26,091	24,477
AR 4		22,131	28,857

SR : Slow Rabbit - FR : Fast Rabbit - MP : MultiPower

(dynamic index radius : 770 mm)

POWER TAKE-OFF

Main power take-off

- Type : rear independant PTO (hydraulic mutiplate clutch)
- Method of engagement : lever located at the middle of the upper right hand side console
- Method of changing power take-off speeds : speed and spline change accomplised by physically replacing the 540 rev/min shaft by the 1000 rev/min shaft and vice-versa

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 R500)
  - . Height above ground : 727 mm with tyres 18.4 - 34
  - . Distance from the median plane of the tractor : 0
  - . Distance behind rear axle : 450 mm
  - . Power take-off speed at rated engine speed : 600 rev/min
  - . Engine speed at standard power take-off speed : 1980 rev/min
  - . Engine to power take-off ratio : 3,66
  - . 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 R500)
  - . Height above ground : 727 mm with tyres 18.4 - 34
  - . Distance from the median plane of the tractor : 0
  - . Distance behind rear axle : 450 mm
  - . Power take-off speed at rated engine speed : 1100 rev/min
  - . Engine speed at standard power take-off speed : 2000 rev/min
  - . Engine to power take-off ratio : 2
  - . Power restriction : none
  - . Direction of rotation (viewed facing driving end) : clockwise

Power take-off proportional to ground speed

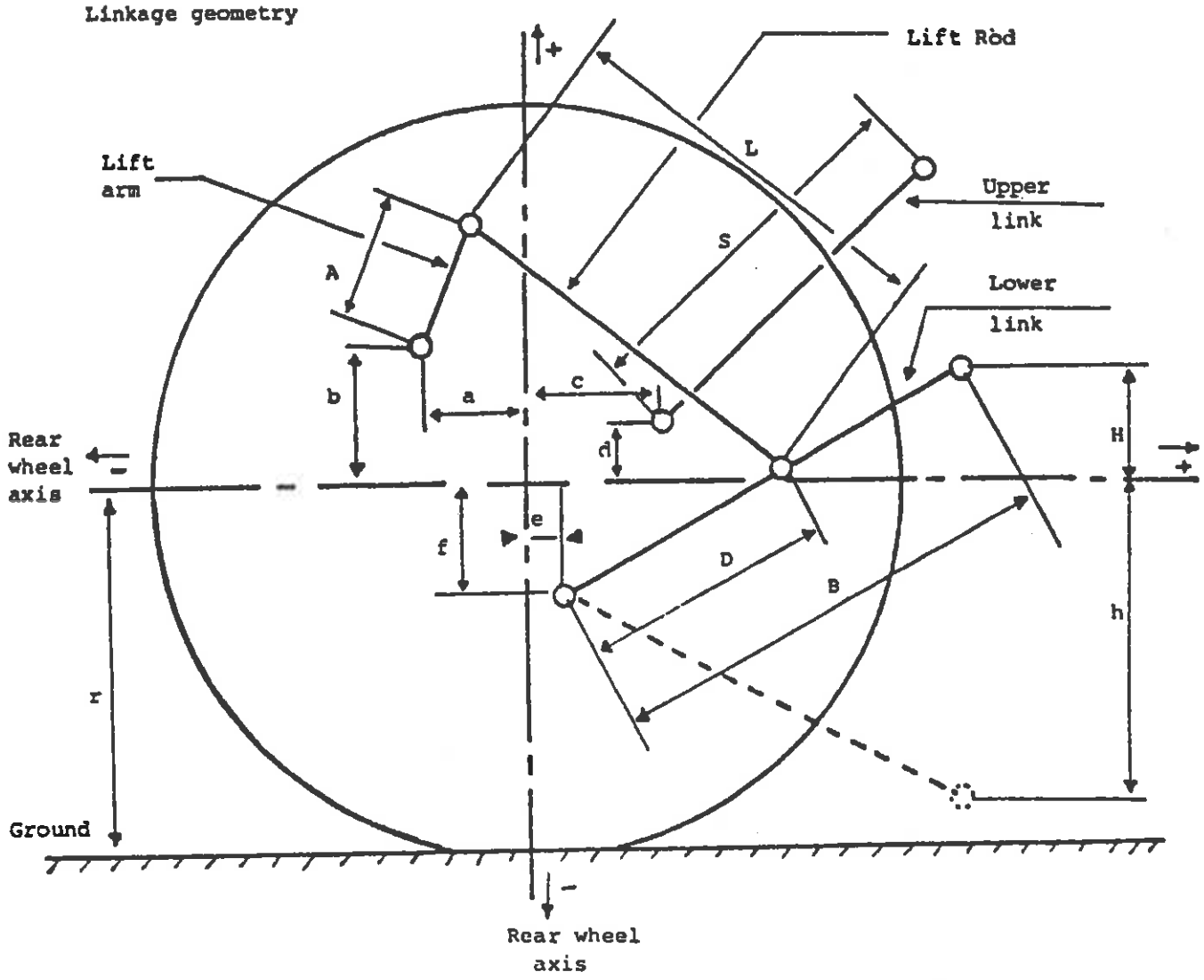
- Speed of shaft : both 540 and 1000 rev/min
- Size of tyre : 18.4 - 34
- Travelling distance for one revolution of power take-off : 0,790 m (540) - 0,431 m (1000)
- Number of power take-off shaft revolutions for one revolution of the rear wheels : 5,4 (540) - 10,0 (1000)
- Direction of rotation with forward gear engaged : clockwise

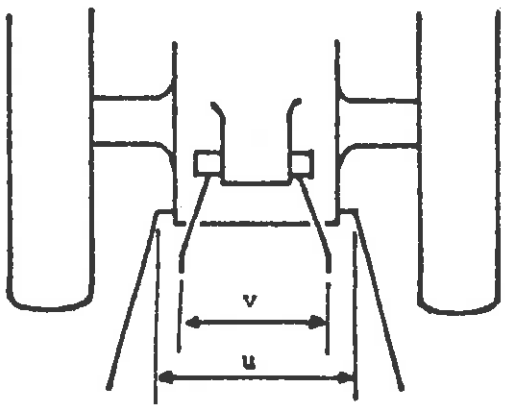
POWER LIFT

- Make : MASSEY FERGUSON
- Type : top link, electronic position, draft or mixed control
- Type and number of cylinders : 2 - single acting
- 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 : PUROLATOR - 1
- Time between oil changes : 1200 h
- Time between filter changes : 600 h
- Oil capacity : 64 l
- Site of oil reservoir : transmission housing
- Type and number of tapping points : 2 - on lift cover
- Maximum volume of oil available to external cylinders : 25 l/min
- Recommended oil : see "fuel and lubricants used in test"

THREE- POINT LINKAGE

- Category : II
- Category adapter : none
- Controls : position control by linear sensor measuring the rockshaft position
  draft control by pin sensors at each lower link


Linkage geometry
Lift Rod
Lift arm
Upper link
Lower link
L
S
A
b
a
c
d
H
h
e
f
D
B
r
Rear wheel axis
Ground
Rear wheel axis
+
-


v
u

Linkage dimensions (mm)				Settings for the test
Rear tyres - dynamic index radius		(r)	770	
Front tyres - loaded radius		(r')	420	
Length of lift arms		(A)	266	
Length of lower links		(B)	940	
Distance of lift arm pivot point from rear wheel center line	horizontally	(a)	128	
	vertically	(b)	330	
Horizontal distance between the 2 lower link points		(u)	580	
Horizontal distance between the 2 lift arm end points		(v)	604	
Length of upper link		(S)	from 590 to 750	650
Distance of upper link pivot point from rear wheel center line	horizontally	(c)	382	
	vertically	(d)	120 | 160 | 200	120
Distance of lower link pivot point from rear wheel center line	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 wheel centre line situated 820 mm above the ground level				
- in low position		(h)	from 447 to 578	578
- in high position		(H)	from 15 to 149	15
Height of lower hitch points when locked in transport position			from 813 to 914	835

SWINGING DRAWBAR

- Height above ground : maximum : 509 mm
  minimum : 509 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 :
  . horizontally : 400 mm to rear
  . vertically : 234 mm
- Lateral adjustment : 293 mm left hand
  293 mm right hand
- Distance of pivot point from rear axles horizontally : 106 mm to rear
- Diameter drawbar pin hole : 30 mm

LINKAGE DRAWBAR

- Height above ground : maximum : 914 mm
  minimum : 187 mm
- Horizontal distance to power take-off shaft end : 565 mm
- Number of holes : 9
- Hole diameter : 24 mm
- Thickness and width of drawbar : 30/80 mm

TRAILER HITCH

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

FRONT TOWING HITCH

- Vertical height at center of clevis : 831 mm
- Width of clevis : 365 mm
- Diameter of pin hole : 32 mm

STEERING

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

BRAKES

Service brake

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

Parking brake

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

Trailer brakes

- 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 line.
- Method of operation : automatic as the right hand tractor brake pedal is depressed
- Maximum braking pressure : 130-150 bars
- Maximum flow : 15 l/min

PROTECTIVE STRUCTURE SPECIFICATIONS

- Manufacturer's name and address : MASSEY FERGUSON S.A.
  avenue Blaise Pascal 60026 BEAUVAIS (FRANCE)
- Trade name : 3000 - B
- OECD approval number : CSD 1043/6
- Description : the cab is made up from 3 major sub-assemblies, the platform, side pillars and roof and the front pillars. Thesse sub-assemblies are bolted together to form the complete cab structure.

DRIVER'S SEAT

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

MISCELLANEOUS

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

LIGHTING

Unrestricted beam angle of head light in plane view : in accordance with national regulation

	Height above ground of centre mm	Size mm	Distance from outside edge of tractor to centre at 1510 mm trackwidth
Headlights	987	167 x 107	1104
Sidelights	1670	120 x 80	508
Rear lights	1684	300 x 62	493
Reflectors	719	98 x 62	771

CONDITIONS DURING TEST

Overall dimensions

	Lenght mm	Width		Height at the top of	
		minimum mm	maximum mm	exhaust silencer mm	protective structure mm
Unballasted	4048	1889	2465	2724	2724

Ground clearance : 407 mm limited by drawbar bracket

Track setting . front : 1543 mm
. rear : 1510 mm

Tractor mass (kg)

	Front	Rear	Total
Unballasted	1380	2695	4075

Fuel used in test

- Type : Diesel oil
- Viscosity : (NFT 60.100) 4,84 cSt
- Gravity at 15°C : 0,844

Lubricants used in test

- Engine oil :
  . Type : BP TOU
  . Viscosity : 10 W 30
  . Classification : MIL-L-2104 C

- Transmission, hydraulic and steering oils :
  . Type : BP AGROTRANS
  . Viscosity : 9,3 cSt at 100°C
  60,6 cSt at 40°C

- Recommended grease : BP AGRICHARGE

Number of lubrification points : 15

2. COMPULSORY TESTS RESULTS

2.1. MAIN POWER TAKE-OFF PERFORMANCE :

- Date and location of tests : 2nd april 1987 - CEMAGREF
- 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 HOUR TEST					
61,3	2200	1100	18,99	260	3,23
MAXIMUM POWER AT RATED ENGINE SPEED					
61,3	2200	1100	18,99	260	3,23
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					
53,6	2258	1129	17,45	273	3,07
(2) 75% of the torque defined in (1)					
40,1	2285	1142	14,41	302	2,78
(3) 50% of the torque defined in (1)					
27,4	2308	1154	11,83	363	2,32
(4) 25% of the torque defined in (1)					
14,1	2340	1170	9,45	564	1,49
(5) Unloaded					
-	2407	1204	6,99	-	-

2.1. MAIN POWER TAKE-OFF PERFORMANCE : (continued)

Power	Speed		Fuel consumption		Specific Energy
	Engine	Power take-off	Hourly	Specific	
kW	rev/min		l/h	g/kWh	kWh/l
MAXIMUM POWER AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)					
60,9	2000	1000	17,50	248	3,39
PART LOADS (governor control being set for maximum power at standard power take-off speed) (1) Torque corresponding to 85% of the torque at maximum power at standard power take-off speed					
51,2	2044	1022	15,69	257	3,26
(2) 75% of the torque defined in (1)					
38,6	2078	1039	12,87	280	3,00
(3) 50% of the torque defined in (1)					
26,5	2106	1053	10,38	330	2,55
(4) 25% of the torque defined in (1)					
13,6	2152	1076	7,98	492	1,71
(5) Unloaded					
-	2218	1109	5,76	-	-

Other results

- No load, maximum engine speed : 2407 rev/min
- Equivalent crankshaft torque at maximum power at rated engine speed : 266,0 N.m
- Maximum equivalent crankshaft torque : 326,7 N.m at 1318 rev/min engine speed

Mean atmospheric conditions

- Temperature : 18°C
- Pressure : 995 mbar
- Relative humidity : 60%

Maximum temperature

- Coolant : 80°C
- Engine oil : 114°C
- Fuel : 22°C
- Air intake : 24°C

2.1. MAIN POWER TAKE-OFF PERFORMANCE : (continued)

Fuel consumption at varying load

	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)	17,45	11,83	15,69	10,38
Specific standard consumption (g/kWh)	273	363	257	330

(1) 85% of the torque corresponding to maximum power for the position of the governor hand lever
(2) 50% of the torque obtained in (1)

2.2 LIFTING FORCE AND HYDRAULIC POWER
- Date : 3rd april 1987

2.2.1. Power lift test :

- Hydraulic fluid : see "Fuel and lubricants used in test"

		at the hitch point	on the frame
Height of lower hitch point above ground in down position	mm	160	140
Vertical movement	mm	593	730
Maximum force exerted through full range	kN	36,1	30,2
Corresponding pressure of hydraulic fluid	bar	169	169
Moment about rear rear axle	kN.m	39,3	49,8
Maximum tilt angle of mast over range of lift	degree	-	12°

2.2.1. Power lift test (continued)

Lifting height (1)	mm	- 370	- 318	- 300	- 200	- 100	0	+ 100	+ 200	+ 275	+ 360
Lifting force (2)	at the hitch point kN	-	36,1	39,6	42,6	44,9	45,8	46,7	46,9	46,9	-
	at frame kN	34,5	34,6	35,1	36,8	36,3	36,0	35,1	33,8	33,3	30,2

(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.

2.2.2 Hydraulic power test :

- Tapping point used for test :auxiliary service connection (spool valve)
- Sustained pressure with relief valve open : 188 bars
- Pump delivery rate at minimum pressure : 51,1 l/min

		corresponding to maximum hydraulic power	corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting
Pressure	bars	175	169
Flow rate	l/min	42,9	43,6
Power	kW	12,5	12,3

2.3. DRAWBAR PERFORMANCE (UNBALLASTED TRACTOR)

- Date and location of test : 16th april 1987 - CEMAGREF

- Type of track : Tarmacadam

- Height of drawbar above ground : 0,76 m

- Tyres	Front	Rear
. Size :	10.0 - 16	18.4 - 34
. Inflation pressure (bars) :	2,5	1,0

- Atmospheric conditions :

. Temperature : 20°C
. Pressure : 1026 mbar
. Relative humidity : 46%

2.3. DRAWBAR PERFORMANCE : (continued)

Gear	Speed km/h	Drawbar pull kN	Power kW	Engine speed rev/min	Wheelslip %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures		
								Fuel °C	Coolant °C	Engine oil °C
MAXIMUM DRAWBAR POWER IN TESTED GEAR										
3 ST + MP	2,76	32,9	25,2	2288	15	447	1,88	30	79	79
4 ST + MP	3,22	32,8	29,3	2278	15	402	2,09	30	79	87
2 FT	3,62	32,6	32,8	2272	15	392	2,14	30	79	91
1 FT + MP	3,89	32,7	35,3	2260	15	376	2,23	30	80	92
3 FT	4,27	32,7	38,8	2256	15	361	2,33	29	80	92
2 FT + MP	4,64	31,7	40,9	2252	15	354	2,37	28	79	93
4 FT	5,06	31,8	44,7	2240	15	351	2,39	30	78	95
3 FT + MP	5,40	31,4	47,1	2226	15	342	2,45	27	78	96
1 SR	6,32	27,7	48,6	2222	12	332	2,52	28	79	98
4 FT + MP	6,62	26,5	48,7	2216	11	331	2,54	29	78	95
2 SR	7,67	23,1	49,2	2200	10	330	2,54	29	80	98
1 SR + MP	8,18	21,8	49,5	2196	9	326	2,58	30	79	99
3 SR	9,17	19,5	49,7	2198	8	323	2,60	29	80	97
2 SR + MP	9,90	18,2	50,0	2186	7	317	2,65	29	80	99
4 SR	10,90	16,7	50,6	2184	6	313	2,68	29	80	100
3 SR + MP	11,73	15,2	49,5	2178	6	312	2,70	29	81	101
1 FR	13,36	13,4	49,7	2176	5	313	2,68	30	80	101

2.3. DRAWBAR PERFORMANCE : (continued)

Gear	Speed km/h	Drawbar pull kN	Power kW	Engine speed rev/min	Wheelslip %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures		
								Fuel °C	Coolant °C	Engine oil °C
TRANSMISSION AND FUEL CONSUMPTION CHARACTERISTICS (i) Maximum drawbar power in tested gear										
4 SR	10,90	16,7	50,6	2184	6	313	2,68	29	80	100
(ii) 75 % of pull at maximum power										
4 SR	11,47	12,6	40,1	2262	5	339	2,48	29	80	99
(iii) 50 % of pull at maximum power										
4 SR	11,82	8,2	26,9	2290	3	385	2,18	30	79	98
(iv) Higher gear same pull as in (i) reduced engine speed										
3 SR + MP	11,43	12,7	40,3	2100	5	324	2,59	29	79	99
(v) Higher gear as in (ii) reduced engine speed										
3 SR + MP	11,82	8,4	27,6	2138	3	376	2,24	28	79	98

3. OPTIONAL TESTS RESULTS

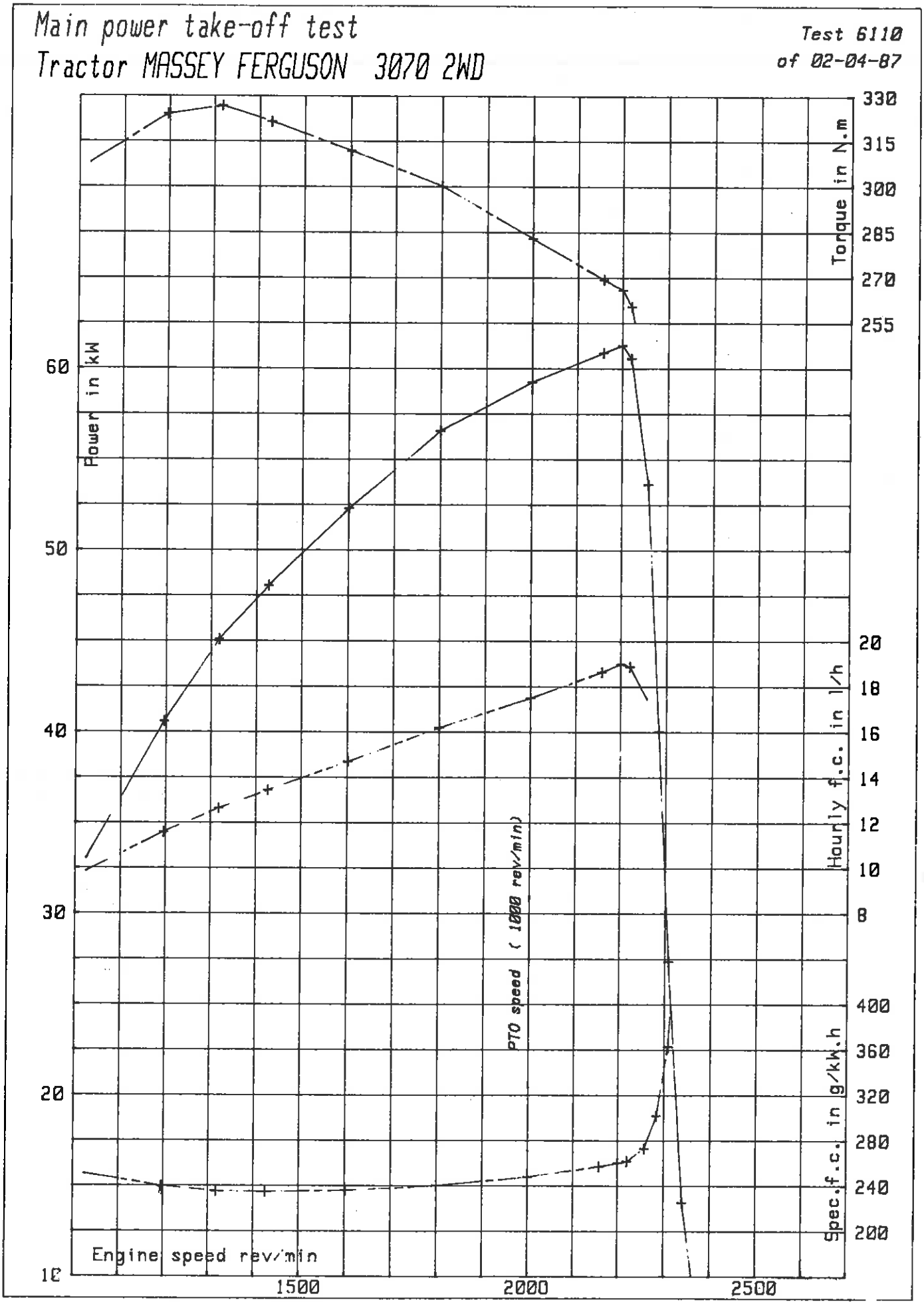
3.1. MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test : 17th april 1987
Type of sound level meter : BRUEL & KJAER 2209
Type of track : TARMACADAM
Gear : 4 FR + MP
Travelling speed before acceleration : 23,9 km/h
Sound level : 82 dB(A)

REPAIR AND ADJUSTMENTS DURING TESTS : none

REMARKS : none

Le Technicien Chargé de l'essai	L'Ingénieur Responsable de l'essai	Le Chef de la Division Tracteurs Travail du Sol
M.HOCQUEL	E.HUGO	J.F.GOUPILLON


Main power take-off test
Tractor MASSEY FERGUSON 3070 2WD
Test 6110
of 02-04-87
Power in kW
60
50
40
30
20
10
Torque in N.m
330
315
300
285
270
255
Hourly f.c. in l/h
20
18
16
14
12
10
8
Spec.f.c. in g/kW.h
400
360
320
280
240
200
PTO speed (1000 rev/min)
Engine speed rev/min
1500
2000
2500

Main power take-off test

Test 6110
of 02-04-87

Tractor MASSEY FERGUSON 3070 2WD

