Consiglio Nazionale delle Ricerche

IMAMOTER

Istituto per le Macchine Agricole e Movimento Terra

Report No. 3089*2*CASE*MAXXUM140X*1*2009

OECD Approval No. 2/2 490 on 30th June 2009

TEST IN ACCORDANCE WITH THE OECD STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL AND FORESTRY TRACTOR PERFORMANCE

Make:	**CASE IH**
Trade Name:	**MAXXUM 140X**
Type:	**4 WD, 50 km/h, 17+16 speed, semi-powershift transmission**



Manufactured by:	CNH Europe Holding S.A.. 13, Rue Aldringen L-1118 Luxembourg
Date and location of the tests:	2008 TORINO (Italy)

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NOTE

The information opposite each item has been validated by the testing station as follows

C data declared and checked by the testing station

D data declared by the manufacturer

C	Tractor manufacturer's name and address:	CNH Europe Holding S.A. 13, Rue Aldringen L-1118 Luxembourg
D	Location of tractor assembly:	Basildon – United Kingdom St. Valentin - Austria
D	Submitted for test by:	the Manufacturer
C	Selected for test by:	manufacturer with the agreement of IMAMOTER
D	Place of running-in:	Modena - Italy
D	Duration of running-in:	appr. 50 hours
C	Location of test:	IMAMOTER – Torino, Italy

1 SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1 Denomination

C	Make of the tractor:	CASE IH
C	Model (trade name):	MAXXUM 140X
C	Type:	4WD

1.1.2 Numbers

D	1st serial N° or prototype:	Z7BE01001
C	Serial N°:	Z7BE04368

1.1.3 Other specification (if applicable)

D	Model(s) for other countries:	MAXXUM 140
C	Transmission type or gears x ranges:	17+16 speeds, semi-powershift
C	Speed version:	50 km/h
D	Manufacturer identification or technical type number	BEFCFB

1.2 Engine

C	Make:	CNH
C	Model:	667TA/MEJ
C	Type:	4 stroke supercharged, intercooler Diesel direct injection type
C	Serial N°:	457485

1.2.1 Cylinders

C	Number and disposition:	6, vertical, in line
D	Bore and stroke:	104x132 mm
D	Capacity:	6728 cm^3
D	Compression ratio:	17.5:1
D	Arrangement of valves:	overhead, 2 valves for cylinder
D	Cylinder liners (wet or dry):	none, monobloc construction

1.2.2 Supercharging

C	Make, model and type:	HOLSET, HX35, Exhaust driven
D	Pressure:	0.105 MPa

1.2.3 Fuel system

C	Fuel feed system:	mechanical rotary injection pump
C	Make model and type of fuel filter(s):	plastic strainer in tank, 1 glass glow sediment and water separation pre-filter, and 1 disposable canister filter (FLEETGUARD, 2830997 drawing, spin on cartridge)
D	Capacity of fuel tank:	250 dm^3, placed under the tractor platform, on the left side
C	Make model and type of injection pump:	BOSCH, VE6/12F, rotary injection pump.
C	Serial N°:	not available
	Manufacturer's production setting of injection pump	
C	Flow rate (rated engine speed and full load):	75.96 mm^3/stroke at rated speed and full load corresponding 30.08 dm^3/h
D	Timing:	dynamic timing, 0° before TDC
D	Make, model and type of injectors:	BOSCH, DSLA 145, mechanical injection nozzles.
D	Injection pressure:	26±1 MPa
C	Make, model and type of carburettor:	not applicable

1.2.4 Governor

C	Make model and type:	BOSCH , VE, mechanical type, incorporated in the fuel pump
C	Governed range of engine speed from-to:	900÷2416 rev/min
C	Rated engine speed:	2200 rev/min

1.2.5 Air cleaner

	Pre-cleaner	
C	Make model and type:	none
C	Location of air intake:	none
	Main cleaner	
C	Make, model and type:	CNH, 3 stage dry paper element with 2 replaceable cartridge, inner (82028977 drawing) and outer (82028151 drawing)
C	Location of air intake:	on front of the radiator under the bonnet cowling inside the pre-cleaner, on front of the radiator under the bonnet cowling

C	Maintenance indicator:	warning lamp on the dashboard
1.2.6	Lubrication system	
D	Type of feed pump:	forced feed from concentric rotor pump
C	Type of filter(s):	mesh strainer in sump on suction line and full flow disposable canister on pressure line
C	Number of filters:	1
1.2.7	Cooling system	
C	Type of coolant:	50% water and 50% antifreeze
D	Type of pump:	centrifugal blade pump with viscous fan belt driven by engine shaft
	Specification of fan or blower	
C	Number of fan blades:	5
C	Fan diameter:	510 mm
D	Coolant capacity:	25 dm^3
C	Type of temperature control:	thermostat with full flow bypass
D	Over-pressure system:	100 kPa
1.2.8	Starting system	
C	Make model and type:	ISKRA, 11131464, positive engagement, solenoid operated
D	Starter motor power rating:	4.2 kW
C	Cold starting aid:	PHILIPS & TEMRO grid heater
C	Safety device:	starting inoperable unless shuttle lever in neutral, clutch pedal depressed and operator seat presence switch is activated
1.2.9	Electrical system	
C	Voltage:	12 V, negative earth
	Generator:	alternator
C	Make model and type:	ISKRA, AAK 5592, belt driven
D	Power:	1.6 kW
	Battery of accumulators	
C	Number:	1, lead acid type
D	Rating:	12 V, capacity 132 Ah, cranking 960 A
1.2.10	Exhaust system	
C	Make model and type:	COR.TUBI, 1.15.1 02AH, vertical stack pipe with integrated silencer
C	Location:	on the right hand side of engine, with the vertical exhaust pipe on right of the bonnet cowling

1.3 Transmission

1.3.1 Clutch (travel alone)

D Make model and type: CNH, own drawing model, wet multi-plate disc

D Number of plates: 9

D Diameter of plates: 160 mm

C Method of operation: electro hydraulic operated by pedal

1.3.2 Gear box

D Make model and type: CNH make, own drawing model, mechanical

Description: 17+16 speeds (50 km/h) mechanical transmission with semi powershift. 17 forward gears and 16 reverse gears in 2 ranges (Low and High) shiftable with 1 lever. 8 gears for range (+1 for range High) with switch for up/down power-shifting. Forward/reverse shuttle lever on steering column. Optional creeper switch acted, 33+32 speeds, not fitted on tested tractor.

		Forward	Reverse
C	Number of gears	8(+1 for High range)	8
C	Number of ranges	2	2
C	Total of arrangements	17	16

D Available options: 24+24 speeds (40 km/h) mechanical transmission: 3 ranges (I, II and III) and 4 gears per range shiftable with 2 levers, 1 switch for up/down power-shifting (Hi and Lo steps), and forward/reverse shuttle lever on steering column. Optional creeper switch acted, 48+48 speeds.

16+16 speeds (40 km/h) mechanical transmission with semi powershift. 16 forward and reverse speeds in 2 ranges (Low and High) shiftable with 1 lever. 8 gears for range with switch for up/down power-shifting. Forward/reverse shuttle lever on steering column. Optional creeper switch acted, 33+32 speeds.

1.3.3 Rear axle and final drives

D Make model and type: CNH, own drawing, crown wheel and pinion with differential and inboard epicyclical reduction gear final drive

Differential lock:

D Type: multi-plate wet discs

C Method of engagement: electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto differential lock actuation

C Method of disengagement: via panel switch or in response to signal from brakes on application, or auto differential lock disengagement

1.3.4 Front axle and final drives

D	Make model and type:	CNH, own drawing oscillating axle with suspension, jointed cross shaft axle, crown wheel and pinion with differential and outboard epicyclical reduction gear final drive
	Drive engagement	
D	Type:	dog clutch
C	Method of operation:	electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto 4WD engagement
	Differential lock	
D	Type:	multi-plate wet discs
C	Method of engagement:	electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto differential lock actuation
C	Method of disengagement:	via panel switch or in response to signal from brakes on application, or auto differential lock disengagement

1.3.5 Total ratios and travelling speeds

	Speed No.[1]	Gear	Range	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2200 min^{-1} (rev/min)[2] km/h
	Forward				
C	1A	1	Low	300.124	2.266
C	2A	2	Low	244.663	2.780
C	3A	3	Low	200.928	3.385
C	4A	4	Low	163.797	4.152
C	5B	5	Low	127.757	5.323
C	6B	6	Low	104.148	6.530
C	7B	7	Low	85.531	7.951
C	9C	9	High	76.750	8.861
C	8B	8	Low	69.725	9.754
C	10C	10	High	62.567	10.870
C	11C	11	High	51.383	13.236
C	12C	12	High	41.887	16.236
C	13D	13	High	32.671	20.816
C	14D	14	High	26.633	25.536
C	15D	15	High	21.872	31.094
C	16D	16	High	17.831	38.141
C	17D	17	High	14.842	45.822
	Reverse				
C	1A	1	Low	303.673	2.240
C	2A	2	Low	247.556	2.747
C	3A	3	Low	203.304	3.345
C	4A	4	Low	165.734	4.104
C	5B	5	Low	129.267	5.261
C	6B	6	Low	105.379	6.454
C	7B	7	Low	86.542	7.859
C	9C	9	High	77.657	8.758
C	8B	8	Low	70.550	9.640
C	10C	10	High	63.307	10.743
C	11C	11	High	51.990	13.081
C	12C	12	High	42.383	16.046
C	13D	13	High	33.057	20.573
C	14D	14	High	26.948	25.237
C	15D	15	High	22.131	30.730
C	16D	16	High	18.041	37.697

[1] *As displayed on dashboard*

[2] *Calculated with a tyre dynamic radius index of 820 mm (ISO 4251-1:2005)*

C Number of revolution of front wheels for one revolution of rear-wheels: 1.353

1.4 Power take-off

1.4.1 Main power take-off

C	Type:	fully independent
C	Method of engagement:	engaged/disengaged by pulling/pushing a switch on the right-hand control panel, driven by electro-hydraulic operated multi-plate clutch
C	Number of shafts:	1
C	Method of changing power take-off shaft ends and speeds:	removing circlip, swapping shaft and replace circlip

1.4.1.1 Power take-off proportional to engine speed

Power take-off at 540 min^{-1} rev/min

C	Location:	at the rear of the tractor, in the median plane
C	Diameter of power take-off shaft end:	35 mm
C	Number of splines:	6, in conformity with ISO 500-1:2005, ISO 500-2:2004 and ISO 500-3:2004
C	Height above ground:	795 mm
C	Distance from the median plane of the tractor:	0 mm
C	Distance behind rear-wheel axis:	555 mm
C	PTO speed at rated engine speed:	603 rev/min
C	Engine speed at standard power take-off speed:	1970 rev/min
C	Ratio of rotation speeds (engine speed/p.t.o. speed):	3.648
D	Power restriction:	none
D	Maximum torque transmissible:	engine torque
C	Direction of rotation (viewed from behind tractor):	clockwise

Power take-off at 1000 min^{-1} rev/min

C	Location:	at the rear of the tractor, in the median plane
C	Diameter of power take-off shaft end:	35 mm
C	Number of splines:	21, in conformity with ISO 500-1:2005, ISO 500-2:2004 and ISO 500-3:2004
C	Height above ground:	795 mm
C	Distance from the median plane of the tractor:	0 mm
C	Distance behind rear-wheel axis:	555 mm
C	PTO speed at rated engine speed:	1038 rev/min
C	Engine speed at standard power take-off speed:	2120 rev/min
C	Ratio of rotation speeds (engine speed/p.t.o. speed):	2.119
D	Power restriction:	none
D	Maximum torque transmissible:	engine torque
C	Direction of rotation (viewed from behind tractor):	clockwise

1.4.1.2 Power take-off proportional to ground speed

Optional, not fitted on tested tractor

1.4.2 Optional power take-off

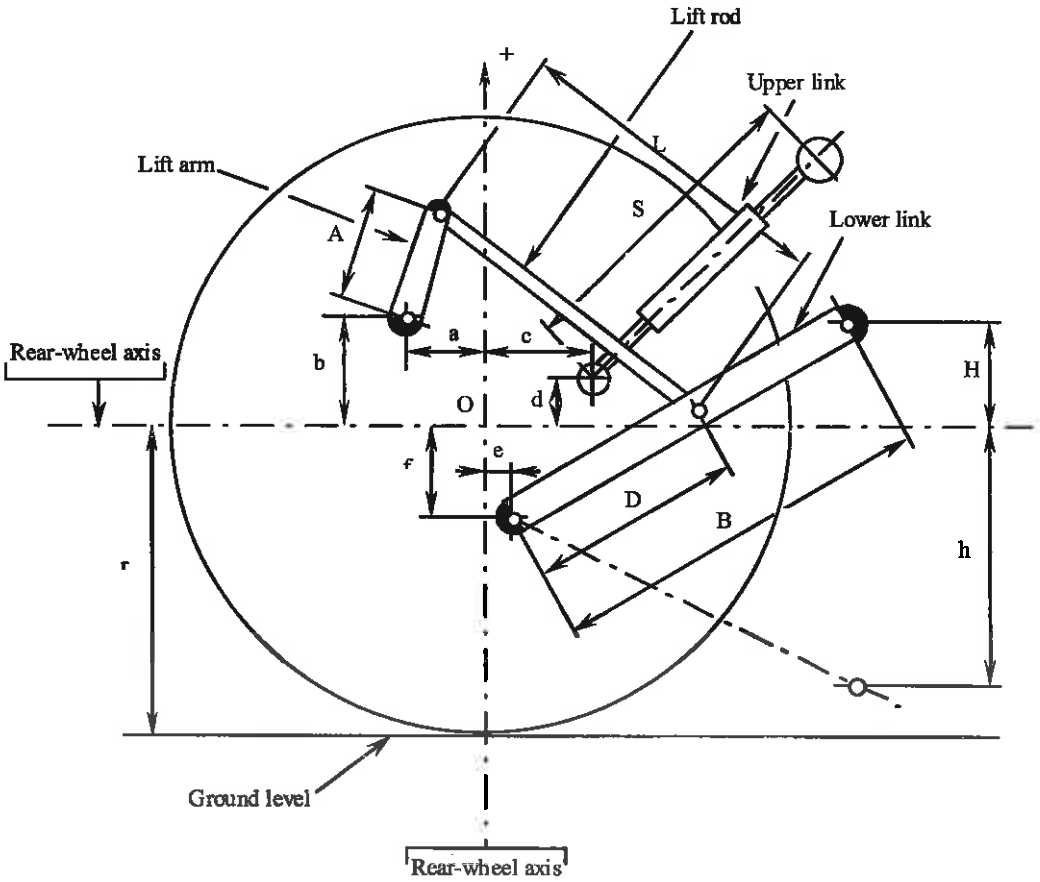
Optional, not fitted on tested tractor

1.5 Hydraulic power lift

C	Make, model and type:	CNH, own drawing, draft and position control and float function; electronically controlled
C	Type of hydraulic system:	closed centre system
C	Type and number of cylinders:	2 single acting Ø 90 mm external
C	Type of linkage lock for transport:	hydraulic
D	Relief valve pressure setting (tolerance):	21±1 MPa
D	Opening pressure of cylinder safety valve (if fitted):	22±0.5 MPa
D	Lift pump type:	load sensing variable displacement gear pump driven by the engine shaft
D	Transmission between pump and engine:	mechanical
C	Type and number of filters:	2, replaceable canister filters
C	Site of oil reservoir:	in common with transmission and rear axle
C	Type, number and location of tapping points:	4 control valves, double acting, 4 couple of couplers at rear of tractor
D	Maximum volume of oil available to external cylinders:	38 dm^3

1.6 Three point linkage

C	Category:	2nd, in conformity with categories 2 ISO 730-1:1994+Cor.1:1995
C	Category adapter:	3rd



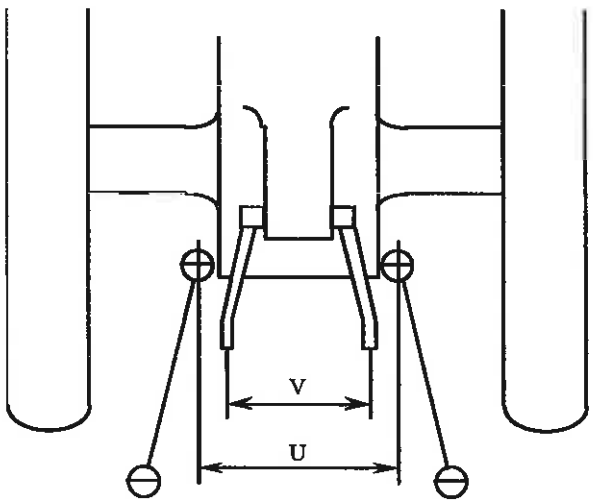


Figure 1. Lift test- Rear linkage geometry

Table 1.1. Dimension of rear linkage geometry when connected to the standard frame

			Dimension or range	Settings used in test		
				OECD[1]		SAE[2]
				Main	Additional	
			mm	mm	mm	
C	Length of lift arms:	(A)	310	310	310	310
C	Length of lower links:	(B)	1010	1010	1010	1010
	Distance of lift arm pivot point from rear wheel axis:					
C	- horizontally (rearward)	(a)	138	138	138	138
C	- vertically	(b)	370	370	370	370
C	Horizontal distance between the 2 lower link points:	(u)	460	460	460	460
C	Horizontal distance between the 2 lift arm end points:	(v)	550	550	550	550
C	Length of upper link:	(S)	650→920	770	794	781
	Distance of upper link pivot point from rear wheel axis:					
C	- horizontally (rearward)	(c)	395-430	430	395	395
C	- vertically	(d)	200-250	200	250	250
	Distance of lower link pivot point from rear wheel axis:					
C	- horizontally	(e)	168	168	168	168
C	- vertically	(f)	235	235	235	235
C	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	505-585-665	505	665	585
C	Length of lift rods:	(L)	692→867	821	867	865/750
	Height of lower hitch points (corresponding to travel of the lift without power) relative to the rear wheel axis:[2]:					
C	- in low position	(h)	-760→-199	-620	-533	-620/-399
C	- in high position	(H)	-40→288	85	62	22/202
C	Height above ground of lower hitch points when locked in transport position		Any height within lift range			

[1] *Main and additional settings are in accordance with OECD Code and manufacturer specifications*

[2] *SAE settings is in accordance with SAE Standard and manufacturer specifications*
SAE setting tests' results is not covered by OECD approval

[3] *Assuming r=820 mm tyre dynamic radius index of 600/65R38 (equivalent to 18.4R38) tyres on rear axle (ISO 4251-1:2005)*

1.7 Swinging drawbar

C	Type:	automatic pick-up drawbar with clevis
	Height above ground	
C	Maximum:	440 mm
C	Minimum:	340 mm
C	Type of adjustment:	overturning the drawbar to position the fork uppermost or underneath
C	Distance of hitch point from rear-wheel axis, horizontally:	962-1346 mm
	Distance of hitch point from power take-off shaft end:	
C	Vertically:	256-346 mm
C	Horizontally:	407-791 mm
	Lateral adjustment (centre of clevis):	
C	Right hand:	Not applicable
C	Left hand:	Not applicable
C	Distance of pivot point from rear-wheel axis, horizontally:	Not applicable
C	Diameter drawbar pinhole:	33 mm
D	Maximum vertical permissible load:	15.0 kN – 13.6 kN on uppermost position depending on longitudinal adjustment 15.0 kN – 13.6 kN on underneath position depending on longitudinal adjustment

1.8 Trailer hitch

Optional, not fitted

1.9 Holed drawbar

Optional, not fitted

1.10 Steering

D	Make model and type:	DANFOSS make, OSPC 160 OR model, hydrostatic type with independent circuit
	Method of operation	
D	Pump(s):	BOSCH, hydraulic gear pump
D	Ram(s):	2 steering cylinders, one for each steering stub, acting directly on front axle
D	Working pressure:	17.0±0.5 MPa

1.11 Brakes

1.11.1 Service brake

D	Make model and type:	CNH make, oil bath disc, total 2 discs, 1 per side at rear axle, independently acting on the rear axle, additionally automatic 4WD engagement.
C	Method of operation:	hydraulically actuated with 2 pedals
C	Trailer braking take-off (hydraulic or air brake):	hydraulic brake system and air brake system

1.11.2 Parking brake

C	Type:	4 oil immersed discs acting on bevel pinion shaft
C	Method of operation:	mechanical cable linked by means of hand lever

1.12 Wheels

Number

C	Front:	2, driving and steering
C	Rear:	2, driving
C	Wheelbase:	2661 mm

Track width adjustment:

		Minimum mm	Maximum mm	Adjustment method
D	Front	1325	2285	Changing the position of the rims with respect to the disc
D	Rear	1430	2130	Changing the position of the rims in respect to the disc

1.13 Protective structure

C	Make model and type:	CNH, SLTV 12, cab
C	Manufacture's name and address:	CNH Europe Holding S.A. 13, Rue Aldringen L-1118 Luxemburg

Protective device

C	Cab, frame, rollguard or other:	four posts
C	Tiltable or not tiltable:	not tiltable

OECD Approval

C	Approval number:	4/0 741/2
C	Date of approval:	16th January 2008
C	Nos. of minor modification certificates, if any:	4

I.14 Seat

I.14.1 Driver's seat

C Make model and type:	GRAMMER, MSG 95G/741, air suspended type (Included in the EC Type Approval, with same position of seat reference point of GRAMMER MSG95A/741)
C Seat and steering wheel reversible:	No
C Type of suspension:	parallelogram linkage
C Type of damping:	hydraulic
Range of adjustment:	
C Longitudinally:	210 mm
C Verticaliy:	60 mm
C Safety belt:	yes
Type:	pelvic

I.14.2 Optional driver's seat(s)

Make	Model	Type of suspension	Type of damping	Range of adjustment	
				Longitudinal	Vertical
				mm	mm
GRAMMER	MSG 85/731	Mechanical	Hydraulic	210	80
GRAMMER	MSG 44/520	Mechanical	Hydraulic	210	80
GRAMMER	MSG 93/731	Air	Hydraulic	210	60
GRAMMER	MSG 95GL/741[1]	Air	Hydraulic	210	80

[1] *Included in the EC Type Approval, with same position of seat reference point of GRAMMER MSG95A/741*

I.14.3 Passenger seat

C Location:	on the left side of the driver's seat
C Capacity (number):	1

1.15 Lighting

		Height above ground of centre	Size (lxh)	Distance from outside edge of lights to median plane of tractor
		mm	mm	mm
C	Headlights	1355	175x110	195
C	Front direction light	1850	80x90	1880
C	Front lower working light	1355	95x110	290
C	Front middle working light	2350	135x85	1025
C	Front higher working light	2635	135x85	653
C	Rear direction lights	1855	265x55	1115
C	Stop/rear position	1800	265x55	1115
C	Reflectors	800	105x45	645
C	Rear middle working light	2280	135x85	920
C	Rear higher working light	2595	135x85	805

2 TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Unballasted	4531	2450	2810	2985	2940

2.2 Ground clearance (unballasted tractor): 300 mm

Clearance-limiting part: drawbar clevis in underneath position

2.3 Tractor mass

	Unballasted	
	without driver	with driver
	kg	kg
Front	2330	2340
Rear	3625	3690
Total	5955	6030

2.4 Ballast

Not applicable

2.5 Track specifications

Not applicable

2.6 Tyres and track width specifications

	Front	Rear
Tyres:		
- dimensions (equivalent)	480/65R28 (14.9R28)	600/65R38 (18.4R38)
- ply rate	none	none
- load index	136	153
- type	radial	radial
- maximum load (tyre manufacturer's)	15.7 kN	25.8 kN
- maximum load (tractor manufacturer's)	15.7 kN	25.8 kN
- inflation pressure (tyre manufacturer's)	80 kPa	80 kPa
- dynamic radius index*	640 mm	820 mm
Chosen track width:	1765 mm	1735 mm
** (ISO 4251-1:2005)*		

2.7 Fuel

Type: Diesel oil, in conformity with UNI EN 590 July 2004.

Density at 15 °C: 840 kg/m^3

2.8 Oils and lubricants

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine	15.0	600	600
Gear box, rear axle, final drive, hydraulic system and steering	62.0	1200 or annually	1200 or annually
Front axle	9.0	1200 or annually	None
Final drive (front)	1.5	1200 or annually	None
Brakes	0.5	Max. level	None

2.8.2 Specifications (SAE, API, CCMC, ACEA, Mil.L, ISO)

	Recommended	Used during test
Engine oil - Type: - Viscosity: - Classification:	15W-40 14.4 cSt at 100 °C (ASTM D 445) API CI-4/CH-4 ACEA E7/E5	As recommended
Transmission oils - Type: - Viscosity: - Classification	SAE 10W-30 10 cSt at 100 °C (ASTM D 445) API GL 4	As recommended
Hydraulic fluid - Type: - Viscosity: - Classification	SAE 10W-30 10 cSt at 100 °C (ASTM D 445) API GL 40	As recommended
Steering oil - Type: - Viscosity: - Classification:	SAE 10W-30 10 cSt at 100 °C (ASTM D 445) API GL 40	As recommended
Grease - Type: - Viscosity: - Classification:	Lithium based Not applicable NLGI 2	As recommended
Brake fluid - Type: - Viscosity: - Classification:	No correspondent 6.5 cSt at 100 °C (ASTM D 445) ISO 7308	As recommended

2.8.3 Grease

Number of lubrication points: 16

3 TEST RESULTS

3.1 Main power take-off

Date and location of tests: 14th December 2007, I.M.A.MO.TER, TORINO, ITALY
Type of dynamometer: parasitic currents, BORGHI&SAVERI FA300-30SP

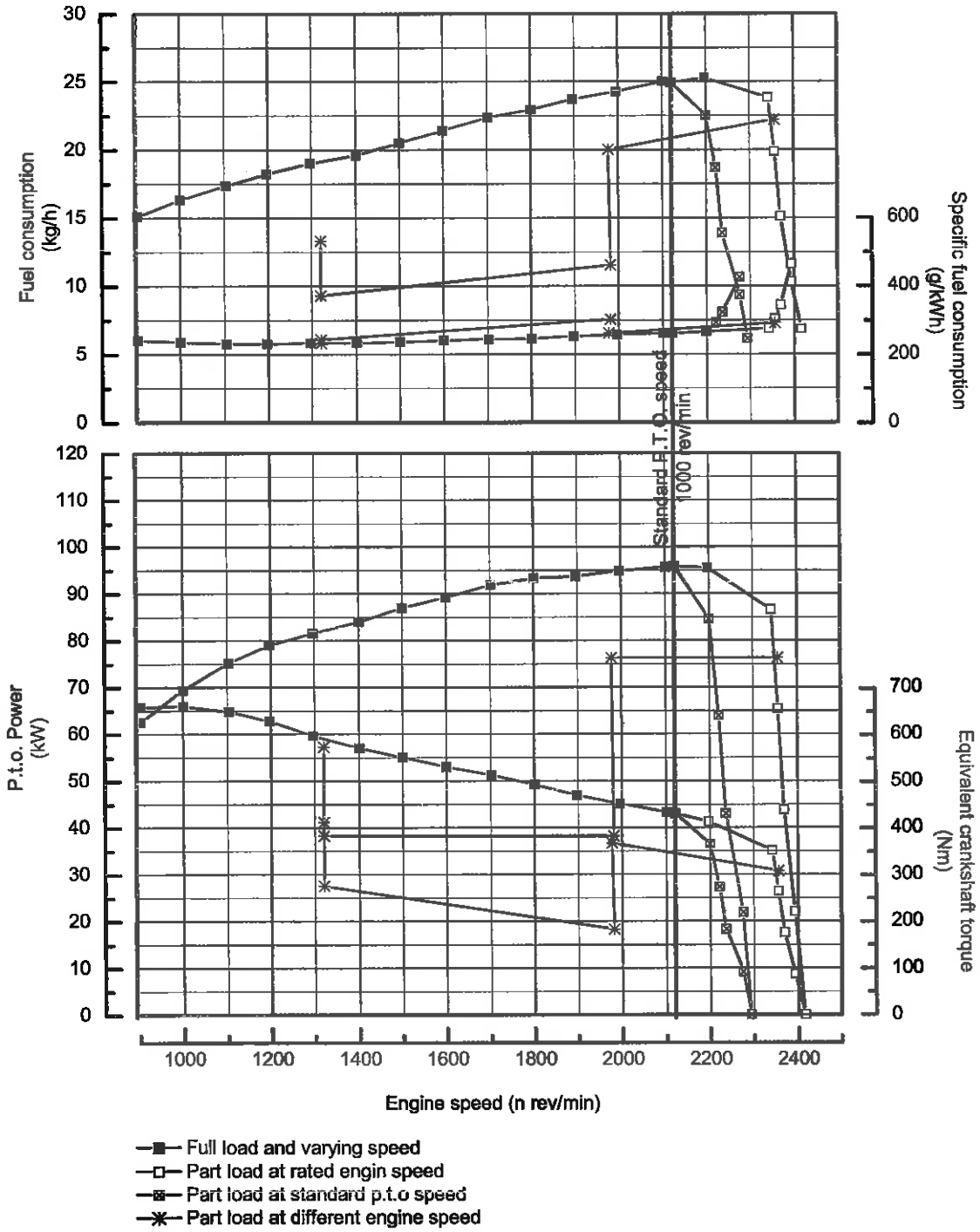
Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O.	Fan	Hourly		Specific	
kW	min^{-1} (rev/min)			kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER-ONE-HOUR TEST							
95.9	2121	1001	2141	24.91	29.65	260	3.23
3.1.2 POWER AT RATED ENGINE SPEED							
95.5	2197	1037	2157	25.27	30.08	265	3.17
3.1.3 POWER AT STANDARD PTO SPEED [1000 ± 25 min^{-1}]							
95.9	2121	1001	2141	24.91	29.65	260	3.23
3.1.4 PART LOADS 3.1.4.1 The torque corresponding to maximum power at rated engine speed							
95.5	2197	1037	2157	25.27	30.08	265	3.17
3.1.4.2 85% of torque obtained in 3.1.4.1							
86.6	2341	1105	1849	23.83	28.37	275	3.05
3.1.4.3 75% of torque defined in 3.1.4.2							
65.4	2356	1112	1678	19.87	23.65	304	2.77
3.1.4.4 50% of torque defined in 3.1.4.2							
43.8	2369	1118	1479	15.12	18.00	345	2.43
3.1.4.5 25% of torque defined in 3.1.4.2							
22.1	2394	1130	1488	10.31	12.27	466	1.80
3.1.4.6 Unloaded							
-	2416	1140	1292	6.84	8.14	-	-
3.1.5 PART LOADS AT STANDARD PTO SPEED [1000 ± 25 min^{-1})] 3.1.5.1 the torque corresponding to maximum power							
95.9	2121	1001	2141	24.91	29.65	260	3.23
3.1.5.2 85% of torque obtained in 3.1.5.1							
84.6	2200	1038	1751	22.50	26.79	266	3.16
3.1.5.3 75% of torque defined in 3.1.5.2							
63.9	2221	1048	1548	18.68	22.24	292	2.87
3.1.5.4 50% of torque defined in 3.1.5.2							
43.0	2236	1055	1473	13.88	16.52	323	2.60
3.1.5.5 25% of torque defined in 3.1.5.2							
21.9	2274	1073	1308	9.35	11.13	427	1.97
3.1.5.6 Unloaded							
-	2293	1082	1264	6.13	7.30	-	-

Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O.	Fan	Hourly		Specific	
kW	min^{-1} (rev/min)			kg/h	l/h	g/kWh	kWh/l
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS 3.1.6.1 Maximum power at rated engine speed							
95.5	2197	1037	2157	25.27	30.08	265	3.17
3.1.6.2 80% of power obtained in 3.1.6.1 at max speed setting							
76.3	2356	1112	1817	22.21	26.44	291	2.88
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
76.3	1977	933	1546	20.03	23.85	262	3.20
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
38.2	1981	935	1340	11.57	13.77	303	2.77
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
57.2	1320	623	1285	13.34	15.88	233	3.60
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
38.3	1320	623	1266	9.29	11.06	243	3.46

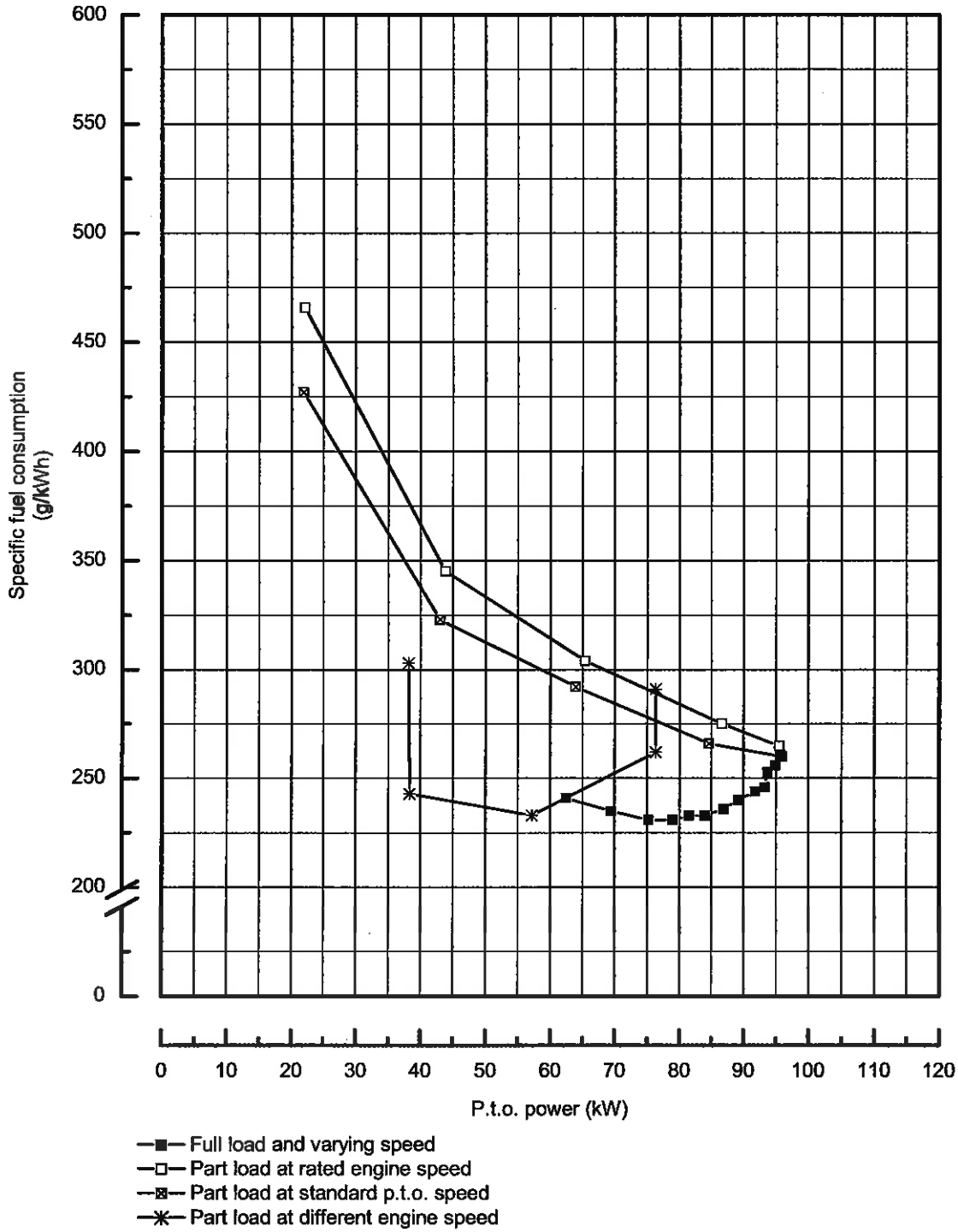
- No load maximum engine speed: 2416 min^{-1} (rev/min)
- Torque (equivalent crankshaft) at maximum power
  - At rated engine speed 414.8 Nm
  - At 1-hour test 431.8 Nm
- Maximum torque (equivalent crankshaft): 662.6 Nm at 1000 min^{-1} (rev/min)

Mean atmospheric conditions:	
Temperature	18.5 °C
Pressure	99.6 kPa
Relative humidity	58 %
Maximum temperatures:	
Coolant	86.3 °C
Engine oil	114.0 °C
Fuel	40.0°C
Engine air intake	27.6 °C

Graph 1. Power take-off test



Graph 2. Power take-off test



3.2 Hydraulic power and lifting force

Date of tests: 14th May 2008

3.2.1 Hydraulic Power Test

3.2.1.1 Hydraulic fluid data

Hydraulic fluid data:

Viscosity index (ASTM D 2270): 147

Viscosity at 65°C (ASTM D 341): 25 mm^2/s

3.2.1.2 Compulsory reporting

	Pressure[1]	Reservoir oil Temperature °C (65°C target)		Engine speed	Flow rate	Power
	MPa	Min.	Max.	min^{-1}	l/min	kW
Rated Engine Speed				2200		
3.2.1.2.1.A Pump delivery rate at minimum pressure through one coupler		60	65	2410	91.4	
3.2.1.2.1.B **Pump delivery rate at minimum pressure through four couplers**		**66**	**70**	**2410**	**112.5**	
3.2.1.2.2 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	21.0	60	65	2410		
3.2.1.2.3 A Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power measured at one coupler	18.9	60	65	2410	66.9	21.1
3.2.1.2.3 B Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power measured at four couplers	18.9	66	70	2410	84.2	26.5
3.2.1.2.4 Maximum available hydraulic power with flow through a single coupler pair, and corresponding flow and available coupler outlet pressure	17.0	60	65	2410	87.9	24.9
3.2.1.2.5 Maximum available hydraulic power with coupler pairs operating simultaneously (flow through four couplers), and corresponding flow and available coupler outlet pressure	18.0	66	70	2410	95.4	28.6

[1] *Pressure as measured at the outlet coupler (pressure near coupler where oil is exiting from tractor)*

3.2.1.3 Supplementary reporting:

	Pressure[2]	Reservoir oil Temperature °C		Engine speed	Flow rate	Power
	MPa	min.	max.	min^{-1}	l/min	kW
3.2.1.3.1 Pump delivery rate at minimum pressure from one couple pair		66	71	2200	91.2	
3.2.1.3.2 Maximum available flow and maximum useable (*continuous*) power from one coupler	15.5	66	71	2200	88.7	22.9
3.2.1.3.3 Maximum available flow and maximum useable (*continuous*) power from four couplers pairs operating simultaneously	17.2	64	67	2200	91.7	26.3
3.2.1.3.4 Maximum differential pressure Category 1 Tractor						
3.2.1.3.5 Maximum differential pressure Category 2 or 3 Tractor	19.1	66	71	2200	50	
3.2.1.3.6 Peak Pressure						
3.2.1.3.7 Maximum sump return pressure with coupler	1.5	66	71	2200		
3.2.1.3.8 Maximum return pressure without coupler						

[2] *Differential pressure (pressure near coupler where oil is exiting from tractor – pressure near coupler where oil is re-entering the tractor)*

3.2.2 Compulsory Power lift test

Linkage settings for test - see Table 1.1 and Figure 1.1 and 1.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement - With lifting force - Without lifting force	 665 mm 705 mm	 805 mm 860 mm
Maximum corrected force exerted through full range	43.5 kN	34.1 kN
Corresponding pressure of hydraulic fluid	18.9 MPa	18.9 MPa
Moment about rear-wheel axis	51.3 kNm	60.9 kNm
Maximum tilt angle of mast from the vertical	none	9.5 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-448	-385	-285	-185	-85	0	115	215	280	315	357
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to a 90% of the actual relief valve pressure setting of the hydraulic lift system):											
at the hitch points kN	-	47.7	48.9	50.4	51.6	52.3	53.3	54.0	43.5	-	-
Corresponding pressure: 18.9 MPa											
at the frame kN	41.6	41.1	41.2	41.3	41.0	40.5	39.7	38.8	-	37.6	34.1
Corresponding pressure: 18.9 MPa											

3.2.3 Optional Power lift test

Tests have been performed in accordance with setting requested by manufacturer.

Linkage settings for test - see *"Additional"* column in Table 1.1 and Figure 1.1 and 1.2

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	287 mm	287 mm
Vertical movement - With power travel of the lift - Without power travel of the lift	 560 mm 595 mm	 654 mm 688 mm
Maximum corrected force exerted through full range	43.4 kN	33.0 kN
Corresponding pressure of hydraulic fluid	18.9 MPa	18.9 MPa
Moment about rear-wheel axis	51.1 kNm	59.0 kNm
Maximum tilt angle of mast from the vertical	none	6.5 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-331	-298	-285	-185	-85	0	100	200	262	300	323
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to a 90% of the actual relief valve pressure setting of the hydraulic lift system):											
at the hitch points kN	-	59.7	-	61.4	62.4	62.7	62.4	61.3	43.4	-	-
Corresponding pressure:18.9 MPa											
at the frame kN	53.3	-	53.1	53.1	52.6	51.7	49.8	47.8	-	44.5	33.0
Corresponding pressure: 18.9 MPa											

3.3 Compulsory drawbar power and fuel consumption test (unballasted tractor)

Date of tests: 8th and 9th January 2008
Type of track: asphalt

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
440 mm	80 kPa	80 kPa

Speed No.[1]	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS/SPEED SETTINGS														
1A	33.7	57.84	2.10	2372	1989	15.53	413	2.03	23	86	102	5	73	99.8
2A	42.8	56.00	2.75	2366	2099	9.25	376	2.24	24	87	103	4	77	99.8
3A	51.2	54.33	3.39	2355	2373	8.42	369	2.28	27	86	103	3	88	99.8
4A	62.1	53.86	4.15	2350	2397	7.80	343	2.45	26	86	104	3	86	99.8
5B	76.9	52.06	5.32	2292	2487	6.51	316	2.66	28	86	104	3	84	99.8
6B	81.7	48.47	6.07	2125	2573	5.41	305	2.76	27	85	101	2	90	99.8
7B	79.6	37.37	7.67	2115	2654	3.10	313	2.69	28	85	102	2	88	99.8
9C	80.5	33.99	8.53	2121	2427	2.63	309	2.72	30	87	103	2	89	99.8
8B	79.4	30.41	9.40	2117	2419	2.43	314	2.68	29	85	104	2	92	99.8
10C	80.0	27.23	10.57	2116	2374	2.03	311	2.70	30	85	103	2	89	99.8
11C	76.0	21.17	12.92	2117	2245	1.50	328	2.56	18	85	104	2	81	99.8
12C	73.8	16.68	15.92	2115	2120	1.18	338	2.49	18	84	103	2	86	99.8

[1] *As displayed on dashboard*

Speed No.[1]	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.2 FUEL CONSUMPTION														
3.3.2.1 In selected gear/speed setting nearest 7.5 km/h, at maximum power at rated engine speed														
7B	77.7	34.98	8.00	2201	2382	2.05	325	2.59	24	87	103	3	78	99.7
3.3.2.1.1 75% of pull corresponding to maximum power at rated engine speed														
7B	63.0	26.23	8.64	2344	2462	1.12	363	2.31	25	87	105	3	80	99.7
3.3.2.1.2 50% of pull corresponding to maximum power at rated engine speed														
7B	42.7	17.57	8.75	2361	2368	0.43	419	2.01	25	87	105	4	76	99.7
3.3.2.1.3 Highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.1.1 and 3.3.2.1.2; same pull and travelling speed as in 3.3.2.1.1														
9C	63.1	26.28	8.64	2107	2157	1.11	328	2.56	27	86	104	3	79	99.7
3.3.2.1.4 Same gear/speed selection as 3.3.2.1.3 at reduced speed; same pull and travelling speed as in 3.3.2.1.2														
9C	42.0	17.26	8.75	2134	1935	0.38	375	2.24	28	86	103	4	78	99.7
3.3.2.2 In selected gear/speed setting nearest between 7 and 10 km/h at rated engine speed														
8B	76.7	28.10	9.82	2201	2394	1.35	330	2.54	28	85	104	4	76	99.7
3.3.2.2.1 75% of pull corresponding to maximum power at rated engine speed														
8B	62.4	21.07	10.67	2344	2385	0.71	368	2.28	28	86	106	6	70	99.7
3.3.2.2.2 50% of pull corresponding to maximum power at rated engine speed														
8B	42.2	14.09	10.78	2360	2260	0.19	435	1.93	29	86	106	4	74	99.7
3.3.2.2.3 Highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.2.1 and 3.3.2.2.2; same pull and travelling speed as in 3.3.2.2.1														
10C	62.3	21.02	10.67	2133	2220	0.68	339	2.48	30	85	104	5	70	99.7
3.3.2.2.4 Same gear/speed setting as 3.3.2.2.3 at reduced speed; same pull and travelling speed as in 3.3.2.2.2														
10C	42.0	14.18	10.67	2113	1927	0.19	382	2.20	31	85	103	4	78	99.7

[1] *As displayed on dashboard*

4 REPAIRS

None

5 REMARKS

Tests results of this report have been obtained from tests carried out on a prototype identical to the tractor CASE IH MAXXUM 140X in all practical aspects relating to the tests.

It has been checked that the series production conforms to the tested tractor.

6 ANNEX

Other tests results not covered by OECD approval

6.1 Test in accordance with SAE J 283, Nov. 1999: Test procedure for measuring hydraulic lift capacity on agricultural tractors equipped with three-point hitch

6.1.1 Test conditions

Tests have been performed in accordance with Section 4 of SAE J283: Static lift force test. Setting of the three-point hitch is specified in *"SAE"* column the table 1.1 and more details on linkage geometry are in figure 1.1 and 1.2.

Lifting heights relative to the horizontal plane including the lower link pivot points												
Lift rods length 865 mm	-385	-285	-185	-	-85	0	85	185	237	-	-	-
Lift rods length 750 mm	-	-	-	-164	-85	0	85	185	-	285	385	424
Lifting forces corrected to correspond to a hydraulic pressure equivalent to a 90% of the minimum relief valve setting of the hydraulic lift system												
kN	61.2	59.3	57.6	-	56.2	54.3	53.1	51.7	34.6	-	-	-
kN	-	-	-	57.1	56.7	56.3	55.7	54.6	-	52.2	49.4	37.0
Corresponding pressure: 18.9 MPa												

This report has been approved by the O.E.C.D. Co-ordinating Centre (CEMAGREF, France) as being in accordance with the O.E.C.D. Standard Code for the official testing of agricultural and forestry tractor performance.

The Head of the Section

E. CAVALLO

The Director

G.L. ZAROTTI

Torino, 24th March 2009