T.C
TARIM VE KÖYİŞLERİ BAKANLIĞI
TARIM ALET VE MAKİNALARI
TEST MERKEZİ MÜDÜRLÜĞÜ

TEST REPORT

REPORT NUMBER: 40/2316 TGK.20

OECD APPROVAL NO: 2/2 215
DATE OF APPROVAL : 26/01/2005

Report on test in accordance with the OECD Standard Code 2 for the Official Testing of Agricultural Tractors Performance

CODE 2
(Restricted code)



MASSEY FERGUSON 461 – 2 WD
8x8 speeds, 40 km/h

Tested Equipment	Applicant
TRACTOR Make : MASSEY FERGUSON Model : 461 Type : 2 WD	Name: Uzel Makina San. A.Ş. Adress: Topçular Kışla Cad. No: 5 34147 Rami/ İSTANBUL Tel: +90 212 5670847

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DECEMBER - 2004
ANKARA

TARIM VE KÖYİŞLERİ BAKANLIĞI
TARIM ALET VE MAKİNALARI TEST MERKEZİ MÜDÜRLÜĞÜ
Tel : 0 (312) 315 65 74- 315 56 85 **Fax :** 0 (312) 315 04 66
Web Sitesi : www.tamtest.gov.tr **e-mail :** info@tamtest.gov.tr

REPORT NUMBER:40/2316-TGK.20

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This is a report on a tractor tested in accordance with OECD standard code for the official Testing of Agricultural Tractor Performance, it doesn't contain an evaluation of the tractor on field activities.

UNITS

Forces	1 kN	= 1000 N	= 102 kp
Powers	1 kW	= 1.36 HP	
Pressures	1 MPa	= 10 bar	= 10.2 kp/cm^2
	100 kPa	= 1000 mbar	= 750.1 mmHg

Note:
[C] data declared by the manufacturer and controlled by the station
[D] data declared by the manufacturer

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[C]	Tractor Manufacturer's name and address	: UZEL Makina San. A.Ş. Topçular Kışla Cad. No: 5 34147 Rami/ İSTANBUL
[D]	Location of tractor assembly	: UZEL Makina San. A.Ş.
[D]	Submitted for test by	: UZEL Makina San. A.Ş.
[C]	Selected for test by	: UZEL Makina San. A.Ş. with agreement of the Testing Station
[C]	Place of running – in	:DAEMTC (The Directorate of Agricultural Equipment and Machinery Testing Centre)
[C]	Duration of running-in	: 30 hours
[C]	Location of test	:DAEMTC, Ankara

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

1.1.1.	Make of the tractor	: MASSEY FERGUSON
[C]	Model (trade name)	: 461
[C]	Type	: 2 WD
1.1.2.	Serial No	
[D]	First Serial No or Prototype	: 461201
[D]	Serial No	: It is attached when selling
1.1.3.	Other Specifications;	
[D]	Model (s) for other countries	: None
[C]	Transmission Type or Gears x Ranges	: SHUTTLE, 8x8
[C]	Speed version	: 40 km/h
[C]	Manufacturer identification or Technical type number	: None

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1.2 ENGINE

[C]	Make, Model and Type	: PERKINS 1103C-33T, water cooled, direct injection, 4 cycles, turbocharged, diesel engine
[C]	Serial No.	: DD38078* U000241 K*

1.2.1 Cylinders

[C]	Number/disposition	: 3, vertical in line
[D]	Bore/stroke	: (105 /127) mm
[D]	Capacity	: 3300 cm^3
[D]	Compression rate	: (18.25) /1
[D]	Arrangement of valves	: Overhead
[D]	Cylinder liners	: Dry

1.2.2 Supercharging

[C]	Make, model and type	: PERKINS,147, turbocharge
[D]	Pressure	: 96 kPa

1.2.3 Fuel System

[C]	Fuel feed system	: Electrical fuel pump
[C]	Make, type and model of fuel filter (s)	: PERKINS, ecoplus, strainer, replaceable filter element
[D]	Capacity of fuel tank	: 48 dm^3
[C,D]	Make, model and type of injection pump	: DELPHI, 1423, rotative
[C]	Serial no	: 13935EWG

Manufacturer's production setting of injection pump

[C]	Flow rate*	: 14.26 dm^3/h at rated engine speed and full load
[D]	Timing	: 1° before T.D.C (at 1000 rev/min) 2° after T.D.C (at 2200 rev/min)
[D]	Make, model and type of injectors	: DELPHI, 2643B303CY, multihole
[D]	Injection pressure	: (29.4 ± 0.5) MPa

*not any setting by the manufacturer because of atmospheric pressure

1.2.4 Governor

[C]	Make, model and type	: DELPHI, mechanical, in corporated in the fuel pump
[C]	Governed range of engine speed	: (700 – 2440) rev/min
[C]	Rated engine speed	: 2200 rev/min

1.2.5 Air cleaner

Pre-cleaner

[C]	Make, model and type	: Donaldson, P77-2552, replaceable paper cartrige
[C]	Location of air intake	: In front of radiator

Main cleaner

[C]	Make, model and type	: Donaldson, P77-0181, 29K03, replaceable felt material
[C]	Maintenance indicator	:Warning light on the dashboard

1.2.6 Lubrication system

[D]	Type of feed pump	: Gear type
[D]	Type of filter(s)	: Atom type
[C]	Number of filters	: 1

1.2.7 Cooling system

[C]	Type of coolant	: Water or water and anti-freeze mixture
[D]	Type of pump	: Centrifugal
	Specification of fan	
[C]	Number of fan blades	: 8
[C]	Fan diameter	: 394 mm
[D]	Coolant capacity	: 13 dm^3
[C]	Type of temperature control	: Thermostat and thermometer indicating temperature level on dashboard
[D]	Superpressure system	: 68.5 kPa

1.2.8 Starting system

[C]	Make, model and type	: ISKRA, AZE 4565, solenoid engaged
[D]	Starter motor power rating	: 3.0 kW
[C]	Cold starting aid	: Flame glow plug and additional fuel system in air intake manifold
[C]	Safety device	: Forward – rear gear at neutral position and PTO Clutch safety switch

1.2.9 Electrical system

[C]	Voltage	: 12 V
	Generator	
[C]	Make,model and type	: LUCAS, A 115/50A, alternator
[D]	Power	: 0.43 kW
	Battery of accumulators	
[C]	Number	: 1
[D]	Rating	: 105 Ah at 20 h

1.2.10 Exhaust system

[C,D]	Make, model and type	: USO, with oval expansion chamber
[C]	Location	: On right hand side of engine, vertical

1.3 TRANSMISSION

1.3.1 Clutch (travel)

[D]	Make, model and type	: VALEO, dry, single step
[D]	Number of plates	: 1
[D]	Diameter of plates	: 305 mm
[C]	Method of operation	: Mechanical; pedal operated for main clutch and hand lever for PTO clutch

1.3.2 Gear box

[D] Make, model and type : DÖKTAŞ, Uzel, mechanical, syncromesh

Description :

		Forward	Reverse
[C]	Number of gears	4	4
[C]	Number of ranges/groups	2/-	2/-
[C]	Total of arrangements	8	8

Available options : None

1.3.3 Rear axle and final drives

[D] Make, model and type : Massey Ferguson, crown wheel and pinion with diferantial and outboard epicycle reduction gear final drives

Differantial lock

[D] Type : Mechanical, pinion wheel

[C] Method of engagement : With foot pedal

[C] Method of disengagement : When foot pedal is depressed

1.3.4 Front axle

[D] Make, model and type : Massey Ferguson, teleskopic U-type

[C] Differantial lock : None

[C] 1.3.5 Total ratios & travelling speed (tested tractor)

Gear no	Group or range	Number of engine revolutions for one revolution of the driving wheels		Nominal travelling speed (*) at rated engine speed of 2200 rev/min km/h	
		Forward	Reverse	Forward	Reverse
1	L Low	190.77	186.12	2.78	2.85
2		127.18	124.08	4.17	4.28
3		87.71	85.57	6.05	6.20
4		61.77	60.27	8.59	8.81
1	H High	47.69	46.53	11.13	11.41
2		31.80	31.02	16.69	17.11
3		21.93	21.39	24.20	24.82
4		15.44	15.07	34.38	35.22

* Calculated with a tyre dynamic index of 640 mm (ISO 4251/1-1998)

1.4 POWER TAKE-OFF

1.4.1 Main power take-off

[C]	Type	: Independent
[C]	Method of engagement	: Mechanical, by hand lever
[C]	Number of shafts	: 1
[D]	Method of changing power take off shaft ends and speeds	: None

1.4.1.1 Power take-off proportional to engine speed

540 rev/min

[C]	Location	: At rear of tractor
[C]	Diameter of power take-off shaft end	: 34.9 mm
[C]	Number of splines	: 6, in conformity with ISO 500:1991
[C]	Height above ground	: 510 mm
[C]	Distance from the median plane of the tractor	: 0 mm
[C]	Distance behind rear-wheel axis	: 295 mm
[C]	P.T.O speed at rated engine speed	: 664 rev/min
[C]	Engine speed at standard power take-off speed	: 1789 rev/min
[C]	Ratio of rotation speeds (engine speed/p.t.o speed)	: 3.3125/1
[D]	Power restriction and maximum torque	: -
[D]	Maximum torque transmissible	: -
[C]	Direction of rotation (viewed from behind tractor)	: Clockwise

1.4.1.2 Power take-off proportional to ground speed : None

1.4.2 Optional power take-off : None

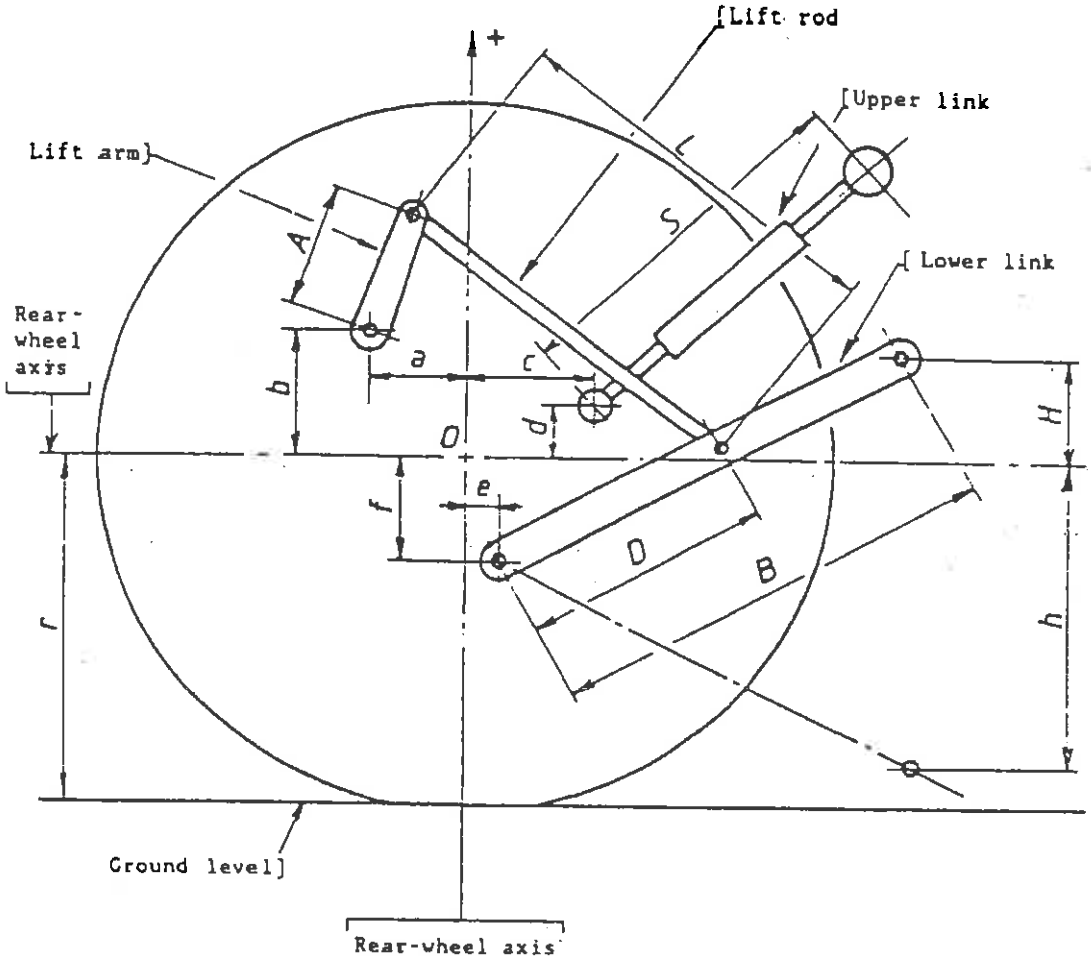
1.5 HYDRAULIC POWER LIFT

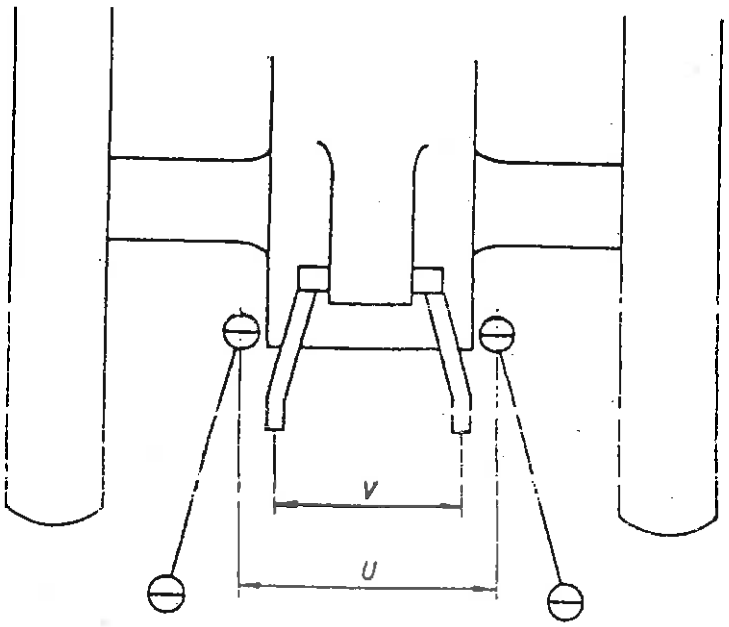
[D]	Make, model and type	:Massey Ferguson, Skotch-Yoke Mark II,hydraulic with inlet suction control
[D]	Type of hydraulic system	: Open center system
[D]	Type and number of cylinders	: 1, single act, internal
[C]	Type of linkage lock for transport	: Mechanical
[D]	Relief valve pressure setting	: 22.1 – 23.1 MPa
[D]	Opening pressure of cylinder safety valve: 23.4 – 24.4 MPa	
[D]	Lift pump type	: Piston
[D]	Transmission between pump and engine : With gear	
[C]	Type and number of filters	: 1, replaceable
[C]	Site of oil reservoir	: Gear box and rear axle
[C]	Type, number and location of tapping points	: At rear of tractor, 4, double acting
[C]	Maximum volume of oil available to external cylinders	: None

1.6 Three- point linkage

[C]	Category	: II, ISO 730-1:1994 + Cor. 1:1995 and ISO 730-2:1979
[C]	Category adapter	: No

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TABLE 2.1. Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range (mm)	Settings used in test (mm)
[C] Length of lift arms	(A)	275	275
[C] Length of lower links	(B)	980	980
Distance of lift arm pivot point from rear wheel axis			
- [C] Horizontally	(a)	-200	-200
- [C] Vertically	(b)	230	230
[C] Horizontal distance between the two lower link points	(u)	480	480
[C] Horizontal distance between the two lift arm end points	(v)	540	540
[C] Length of upper link	(S)	from730 to 965	735
Distance of upper link pivot point from rear wheel axis			
- [C] horizontally	(c)	185/195/212	212
- [C] vertically	(d)	120/160/195	195
Distance of lower link pivot point from rear wheel axis			
- [C] horizontally	(e)	-35	-35
- [C] vertically	(f)	215	215
[C] Distance of lower link pivot points to lift rod pivot points on lower links	(D)	435/500/565	435
[C] Length of lift rods	(L)	from 540 to 680	610
Height of lower hitch points relative to the rear wheel axis			
- [C] in low position	(h)	from 325 to 590	440
- [C] in high position	(H)	from 160 to 370	300
[C] Height above ground of lower hitch points when locked in transport position (*)		Any height within lift range	
[C] (*)Assuming r = 640 mm tire dynamic radius index ISO 4251/ 1-1998			

1.7 SWINGING DRAWBAR

[C]	Type	: Clevis
	Height above ground;	
[C]	Maximum	: 470 mm
[C]	Minimum	: 270 mm
[C]	Type of adjustment	: Reversing
[C]	Distance of hitch point from rear – wheel axis horizontally	: 535/650/700 mm
[C]	Distance of hitch point from p.t.o shaft ends	
	Vertically	: 40/240 mm
	Horizontally	: 240/355/405 mm
	Lateral adjustment (center of clevis)	
[C]	Right-hand	: 220 mm
[C]	Left-hand	: 220 mm
[C]	Distance of pivot point from rear-wheel axis horizontally	: -135 mm
[C]	Diameter drawbar pin hole	: 33 mm
[D]	Maximum vertical permissible load	: -

1.8 TRAILER HITCH : None

1.9 HOLED DRAWBAR : None

1.10 STEERING

[D]	Make, model and type	: DANFOSS, Massey Ferguson, hydrostatic
	Method of operation	
[D]	Pump(s)	: Gear pump
[D]	Ram(s)	: 1, Double acting, actuated on front axle
[D]	Working pressure	: 14.0 MPa

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1.11 BRAKES

1.11.1 Service brake

[D] Make, model and type : GIRLING, mechanical, oil immersed disc

[C] Method of operation : Mechanical, pedal operated

[C] Trailer braking take-off : None

1.11.2 Parking brake

[C] Type :Mechanical, common with servise brake

[C] Method of operation :By hand lever operated

1.12. WHEELS

Number

[C] Front : 2/steering

[C] Rear : 2/driving

[C] Wheelbase : 1940 mm

Track width adjustment

		Minumum mm	Maximum mm	Adjustment method
[C]	Front	1390	1790	extending of front axle
[C]	Rear	1235	1775	reversing wheels and off-set lug rims

1.13 PROTECTIVE STRUCTURE

[C] Make, model and type : TERBAY, 1301 CT, Roll-bar

[C] Manufacturer's name and address : TERBAY A.Ş. Ankara cad. No:321 35042 Bornova - İZMİR/TURKEY

Protective device

[C] Cab / frame / roll guard / other : Roll-bar

[C] Tiltable / not tiltable : Tiltable

OECD approval

[C] Approval number : 4/0 690/1

[C] Date of approval : 28/01/2004

[D] Nos. of minor modification of certificates, if any: None

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1.14 SEAT

1.14.1 Driver's seat

[C]	Make, model and type	: GRAMMER, MSG 44/HBA, vinylex covered, arm rested
[C]	Seat and steering wheel reversible	: No
[C]	Type of suspension	: Mechanical, with spring
[C]	Type of damping	: Hydraulic, with amortisor
	Range of adjustment	
[C]	Longitudinally	:150 mm
[C]	Vertically	: 60 mm
[C]	Safety belt	: Static safety belt

1.14.2. Optional driver's seat(s) : None

1.14.3 Passenger seat : None

1.15 LIGHTING

		Height above ground of center mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
[C]	Headlights	970	160x100	220
[C]	Sidelights	1460	110x70	555
[C]	Rearlights	1550	110x70	555
[C]	Reflectors	670	Ø 80	410

2. TEST CONDITIONS

2.1 OVERALL DIMENSIONS (unballasted tractor)

Length mm	Width		Height at top of	
	minimum mm	maximum mm	Protective structure mm	exhaust pipe mm
3310	1610	2010	2370	2200

2.2 GROUND CLEARANCE (unballasted tractor)

Clearance – limiting part :255 mm (bottom point of swinging drawbar)

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2.3 TRACTOR MASS (with roll-bar)

	Unballasted	
	Without driver kg	with driver kg
Front	820	835
Rear	1445	1505
Total	2265	2340

2.4 TRACK SPECIFICATION: Not applicable

2.5 TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres :	GOOD YEAR	GOOD YEAR
Dimensions	9.5 L-15	14.9-28
Ply rating	6	6
Type	Diagonal	Diagonal
Maximum load (tyre manufacturer's)	6.77 kN	15.78 kN
Maximum load (tractor manufacturer's)	6.77 kN	15.78 kN
Inflation pressure (tyre manufacturer's)	250 kPa	160 kPa
Dynamic radius index	370 mm	640 mm
Chosen track width	1390 mm	1335 mm

2.6 FUEL

Type : Diesel oil, in conformity with national standard, TS 3082

Density at 15 °C : PTO : 0.828 g/cm^3
Drawbar: 0.832 g/cm^3

2.7 OILS AND LUBRICATION

2.7.1 Capacity and change interval

	Capacity dm^3	Oil change h	Filter Change h
Engine	7.0	250	250
Gear box Final drive (rear) Hydraulic system Steering	38.0	250	250

2.7.2 Specifications

	Recommended	Used during test
Engine oil Type Viscocity Classification	BP TERRAC EXTRA 20W/50 API CE or CF4	Same
Hydraulic Fluid Type Viscocity Classification	BP TERRAC TRACTAN 9 20W/30 M.I.L. – 2104 A	Same
Transmission oils Type Viscocity Classification	BP TERRAC TRACTAN 9 20W/30 M.I.L. – 2104 A	Same
Steering Type Viscocity Classification	BP TERRAC TRACTAN 9 20W/30 M.I.L. – 2104 A	Same

2.7.3 Grease : BP ENERGREASE

Number of lubrication points : 10

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3. COMPULSORY TEST RESULTS

3.1 MAIN POWER TAKE-OFF

Date and location of tests : 28-29/09/2004, D.A.E.M.T.C,Ankara

Type of dynamometer bench : AEG, Electrical

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/ l
3.1.1. MAXIMUM POWER- TWO HOUR TEST						
40.8	1850	558	10.64	12.85	261	3.17
3.1.2. Power at rated engine speed						
39.9	2200	664	11.67	14.09	292	2.83
3.1.3. Standard Power Take-off speed (540 ± 10 rev/min)						
40.5	1789	540	10.35	12.50	256	3.24
3.1.4. PART LOADS						
3.1.4.1.The torque corresponding to maximum power at rated engine speed						
39.9	2200	664	11.67	14.09	292	2.83
3.1.4.2. 85% of torque obtained in 3.1.4.1.						
36.7	2377	718	11.32	13.67	309	2.68
3.1.4.3. 75% of torque defined in 3.1.4.2.						
27.8	2403	725	9.79	11.82	352	2.35
3.1.4.4. 50% of torque defined in 3.1.4.2.						
18.7	2419	730	8.43	10.18	452	1.83
3.1.4.5. 25% of torque defined in 3.1.4.2.						
9.4	2432	734	5.61	6.78	599	1.38
3.1.4.6. No load						
0	2440	737	3.57	4.31	-	-

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Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/ l
3.1.5.PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 ±10 rev/min) 3.1.5.1. The torque corresponding to maximum power						
40.5	1789	540	10.35	12.50	256	3.24
3.1.5.2. 85% of torque obtained in 3.1.5.1.						
37.4	1947	588	10.25	12.38	274	3.02
3.1.5.3. 75% of torque defined in 3.1.5.2.						
28.6	1984	599	8.35	10.09	292	2.83
3.1.5.4. 50% of torque defined in 3.1.5.2.						
19.4	2016	608	6.59	7.96	340	2.43
3.1.5.5. 25% of torque defined in 3.1.5.2.						
9.8	2040	616	4.40	5.31	448	1.85
3.1.5.6. No load						
0	2056	621	2.58	3.12	-	-

Maximum engine speed at no load : 2440 rev/min

Torque at maximum power(equivalent crankshaft)
- At rated engine speed : 173.40 Nm
- At 2-hour test : 210.52 Nm

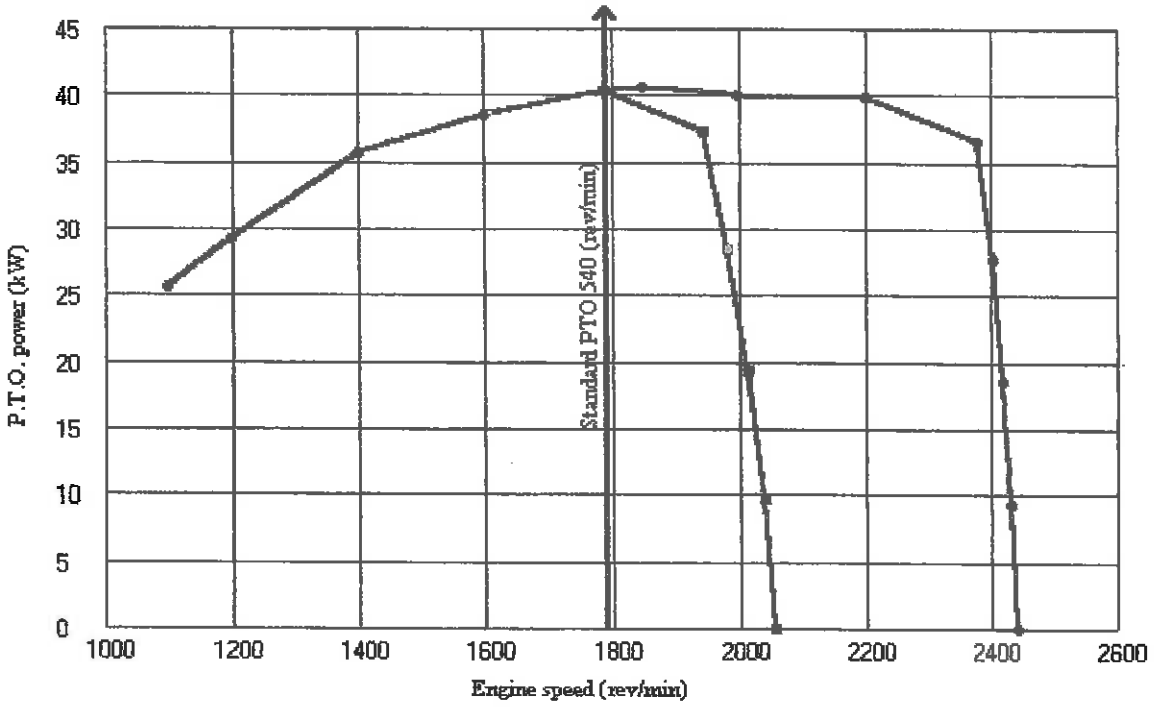
Maximum torque : 243.86 Nm (1400 rev/min engine speed)

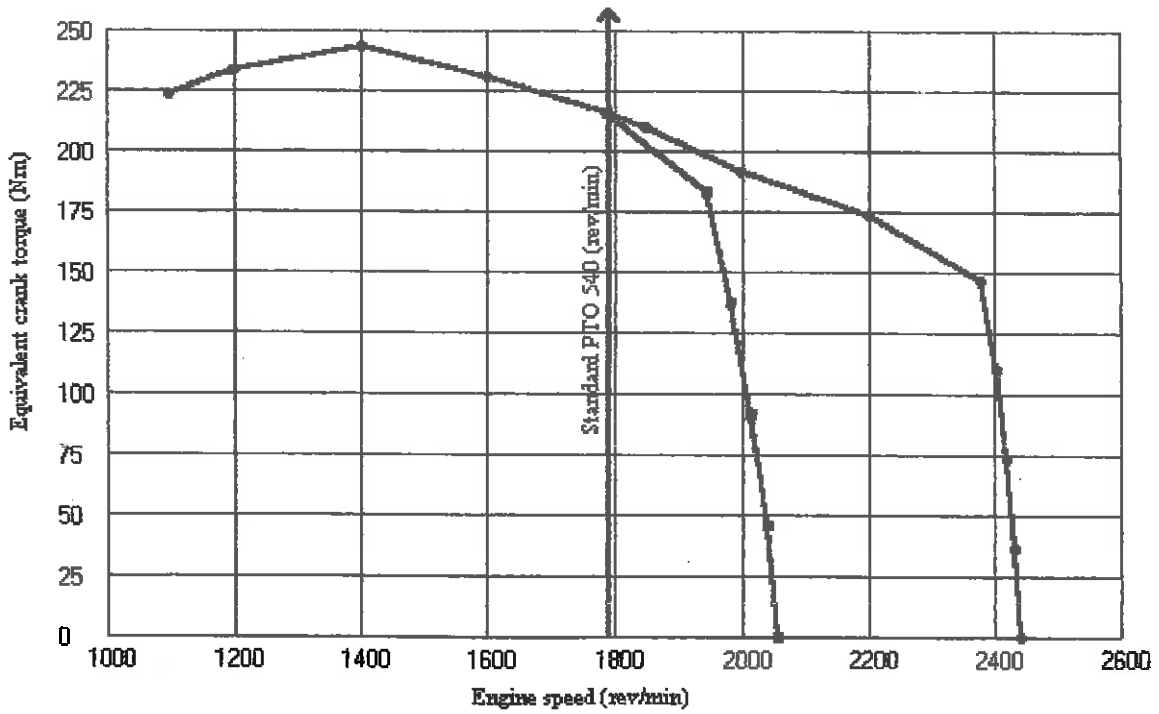
Mean atmospheric conditions
- Temperature : 28 °C
- Pressure : 91.6 kPa
- Relative humidity : 28%

Maximum temperatures (°C)
- Cooling water : 91
- Engine oil : 121
- Fuel : 35
- Engine air intake : 32

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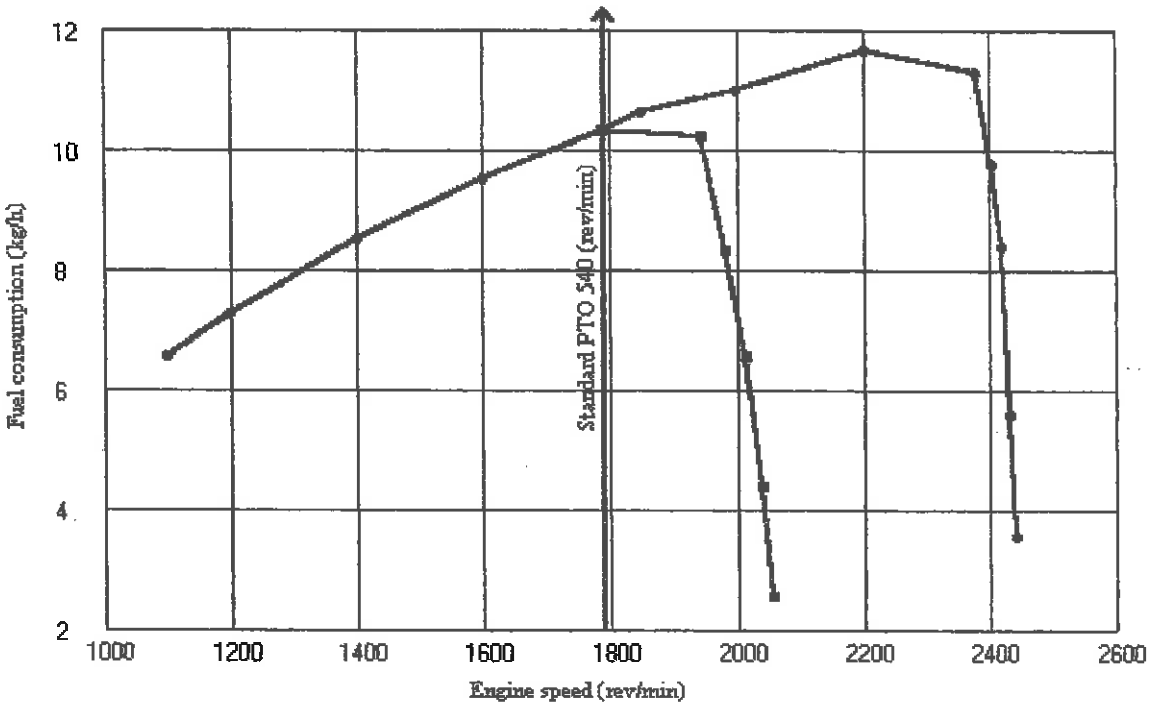
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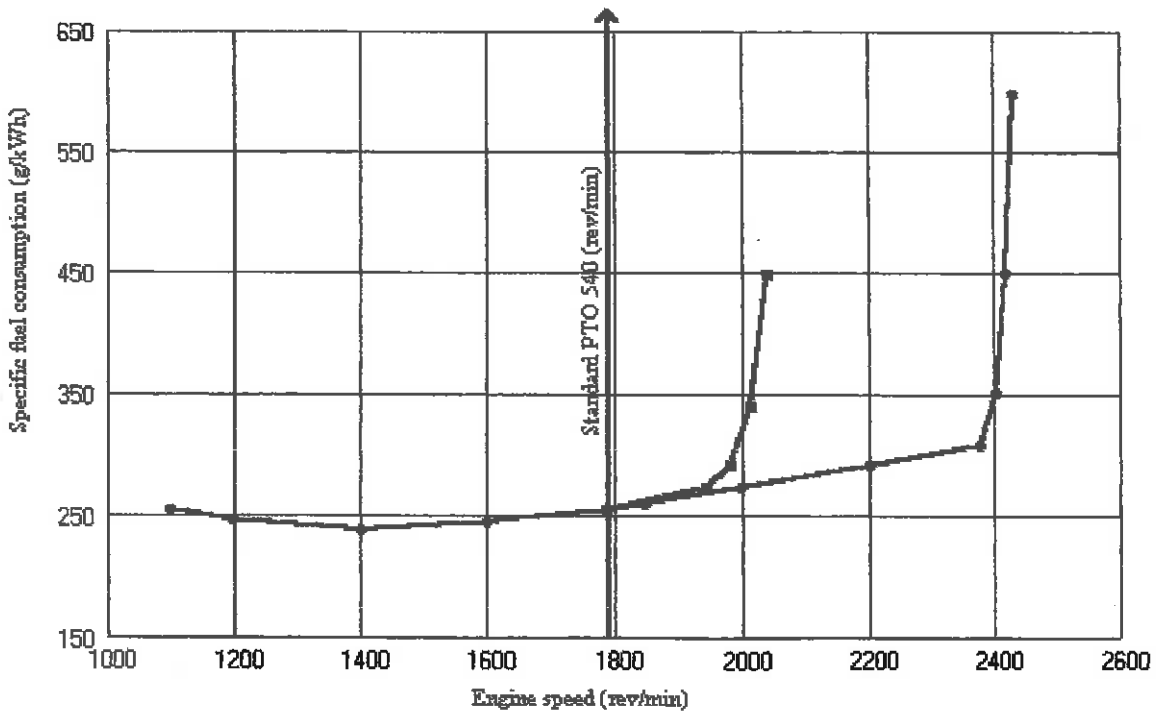




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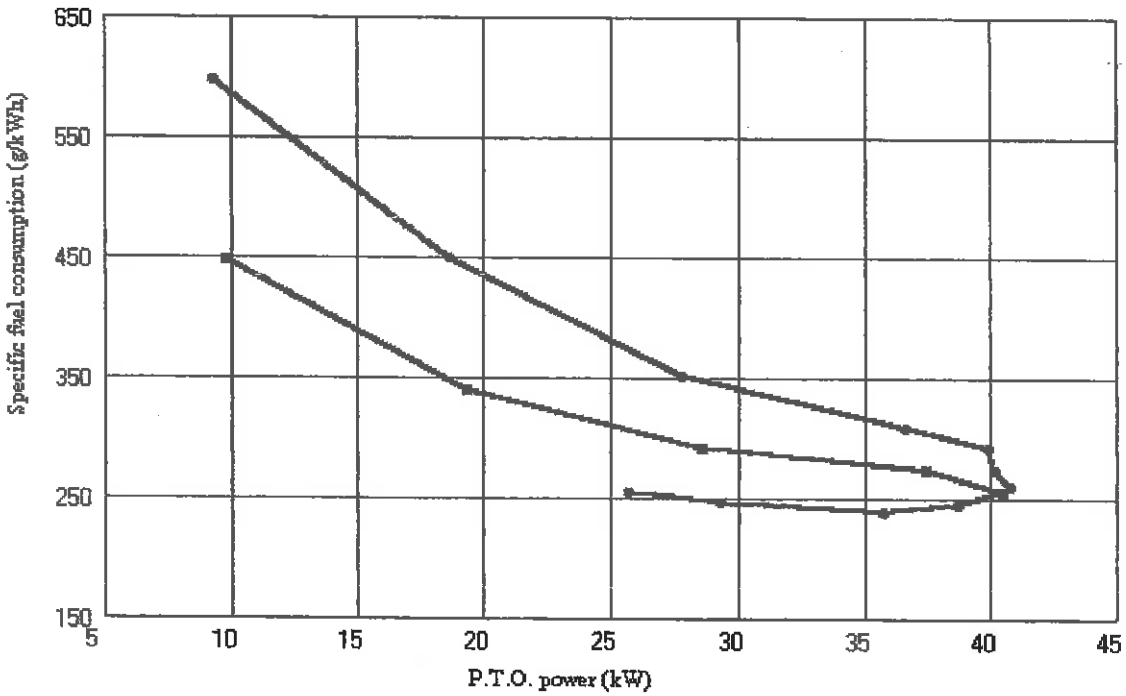
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3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests :30/09/2004 - 04/10/2004

3.2.1 Hydraulic power test

3.2.1.1 Hydrolic fluid data

Hydrolic fluid type : TERRAC TRACTAN 9
Viscosity index, ISO 3448 + Cor. 1:1993 : 20W-30
Viscosity at 65 °C : Not declared

3.2.1.2 Compulsory Reporting (Test results)

	Pressure[4]	Reservoir oil Temperature°C (65 °C target)		Engine speed	Flow rate	Power
	MPa	Min	Max	rev/min	L/min	kW
Rated Engine Speed (Manufacturer Specification)	-	-	-	2200	-	-
Number of pair of coupler used	1					
	2					
3.2.1.2.1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: No	(2) 16.5	60	69	2427	-	-
	16.5	60	70	2433	-	-
3.2.1.2.2 Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	(2) 14.9	(3) 65		2427	35.2	8.7
	14.9	68		2433	35.2	8.7
3.2.1.2.3 Maximum avaible flow and maximum power [1]	(2) 15.0	(3) 66		2427	35.0	8.8
	14.9	69		2433	35.2	8.7
3.2.1.2.4 Maksimum flow rate at minimum pressure	(2) 1.0	(3) 60		2440	36.7	-
	1.0	60		2440	37.2	-

Note1:Calculated maximum power is based on only the coupler outlet pressure (pressure near coupler where oil is exiting from tractor) and does take not into account the return coupler pressure.
Note 2:Record pressure as measured at the outlet coupler (pressure near coupler where oil is exiting from tractor).
Note 3:Average test temperature.
Note 4: See ISO 789-10:1996 for the specific location of the pressure measurements and other referenced terms.

3.2.2 Power lift test

Linkage settings for test: see 10-11 pages

		At the hitch point	On the frame
Height of lower hitch point above ground in down position	mm	200	135
Vertical movement With lifting force Without lifting force	 mm mm	 695 740	 925 970
Maximum corrected force exerted through full range	kN	15.6	11.8
Corresponding pressure of hydraulic fluid	MPa	14.9	14.9
Moment about rear wheel axis	kNm	14.7	18.4
Maximum tilt angle of mast from vertical	Degrees	-	18°

Lifting heights relative to the horizontal lower links

mm	-280	-230	-200	-100	0	+100	+200	+300	+400	+465	+500	+600	+645

Lifting forces at the hitch point: Corresponding pressure:14.9 MPa

kN*	-	15.6	15.9	17.1	17.9	18.7	19.6	20.6	21.5	19.2	-	-	-

Lifting forces at the frame: Corresponding pressure: 14.9 MPa

kN*	12.6	12.9	13.0	13.4	13.7	13.9	13.9	14.1	13.8	-	13.6	13.5	11.8

*The values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting of the hydraulic lift system.

3.3 DRAWBAR POWER AND FUEL CONSUMPTION (unballasted tractor)

Date of tests :10-11/11/2004

Type of track : Concrete

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
365 mm	250 kPa	100 kPa

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Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheel	Specific fuel consump.	Specific energy	Temperature			Atmospheric conditions		
no	kW	kN	km/h	min^{-1}	%	g/ kWh	kWh / l	Fuel °C	Coolant °C	Engine Oil ° C	Temperature °C	Relative humidity %	Pressure kPa
3.3.1. MAXIMUM POWER IN TESTED GEARS (Unballasted tractor)													
L-1	11.6	15.8	2.66	2428	15.0	606	1.37	31	87	93	19	34	90.9
L-2	17.9	16.3	3.95	2404	15.0	481	1.73	31	87	93	19	34	90.9
L-3	26.0	16.5	5.67	2381	15.0	392	2.12	31	87	93	19	34	90.9
L-4	33.3	16.5	7.28	2134	14.2	304	2.74	32	86	95	19	36	90.9
H-1	35.0	14.9	8.46	1850	11.2	264	3.15	32	86	95	19	36	90.9
H-2	34.7	9.3	13.41	1849	6.1	261	3.19	32	86	95	19	36	90.9
H-3	This gear couldn't be tested because of safety												
3.3.2.FUEL CONSUMPTION 3.3.2.1. In selected gear, at maximum power at rated speed													
H-1	34.8	12.1	10.35	2200	8.7	298	2.79	29	82	92	18	44	91.3
3.3.2.1.1. 75 % of pull at maximum power at rated speed													
H-1	28.7	9.1	11.39	2360	6.3	358	2.32	29	82	92	18	44	91.3
3.3.2.1.2. 50 % of pull at maximum power at rated speed													
H-1	19.9	6.1	11.86	2392	3.8	445	1.87	29	82	92	18	44	91.3
3.3.2.1.3. Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1.													
H-2	28.7	9.1	11.34	1565	6.2	269	3.10	29	82	92	18	44	91.3
3.3.2.1.4. Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2.													
H-2	19.9	6.1	11.81	1587	3.7	312	2.67	29	82	92	18	44	91.3
3.3.2.2. in selected gear nearest to 7.5 km/h at rated speed													
L-4	33.0	15.7	7.59	2197	13.1	335	2.48	30	84	94	17	47	91.3
3.3.2.2.1. 75 % of pull at maximum power at rated speed													
L-4	28.3	11.8	8.68	2387	8.6	377	2.21	30	84	94	17	47	91.3
3.3.2.2.2. 50 % of pull at maximum power at rated speed													
L-4	19.8	7.8	9.09	2401	4.8	451	1.85	30	84	94	17	47	91.3
3.3.2.2.3. Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1.													
H-1	28.3	11.8	8.65	1836	8.6	301	2.76	30	84	94	17	47	91.3
3.3.2.2.4. Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2.													
H-1	19.8	7.9	9.08	1851	4.8	326	2.55	30	84	94	17	47	91.3

4.OPTIONAL TESTS : None

5. REPAIRS : None

6. REMARKS : Atmospheric pressure 90.9 kPa, 91.3 kPa and 91.6 kPa less than 96.6 kPa fixed in the OECD code.

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TEST COMMISSION

Mehmet DOĞAN
Agricultural Engineer

İbrahim ERGÜL
Agricultural Engineer, MSc.

Bekir İLBAN
Agricultural Engineer

Duran DOĞANGÜZEL
Agricultural Engineer

Kerim EKMEKCİ
Departmant Chief

Hüseyin YAŞAR
Chairman of Test Commission

This test report has been prepared and undersigned as 25 pages

Aşır NADAR
Assistant Director

Signatures that belong to members of test commission above have been approved **03/12/2004**

Dr. Hamdi TAŞBAŞ
Director