Report on test in accordance with O.E.C.D.
STANDARD CODE 1 for the Official
Testing of Agricultural Tractor Performance

FULL CODE

O.E.C.D. Approval No.: 1/2 003
Date of approval: 26th September 2002



Agricultural Tractor

DAEDONG DK90 (4WD)

Manufactured by : DAEDONG Ins. Co., Ltd.
1-12, Buk-ri, Nongong-eub, Dalsung-kun, Daegu,
Republic of KOREA

NATIONAL AGRICULTURAL MECHANIZATION RESEARCH INSTITUTE
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This is a report on a tractor test in accordance with the OECD STANDARD CODE for the Official Testing of Agricultural Tractor Performance(C(87)53(Final), Code 1) and amendments (C(90)79, C(92)52, C(93)52, C(93)133, C(95)17) and C(99)23).

It does not contain an evaluation of the tractor on practical work

Report No. : 02-M-5-2
Duration of test : April to June, 2002
Date of approval : 26th September 2002

This report has been approved by the OECD Co-ordinating Centre (CEMAGREF, France) as being in accordance with the OECD STANDARD CODE 1.

In this report all performance characteristics are given corresponding to the International System of Units.
The reference to the former used Technical System of Units is given by the following relations:

Forces	1 kgf	=	9.80665	N
Powers	1 PS	=	0.7355	kW
Pressures	1 kgf/㎠	=	98.0665	kPa

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Printed in the Republic of KOREA, 2002 ; NAMRI

TABLE OF CONTENTS

	page
SPECIFICATIONS OF TRACTOR	4 to 14
TEST CONDITIONS	14 to 16
COMPULSORY TESTS RESULTS	
Main power take-off performance	17 to 20
Hydraulic power and lifting force	21
Drawbar performance	22
Turning area and turning circle	22
Location of center of gravity	23
Braking performance	23 to 25
Measurement of external noise level	25
REPAIRS	25
REMARKS	25

- Tractor manufacturer's name and address: DAEDONG INS. CO. , Ltd
  1-12, Buk-ri, Nongong-eub, Dalsung-kun, Daegu, Korea
- Location of tractor assembly: 1-12, Buk-ri, Nongong-eub, Dalsung-kun, Daegu, Korea
- Submitted for test by: The manufacturer
- Selected for test by : The manufacturer in agreement by NAMRI
- Place of running-in: DAEDONG INS. CO. , Ltd
  1-12, Buk-ri, Nongong-eub, Dalsung-kun, Daegu, Korea
- Duration of running-in: Engine and tractor 30 hours
- Location of test: NAMRI

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1 - Make of the tractor: Daedong
- Model (trade name): DK90
- Type: Four-wheel drive, unit construction

1.1.2 Number
- 1st Serial No.: 166900001
- Serial No.: 166900014

1.2 Engine

- Make/Model/Type: PERKINS, 1004.4T, 4-cycle diesel engine with direct injection, water cooled, turbocharged
- Serial No: U501402H

1.2.1 Cylinders
- Number/disposition: 4/ vertical in-line
- Bore/stroke: 100/127 mm
- Capacity: 3990 cm^3
- Compression ratio: 16.0:1

- Arrangement of valves: Overhead valves
- Cylinder liners (wet or dry): Dry

1.2.2 Supercharging

- Make/Model/Type: Garrett, T31, Exhaust gas turbine
- Pressure: -

1.2.3 Fuel system

- Fuel feed system: Forced feed type (diaphragm pump)
- Fuel filters
  . Make/Model/Type: Lucas, Replaceable element, cartridge type
- Capacity of fuel tank: 100 dm^3
- Injection pump
  . Make/Model/Type: Lucas, DP200, Rotary type
- Serial No.: None
- Manufacturer's production setting of injection pump
  . Flow rate (rated engine speed and full load): $18.0 \pm 5\%$ dm^3/h
  . Timing: 14 degrees before T.D.C
- Injectors
  . Make/Model/Type: Lucas, NR, Multi-hole type
- Injection pressure: 23.3 MPa
- Make/Model/Type of carburetor None

1.2.4 Governor

- Make/Model/Type: Lucas, Mechanical, Centrifugal ball
- Governed range of engine speed from 850 ± 50 to 2310 ± 50 min^{-1}(rev/min)
- Rated engine speed: 2200 min^{-1}(rev/min)

1.2.5 Air cleaner

- Pre-cleaner
  . Make/Model/Type: Daesung, Cyclone
  . Location of air intake: Upper the bonnet, in front of the radiator
- Main cleaner
  . Make/Model/ Type: Namsin, Dry dual paper element type
  · Location of air intake (in case of no pre-cleaner): -
- Maintenance indicator: None

1.2.6 Lubrication system

- Type of feed pump:	Rotor type
- Type of filter(s):	Full flow, cartridge type
- Number of filters:	1

1.2.7 Cooling system

- Type of coolant:	Water or water and antifreeze solution
- Type of pump:	Centrifugal
- Specification of fan:	Belt driven
. Number of fan blades:	6
. Fan diameter:	457 mm
- Coolant capacity:	25.5 dm^3
- Type of temperature control:	Wax pellet type thermostat
- Superpressure system:	88.2 kPa, at radiator cap

1.2.8 Starting system

- Make/Model/ Type:	Valleo-Mando, TM000A23301 Electrical pre-engaged solenoid operated
- Starter motor power rating:	3.0 kW
- Cold starting aid:	Fuelled starting aid
- Safety device:	Starting operable only when main clutch pedal fully depressed

1.2.9 Electrical system

- Voltage:	12 V
- Generator	
. Make/Model/Type:	Perkins, A127-55, 3 phase generator
. Power:	0.66 kW
- Battery of accumulators	
. Number:	2
. Rating:	65Ah at 20 hours rating

1.2.10 Exhaust system

- Make/Model/Type:	Sindong, Expansion and absorption muffler
- Location:	Under the bonnet, left hand side of tractor

1.3 Transmission

1.3.1 Clutch (travel alone)

- Make/Model/Type: Seojin, 0422750401, Dry single plate
- Number of plates: 1
- Diameter of plates: 310 mm
- Method of operation: Mechanically actuated by pedal

1.3.2 Gear box

- Make/Model/ Type: Daedong, Mechanical
- Description: 4 main gears with synchro-mesh
  3 range gears with synchro-mesh, and
  synchro-mesh type forward/reverse gear with shuttle lever, 12 forward and 12 reverse gears

	Forward	Reverse
Number of gears	4	4
Number of ranges/groups	3	3
Total of arrangements	12	12

- Available options: None

1.3.3 Rear axle and final drives

- Make/Model/Type: Daedong-gear, Bevel gear type differential
  Planetary gear type final drives
- Differential lock
  . Type: Mechanical
  . Method of engagement: : Mechanically actuated by pedal
  . Method of disengagement: Self-disengagement by spring

1.3.4 Front axle and final drives

- Make/Model/Type: Daedong-gear, Bevel gear type differential
  Bevel gear type final drives
- Differential lock
  . Type: Mechanical
  . Method of engagement: Mechanically actuated by pedal
  . Method of disengagement: Self-disengagement by spring

1.3.5 Total ratios and travelling speeds

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 min^{-1}(rev/min) km/h	
		Forward	Reverse	Forward	Reverse
1	L-1	1439.03	1469.89	0.41	0.41
2	L-2	988.42	1009.62	0.60	0.59
3	L-3	731.81	747.51	0.82	0.80
4	L-4	461.26	471.16	1.29	1.27
5	M-1	297.00	303.37	2.01	1.97
6	M-2	204.00	208.37	2.93	2.86
7	M-3	151.04	154.28	3.95	3.87
8	M-4	95.20	97.24	6.27	6.14
9	H-1	64.98	66.37	9.19	8.99
10	H-2	44.63	45.59	13.37	13.09
11	H-3	33.05	33.75	18.06	17.68
12	H-4	20.83	21.28	28.66	28.05
(*) Calculated with a tyre dynamic index 720 mm (pneumatic tyred tractors only) (ISO 4251-1:1998).					

- Number of revolutions of front wheels for one revolution of rear-wheels (for 4WD tractors only): 1.495
- Range selection : L=Low, M=Medium, H=High

1.4 Power take-off

1.4.1 Main power take-off

- Type (independent, semi-independent or not independent): Independent
- Method of engagement (if necessary describe the type of clutch): Engaged or disengaged by switch, driven by multi-plate wet clutch independent of travel clutch
- Number of shafts: 1
- Method of changing power take-off shaft ends and speeds: Manually by hand lever

1.4.1.1 Power take-off proportional to engine speed

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

- Location: Rear of tractor
- Diameter of power take-off shaft end: 35 mm
- Number of splines: 6 , in conformity with ISO 500:1991
- Height above ground: 700 mm

- Distance from the median plane of the tractor: 0 mm
- Distance behind rear-wheel axis: 450 mm
- PTO speed at rated engine speed (2200 rev/min): 539 min^{-1}(rev/min)
- Engine speed at standard power take-off speed: 2205 min^{-1}(rev/min)
- Ratio of rotation speeds (engine speed/p.t.o speed): 4.083:1
- Power restriction: None
- Maximum torque transmissible: None
- Direction of rotation (viewed from behind tractor): Clockwise

Power take-off at 750 min^{-1}(rev/min)

- Location: Rear of tractor
- Diameter of power take-off shaft end: 35 mm
- Number of splines: 6 , not in conformity with ISO 500:1991
- Height above ground: 700 mm
- Distance from the median plane of the tractor: 0 mm
- Distance behind rear-wheel axis: 450 mm
- PTO speed at rated engine speed (2200 rev/min): 717 min^{-1}(rev/min)
- Engine speed at standard power take-off speed: 2300 min^{-1}(rev/min)
- Ratio of rotation speeds (engine speed/p.t.o speed): 3.067:1
- Power restriction: None
- Maximum torque transmissible: None
- Direction of rotation (viewed from behind tractor): Clockwise

1.4.1.2 Power take-off proportional to ground speed:

Indicate 540 and 750 min^{-1}(rev/min)	540 min^{-1}(rev/min)	750 min^{-1}(rev/min)
Travelling distance for one revolution of Power take-off shaft	0.83 m	0.62 m
Number of power take-off shaft revolutions for one revolution of (rear) driving wheels	5.465	7.277
Direction of rotation with forward gear engaged(view from behind tractor)	Clockwise	Clockwise

1.4.2 Optional power take-off: None

1.5 Hydraulic power lift

- Make/Model/Type: MITA, M970DD, Hydraulic with mechanical draft and position control, top linking sensing
- Type of hydraulic system: Open center system
- Type and number of cylinders (single or double-acting): 1, internal single acting
- Type of linkage lock for transport: Hydraulic
- Relief valve pressure setting (tolerance): 18.0±0.5 MPa
- Opening pressure of cylinder safety valve (if fitted): None
- Lift pump type: Gear type
- Transmission between pump and engine: Mechanical, driven by cam shaft
- Type and number of filters: 2, Cartridge type
- Site of oil reservoir: Transmission housing
- Type, number and location of tapping points: ISO standard 12.7mm, 2, rear of tractor
- Maximum volume of oil available to external cylinders: Not available

1.6 Three point linkage

- Category : 2, in conform with ISO 730-1:1994+ Cor.1:1995 and ISO 730-2:1979
- Category adapter: None

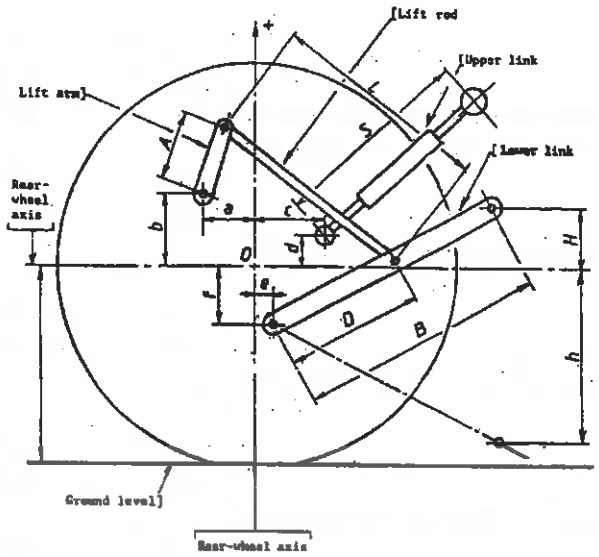


Figure 1.1

Lift test – Linkage geometry

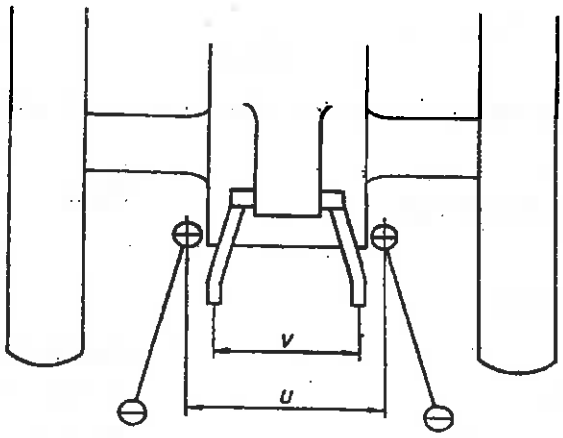


Figure 1.2

Lift test – linkage geometry

		Dimension or range	Settings used in test
		mm	mm
Length of lift arms:	(A)	250	250
Length of lower links:	(B)	885	885
Distance of lift arm pivot point from rear-wheel axis :			
- Horizontally	(a)	-63	-63
- vertically	(b)	320	320
Horizontal distance between the 2 lower link points:	(u)	357	357
Horizontal distance between the 2 lift arm end points:	(v)	526	526
Length of upper link:	(S)	552 – 858	700
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	278, 297, 299	299
- vertically	(d)	292, 324, 366	366
Distance of lower link pivot point from rear wheel axis :			
- horizontally	(e)	118	118
- vertically	(f)	179	179
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	410	410
Length of lift rods	(L)	520 – 670	585
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	248 – 626	535
- in high position	(H)	46 – 312	207
Height above ground of lower hitch point when locked in transport position(*)		Any height within lifting range	
(*) Assuming r = 720mm type dynamic radius index of ISO 4251-1:1998 (pneumatic tyred tractors only)			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

1.7 Swinging drawbar : None

1.8 Trailer hitch

- Type: Fixed clevis on rear axle housing
- Hole diameter: 29 mm
- Height above ground: 400 mm
- Distance of hitch point from rear-wheel axis, horizontally: 595 mm
- Distance of hitch point from power take-off shaft end . Vertically: 220 mm

. Horizontally: 145 mm

- Maximum vertical permissible load: 6.5 kN

1.9 Holed drawbar : None

1.10 Steering

- Make/Model/Type: Sumitomo Eaton, VR140P20U4B Hydrostatic type
- Method of operation
  . Pump(s): Gear
  . Ram(s): 1, double acting
- Working pressure: 11.8 MPa

1.11 Brakes

1.11.1 Service brake

- Make/Model/Type: Jin Myoung, Oil-immersed multi-plate discs on each side
- Method of operation: Hydraulically by pedals, coupled or independent
- Trailer braking take-off (hydraulic or air brake): Not available

1.11.2 Parking brake

- Type: Mechanical, common with service brake
- Method of operation: Mechanically by hand lever with ratchet

1.12 Wheel

- Number
  . Front: 2, driving/steering
  . Rear: 2, driving
- Wheelbase: 2142 mm
- Track width adjustment:

	Minimum	Maximum	Adjustment method
	mm	mm	
Front	1485	1715	By reversing wheels and offset lug rims
Rear	1535	1935	

1.13 Protective structure: None

1.14 Seat

1.14.1 Driver's seat

- Make/Model/Type: Woochang, HE 110-Z000
  Upholstered seat with back rest
- Seat and steering wheel reversible: No
- Type of suspension: Spring
- Type of damping: None
- Range of adjustment
  . Longitudinally: 110 mm
  . Vertically: Fixed
- Safety belt: Yes

1.14.2 Optional driver's seat(s) : None

1.14.3 Passenger seat : None

1.15 Lighting

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights	1025	260x130	318
Sidelights	1585	70x80	755
Rearlights	1585	110x80	670
Reflectors	1585	40x40	695

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		Minimum	Maximum	Protective structure	Exhaust pipe
	mm	mm	mm	mm	mm
Ballasted	4340	2000	2400	-	2575
Unballasted	4100	2000	2400	-	2575

2.2 Ground clearance (unballasted tractor): 400 mm

Clearance-limiting part: trailer hitch

2.3 Tractor mass

Mass (without protective structure):

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	1925	1927	1412	1418
Rear	1606	1679	1759	1828
Total	3531	3606	3171	3246

2.4 Ballast

	Weights		Water
	Number	Total mass	
		kg	kg
Front	10 of 36 kg	360	-
Rear	-	-	-
Optional	-	-	-

2.5 Tyres and track width specifications

	Front	Rear
Tyres:		
- Dimensions	11.2-24	18.4-30
- Ply rating	8	10
- Type	Diagonal	Diagonal
- Maximum load (tyre manufacturer's)	10.7 kN	24.5 kN
- Maximum load (tractor manufacturer's)	10.7 kN	24.5 kN
- Inflation pressure (tyre manufacturer's)	235 kPa	157 kPa
- Dynamic radius index	515 mm	720 mm
Chosen track width	1485 mm	1535 mm

2.6 Fuel

- Type: Diesel fuel No 2, in conformity with Korean Standard.(KS M 2610:1996)
- Density at 15°C: 0.824 g/cm³

2.7 Oils and lubricants

2.7.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine	8.8	250	250
Gear box, rear axle and final drives in common with hydraulic system	60	300	200
Front differential case	4.5	300	-
Front axle case and final drives	3.5	300	-
Brake	0.47	600	-

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

	Recommended	Used during test
Engine oil . Type: . Viscosity: . Classification:	SAE 10W-30 105-110 cSt at 40∘C API CD-4	Recommended
Transmission oils, Hydraulic fluid, steering oil . Type: . Viscosity: . Classification:	Gear oil, DAEDONG TF65 60-68 cSt at 40∘C API GL-4	Recommended
Brake oil . Type: . Viscosity: . Classification:	Gear oil, shell tellus 32 30-35 cSt at 40∘C ISO VG 32	Recommended

2.7.3 Grease

- Number of lubrication points: 8

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

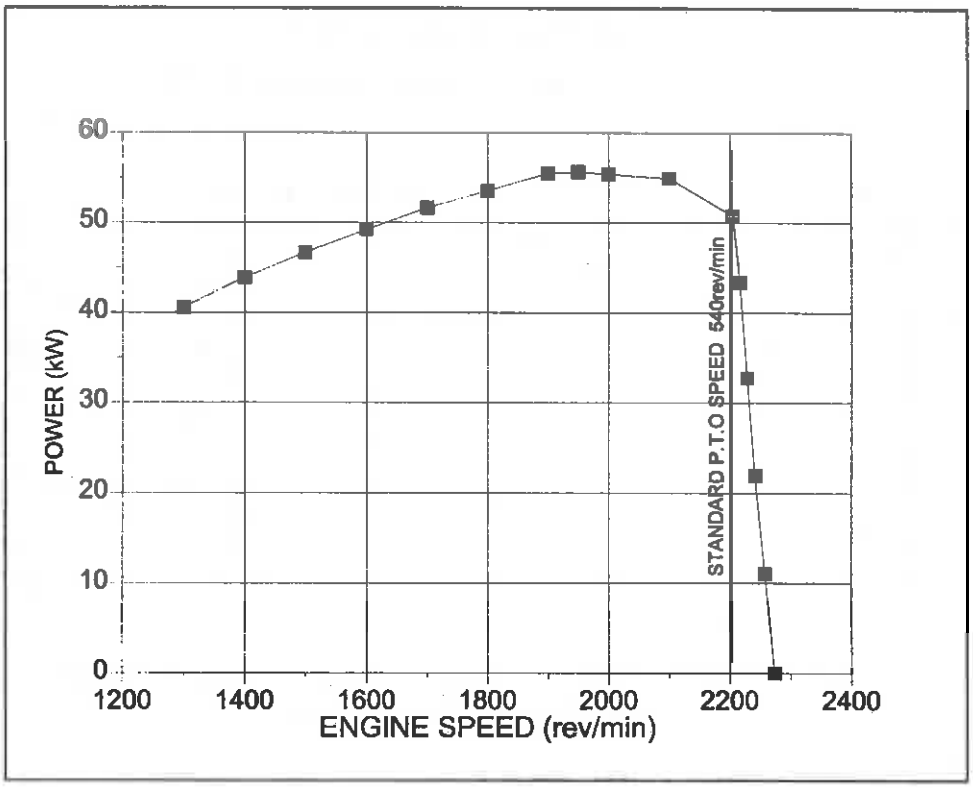
- Date and location of test: 10th to 13th April 2002, NAMRI
- Type of dynamometer bench: FROUD AG-400

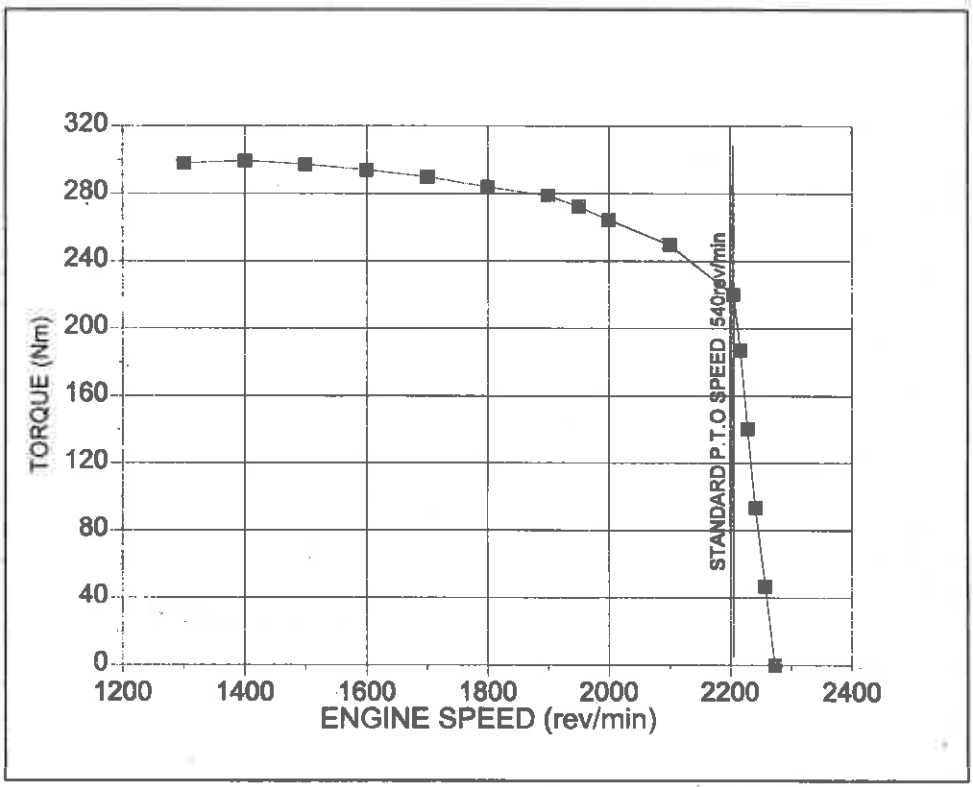
Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O.	Hourly		specific	
kW	min^{-1}(rev/min)		kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER-TWO-HOUR TEST						
55.6	1950	478	14.17	17.19	255	3.24
3.1.2 POWER AT RATED ENGINE SPEED						
50.8	2205	540	14.02	17.01	276	2.99
3.1.3 STANDARD POWER TAKE-OFF SPEED [540±10 min^{-1}(rev/min)]						
50.8	2205	540	14.02	17.01	276	2.99
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed						
50.8	2205	540	14.02	17.01	276	2.99
3.1.4.2 85% of torque obtained in 3.1.4.1						
43.4	2217	543	13.21	16.03	304	2.71
3.1.4.3 75% of torque defined in 3.1.4.2						
32.7	2229	546	11.26	13.66	344	2.40
3.1.4.4 50% of torque defined in 3.1.4.2						
21.9	2242	549	9.42	11.43	429	1.92
3.1.4.5 25% of torque defined in 3.1.4.2						
11.1	2258	553	7.36	8.93	666	1.24
3.1.4.6 unloaded						
0	2274	557	5.26	6.38	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED [540±10 min^{-1}(rev/min)] 3.1.5.1 the torque corresponding to maximum power						
50.8	2205	540	14.02	17.01	276	2.99
3.1.5.2 85% of torque obtained in 3.1.5.1						
43.4	2217	543	13.21	16.03	304	2.71
3.1.5.3 75% of torque defined in 3.1.5.2						
32.7	2229	546	11.26	13.66	344	2.40
3.1.5.4 50% of torque defined in 3.1.5.2						
21.9	2242	549	9.42	11.43	429	1.92
3.1.5.5 25% of torque defined in 3.1.5.2						
11.1	2258	553	7.36	8.93	666	1.24
3.1.5.6 unloaded						
0	2274	557	5.26	6.38	-	-

- No load maximum engine speed: 2274 min^{-1}(rev/min)
- Torque (equivalent crankshaft)at maximum power
  . At rated engine speed 219.9 Nm
  . At 2-hour test 272.4 Nm
- Maximum torque (equivalent crankshaft): 299.4 Nm
  (engine speed: 1400 min^{-1}(rev/min))

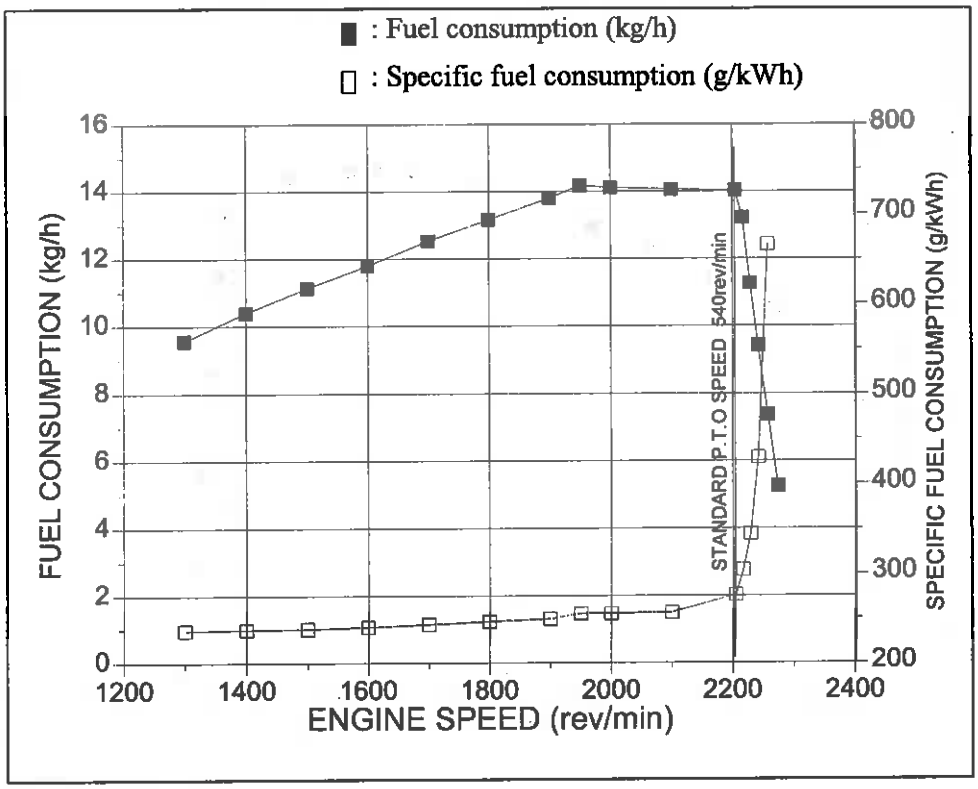
Mean atmospheric conditions:	
Temperature	21 ◦C
Pressure	100.8 kPa
Relative humidity	44 %
Maximum temperatures:	
Coolant	93 ◦C
Engine oil	115 ◦C
Fuel	48 ◦C
Engine air intake	28 ◦C

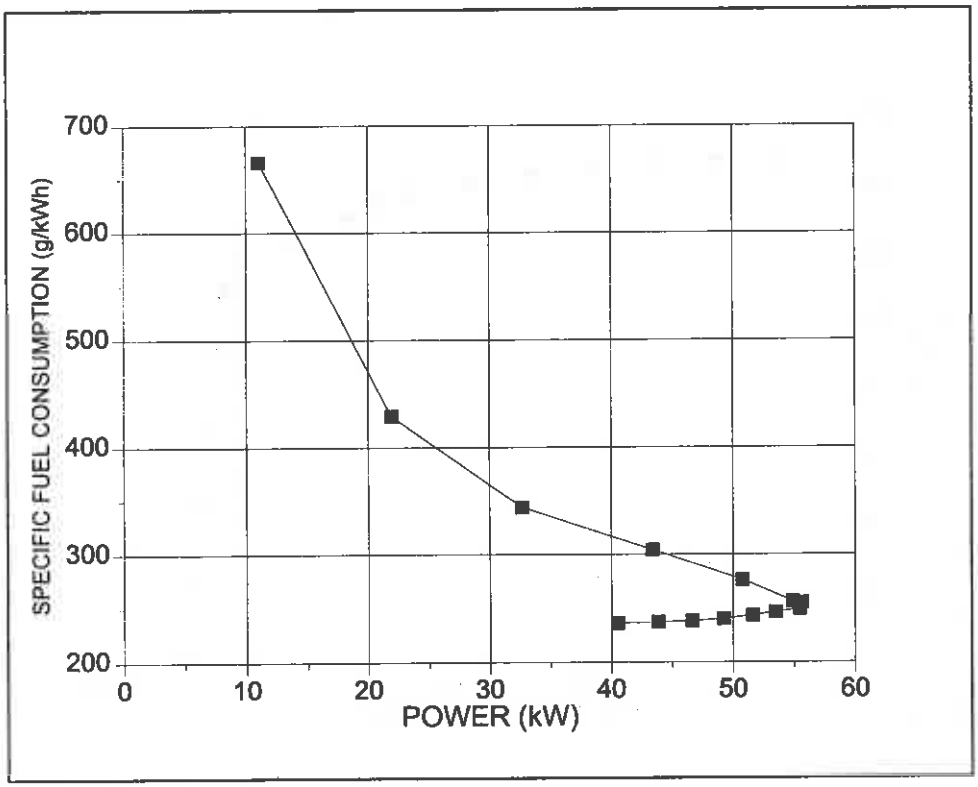
POWER TAKE – OFF PERFORMANCE CURVES





POWER TAKE – OFF PERFORMANCE CURVES





3.2 Hydraulic power and lifting force

- Date of tests: 18th to 20th May 2002

3.2.1 Hydraulic power test

- Sustained pressure with relief valve open: 17.9 MPa
- Pump stalled: Not applicable, open center system
- Pump delivery rate at minimum pressure 43.0 ℓ /min

	Flow rate ℓ /min	Pressure MPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	39.1	16.1	10.5
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	39.0	16.4	10.7

- Tapping point used for test: External tapping
- Temperature of hydraulic fluid, if different from 65±5°C: None
- Opening pressure of the unloading valve: None
- Closing pressure of the unloading value: None

3.2.2 Power lift test

- Linkage settings for test -see Table 1.1 and Figures 1.1 and 1.2.

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	185 mm	185 mm
Vertical movement		
Without lifting forces	742 mm	779 mm
With lifting forces	706 mm	747 mm
Maximum corrected force exerted through full range	18.2 kN	17.3 kN
Corresponding pressure of hydraulic fluid	16.1 MPa	16.1 MPa
Moment about rear-wheel axis	18.3 kNm	27.8 kNm
Maximum tilt angle of mast from vertical	-	4 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-387	-356	-300	-200	-100	0	100	200	300	350	360
Lifting forces (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):											
At the hitch point, corrected to 16.1 MPa											
kN	-	18.2	18.5	19.4	20.2	21.0	21.4	21.6	21.9	21.9	-
At the frame, corrected to 16.1 MPa											
kN	19.7	-	20.0	20.2	19.7	19.2	18.7	18.1	17.5	-	17.3

3.3 Drawbar power test (ballasted and unballasted tractor)

- Date of tests: 15th to 17th May 2002
- Type of track: Asphalt

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	475	235	157
Ballasted	475	235	157

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric condition		
								Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	%	g/kWh	kWh/ℓ	℃	℃	℃	℃	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
L-4	8.1	24.55	1.19	2249	15.1	990	0.83	34	90	109	19	65	100.4
M-1	12.7	24.84	1.84	2241	15.1	737	1.12	34	89	108	18	64	100.5
M-2	18.4	24.68	2.69	2236	15.1	561	1.47	35	91	109	19	63	100.4
M-3	24.7	24.56	3.63	2227	15.0	454	1.81	35	91	110	19	63	100.6
M-4	38.2	24.13	5.70	2192	15.0	369	2.23	34	92	111	20	62	100.8
H-1	47.9	21.93	7.86	1952	9.6	305	2.70	33	91	110	19	63	100.6
H-2	47.1	13.99	12.12	1950	4.2	311	2.65	33	90	108	19	63	100.6
3.3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
L-3	5.3	25.87	0.74	2236	15.2	1974	0.42	43	93	110	26	55	100.1
L-4	8.6	26.37	1.18	2225	15.0	1304	0.63	44	92	111	27	54	100.0
M-1	13.6	27.16	1.81	2216	15.0	968	0.85	42	92	112	28	52	99.8
M-2	19.8	26.75	2.67	2207	15.0	708	1.16	43	91	110	28	53	100.2
M-3	26.1	26.35	3.56	2199	15.0	541	1.52	44	92	111	29	52	100.1
M-4	40.6	25.93	5.64	2152	15.0	350	2.36	42	91	109	28	53	100.1
H-1	47.8	21.62	7.95	1952	7.8	307	2.69	43	92	110	28	54	100.0
H-2	47.2	13.91	12.21	1950	3.9	311	2.65	43	91	109	27	55	100.1
3.3.3 FIVE-HOUR TESTS 3.3.3.1 FIVE-HOUR TEST at 75% of the pull corresponding to maximum power at rate speed													
M-4	33.1	19.40	6.15	2220	9.63	372	2.22	43	93	108	28	54	100.0
3.3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip, with additional ballast : (+)..... kg													
M-3	26.2	26.21	3.60	2189	15.0	538	1.53	44	93	109	28	56	100.1

(+) Test 3.3.3.2 was carried out without additional ballast.

Oil consumption during ten hours duration of tests 3.3.3.1 and 3.3.3.2: 16.2g/h

3.4 Turning area and turning circle

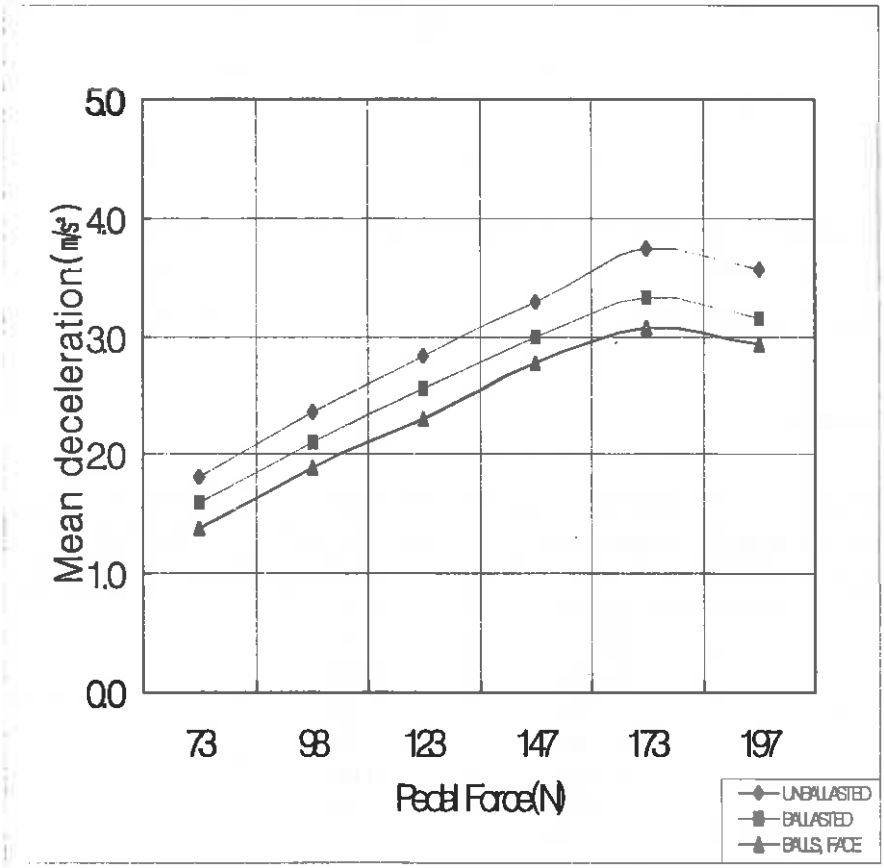
	Without brakes	
	Right-hand	Left-hand
	m	m
Radius of turning area	4.08	4.08
Radius of turning circle	3.90	3.91

3.5 Location of centre of gravity

- Height above ground: 874 mm
- Distance from the vertical plane containing the axis of the rear-wheels: 936 mm
- Distance from the median longitudinal plane of the tractor , to the left: 2 mm
- If the angle of suspension of the tractor is less than 20°, indicate its value: None

3.6 Braking

- Date of tests: 14th to 22nd June 2002



3.6.1 Cold service braking device test

	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking wheels
	km/h	kN	m/s^2	m
Ballasted tractor	31.45	0.050 0.074 0.099 0.123 0.147 0.172 0.197	0.99 1.60 2.10 2.55 2.99 3.32 3.16	11.49
Unballasted tractor	31.43	0.049 0.073 0.098 0.123 0.147 0.173 0.197	1.09 1.81 2.36 2.83 3.28 3.74 3.56	10.2

- Maximum deviation of tractor from its original course: None
- Abnormal vibration: None
- Brake heating method: None

3.6.2 Fade test

Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking wheels
km/h	kN	m/s^2	m
31.44	0.049 0.074 0.098 0.123 0.148 0.172 0.197	0.87 1.38 1.89 2.30 2.78 3.08 2.94	12.40

- Maximum deviation of tractor from its original course: None
- Abnormal vibration: None
- Brake heating method: Driven with brakes applied for 1km at 80%(25.2km/h) of maximum speed with a pedal force corresponding to deceleration of 1 m/s^2

3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	0.34 kN	0.34 kN

3.7 Measurement of external noise

- Date of tests: 19 th April 2002
- Sound level meter, make/model/type: Brüel & kjær, 2236
- Type of track: Asphalt
- Gear number: 12(H-4) gear
- Travelling speed before acceleration: 23.4 km/h
- Sound level: 83.8 dB(A)

4. OPTIONAL TESTS RESULTS

None

5. REPAIRS

None

6. REMARKS

None