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

FULL CODE

O.E.C.D. Approval No. : 1/1867

Date of approval : 7th December, 1999



Agricultural Tractor
TONG YANG T280(4WD)

Manufactured by : TONG YANG MOOLSAN CO., Ltd.
604-9, Namsan-dong, Changwon-city,
Kyungsangnam-do, Republic of KOREA

NATIONAL AGRICULTURAL MECHANIZATION RESEARCH INSTITUTE
249, Seodun-dong, Kwonson-gu, Suwon-city, Kyunggi-do, Republic of Korea

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. : 99-M-5-1

Duration of test : March 1999 till June 1999

Date of approval : 7th December, 1999

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

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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- Tractor manufacturer's name and address : TONG YANG MOOLSAN Co., Ltd. 604-9, Namsan-dong, Changwon-city, Kyungsangnam-do, Korea
- Location of tractor assembly : 604-9, Namsan-dong, Changwon-city, Kyungsangnam-do, Korea
- Submitted for test by : The manufacturer
- Selected for test by : The manufacturer in agreement with the test station
- Place of running-in : TONG YANG MOOLSAN Co., Ltd.
- Duration of running-in : Engine and tractor 58 hours
- Location of test : NAMRI

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

- Make : Tong Yang
- Model : T280
- Type : Wheeled tractor, unit construction
- Number of driving wheels : 4
- Serial No. : R 12 0201
- 1st Serial No. : R 12 0001

1.2 Engine

- Make : Kubota
- Model : D1503
- Type : 4 stroke, water cooled, indirect diesel, naturally aspirated
- Serial No. : D1503-LLN9858

1.2.1 Cylinders

- Number/disposition : 3 , Vertical in-line
- Bore/stroke : 83 / 92.4 mm
- Capacity : 1499 ㎤
- Compression ratio : 23.0 : 1
- Arrangement of valves : Overhead valves
- Cylinder liners (wet or dry) : None

1.2.2 Supercharging

None

1.2.3 Fuel system

- Fuel feed system : Forced feed type

- Fuel filters
  - ·Make : Samo
  - ·Model : 61047022000
  - ·Type : Replaceable element
- Capacity of fuel tank : 26 dm^3
- Injection pump
  - ·Make : Nihon Denso
  - ·Model : PFR 4M
  - ·Type : Bosch, in line
- Serial No. : None
- Manufacturer's production setting of injection pump
  - ·Flow rate : 6.07± 0.3 dm^3/h at rated engine speed and full load
  - ·Timing : 18 degrees before T.D.C
- Injectors
  - ·Make : Nihon Denso
  - ·Model : DNOPD95
  - ·Type : Multi-hole
- Injection pressure : 13.7 MPa

1.2.4 Governor

- Make : Kubota
- Model : None
- Type : Variable speed governor, mechanically acting
- Governed range of engine speed : From 800± 50 to 2850± 50 rev/min
- Rated engine speed : 2600 rev/min

1.2.5 Air cleaner

- Pre-cleaner
  - ·Make : None
  - ·Model : None
  - ·Type : None
  - ·Location of air intake : None
- Main cleaner
  - ·Make : Poong-Yang
  - ·Model : 13001032000
  - ·Type : Cyclone type, dry
  - ·Location of air intake : Under the bonnet, in front of the radiator
- Maintenance indicator : None

1.2.6 Lubrication system

- Type of feed pump :	Rotor type
- Type of filter :	Full flow, replaceable canister
- 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, puller
· Number of fan blades :	7
· Fan diameter :	350 mm
- Coolant capacity :	7.0 d m^3(Radiator 2.8 d m^3+ Engine 4.2 d m^3
- Type of temperature control :	Wax type Thermostat
- Superpressure system :	88.2 kPa, at radiator cap

1.2.8 Starting system

- Make :	Nihon Denso
- Model :	15461-63014
- Type :	Electrical, pre-engaged, solenoid operated
- Starter motor power rating :	1.4 kW
- Cold starting aid :	Electrical glow plug
- Safety device :	Starting operable only when main clutch pedal fully depressed

1.2.9 Electrical system

- Voltage :	12 V
- Generator	
· Make :	Daewoo
· Model :	219210
· Type :	3 phase generator
· Power :	0.6 kW
- Battery of accumulators	
· Number :	1
· Rating :	75Ah at 20 hours rating

1.2.10 Exhaust system

- Make :	Sae-Shin
- Model :	13001052000
- Type :	Silencer
- Location :	Under bonnet, left hand side in front of engine

1.3 TRANSMISSION

1.3.1 Clutch (travel alone)

- Make : Seo-Jin
- Model : 14451202001A
- Type : Dry single plate clutch
- Number of plates : 1
- Diameter of plates : 225 mm
- Method of operation : Mechanically actuated by pedal

1.3.2 Gear box

- Make : Own make
- Model : None
- Type : Mechanical
- Description : 4 main gear with constant-mesh (1st.-2nd.) and synchro-mesh (3rd.-4th.), 3 range gear with constant-mesh and 1 creeper gear

	Forward	Reverse
Number of gears	4	4
Number of ranges	4	4
Total of arrangements	16	16

※ The creeper gear is not to be used for heavy drawbar work.

- Available options : None

1.3.3 Rear axle and final drives

- Make : Own make
- Model : 1300300000
- Type : Bevel gear type differential and helical gear type final drives
- Differential lock
  - Type : Mechanical
  - Method of engagement : Mechanically actuated by foot pedal
  - Method of disengagement : Self-disengagement by spring

1.3.4 Front axle and final drives

- Make : Seil
- Model : 14614003000
- Type : Bevel gear type differential and bevel gear type final drives
- Differential lock : Not available

1.3.5 Total ratios and travelling speeds

Gear No	Group or range	Number of engine revolutions for one revolution of driving wheels		Nominal travelling speed(*) at rated engine speed to 2600 rev/min (km/h)	
		Forward	Reverse	Forward	Reverse
1	LL-1	1212.40	1165.24	0.42	0.43
2	LL-2	1047.08	1006.35	0.48	0.50
3	LL-3	763.78	734.07	0.66	0.69
4	LL-4	538.09	517.16	0.94	0.98
5	LH-1	486.70	467.76	1.04	1.08
6	LH-2	420.33	403.97	1.20	1.25
7	LH-3	306.60	294.68	1.65	1.71
8	LH-4	216.01	207.60	2.34	2.43
9	HL-1	166.41	159.93	3.03	3.16
10	HL-2	143.71	138.12	3.51	3.65
11	HL-3	104.83	100.75	4.82	5.01
12	HL-4	73.86	70.98	6.83	7.11
13	HH-1	66.80	64.20	7.56	7.86
14	HH-2	57.69	55.45	8.75	9.10
15	HH-3	42.08	40.45	12.00	12.48
16	HH-4	29.65	28.49	17.03	17.72

(*) Calculated with rear tyre dynamic radius index of 515 mm(ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear-wheels : 1.502
Range selection : LL = Creep, LH = Low, HL = Medium, HH = High

1.4 POWER TAKE-OFF

1.4.1 Main power take-off

- Type : Independent
- Method of engagement : Operated electrohydraulical by push button
  Driven by wet multiplate clutch
- Number of shafts : 1
- Method of changing power take-off shaft speeds : Speed change manually by hand lever

1.4.1.1 Power take-off proportional to engine speed
Power take-off at 540 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 : 551 mm
- Distance from the median plane of the tractor : 0 mm
- Distance behind rear-wheel axis : 268 mm

- PTO speed at rated engine speed(2600rev/min) : 553 rev/min
- Engine speed at standard power take-off speed : 2539 rev/min
- Ratio of rotation speeds (engine speed / p.t.o speed) : 4.701 : 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 : None

1.4.2 Optional power take-off : None

1.5 Hydraulic power lift

- Make : Own make
- Model : 13005000000
- Type : Hydraulic, position, draft and mixed control
- Type of hydraulic system : Open center system
- Type and number of cylinders : 1, Single acting
- Type of linkage lock for transport : Hydraulic
- Relief valve pressure setting : $13.3 \pm {}^{0.5}_{0}$ MPa
- Opening pressure of cylinder safety valve : Not fitted
- Lift pump type : Gear pump
- Transmission between pump and engine : Driven by engine cam shaft
- Type and number of filters : 1, cartridge
- Site of oil reservoir : Transmission housing
- Type, number and location of tapping points : SAE 3/8" hydraulic female coupler, 2 sets, rear of tractor
- Maximum volume of oil available to external cylinders : None

1.6 Three-point linkage

- Category : 1, in conformity with ISO730/1-1994
- Category adapter : None

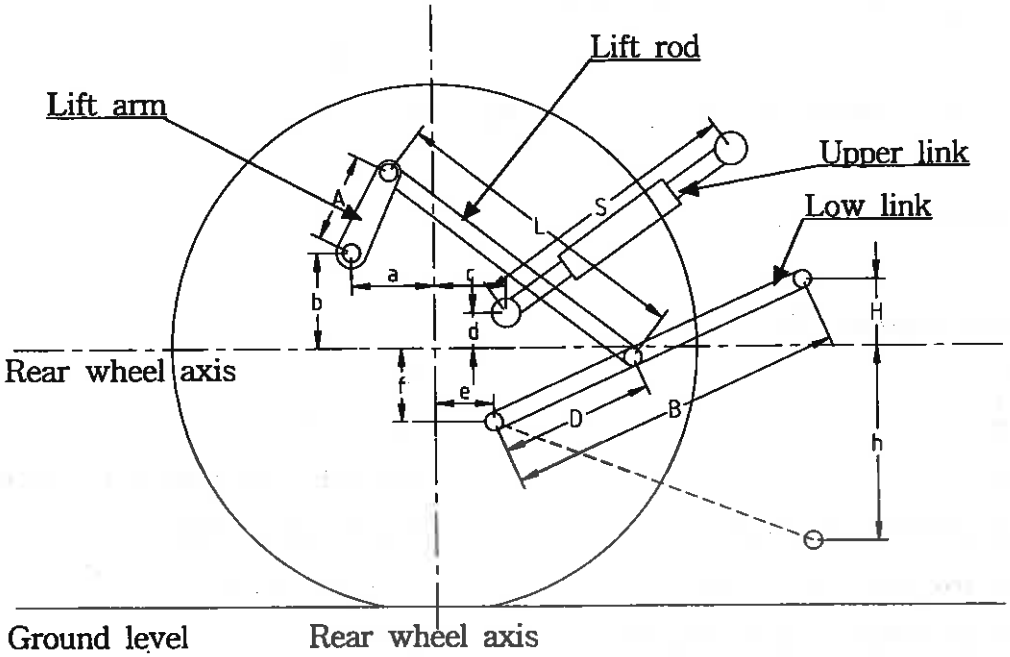


Figure 1.1 Linkage geometry

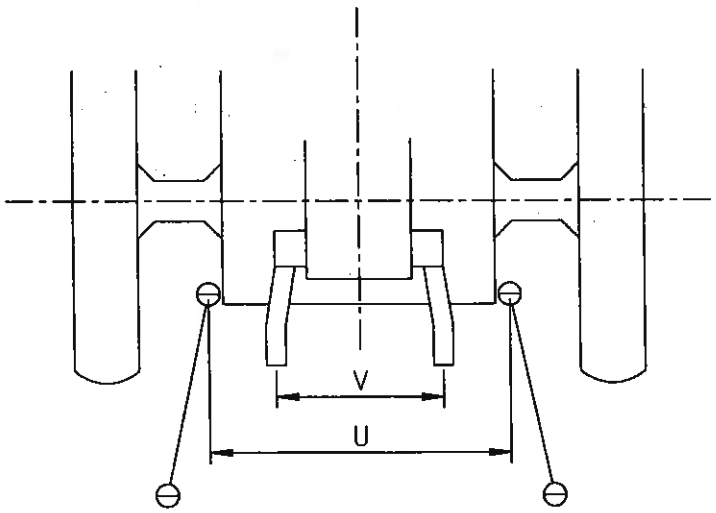


Figure 1.2 Linkage geometry

		Dimension or range (mm)	Settings used in test (mm)
Length of lift arms	(A)	260	260
Length of lower links	(B)	720	720
Distance of lift arm pivot horizontally	(a)	32	32
Point from rear-wheel axis vertically	(b)	246	246
Horizontal distance between the 2 lower link points	(u)	440	440
Horizontal distance between the 2 lift arm end points	(v)	360	360
Length of upper link	(S)	from 460 to 735	585
Distance of upper link			
Pivot point from rear horizontally	(c)	260	260
Wheel axis vertically	(d)	from 384 to 424	424
Distance of lower link			
Pivot point from rear horizontally	(e)	90	90
Wheel axis vertically	(f)	100	100
Distance of lower link pivot point to lift rod pivot			
Points on lower links	(D)	from 284 to 520	345
Length of lift rods	(L)	from 371 to 428	420
Height of lower hitch points relative to the rear-wheel			
Axis			
- in low position	(h)	250~390	375
- in high position	(H)	180~260	250
Height above ground of lower hitch points When locked in transport position(*)		Any height within lifting range	
(*)Assuming r = 515mm rear tyre dynamic radius index of ISO 4251/1-1992			

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 the rear of transmission housing
- Hole diameter :	22.5 mm
- Height above ground :	382 mm
- Distance of hitch point from rear-wheel axis, horizontally :	297 mm
- Distance of hitch point from power take-off shaft end	
·Vertically :	161 mm
·Horizontally :	40 mm
- Maximum vertical permissible load :	6.5 kN

1.9 Holed drawbar : None

1.10 Steering

- Make :	Sumitomo Eaton
- Model :	ORBITROL UBS100B16AWD
- Type :	Hydrostatic
- Method of operation :	Steering wheel operated and full hydraulic power
·Pump :	Gear pump
·Ram :	1, double acting ram actuated directly on front axle
- Working pressure :	From 10.0 to 10.8 MPa

1.11 Brakes

1.11.1 Service brake

- Make :	Jin-Myoung
- Model :	15603102001B
- Type :	Oil-immersed multiplate discs, 4 per side
- Method of operation :	Operated by 2 foot pedals which can be locked together
- Trailer braking take-off :	None

1.11.2 Parking brake

- Type :	Mechanical in common with service brake
- Method of operation :	Depressed by pedals and ratched by hand lever

1.12 Wheels

- Number	
·Front :	2, steering and driving
·Rear :	2, driving
- Wheelbase :	1610 mm

- Track width adjustment :

	Minimum Mm	Maximum mm	Adjustment method
Front	1050	1050	-
Rear	985	1305	By reversing wheels and offset lug rims

1.13 Protective structure

- Make : Own make
- Model : TSF28
- Type : 2 posts configuration attached to the rear frame
- Manufacturer's name and address : TONG YANG MOOLSAN Co., Ltd
  604-9, Namsan-dong, Changwon-city, Kyungsangnam-do, Korea
- Protective device : Rollguard, not tiltable
- OECD approval
  - · Approval number : None
  - · Date of approval : None
  - · Nos. of minor modification certificates, if any : None

1.14 Seat

1.14.1 Driver's seat

- Make : Young Jin
- Model : 14216000510
- Type : Upholstered seat with back rest
- Seat and steering wheel reversible : No
- Type of suspension : Not available
- Type of damping : Not available
- Range of adjustment
  - · Longitudinal : 120 mm
  - · Vertical : 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 center	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Head lights	1040	150× 95	190
Side lights	1300	120× 65	600
Rear lights	1180	120× 65	580
Reflectors	1180	55× 55	435

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust silencer(*)
	Mm	mm	mm	mm	mm
Ballasted	2870	1285	1340	2025	925
Unballasted	2699	1285	1340	2025	925

(*) The exhaust silencer is on the left hand side under bonnet.

2.2 Ground clearance (unballasted tractor) : 320 mm

- Clearance-limiting part : Front axle housing

2.3 Tractor mass

- Mass(with frame)

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	602	635	476	490
Rear	675	717	711	772
Total	1277	1352	1187	1262

2.4 Ballast

	Weights		Water
	Number	Total mass	
		kg	kg
Front	6 × 15 kg	90	-
Rear	-	-	-
Optional	-	-	-

2.5 Track specifications : None

2.6 Tyres and track width specifications

	Front	Rear
Tyres		
·dimensions	7-16	11.2-24
·ply rating	4	4
·type	Diagonal(bias)	Diagonal(bias)
·maximum load (tyre manufacturer's)	3.97 kN	8.28 kN
·maximum load (tractor manufacturer's)	3.97 kN	8.28 kN
·inflation pressure (tyre manufacturer's)	176 kPa	117 kPa
·dynamic radius index	345 mm	515 mm
Chosen track width	1050 mm	985 mm

2.7 Fuel

- Type : Diesel fuel No2, in conformity with Korean Standards (KS M 2620)
- Density at 15℃ : 0.824 g/㎤

2.8 Oils and lubricants

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm³	h	h
Engine	5.7	200	400
Gear box, rear axle, steering and final drives in common with hydraulic system	34	300	300
Front axle and final drives	6.5	600	-

2.8.2 Specifications

	Recommended	Used during test
Engine oil ·Type : ·Viscosity : ·Classification :	 Delo400, SAE 15W-40 14.0 cSt at 100 ℃ API CF-4	Same
Transmission oil, Hydraulic fluid, Steering oil ·Type : ·Viscosity : ·Classification :	 TONG YANG THF500 9.2 cSt at 100 ℃ API GL-4	Same

2.8.3 Grease

- Number of lubrication points : 7

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of tests : 31st March to 3rd April, 1999, NAMRI, Konjiam
- Type of dynamometer : Eddy current, FROUD AG 250

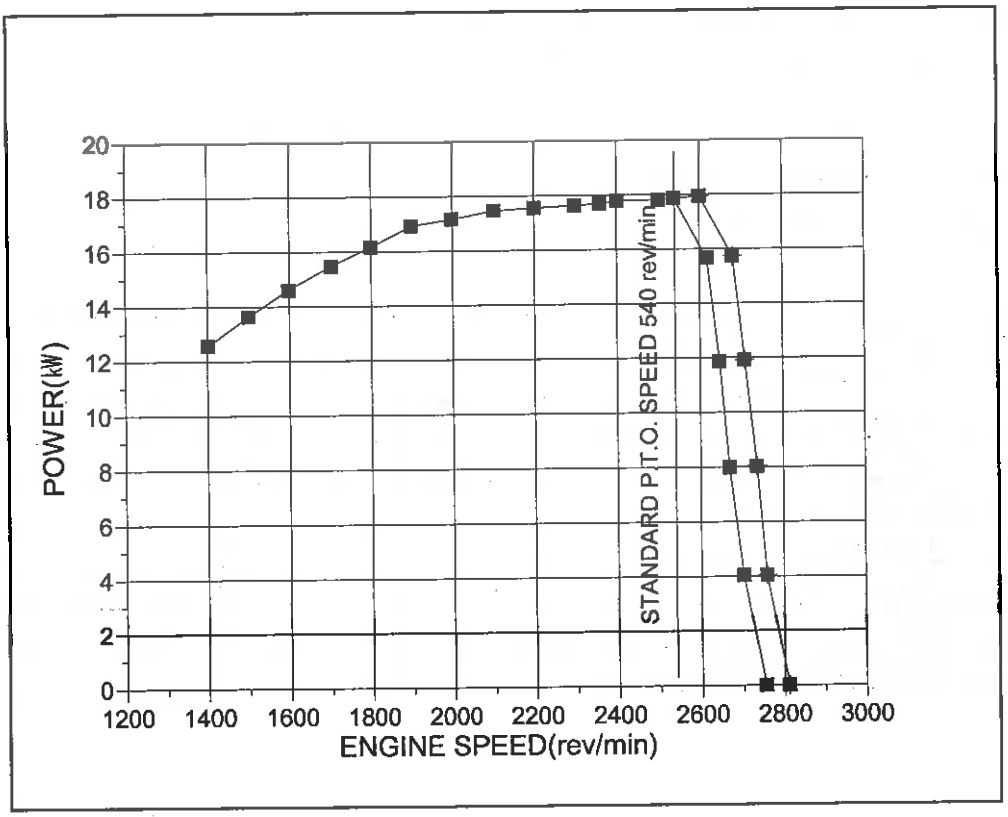
Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O	Hourly		Specific	
kW	rev/min		kg/h	ℓ /h	g/kWh	kWh/ℓ
3.1.1 MAXIMUM POWER - 2 HOURS TEST						
18.0	2600	553	5.11	6.20	285	2.895
3.1.2 POWER AT RATED ENGINE SPEED						
18.0	2600	553	5.11	6.20	285	2.895
3.1.3 STANDARD POWER TAKE-OFF SPEED (540± 10 rev/min)						
17.9	2539	540	5.07	6.15	284	2.904
3.1.4 PART LOADS 3.1.4.1 The torque corresponding to maximum power at rated engine speed						
18.0	2600	553	5.11	6.20	285	2.895
3.1.4.2 85% of torque obtained in 3.1.4.1						
15.7	2680	570	4.68	5.68	298	2.769
3.1.4.3 75% of torque defined in 3.1.4.2						
11.9	2708	576	3.92	4.76	329	2.504
3.1.4.4 50% of torque defined in 3.1.4.2						
8.0	2736	582	3.21	3.89	399	2.064
3.1.4.5 25% of torque defined in 3.1.4.2						
4.1	2759	587	2.65	3.22	655	1.258
3.1.4.6 Unloaded						
0	2811	598	1.89	2.29	-	-
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 available						
17.9	2539	540	5.07	6.15	284	2.904
3.1.5.2 85% of torque obtained in 3.1.5.1						
15.7	2618	557	4.60	5.58	294	2.806
3.1.5.3 75% of torque defined in 3.1.5.2						
11.9	2647	563	3.85	4.67	324	2.541
3.1.5.4 50% of torque defined in 3.1.5.2						
8.0	2670	568	3.13	3.80	392	2.101
3.1.5.5 25% of torque defined in 3.1.5.2						
4.0	2703	575	2.45	2.97	606	1.360
3.1.5.6 Unloaded						
0	2755	586	1.81	2.20	-	-

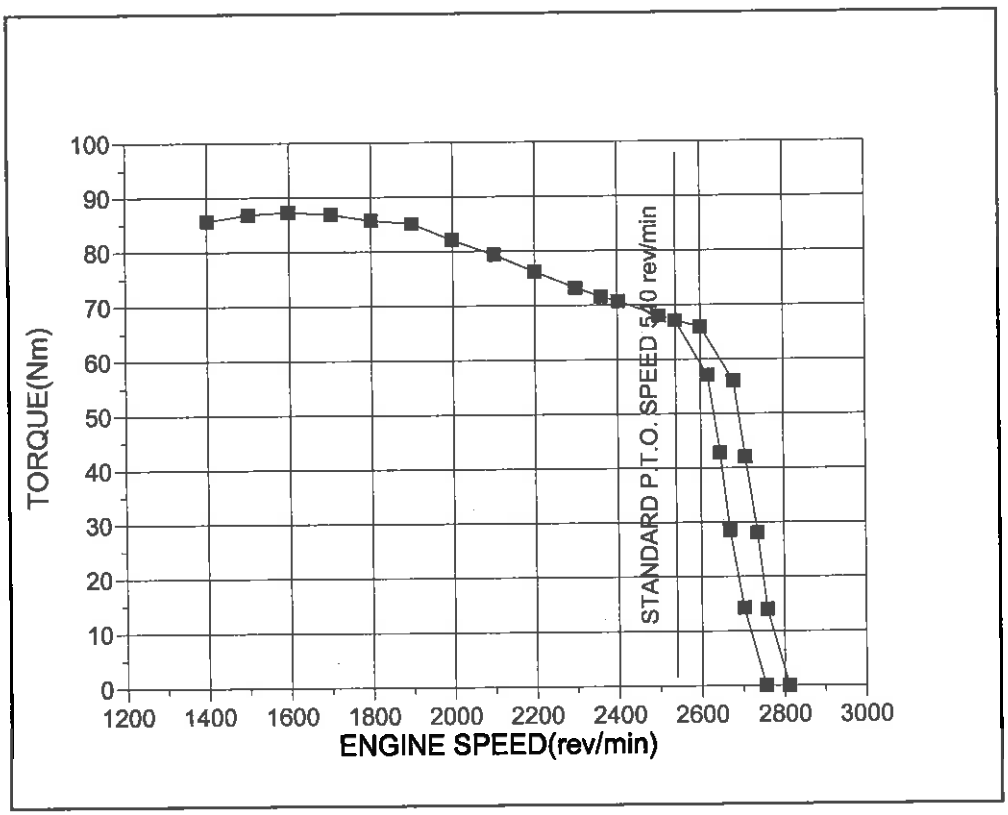
- No load maximum engine speed : 2811 rev/min
- Torque (equivalent crankshaft) at maximum power
  - ·At rated engine speed : 65.9 Nm
  - ·At 2 hours test : 65.9 Nm
- Maximum torque(equivalent crankshaft) : 87.3 Nm

  (engine speed : 1600 rev/min)

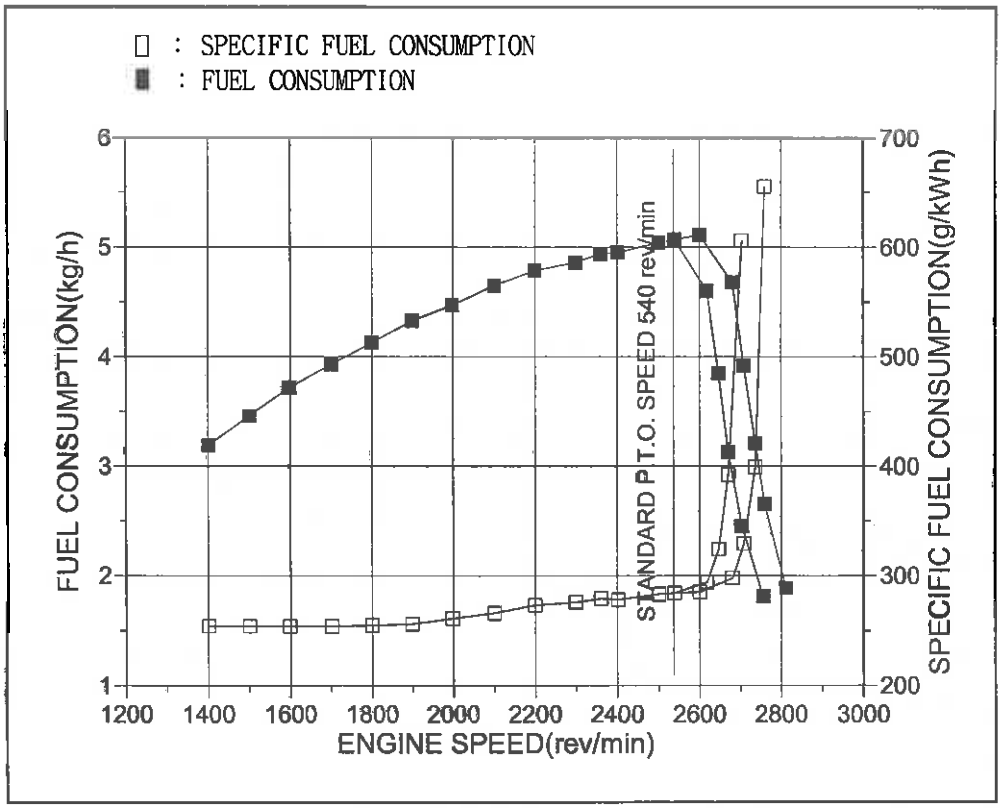
Mean atmospheric conditions	
Temperature	23 ℃
Pressure	100.5 kPa
Relative humidity	42 %
Maximum temperatures	
Coolant	87 ℃
Engine oil	99 ℃
Fuel	47 ℃
Engine air intake	25 ℃

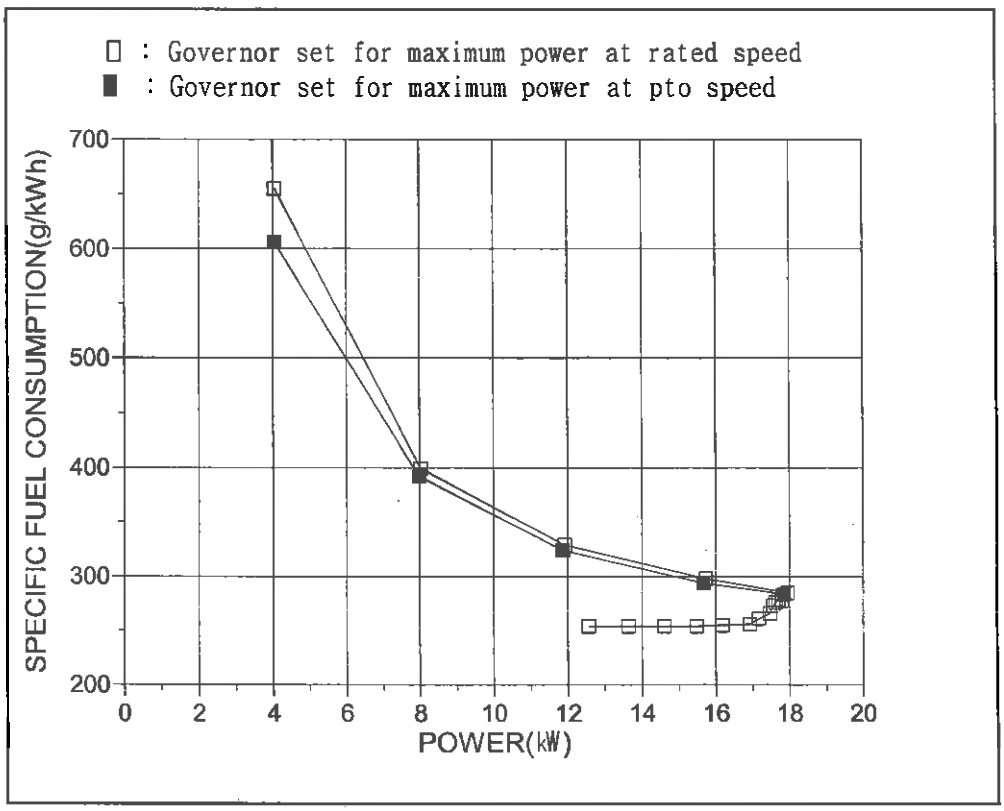
POWER TAKE - OFF PERFORMANCE CURVES





POWER TAKE - OFF PERFORMANCE CURVES





3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests : 1st June ~ 3rd June, 1999

3.2.1 Hydraulic power test

- Sustained pressure with relief valve open : 13.30 MPa
- Pump delivery rate at minimum pressure : 23.85ℓ /min

	Flow rate	Pressure	Power
	ℓ /min	MPa	kW
Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power	7.84	12.0	1.57
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	20.95	9.8	3.42

- Tapping point used for test : Rear of tractor
- Temperature of hydraulic fluid if different from 65± 5℃ : None
- Opening pressure of the unloading valve : Not available
- Closing pressure of the unloading valve : Not available

3.2.2 Power lift test

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

	At the hitch point	On the frame
Height of lower hitch point above ground in down position	140 mm	140 mm
Vertical movement without lifting forces with lifting forces	 625 mm 608 mm	 920 mm 890 mm
Maximum corrected force exerted through full range	9.40 kN	4.94 kN
Corresponding pressure of hydraulic fluid	12.0 MPa	12.0 MPa
Moment about rear-wheel axis	7.61 kNm	7.01 kNm
Maximum tilt angle of mast from vertical	-	19 °

Lifting heights relative to the horizontal plane including the lower link pivot points													
mm	-380	-300	-285	-200	-100	0	100	200	300	323	400	500	510
Lifting forces(the values of force measured shall be corrected to corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting of the hydraulic lifting system) At the hitch points, Corresponding pressure 12.0 Mpa													
kN	-	-	10.06	10.28	10.20	10.11	10.02	9.88	9.76	9.40	-	-	-
At the frame, Corresponding pressure 12.0 Mpa													
kN	6.96	6.89	-	6.62	6.44	6.26	6.14	6.00	5.70	-	5.34	5.12	4.94

3.3 DRAWBAR PERFORMANCE

- Date of tests : 23rd June ~ 26th June, 1999
- Type of track : Asphalt

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	390	176	117
Ballasted	390	176	117

Gear number And Range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consum-ption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Tempe-rature	Relative humidi	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/ℓ	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
LH-4	4.82	7.91	2.19	2738	15.0	607	1.357	54	88	100	29	53	99.6
HL-1	6.34	8.05	2.84	2726	15.0	509	1.620	54	89	101	29	53	99.6
HL-2	7.22	7.95	3.27	2715	15.0	477	1.726	55	91	102	28	54	99.7
HL-3	9.81	7.94	4.45	2686	15.0	420	1.964	54	90	101	28	52	99.7
HL-4	13.32	7.76	6.18	2604	13.9	378	2.180	55	89	100	27	53	99.6
HH-1	13.66	6.95	7.07	2602	11.0	369	2.233	55	90	102	28	54	99.7
HH-2	13.97	5.94	8.47	2602	8.1	362	2.273	54	89	101	29	53	99.7
HH-3	13.89	4.13	12.11	2601	4.3	368	2.239	55	88	100	28	53	99.6
3.3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)(†)													
LH-1	2.35	8.62	0.98	2778	15.1	1000	0.824	57	85	98	29	52	99.6
LH-2	2.70	8.55	1.14	2766	15.0	904	0.912	58	86	99	29	53	99.6
LH-3	3.72	8.63	1.55	2750	15.0	713	1.156	56	87	98	29	52	99.7
LH-4	5.26	8.64	2.19	2734	15.0	572	1.441	57	89	99	30	52	99.6
HL-1	6.97	8.89	2.82	2717	15.0	487	1.691	58	90	100	29	53	99.7
HL-2	7.95	8.78	3.26	2708	15.0	457	1.805	59	90	101	30	52	99.6
HL-3	10.70	8.69	4.43	2679	15.0	408	2.020	58	91	102	29	53	99.6
HL-4	13.66	7.75	6.35	2603	11.5	367	2.248	57	90	101	28	54	99.6
HH-1	13.83	6.94	7.17	2602	9.6	363	2.267	58	91	100	29	53	99.6
HH-2	14.13	5.97	8.51	2601	7.4	356	2.315	56	90	99	29	53	99.7
HH-3	14.08	4.20	12.07	2600	4.6	356	2.315	55	90	99	28	52	99.6
3.3.3 FIVE-HOUR TESTS													
3.3.3.1 FIVE-HOUR TEST at 75% of pull at maximum power (at rated engine speed)													
HH-1	11.13	5.21	7.70	2687	6.1	382	2.157	56	90	101	28	52	99.6
3.3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip with additional ballast : 40 kg													
HL-3	10.73	8.71	4.43	2679	(*)	(*)	(*)	57	91	102	27	53	99.6

(†) The creeper gears(LL-1, LL-2, LL-3, LL-4) are not to be used for heavy drawbar work.

(*) Those figures not quoted are irrelevant due to the additional ballast.

Oil consumption during ten hours duration of tests 3.3.3.1 and 3.3.3.2 : 1.1 g/h

3.4 TURNING AREA AND TURNING CIRCLE

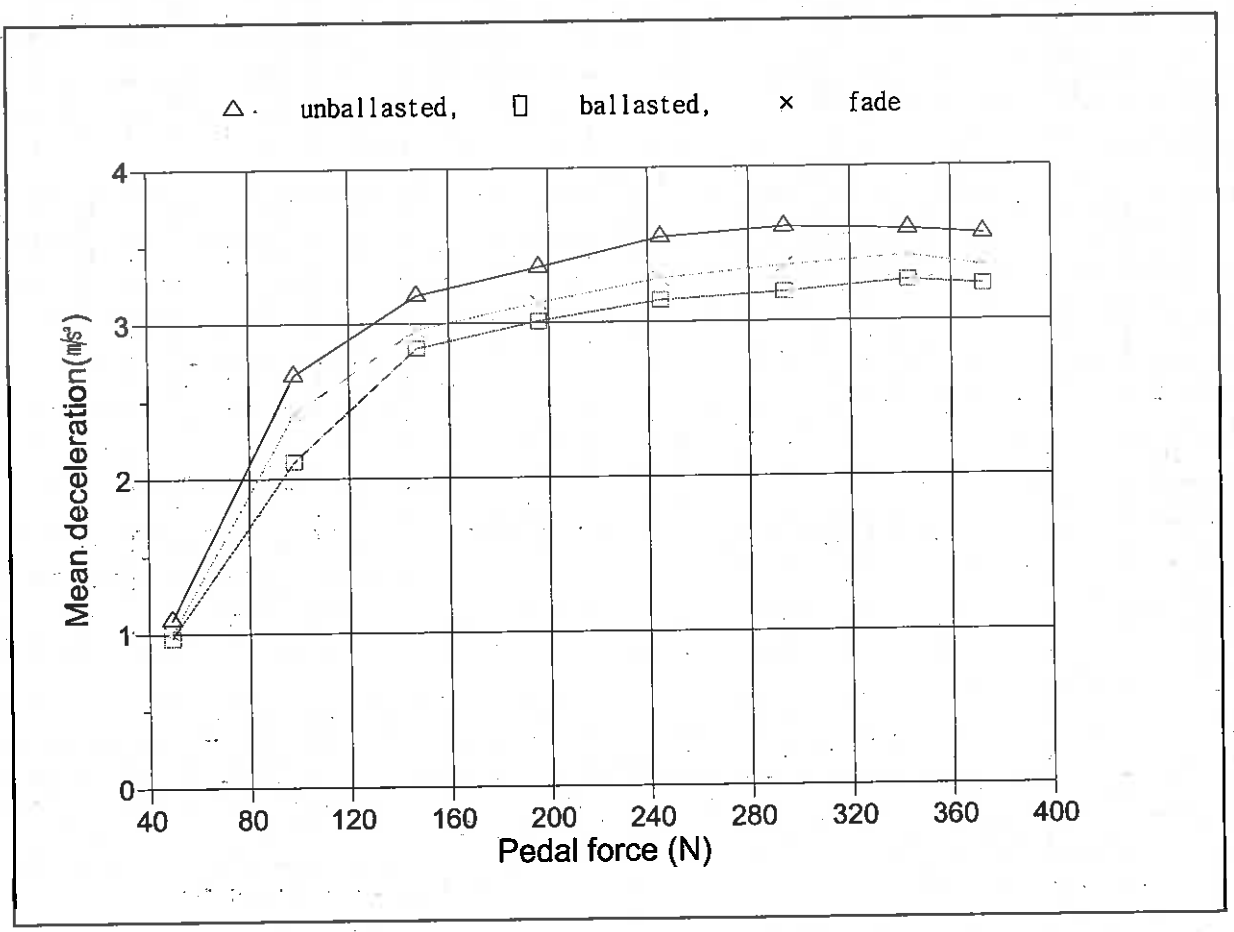
	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
	mm	mm	mm	mm
Radius of turning area	2650	2640	3015	3005
Radius of turning circle	2460	2450	2825	2815

3.5 LOCATION OF CENTER OF GRAVITY

- Height above ground : 747 mm
- Distance from the vertical plane containing the axis of the rear wheels : 625 mm
- Distance from the median longitudinal plane of the tractor, to the left side : 2 mm

3.6 BRAKING

- Date of tests : 24th June ~ 25th June, 1999
- Type of track : Asphalt



COLD SERVICE BRAKING DEVICE TEST AND FADE TEST

3.6.1 Cold service braking device test

	Speed before application of brakes	Braking device control force	Mean deceleration
	km/h	kN	m/s²
Ballasted tractor	19.66	0.050	0.97
		0.100	2.11
		0.150	2.84
		0.195	3.01
		0.245	3.14
		0.295	3.19
		0.345	3.26
		0.375	3.23
Unballasted tractor	19.73	0.050	1.09
		0.100	2.67
		0.150	3.18
		0.195	3.36
		0.245	3.55
		0.295	3.61
		0.345	3.59
		0.375	3.56

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

3.6.2 Fade Test

- Maximum deviation of tractor from its original course : None
- Abnormal vibration : None
- Brake heating method : Driven with brakes applied for 1km at 80% of maximum speed with a pedal force corresponding to a deceleration of 1m/s²

Speed before application of brakes	Braking device control force	Mean deceleration
km/h	kN	m/s²
19.66	0.050	1.00
	0.100	2.42
	0.150	2.96
	0.195	3.13
	0.245	3.28
	0.295	3.36
	0.345	3.42
	0.375	3.35

3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	314 N	304 N

3.7 Measurement of external noise level

- Date of tests :	29th April ~ 30th April, 1999
- Sound level meter, make/model :	Bruel & kjaer, 2236
- Type of track :	Asphalt
- Gear number :	16(HH-4) gear
- Travelling speed before acceleration :	13.9 km/h
- Sound level :	81.4 dB(A)

4. REPAIRS None

5. REMARKS None