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. : 1/1 965
Date of approval : 19th July 2001



Agricultural Tractor

TONG YANG T290 (4WD)

Manufactured by : TONG YANG MOOLSAN Co., Ltd.
604-9 Namsan-dong, Changwon-si,
Gyeongsangnam-do, Republic of KOREA

NATIONAL AGRICULTURAL MECHANIZATION RESEARCH INSTITUTE
249, Seodun-dong, Gwonseon-gu, Suwon-si, Gyeonggi-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. : 01-M-5-2
Duration of test : January 2001 till May 2001
Date of approval : 19th July 2001

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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- Tractor manufacturer's name and address : TONG YANG MOOLSAN Co., Ltd 604-9 Namsan-dong, Changwon-si, Gyeongsangnam-do, KOREA
- Location of tractor assembly : 604-9 Namsan-dong, Changwon-si, Gyeongsangnam-do, KOREA
- Submitted for test by : The manufacturer
- Selected for test by : The manufacturer in agreement with NAMRI
- Place of running-in : 604-9 Namsan-dong, Changwon-si, Gyeongsangnam-do, KOREA
- Duration of running-in : Engine and tractor 70 hours
- Location of test : NAMRI

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

- Make : TONG YANG
- Model : T290
- Type : Wheeled tractor, unit construction
- Number of driving wheels : 4
- Serial No. : T12 0078
- 1st Serial No. : T12 0001

1.2 ENGINE

- Make : KUBOTA
- Model : D1503
- Type : 4-stroke, water cooled, indirect diesel, naturally aspirated
- Serial No. : D1503-20900

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
- 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 : SAM-O
  - Model : 14571002000
  - Type : Replaceable paper element
- Capacity of fuel tank : 33.0 dm³

- Injection pump
  - Make : NIHON DENSO
  - Model : PFR 4M
  - Type : BOSCH, in line
  - Serial No. : None
- Manufacturer's production setting of injection pump
  - Flow rate : 7.56 ± 5% dm³/h at rated engine speed and full load
  - Timing : 18 degrees before T.D.C
- Injectors
  - Make : NIHON DENSO
  - Model : DNOPD95
  - Type : Throttle
- Injection pressure : 13.7 MPa

1.2.4 Governor
- Make : KUBOTA
- Model : None
- Type : Mechanical, centrifugal ball
- Governed range of engine speed : From 800±50 to 2950±50 rev/min
- Rated engine speed : 2800 rev/min

1.2.5 Air cleaner
- Pre-cleaner : None
  - Make :
  - Model :
  - Type :
  - Location of air intake :
- Main-cleaner
  - Make : POONG-YANG
  - Model : 14571032003C
  - Type : Dry paper element filter
- 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 of filter(s) : 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 : 375 mm
- Coolant capacity : 7.0 dm³

- Type of temperature control : Wax pellet type thermostat
- Superpressure system : 88.2 kPa, at radiator cap

1.2.8 Starting system
- Make : NIHON DENSO
- Model : 15641630130
- Type : Electrical pre-engaged solenoid operated
- Starter motor power rating : 1.4 kW
- Cold starting aid : Electric glow plug, 12 V
- Safety device : Starting operable only when main clutch pedal fully depressed

1.2.9 Electrical system
- Voltage : 12 V
- Generator
  - Make : HANKOOK DELPHI
  - 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 : 14571052002B
- 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 : 14581212100A
- Type : Dry single plate
- Number of plates : 1
- Diameter of plates : 225 mm
- Method of operation : Mechanically actuated by pedal

1.3.2 Gear box
- Make : TONG YANG
- Model : None
- Type : Mechanical
- Arrangement : 4 main gears with constant-mesh and synchro-mesh, 3 range gears with constant-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	3	3
Total of arrangements	12	12

- Available options : None

1.3.3 Rear axle and final drives

- Make : TONG YANG
- Model : 14613000000
- Type : Bevel gear differential and helical gear 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 : SEIL
- Model : 14574122001A
- Type : Bevel gear differential and bevel gear final drives

- Differential lock :
  - Type : None
  - Method of engagement : None
  - Method of disengagement : None

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 2800 min^{-1}(rev/min) km/h	
		Forward	Reverse	Forward	Reverse
1	L-1	619.60	637.31	0.88	0.85
2	L-2	451.43	464.33	1.20	1.17
3	L-3	351.11	361.14	1.55	1.51
4	L-4	254.25	261.52	2.14	2.08
5	M-1	196.09	201.69	2.77	2.70
6	M-2	142.86	146.94	3.81	3.70
7	M-3	111.12	114.29	4.89	4.76
8	M-4	80.46	82.76	6.76	6.57
9	H-1	61.40	63.16	8.85	8.61
10	H-2	44.74	46.01	12.15	11.82
11	H-3	34.79	35.79	15.63	15.19
12	H-4	25.20	25.92	21.57	20.97
(*)Calculated with a tyre dynamic radius index of 515 mm(ISO 4251/1-1998)					

Number of revolutions of front wheels for one revolution of rear-wheels : 1.492
Range selection : L = Low, M = Medium, H = High

1.4 POWER TAKE-OFF

1.4.1 Main power take-off

- Type : Independent
- Method of engagement : Engaged or disengaged by push button, driven by wet multiplate clutch.
- Number of shafts : 1(for 540 and 1000 rev/min)
- Method of changing power take-off shaft 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 : 509 mm
- Distance from the median plane of the tractor : 0 mm
- Distance behind rear-wheel axis : 263.5 mm
- PTO speed at rated engine speed, and engine speed at standard power take-off speed:

PTO speed (rev/min)	Engine speed (rev/min)	Engine/PTO transmission ratio
595	2800	4.7056
540	2541	

- Power restriction : 21.5 kW

- Maximum torque transmissible : 379.6 Nm
- 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 : 509 mm
- Distance from the median plane of the tractor : 0 mm
- Distance behind rear-wheel axis : 263.5 mm
- PTO speed at rated engine speed, and engine speed at standard power take-off speed:

PTO speed (rev/min)	Engine speed (rev/min)	Engine/PTO transmission ratio
809	2800	3.4611
750	2595	

- Power restriction : 21.5 kW
- Maximum torque transmissible : 273.1 Nm
- Direction of rotation(viewed from behind tractor) : Clockwise

Power take-off at 1000 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 : 509 mm
- Distance from the median plane of the tractor : 0 mm
- Distance behind rear-wheel axis : 263.5 mm
- PTO speed at rated engine speed, and engine speed at standard power take-off speed:

PTO speed (rev/min)	Engine speed (rev/min)	Engine/PTO transmission ratio
1100	2800	2.5455
1000	2545	
1426	2800	1.9635

- Power restriction : 21.5 kW
- Maximum torque transmissible : 204.8 Nm
- 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 : TONG YANG
- Model : 14575140000
- Type : Hydraulic 3-point hitch
- 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 :	14.2±5 MPa
- Opening pressure of cylinder safety valve :	None
- Lift pump type :	Gear pump
- Transmission between pump and engine :	Driven by 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, 4 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+Cor.1:1995
- Category adapter : None

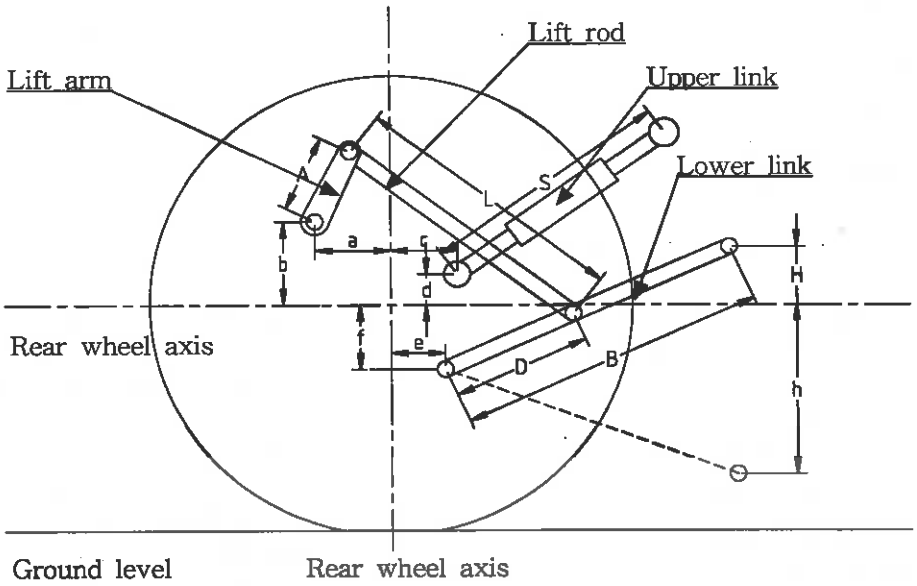


Figure 1.1

Lift test-Linkage geometry

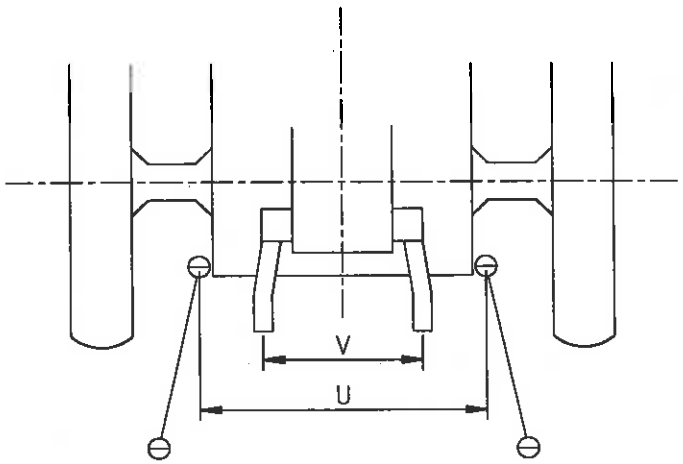


Figure 1.2

Lift test-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 point from rear-wheel axis :			
- horizontally	(a)	32	32
- vertically	(b)	245	245
Horizontal distance between the 2 lower link points:	(u)	450	450
Horizontal distance between the 2 lift arm end points:	(v)	420	420
Length of upper link:	(S)	from 490 to 630	592
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	241	241
- vertically	(d)	from 99 to 189	189
Distance of lower link pivot point from rear wheel axis:			
- horizontally	(e)	86	86
- vertically	(f)	90	90
Distance of lower link pivot point to lift rod pivot points on lower links:	(D)	from 350 to 490	350
Length of lift rods:	(L)	from 385 to 415	415
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	from 60 to 392	368
- in high position	(H)	from 114 to 306	245
Height above ground of lower hitch points when locked in transport position(*)		Any height within lifting range	
(*)Assuming r = 515mm tyre dynamic radius index of ISO 4251/1-1998			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

1.7 SWINGING DRAWBAR : None

1.8 TRAILER HITCH :

- Type : Clevis
- Hole diameter : 28 mm
- Height above ground : 341 mm
- Distance of hitch point from rear-wheel axis, horizontally : 300 mm
- Distance of hitch point from power take-off shaft end
  - Vertically : 128 mm
  - Horizontally : 37 mm
- Maximum vertical permissible load: 6.5 kN

1.9 HOLED DRAWBAR : None

1.10 STEERING

- Make : SUMITOMO EATON
- Model : Orbitrol UBS110B08AWD
- Type : Hydrostatic
- Method of operation
  - Pump(s) : Gear pump
  - Ram(s) : 1, double acting ram
- 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 two 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 : Ratched by depressing pedal

1.12 WHEELS

- Number
  - Front : 2, steering and driving
  - Rear : 2, driving
- Wheelbase : 1640 mm
- Track width adjustment :

	Minimum	Maximum	Adjustment method
	mm	mm	
Front	1070	1070	-
Rear	1030	1345	By reversing wheels and offset lug rims

1.13 PROTECTIVE STRUCTURE :

- Make : TONG YANG
- Model : TSF290
- Type : Two-post rear frame
- Manufacturer's name and address : TONG YANG MOOLSAN Co., Ltd 604-9 Namsan-dong, Changwon-si, Gyeongsangnam-do, KOREA
- Protective device : Rollguard, tiltable(rear)
- OECD approval
  - Approval number : 7/S/0 189
  - Date of approval : 13/07/2001

1.14 SEAT

1.14.1 Driver's seat

- Make : TAE-KWANG
- Model : 14576112001A
- Type : Cushion seat with back rest
- Seat and steering wheel reversible : No
- Type of suspension : Spring
- Type of damping : None
- Range of adjustment
  - Longitudinally : 120 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 center	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights	962	140×98	223
Sidelights	1256	80×80	536
Rearlights	1174	120×65	513
Reflectors	1174	55×55	513

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	3287	1320	1639	2370	1141
Unballasted	3080	1320	1639	2370	1141

2.2 GROUND CLEARANCE(unballasted tractor) : 310 mm

- Clearance-limiting part : Drawbar frame

2.3 TRACTOR MASS

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	636	644	530	539
Rear	753	820	787	853
Total	1389	1464	1317	1392

2.4 BALLAST

	Weights		Water
	Number	Total mass	
		kg	kg
Front	4	72	-
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	Diagonal
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)	177 kPa	117 kPa
dynamic radius index	345 mm	515 mm
Chosen track width	1070 mm	1030 mm

2.7 FUEL

- Type : Diesel fuel No. 2 in conformity with Korean Standard(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	100	400
Gear box, rear axle and final drives, steering in common with hydraulic system	32	300	300
Front axle and final drives	6.5	600	-

2.8.2 Specifications

	Recommended	Used during test
Engine oil · Type : · Viscosity : · Classification :	 Delo 400, SAE 15W-40 14.0 cSt at 100 ℃ API CF-4	 Recommended
Transmission oils, Hydraulic fluid Steering oil · Type : · Viscosity : · Classification :	 TONG YANG THF500 9.2 cSt at 100℃ API GL-4	 Recommended

2.8.3 Grease :

- Number of lubrication points : 10

3. COMPULSORY TESTS RESULTS

3.1 MAIN POWER TAKE-OFF

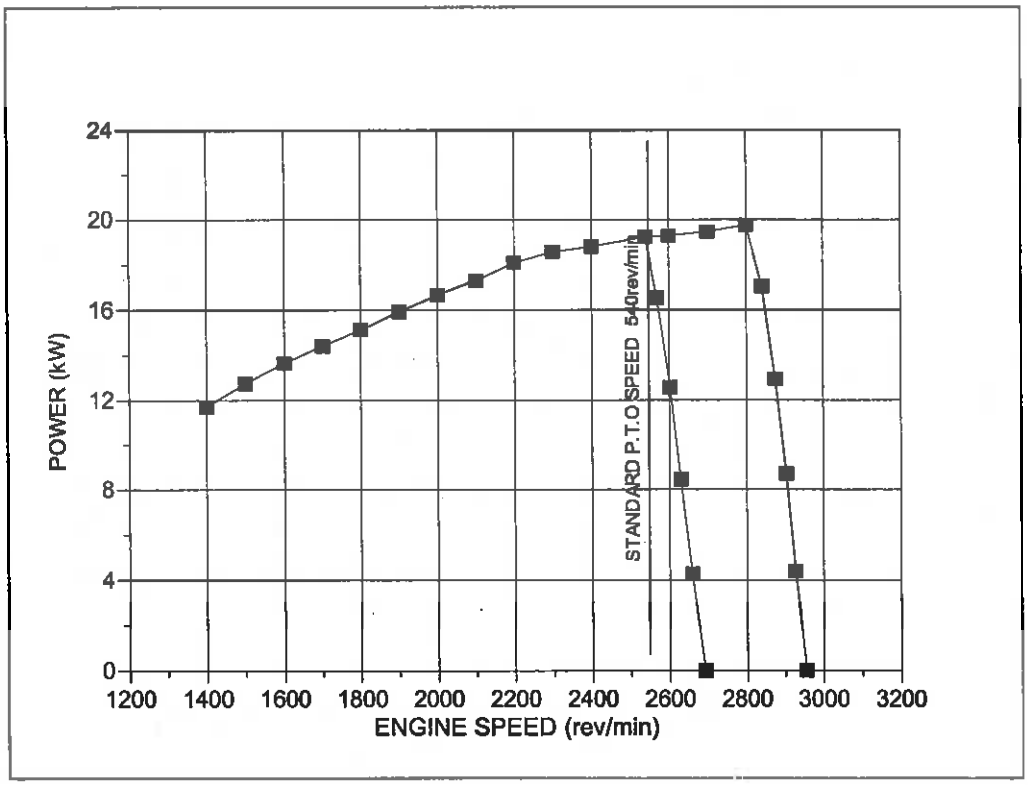
- Date and location of tests : 2nd to 5th April 2001 NAMRI, Konjiam
- Type of dynamometer bench : Eddy Current, FROUD AG 250

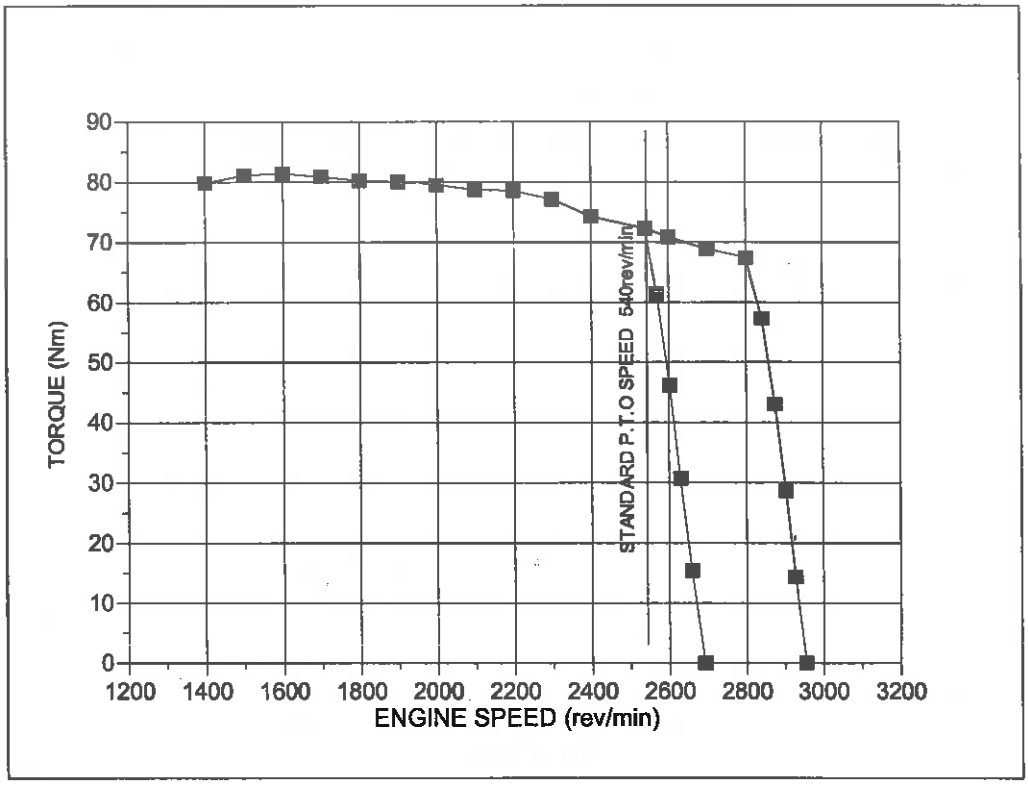
Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O	Hourly		Specific	
kW	rev/min	rev/min	kg/h	ℓ/h	g/kWh	kWh/ℓ
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
19.76	2800	595	6.43	7.81	326	2.531
3.1.2 POWER AT RATED ENGINE SPEED						
19.76	2800	595	6.43	7.81	326	2.531
3.1.3 STANDARD POWER TAKE-OFF SPEED (540±10 rev/min)						
19.23	2541	540	5.91	7.17	307	2.682
3.1.4 PART LOADS						
3.1.4.1 The torque corresponding to maximum power at rated engine speed						
19.76	2800	595	6.43	7.81	326	2.531
3.1.4.2 85% of torque obtained in 3.1.4.1						
17.05	2842	604	5.70	6.92	335	2.462
3.1.4.3 75% of torque defined in 3.1.4.2						
12.93	2875	611	4.54	5.50	351	2.349
3.1.4.4 50% of torque defined in 3.1.4.2						
8.71	2903	617	3.71	4.50	426	1.935
3.1.4.5 25% of torque defined in 3.1.4.2						
4.39	2927	622	2.97	3.60	676	1.219
3.1.4.6 Unloaded						
0	2955	628	2.25	2.73	-	-
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						
19.23	2541	540	5.91	7.17	307	2.682
3.1.5.2 85% of torque obtained in 3.1.5.1						
16.53	2569	546	5.20	6.32	315	2.617
3.1.5.3 75% of torque defined in 3.1.5.2						
12.56	2602	553	4.17	5.06	332	2.483
3.1.5.4 50% of torque defined in 3.1.5.2						
8.46	2630	559	3.34	4.05	395	2.087
3.1.5.5 25% of torque defined in 3.1.5.2						
4.28	2659	565	2.62	3.17	612	1.347
3.1.5.6 Unloaded						
0	2692	572	1.92	2.33	-	-

- No load maximum engine speed : 2955 rev/min
- Torque (equivalent crankshaft) at maximum power
  - At rated engine speed : 67.4 Nm
  - At 2-hour test : 67.4 Nm
- Maximum torque (equivalent crankshaft) : 81.4 Nm
  (engine speed : 1600 min^{-1}(rev/min))

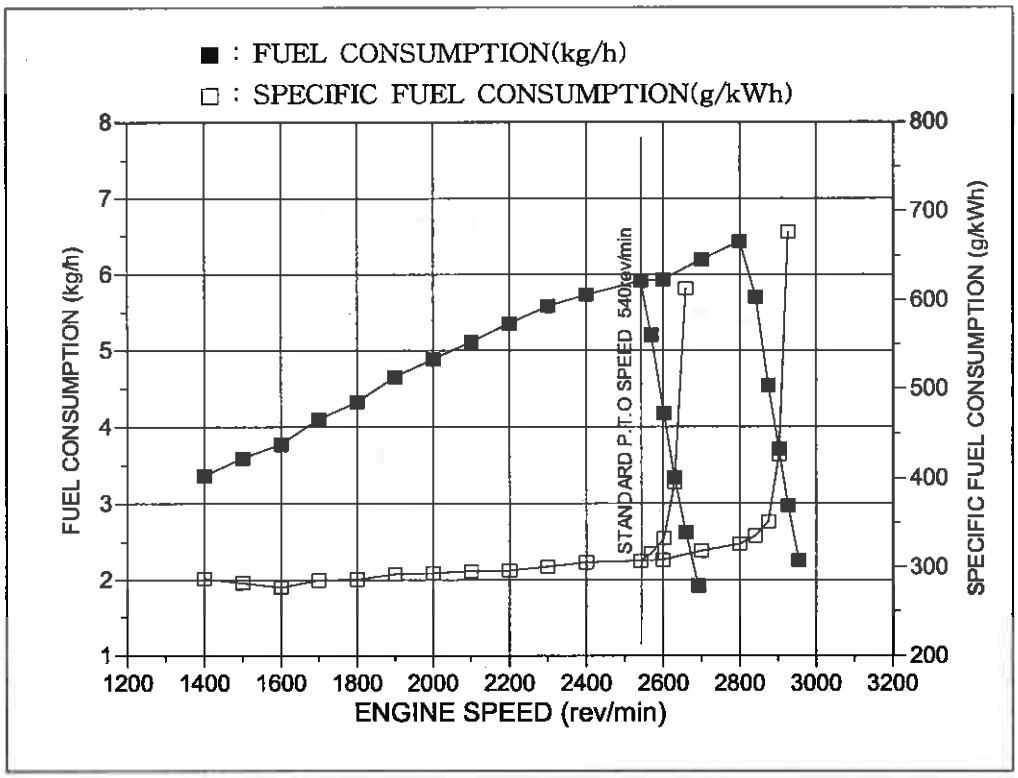
Mean atmospheric conditions	
Temperature	20 ℃
Pressure	101.0 Pa
Relative humidity	30 %
Maximum temperatures	
Coolant	98 ℃
Engine oil	113 ℃
Fuel	42 ℃
Engine air intake	26 ℃

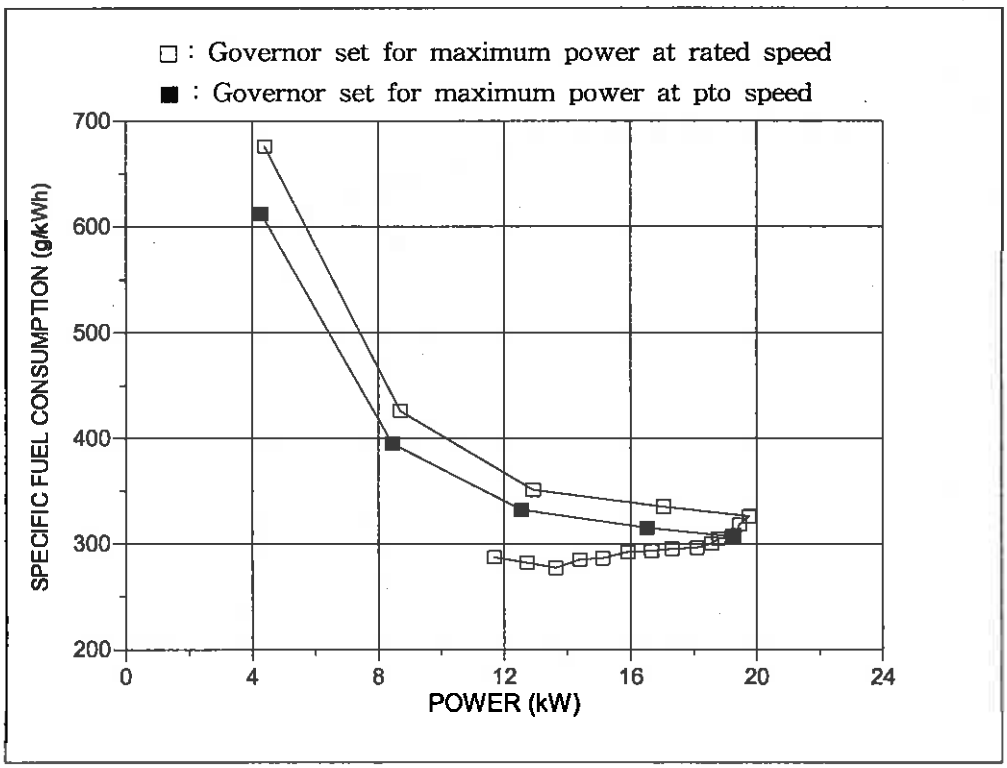
POWER TAKE - OFF PERFORMANCE CURVES





POWER TAKE - OFF PERFORMANCE CURVES





3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests : 16th to 24th April 2001

3.2.1 Hydraulic power test

- Sustained pressure with relief valve open : 14.02 MPa
- Pump stalled : Not applicable, open center system
- Pump delivery rate at minimum pressure : 25.14 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	17.51	12.65	3.69
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	23.98	11.57	4.62

- Tapping point used for test : Rear of tractor
- Temperature of hydraulic fluid, if different from 65±5℃ : None
- Opening pressure of the unloading valve : None
- Closing pressure of the unloading valve : None

3.2.2 Power lift test

- Linkage settings for tests – see Table 1.1 and Figure 1.1 and 1.2

	At the hitch point	On the frame
Height of lower hitch point above ground in down position	147 mm	147 mm
Vertical movement without lifting forces with lifting forces	 613 mm 578 mm	 844 mm 793 mm
Maximum corrected force exerted through full range	10.54 kN	4.88 kN
Corresponding pressure of hydraulic fluid	12.65 MPa	12.65 MPa
Moment about rear-wheel axis	8.49 kNm	6.91 kNm
Maximum tilt angle of mast from vertical	-	15 °

Lifting heights relative to the horizontal plane including the lower link pivot point											
mm	-353	-300	-278	-200	-100	0	100	200	300	400	440
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 point, corrected to 12.65 MPa											
kN	-	-	10.54	10.91	11.08	11.18	11.35	11.43	10.97	-	-
At the frame, corrected to 12.65 MPa											
kN	6.32	6.44	-	6.59	6.42	6.14	5.87	5.55	5.31	5.03	4.88

3.3 DRAWBAR POWER TEST(ballasted and unballasted tractor)

- Date of tests : 18th to 20th April 2001
- Type of track : Asphalt

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	370	177	117
Ballasted	370	177	117

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	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)													
L-1	2.32	10.18	0.82	2939	15.1	1134	0.726	32	93	110	22	36	100.9
L-2	3.17	10.26	1.11	2931	15.1	893	0.922	31	94	111	21	37	100.8
L-3	4.11	10.31	1.43	2923	15.1	742	1.110	30	95	112	21	37	100.8
L-4	5.75	10.47	1.98	2913	15.0	588	1.401	32	96	112	21	36	100.9
M-1	7.49	10.57	2.55	2900	15.0	497	1.657	31	94	110	21	35	100.9
M-2	9.92	10.29	3.47	2881	15.0	432	1.907	29	92	110	20	37	100.9
M-3	12.49	10.09	4.46	2863	15.0	396	2.081	28	93	109	20	38	100.9
M-4	15.56	9.22	6.08	2803	12.7	415	1.987	29	92	108	21	36	100.8
H-1	17.85	7.53	8.54	2800	8.1	362	2.279	29	93	109	21	34	100.9
H-2	18.14	5.37	12.15	2798	4.6	356	2.317	30	94	110	22	34	100.8
H-3	17.60	4.03	15.74	2797	2.7	366	2.251	28	92	108	21	36	100.9
3.3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
L-1	2.37	10.53	0.81	2943	15.1	1148	0.718	31	95	111	21	37	100.8
L-2	3.31	10.67	1.12	2933	15.1	860	0.958	29	94	109	20	38	100.8
L-3	4.25	10.69	1.43	2925	15.1	732	1.126	31	96	111	22	36	100.9
L-4	5.90	10.75	1.98	2913	15.1	580	1.421	32	97	112	23	35	100.8
M-1	7.70	10.87	2.55	2897	15.0	491	1.678	31	96	110	21	37	100.8
M-2	10.16	10.54	3.47	2876	15.0	427	1.929	32	95	109	22	36	100.9
M-3	12.97	10.53	4.43	2859	15.0	401	2.056	31	94	110	21	37	100.9
M-4	16.48	9.66	6.14	2801	12.9	393	2.097	30	95	109	23	35	100.8
H-1	17.95	7.56	8.55	2800	7.0	361	2.280	29	93	109	21	34	100.9
H-2	18.19	5.38	12.16	2797	3.9	356	2.314	30	95	111	23	32	100.8
H-3	17.65	4.02	15.81	2795	2.4	366	2.249	29	93	109	22	34	100.9
3.3.3 FIVE-HOUR TEST													
3.3.3.1 FIVE-HOUR TEST at 75% of pull at maximum power at rated engine speed													
H-1	14.29	5.65	9.10	2862	4.2	354	2.330	32	96	110	21	37	100.8
3.3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip with additional ballast(†) : - kg													
M-3	12.96	10.54	4.43	2863	15.0	476	1.730	28	96	107	20	47	101.7

(†) 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 : 13.4 g/h

3.4 TURNING AREA AND TURNING CIRCLE

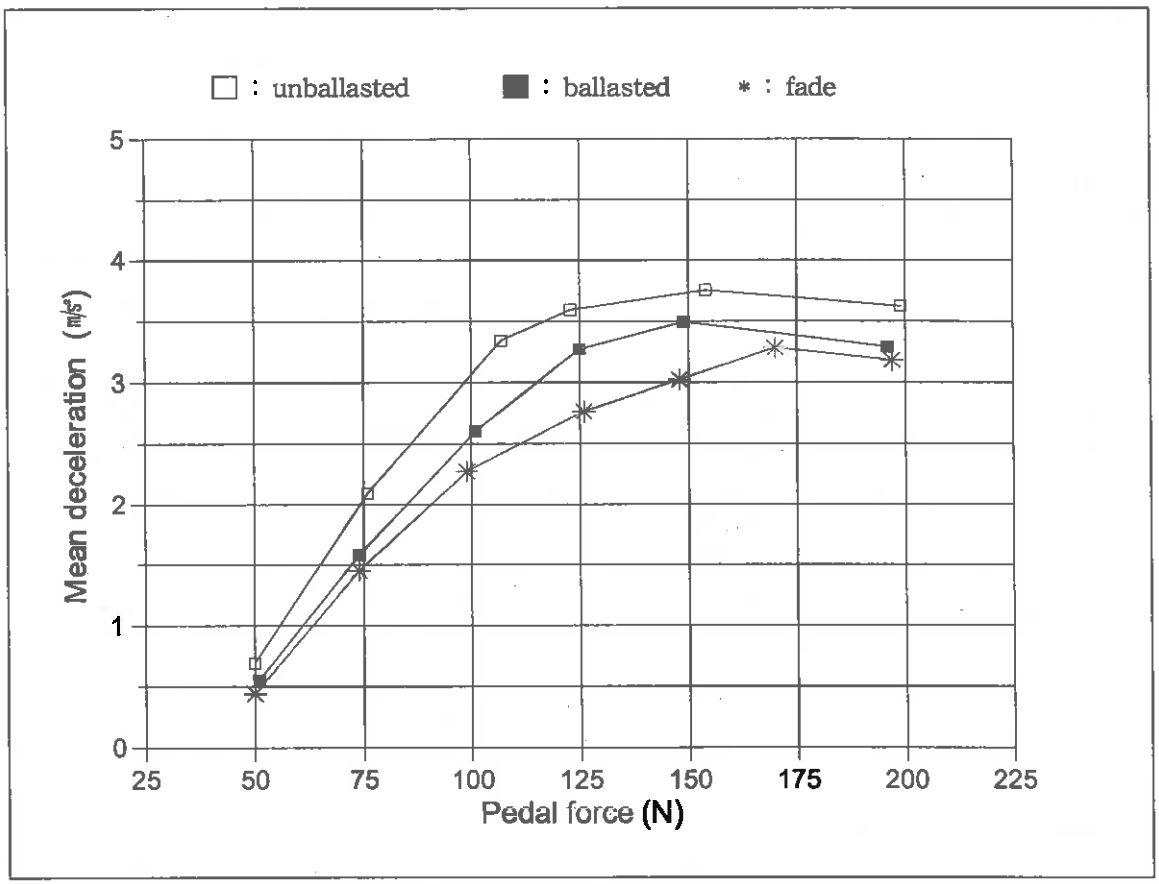
	Without brakes	
	Right-hand	Left-hand
	m	m
Radius of turning area	2.94	2.96
Radius of turning circle	2.85	2.87

3.5 LOCATION OF CENTER OF GRAVITY

- Height above ground : 752 mm
- Distance from the vertical plane containing the axis of the rear-wheels : 635 mm
- Distance from the median longitudinal plane of the tractor, to the right : 2 mm
- If the angle of suspension of the tractor is less than 20° indicate its value : None

3.6 BRAKING

- Date of tests : 21st to 23rd April 2001



3.6.1 Cold service braking device test

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

	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking wheels
	km/h	kN	m/s²	m
Ballasted tractor	24.20	0.051 0.074 0.101 0.125 0.149 0.196	0.55 1.58 2.60 3.27 3.49 3.29	6.47
Unballasted tractor	24.06	0.051 0.076 0.107 0.123 0.154 0.199	0.69 2.09 3.34 3.59 3.75 3.62	5.96

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%(19.41 km/h) of maximum speed with a pedal force corresponding to deceleration of 1m/s².

Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking wheels
km/h	kN	m/s²	m
24.26	0.050 0.074 0.099 0.126 0.148 0.170 0.197	0.44 1.45 2.27 2.76 3.02 3.28 3.18	6.93

3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	0.25 kN	0.25 kN

3.7 MEASUREMENT OF EXTERNAL NOISE

- Date of test : 28th April 2001
- Sound level meter, make/model/type : Brüel and kjær, 2236
- Type of track : Asphalt
- Gear number : 12 (H-4) gear
- Travelling speed before acceleration : 17.7 ㎞/h
- Sound level : 77.4 dB(A)

4. OPTIONAL TESTS RESULTS

None

5. REPAIRS

None

6. REMARKS

None

7. ANNEX

None

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. : 1/1 965
Date of approval : 19th July 2001

Erratum to the OECD test report(page 18)



Agricultural Tractor

TONG YANG T290 (4WD)

Manufactured by : TONG YANG MOOLSAN Co., Ltd.
604-9 Namsan-dong, Changwon-si,
Gyeongsangnam-do, Republic of KOREA

NATIONAL AGRICULTURAL MECHANIZATION RESEARCH INSTITUTE
249, Seodun-dong, Gwonseon-gu, Suwon-si, Gyeonggi-do, Republic of Korea

Erratum

Page	Item	Error	Correct
18	Mean atmospheric conditions – pressure	101.0 Pa	101.0 kPa