O. E. C. D. Approval No. :853

Report on test in accordance with

O. E. C. D. Test Code for Agricultural Tractors

KUBOTA L 275 4WD

Manufactured by: KUBOTA, Ltd.
TSUKUBA Plant
Ibaraki, JAPAN



Test No.: 82003/O. E. C. D.
Date of Test: May, 1982

This report has been approved by the O. E. C. D. Coordinating Center (C. E. M. A. G. R. E. F., France) as being in accordance with the O. E. C. D. Tractor Test Code.
Date of Approval: 10th December, 1982

INSTITUTE OF AGRICULTURAL MACHINERY

OMIYA SAITAMA JAPAN

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Repairs and adjustments during tests

Remarks

Manufacturer :	KUBOTA, Ltd. TSUKUBA Plant Ibaraki, Japan
Submitted for test by :	The manufacturer
Selected by :	The manufacturer with the agreement of the I. A. M.
Place of running-in :	KUBOTA, Ltd. TSUKUBA Plant
Duration of running-in :	77 hours

SPECIFICATION OF TRACTOR

Tractor

Make :	KUBOTA, Ltd.
Model :	L275 4WD
Type :	Wheeled tractor, four wheel driven, unit construction
Serial No. :	L275DT-10948

Engine

Make :	KUBOTA, Ltd.
Model :	D1302-A
Type :	4-stroke diesel engine with indirect injection, water cooled
Serial No. :	D1302-A-2530
Cylinders :	
Number and disposition :	3 vertical, in-line
Bore :	82 mm
Stroke :	82 mm
Capacity :	1299 cm^3
Compression ratio :	21:1
Arrangement of valves :	Over head
Liners :	Replaceable, dry
Fuel system :	
Feed system :	Gravitational
Make, type and model of injection pump :	NIPPON DENSO, in-line, ND-PFR3M55/1ND061
Manufacturer's production setting :	23-26 mm^3/stroke at rated engine speed and full load
Injection timing :	22-24° before TDC
Make, type and model of injection nozzles :	NIPPON DENSO, throttle type, ND-DN12SD12
Injection pressure :	137^{+10}_{-0} bar

Make, type and model of filter :	TAIYO GIKEN, replaceable paper element with sediment bowl
Element changing period :	400 hours
Capacity of fuel tank :	28 ℓ
Governor :	
Make and type :	KUBOTA, mechanical acting variable speed type incorporated with injection pump
Governed range of speed :	820 to 2800 rev/min
Rated engine speed :	2600 rev/min
Air cleaner :	
Make and type :	TOKYO ROKI, dry paper element cyclone type
Position :	In front of radiator under the bonnet
Lubrication system :	
Feed system :	Forced feed from gear pump
Type of filter :	Full flow replceable cartridge paper element type
Cartridge changing period :	150 hours
Oil capacity :	6.1 ℓ
Oil changing period :	75 hours
Recommended oil quality :	API service CC or CD
Recommended oil viscosity :	Below 0°C SAE 10W or 10w-30 0°C to 25°C SAE 20 or 10W-30 above 25°C SAE 30 or 10W-30
Cooling system :	
Coolant :	Water
Type :	Centrifugal type
Fan diameter :	320 mm
Number of blade of fan :	7
Type of temperature control :	Thermostat of wax type
Water capacity :	6.6 ℓ
System pressure :	0.88 bar
Starting system :	
Type :	Electrical type
Make, type and model of starter motor :	NIPPON DENSO, solenoid engaged type, ND028000-3611
Voltage and power rating of starter motor :	12 V, 1 kW
Safety features :	Operable only with clutch pedal operated
Cold starting aid :	Electrical grow plug
Exhaust silencer :	
Make and type :	KUBOTA, multi-chamber absorption-expansion type

Dimensions of silencer :	85 mm dia. × 530 mm long
Total length :	1180 mm
Position :	Vertical on the left side of tractor
Direction of discharge :	Laterally left direction
Option :	Silencer under the tractor body and posterior discharge, not fitted in tests

Electrical equipment :

Voltage :	12 V
Earth polarity :	Negative
Make, type and model of generator :	NIPPON DENSO, three-phase alternator, ND021000-8660
Output of generator :	420 W, 35 A
Type of battery :	1 lead acid
Capacity of battery :	70 Ah at 20 hours rating

Transmission

Clutch :

Make and type :	DAIKIN SEISAKUSHO, dry dual disk, semi-independent type
Diameter of disks :	215 mm
Method of operation :	The clutch for gear box disengaged with clutch pedal halfway pressed, the clutch for gear box and p.t.o. drive disengaged with pedal fully pressed; using clutch stopper, the clutch for gear box disengaged with pedal fully pressed
Option :	Dry single disk clutch, not fitted in tests

Gear box :

Make and type :	KUBOTA, mechanical type, constant and sliding mesh
Number of speeds :	8 forward and 7 reverse
Arrangement :	Forward-reverse gear with 4 speed change gear and high-low gear* *Because of action of stopper combined high-low gear lever, when the lever position is "HIGH", combination of gear "REVERSE-4" cannot be engaged.

Rear axle and final drives :

Make and type :	KUBOTA, bevel gear drive with crown wheel and pinion, bevel gear type differential and spur gear final drives
Type of differential lock and method of engagement :	Self-disengaging, pedal operated

Front axle and final drives :

Make and type :	KUBOTA, bevel gear drive with crown wheel and pinion, 3 bevel pinion gears and 1 crown wheel final drives in portals

Transmission oil :

Oil capacity of gear box, rear axle, differential and final drives :	24 ℓ in common with hydraulic system
Recommended oil quality :	API service GL-4
Recommended oil viscosity :	SAE 75W
Oil changing period :	300 hours

Oil for front axle case :

Oil capacity :	Front axle differential case 2.3 ℓ Front axle gear case each 0.15 ℓ
Recommnded oil quality :	API service GL-4
Recommended oil viscosity :	SAE 80 or 90
Oil changing period :	300 hours

Total ratios and speeds (tyres 11. 2-24)

Gear		Number of engine revolutions for one revolution of driving wheels	*Nominal travelling speed for rated speed of engine km/h
Sub	Main		
Forward			
low	1	366.95	1.40
low	2	239.20	2.15
low	3	140.85	3.65
low	4	105.33	4.88
high	1	88.34	5.82
high	2	57.59	8.94
high	3	33.91	15.17
high	4	25.36	20.29
Reverse			
low	1	407.19	1.26
low	2	265.43	1.94
low	3	156.30	3.29
low	4	116.88	4.40
high	1	98.03	5.25
high	2	63.90	8.05
high	3	37.63	13.67

* Calculated with a tyre rolling radius of 525 mm

Power take-off

Main p. t. o. :

Position :	At rear of tractor in median plane
Height above ground :	540 mm
Distance behind rear axle center :	173.5 mm
Diameter of p. t. o. shaft :	35 mm
Number of splines :	6 to SAE J1170/ISO 500
Type of drive :	Semi-independent of main clutch
Method of engagement :	By hand lever and second plate of clutch
Direction of rotation :	Clockwise viewed from driving end
P. t. o. speed :	Proportional engine speed, 582 rev/min at rated engine speed 2600 rev/min, 540 rev/min (standard p. t. o. speed) at 2414 rev/min engine speed
Option :	dependent of main clutch, 2 speeds are preselectable by hand lever High ratio 887 rev/min at rated engine speed 540 rev/min at 1584 rev/min engine speed Low ratio 578 rev/min at rated engine speed 540 rev/min at 2430 rev/min engine speed not fitted in tests

Power lift

Make :	KUBOTA
Type :	Hydraulic type, open center system, position control
Bore of ram :	80 mm
Stroke of ram :	90 mm
Make and type of pump :	KUBOTA, gear type pump driven by engine
Pump delivery rate :	23.6 ℓ/min at rated engine speed
Maximum pressure :	142 bar
Number of oil tappings :	2* *When using tappings, hydraulic oil should be added for external hydraulic circuit.
Method of linkage lock for transport :	Hydraulically closing delivery line
Type and position of hydraulic filter :	Metal net, situated delivery line between gear box and gear pump
Filter cleaning period :	300 hours
Oil capactiy :	24 ℓ in common with gear box
Oil changing period :	300 hours
Category of implement linkage :	I to SAE J715f and ISO 730
Adjustment of lift lods length :	388, 413 and 438 mm
Lifting range :	From 250 to 835 mm above ground with lift rods length 413 mm

Option :	Position control and draft control, not fitted in tests
Holed drawbar :	Optional, fitted in tests
Fitting position :	On the clevis of lower links
Length between the ball joints :	683 mm
Thickness :	25 mm
Width :	75 mm
Number of holes and interval distance :	Center hole and 3 holes on either side, 80 mm distance each
Range of movement :	263 to 848 mm above ground at the surface of the bar with lift lods length 413 mm
Position relative to p. t. o. :	544.5 mm
Position relative to rear axle center :	718 mm

Pull attachment

Drawbar :	Optional, fitted in tests
Type :	Swinging drawbar
Height above ground :	350 mm and 455 mm
Distance from rear axle :	479.5 mm and 529.5 mm
Position relative to p. t. o. :	306 mm and 356 mm rearward
Lateral adjustment :	34°
Distance of pivot point rearward from rear axle :	95 mm
Pin hole diameter :	26 mm
Hitch :	Optional, not fitted in tests
Type :	Clevis
Height above ground :	370 mm
Distance from rear axle :	204.5 mm
Position relative to p. t. o. :	31 mm rearward
Maximum permissible load :	Vertically 550 kg

Steering

Make and type :	NIPPON SEIKO, ball and screw type with single drag link on the left side of tractor
Option :	Power-assisted steering, not fitted in tests

Brakes

Service brake :	
Make and type :	KUBOTA, mechanical acting oil-immersed disk type
Number of disks :	2 on each differential half shaft
Diameter of disks :	210 mm
Method of operation :	Independent or combined pedal operated

Parking brake :

Type :	In common with service brake
Method of operation :	Pedal operated with ratchet

Wheels

Steering wheels :

Type and position :	Pneumatic crossply tyres, at front
Number of tyres :	2
Size :	7-16 4 ply rating
Maximum load on each tyre :	405 kg at 1.76 bar inflation pressure
Track width :	1100 mm only
Size of rims :	5JA × 16WDC

Driving wheels :

Type and position :	Pneumatic crossply tyres, at rear
Number of tyres :	2
Size :	11.2-24 4 ply rating
Maximum load on each tyre :	815 kg at 0.98 bar inflation pressure
Track width :	1030, 1125, 1220, 1305 and 1400 mm
Adjustment of track width :	Changing by turning wheels and offset of rims
Size of rims :	W-9 × 24W

Wheel base : 1650 mm

Seat

Make and type :	NANBA PRESS INDUSTRY, upholstered type with back rest
Suspension :	Hinge and coil spring
Range of adjustment :	Longitudinal 60 mm vertically not adjustable

Number of grease points 7

Dimensions

Total length :

Without ballast :	2860 mm with three point linkage
With ballast :	3065 mm with three point linkage

Total width :

Without ballast :	1400 mm at 1125 mm rear wheels track width
With ballast :	1695 mm at 1125 mm rear wheels track width

Total height :

Without ballast :	1995 mm (to top of exhaust silencer)
With ballast :	1990 mm (to top of exhaust silencer)

Ground clearance : 305 mm below front differential case

Technical permissible total weights and axle loads

for all available wheel equipment

Tyre size		Perissible axle load		Permissible total weight
front	rear	front kg	rear kg	kg
7-16 4PR	11. 2-24 4PR	810	1300	1910
27×8. 50 -15 4PR	13. 6-16 4PR	1300	1300	1910

Lighting equipment

Electrical 12 V
as per EC directives

	Dimensions mm	Height above ground of center mm	*Distance from outside edge of tractor to center mm
Head lights	120 dia.	1040	550
Side lights	120 × 40	1180	210
Rear lights	120 × 40	1180	210
Flashers	120 × 70	1235	210
Reflectors	60 dia.	865	210

* with track width of 1125 mm

TEST CONDITIONS

Weights (without driver but with tanks full)

Without ballast :	front	476 kg
	rear	548 kg
	total	1024 kg
With ballast :	front	606 kg
	rear	1044 kg
	total	1650 kg
Ballast :		
At front wheels :	none	
At rear wheels :	12 weights 27.2 kg each	326 kg
	water	200 kg
At front frame :	4 weights 25.0 kg each	100 kg

Track setting during tests

At front :	1100 mm
At rear :	1125 mm

Fuel and lubricants used in tests

Fuel :	Diesel oil, specific gravity 0.8385 at 15°C, viscosity 3.806 cSt at 30°C, cetane index 58 to No. 2 JIS
Engine oil :	GENERAL SEKIYU, ENGLNE OIL, API service CC, SAE 10W-30, viscosity 66. 21 cSt at 40°C
Transmission oil :	MARUZEN OIL, KUBOTA "JUN" UDT OIL, API service GL-4, SAE 75W, viscosity 56. 72 cSt at 40°C
Front axle gear oil :	ESSO STANDARD SEKIYU, JWS 2098 C, API service GL-3, SAE 85W, viscosity 100. 90 cSt at 40°C

COMPULSOLY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE (low ratio)

Date of test : 11th May, 1982
Type of dynamometer : DC electrical, MEIDENSHA EB-DH1

Power	Speed		Fuel consumption			Specific energy
	Engine	p. t. o.	hourly		specific	
kW	rev/min	rev/min	ℓ/h	kg/h	g/kWh	kWh/ℓ
MAXIMUM POWER At 2 hour test						
17.0	2600	581	5.86	4.91	289	2.90
At the speed recommended for drawbar work						
17.0	2600	581	5.86	4.91	289	2.90
PART LOADS, The governor hand lever in the position corresponding to the maximum power at full load						
(i) 85 per cent of the torque obtained at maximum power						
14.6	2640	591	5.19	4.36	297	2.82
(ii) unloaded						
—	2794	626	1.87	1.57	—	—
(iii) half the torque defined in (i)						
7.5	2701	605	3.37	2.82	375	2.23
(iv) the torque correspoding to maximum power						
17.0	2600	581	5.86	4.91	289	2.90
(v) one-quater of the torque defined in (i)						
3.8	2732	612	2.53	2.12	565	1.48
(vi) three-quaters of the torque defined in (i)						
11.1	2675	599	4.26	3.57	321	2.61

Power	Speed		Fuel consumption			Specific energy
	Engine rev/min	p. t. o. rev/min	hourly		specific g/kWh	
kW			ℓ/h	kg/h		kWh/ℓ
PART LOADS, The governor hand lever in the position corresponding to the standard p. t. o. speed at full load						
(i) 85 per cent of the torque obtained at maximum power						
13.8	2478	554	4.79	4.01	290	2.89
(ii) unloaded						
—	2604	583	1.60	1.34	—	—
(iii) half the torque defined in (i)						
7.1	2535	568	3.10	2.60	365	2.29
(iv) the torque corresponding to maximum power						
15.9	2413	540	5.36	4.50	284	2.96
(v) one-quater of the torque defined in (i)						
3.6	2567	575	2.31	1.94	537	1.56
(vi) three-quaters of the torque defined in (i)						
10.5	2510	561	3.90	3.27	312	2.69

Standard specific fuel consumption : 297/375/290/365 g/kWh

No load maximum engine speed : 2794 rev/min

Equivalent crankshaft torque at maximum power : 62.4 Nm

Maximum equilvalent crankshaft torque : 75.0 Nm at 1300 rev/min of the engine

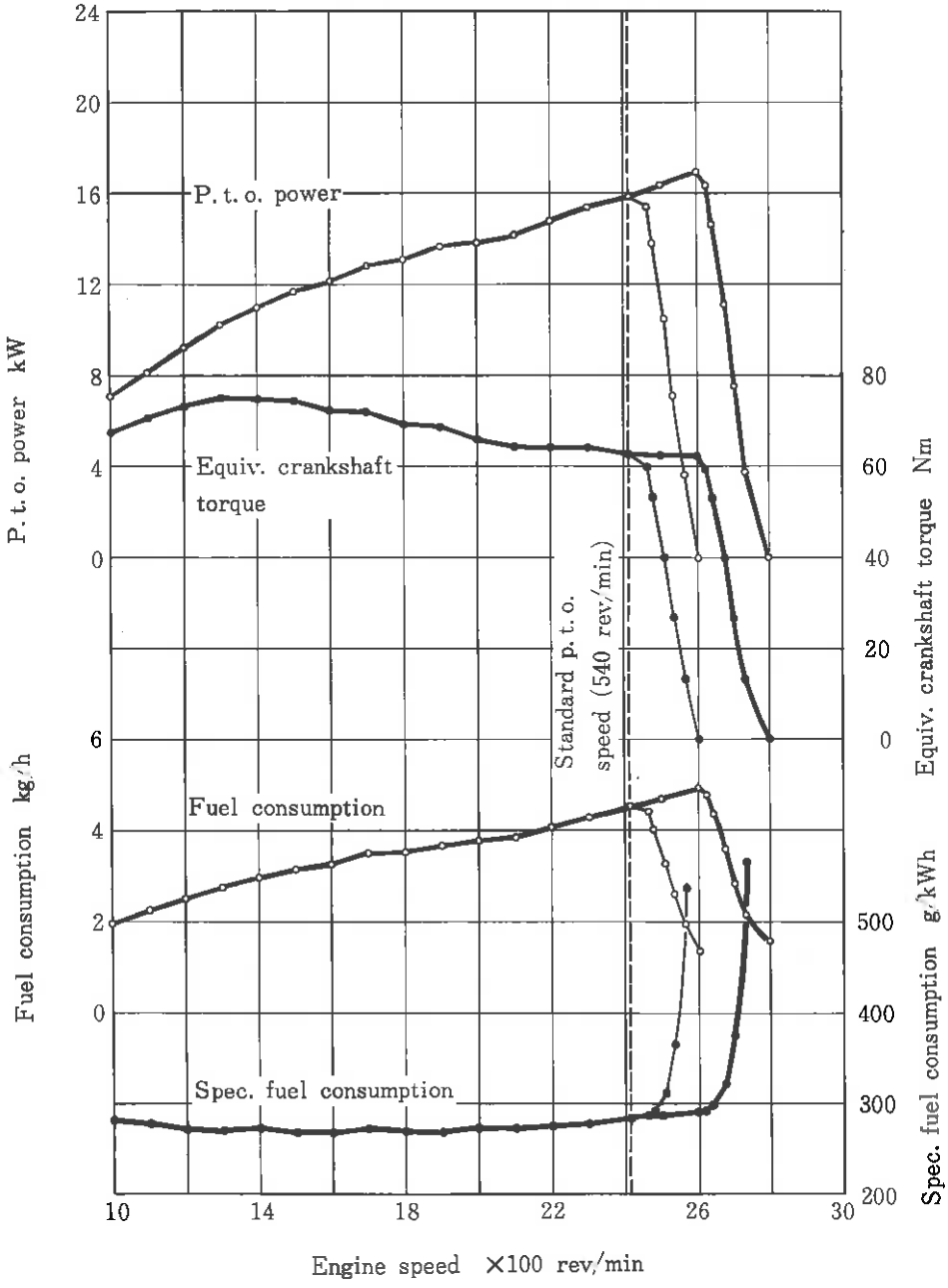
Mean atmospheric conditions :

temperature	21 °C
pressure	1019 mbar
relative humidity	59 %

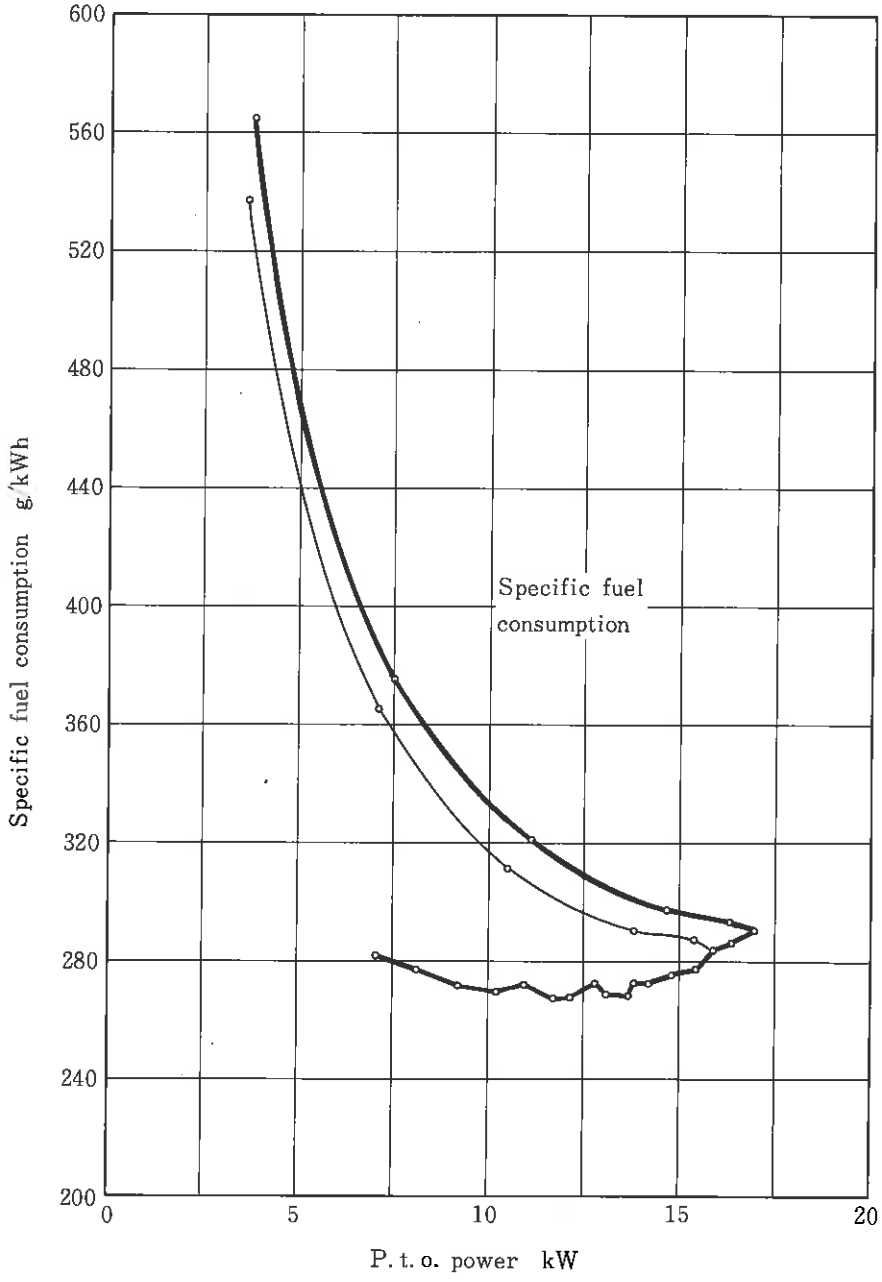
Maximum temperatures :

coolant	100 °C
engine oil	113 °C
fuel	28 °C
engine air intake	31 °C

P. T. O. PERFORMANCE



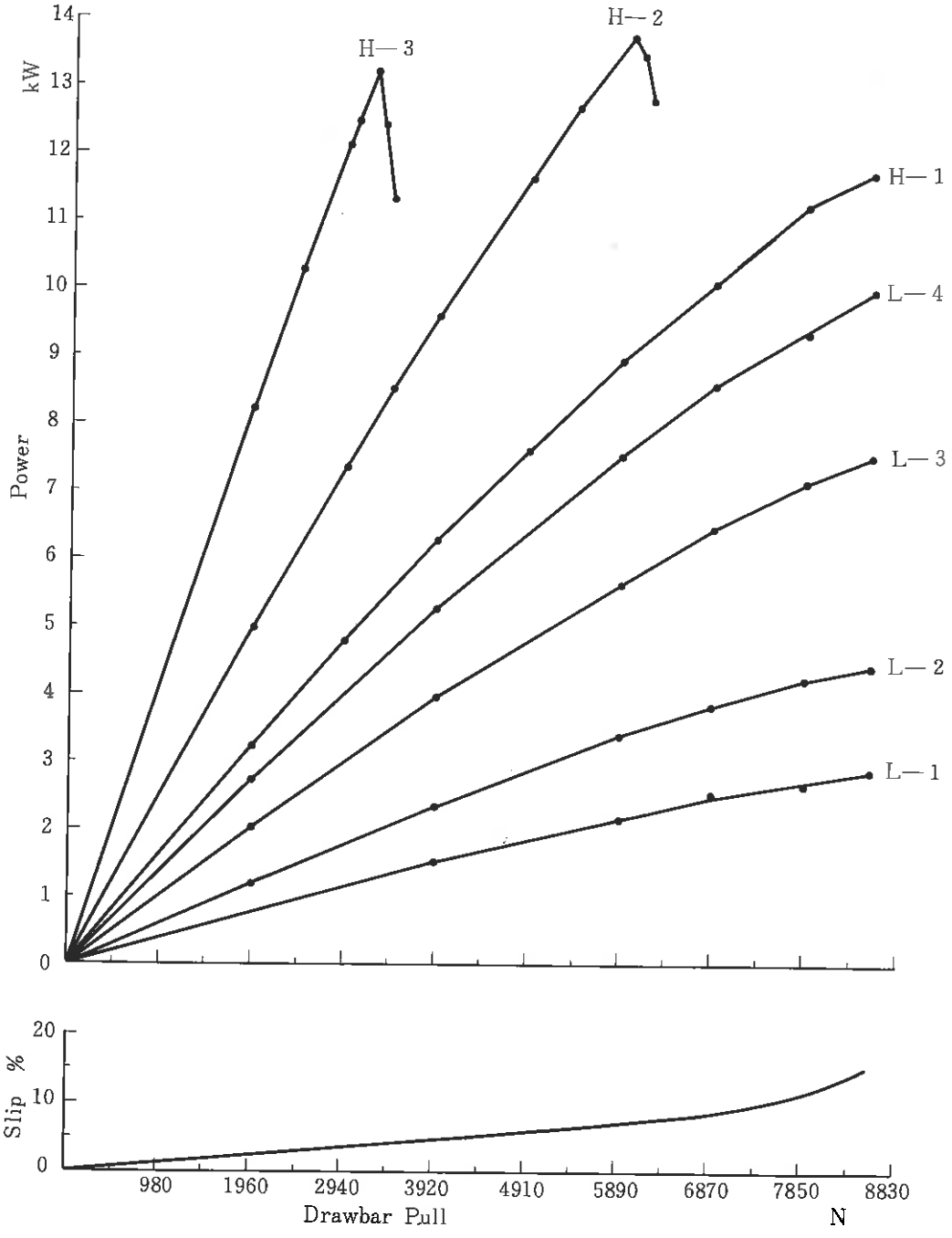
P. T. O. PERFORMANCE



(2) DRAWBAR PERFORMANCE

Date of test : 13th till 19th May, 1982
Tyre size : 11.2-24 at rear, 7-16 at front
Type of track : Concrete
Tread bar height at the beginning of drawbar test in per cent of the value when new : 94 at rear, 95 at front
Height of drawbar above ground : 445 mm
Tyre inflation pressure : 0.98 bar at rear, 1.76 bar at front

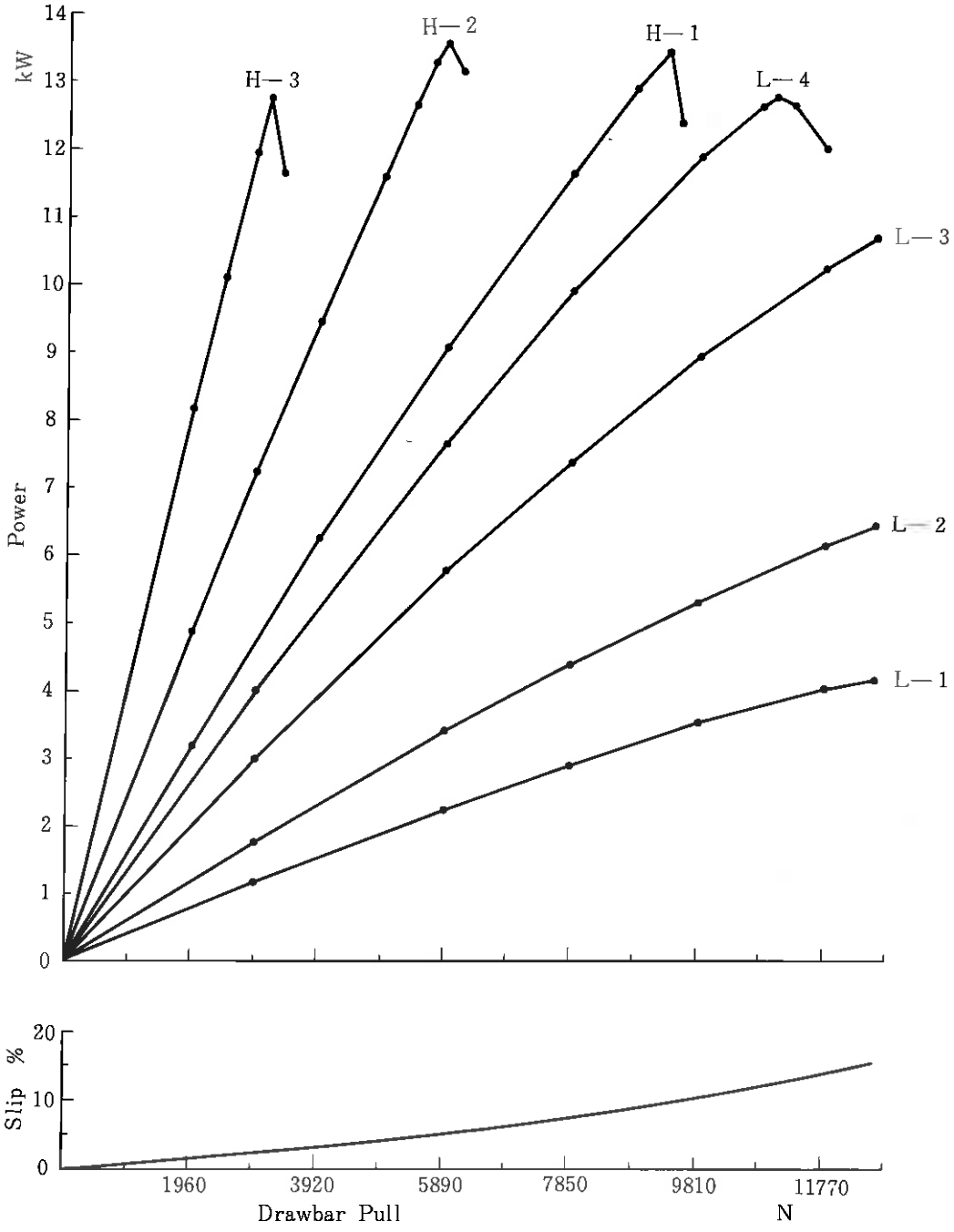
Gear No.	Speed km/h	Power kW	Drawber pull N	Engine speed rev/min	Slip of wheels %	Specific fuel consumption kg/kWh	Specific energy kWh/ℓ	Temperatures			Atmospheric conditions		
								Fuel °C	Coolant °C	Engine oil °C	Temperature °C	Relative humidity %	Pressure mbar
(I) MAXIMUM POWER (without ballast)													
L-1	1.22	2.9	8540	2721	15.1	0.873	0.96	46	80	93	28	63	1015
L-2	1.87	4.4	8540	2705	14.9	0.654	1.28	45	82	95	28	63	1015
L-3	3.17	7.5	8540	2680	15.0	0.495	1.69	43	85	98	28	62	1015
L-4	4.21	10.0	8540	2645	14.9	0.442	1.90	40	86	100	28	65	1015
H-1	4.93	11.7	8540	2614	15.1	0.425	1.97	37	87	104	28	65	1015
H-2	8.24	13.7	5980	2598	7.0	0.382	2.19	32	83	99	27	77	1015
H-3	14.69	13.2	3240	2604	2.9	0.396	2.12	29	75	96	27	77	1015


H— 3
H— 2
H— 1
L— 4
L— 3
L— 2
L— 1
Power
kW
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Slip %
20
10
0
980
1960
2940
3920
4910
5890
6870
7850
8830
Drawbar Pull
N

Height of drawbar above ground : 423 mm
Tyre inflation pressure : 0.98 bar at rear, 1.76 bar at front

Gear No.	Speed km/h	Power kW	Drawber pull N	Engine speed rev/min	Slip of wheels %	Specific fuel consumption kg/kWh	Specific energy kWh/ℓ	Temperatures			Atmospheric conditions		
								Fuel °C	Coolant °C	Engine oil °C	Temperature °C	Relative humidity %	Pressure mbar
(II) MAXIMUM POWER (with ballast)													
L-1	1.19	4.1	12560	2723	15.1	0.594	1.41	48	79	95	30	52	1009
L-2	1.84	6.4	12560	2699	15.0	0.461	1.82	48	80	97	30	52	1009
L-3	3.06	10.7	12560	2653	15.1	0.393	2.14	48	82	98	30	52	1009
L-4	4.18	12.8	10990	2607	12.1	0.375	2.24	46	82	98	30	55	1011
H-1	5.18	13.4	9320	2606	8.9	0.355	2.36	44	86	99	30	55	1011
H-2	8.28	13.5	5890	2602	4.8	0.354	2.37	44	88	99	30	53	1011
H-3	14.62	12.8	3140	2606	1.3	0.372	2.25	40	85	98	30	54	1011
(III) FIVE HOUR TEST at 75% of pull at maximum power													
H-2	8.68	10.6	4415	2667	2.5	0.367	2.29	42	82	99	24	44	1013
(IV) FIVE HOUR TEST at pull corresponding to 15% wheelslip in test (II)													
*L-3	3.10	—	12560	—	—	—	—	42	82	101	22	63	1018

*Those figures not quoted are irrelevant due to the additional ballast.
Total oil consumption during ten hours duration of tests (III) and (IV) 5.4 g/h


kW
Power
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
H— 3
H— 2
H— 1
L— 4
L— 3
L— 2
L— 1
Slip %
20
10
0
1960
3920
5890
7850
9810
11770
Drawbar Pull
N

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment	front :	7—16 4 PR
	rear :	11.2—24 4 PR
Track of wheels	front :	1100 mm
	rear :	1125 mm

Front axle drive disengaged

	with brakes		without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	2.92	2.86	3.27	3.24
Radius of turning circle	2.77	2.71	3.12	3.09

Front axle drive engaged

	with brakes		without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	2.70	2.68	3.58	3.54
Radius of turning circle	2.55	2.53	3.43	3.39

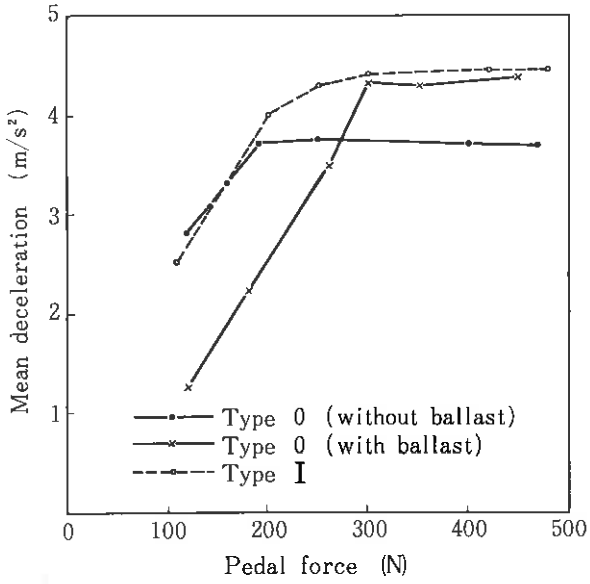
(4) LOCATION OF CENTER OF GRAVITY

Height above ground	653 mm
Distance forward from the vertical plane containing the axis of the rear wheels	722 mm
Distance from the median plane to the left	5 mm

(5) **BRAKING**

Date of test :	12th May, 1982		
Tractor masses during test with driver :	front	rear	total
	kg	kg	kg
without ballast	480	650	1130
with ballast	609	1302	1911

A) Service brake



Speed before application of brakes , without ballast 21.6 km/h
with ballast 21.1 km/h

The brakes were heated by towing of the tractor for 1 km.

B) Parking brake

	Ballasted tractor on 18%-slope		Unballasted tractor on 12%-slope with trailer of 1130 kg	
	up	down	up	down
Braking device control force N	275	226	226	186

(6) MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test : 12th May, 1982
Type of track : Concrete
Type of sound level meter : RION NA-61

Results of test

Gear : High 4
Travelling speed before acceleration 16.2 km/h
Sound level 78 dB(A)

(7) NOISE MEASUREMENT AT THE DRIVER'S EAR LEVEL

Date of test : 13th May, 1982
Type of sound level meter : RION NA-61
Type of track : Concrete

Results of test

Gear	Drawbar pull at which the tractor develops the max. sound level kN	Measured travelling speed km/h	Sound level dB(A)
H-2*	5.8	8.24	91
H-3	2.9	14.83	91
H-4	1.7	20.12	92
H-2*	Light load	9.11	88
H-4	Light load	20.38	91

*) The H-2 gear corresponds to the nominal travelling speed nearest to 7.5 km/h

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of test : 11th May, 1982

Power Lift

	Height of lower hitch point above ground in down position mm	Vertical movement mm	Maximum force exerted through full range kN	Corresponding pressure of hydraulic fluid MPa	Moment about rear axle kNm	Maximum tilt angle of mast over range of lift degrees
At hitch points	250	585	5.11	9.41	—	—
On the frame	250	921	3.60	9.41	4.78	22

Temperature of hydraulic fluid at start of test 68 °C

Hydraulic pump performance

Opening pressure of the relief valve	9.41 MPa
Sustained pressure with relief valve open	14.1 MPa
Pump delvery rate at minimum pressure, the governor control lever being set for maximum power	27.2 ℓ/min
Hydraulic power at 90 per cent of relief valve setting	1.96 kW
Corresponding delivery rate	9.2 ℓ/min
Pressure	12.7 MPa
Temperature of hydraulic fluid	68 °C
Tapping point used for test : under the seat	

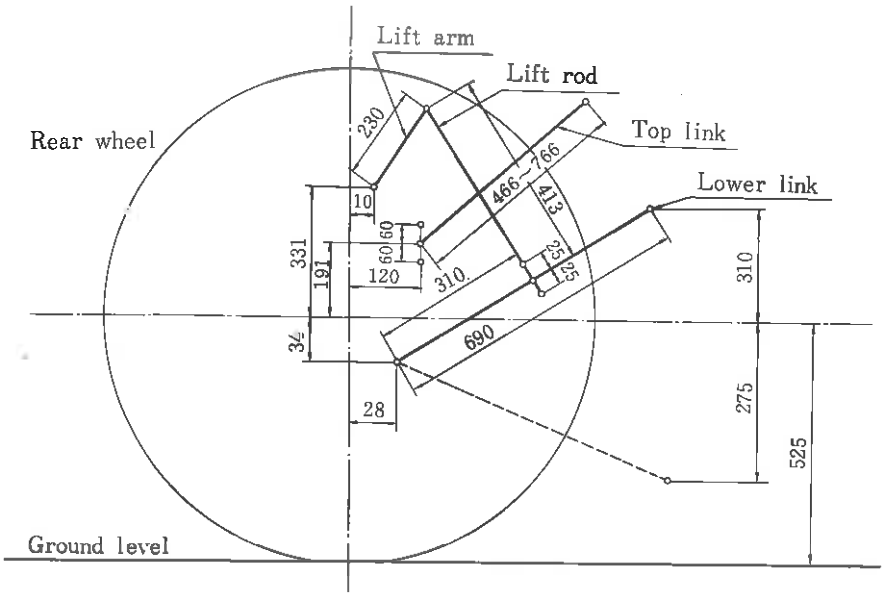
Linkage geometry when connected to the standard frame

Projected length in side view :

Lower links	690 mm
Lift arms	230 mm
Lift rods	413 mm
Top link	645 mm
Distance of lift rod connection point from pivot point of lower link	310 mm

The following dimensions are given relative to the rear wheel centre line, situated 525 mm above the ground level :

Lower link pivot point	34 mm below,	28 mm behind
Top link pivot point	191 mm above,	120 mm behind
Lift arm pivot point	331 mm above,	10 mm behind
Maximum and minimum height of lower link hitch points	310 mm above,	275 mm below
Height of lower link hitch points when locked in transport position	Any position within power range	



all dimensions in mm

REPAIRS AND ADJUSTMENTS DURING TESTS:	None
REMARKS:	None

Officer in charge:	K. NISHIZAKI
Head of Testing Division:	T. KANATSU
Date:	2nd June, 1982