AFRC Institute of ENGINEERING RESEARCH

OECD Approval No. 1167

Test in accordance with the OECD standard code for the official testing of agricultural tractors

Report on Test of Zetor 14245 Tractor with 4 Wheel-Drive



Manufacturered by	Zavody Tazkeho Strojarstva, Narodny Podnik, Box 03657 Martin, Czechoslovakia.
Test No.	R88/70643/OECD
Report No.	735
Date	September 1988

THE BRITISH SOCIETY FOR RESEARCH IN AGRICULTURAL ENGINEERING

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Tractor manufacturer's name and address:	Zavody Tazkeho Strojarstva, Narodny Podnik, Box 03657 Martin, Czechoslovakia.
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer with the agreement of the testing station
Place of running in:	Z.T.S. Martin, Czechoslovakia
Duration of running in:	72 hours
Location of tests:	AFRC Institute of Engineering Research

SPECIFICATION OF TRACTOR

TRACTOR	
Make:	Z.T.S. N.P. Martin
Trade name:	Zetor
Model:	Z 14245
Type:	4 wheel-drive, unit construction
Serial No:	14245 0001
1st Serial No:	14245 0001
ENGINE	
Make:	Z.T.S. N.P. Martin
Model:	Z 8602.13
Type:	4 stroke, direct injection, turbocharged diesel
Serial No:	000 001
Cylinders	
Number/disposition:	6, vertical in-line
Bore/stroke:	110 mm x 120 mm
Capacity:	6842 cm^3
Compression ratio:	17:1 nominal
Arrangement of valves:	Overhead
Cylinder liners:	Replaceable, wet
Supercharging	
Make:	CZM
Model:	K27.2966 u/17.21
Type:	Exhaust driven
Pressure:	0.90 MPa

Fuel System

Fuel feed system:	Lift pump integral with fuel injection pump
Make, type and model of fuel filter(s):	Autobrzdy, dual, 03-9800.00
Capacity of fuel tank:	195 l
Make, type and model of injection pump:	Motorpal, in line, PP6 M9 KLe3136
Serial No:	US 0076
Manufacturer's production setting of injection pump:	
Flow rate:	25.3-29.6 at 2200 rev/min engine speed at full load and 20°C pump inlet temperature
Timing:	22° + 2° before T.D.C.
Make, type and model of injectors:	Motorpal, DOP 150S 5351417, 5 hole
Injection pressure:	16.8-17.6 MPa
Governor	
Make:	Motorpal
Type:	Mechanical incorporated in the injection pump
Model:	RV 3M 300/1100 - 2538
Governed range of engine speed:	600-2450 rev/min
Rated engine speed:	2200 rev/min
Air cleaner	
Pre-cleaner	
Make:	Sandrik
Type:	Stack cap with centrifugal dust trap
Model:	PC 750
Location:	Above bonnet forward of radiator
Main	
Make:	Sandrik
Type:	Oilbath
Model:	9470.11
Oil capacity:	2.1 l
Location:	Under bonnet forward of radiator
Maintenance indicator	Warning light on instrument panel
Lubrication system	
Type of feed pump:	Gear
Type of filter(s):	Centrifugal, replaceable element RDP 3/A
Number:	1

Cooling system	
Type of coolant:	Water and anti-freeze 1.5:1 solution
Type of pump:	Centrifugal, belt driven
Description of fan:	Belt driven
Number of fan blades:	8
Fan diameter:	460 mm
Coolant capacity:	25.0 l
Type of temperature control:	Thermostat
Superpressure system:	41 kPa
Starting system	
Starter motor	
Make:	Polmo-Elmot
Type:	Electrical, solenoid engaged
Model:	R20E, 24V
Power rating:	5.5 kW
Cold starting aid:	None
Safety device:	Gear selector lever to be in neutral position
Electrical system	
Voltage:	12 (negative earth)
Generator	
Make:	Pal-Magneton
Model:	443 113 516 184 (14V)
Type:	Belt driven, alternator
Power:	55 A at 9000 rev/min
Batteries	2, Prazska, Akumulatorka
Rating:	2 x 100 Ah at 20-hour rating
Exhaust system	
Make:	Z.T.S.
Type:	Oval, baffle
Model:	89014500
Location:	Left-hand side of engine, vertical

TRANSMISSION TO WHEELS

Clutch	
Make:	Z.T.S.
Model:	89021500
Type:	Dry, for transmission only
Number of plates:	1
Diameter of plate:	380 mm
Method of operation:	Mechanically by pedal
Gear box	
Make:	Z.V.L. Povazske Strojarne
Model:	89 000 757
Type:	Mechanical
Arrangement:	3 gears with manually operated high, low or reverse selector, and manually operated, hydraulically actuated torque multiplier on all gears
Number of speeds:	12 forward and 6 reverse
Available options:	1 creep gear, less torque multiplier
Rear axle and final drives	
Make:	ZPC Ursus
Model:	89 000 240
Type:	Crown wheel and pinion, bevel gear and differential, planetary reduction gear final drives
Differential lock	
Type:	Mechanical
Method of engagement:	Manual by pedal
Method of disengagement:	Self disengaging
Front axle and final drives	
Make:	U T B
Model:	89 000 650
Type:	Crown wheel and pinion, bevel gear and differential, planetary reduction gear final drives
Driven from:	Front of gearbox, through hydraulic clutch arrangement controlled by hand-lever
Differential lock	
Type:	Mechanical
Method of engagement:	Automatic
Method of disengagement:	Automatic

Total ratios and travelling speeds

Gear	Group No.	Number of engine revolutions for one revolution of the driving wheels	*Nominal travelling speed at rated engine speed: 2200 rev/min, km/h
Forward			
1	LM	286.869	2.37
1	L	214.445	3.17
2	LM	176.092	3.86
2	L	131.631	5.17
3	LM	104.994	6.48
1	HM	91.526	7.43
3	L	78.458	8.67
1	H	68.419	9.94
2	HM	56.177	12.11
2	H	41.983	16.20
3	HM	33.296	20.43
3	H	25.034	27.17
Reverse			
1	RM	243.935	2.79
1	R	182.451	3.73
2	RM	149.681	4.54
2	R	111.934	6.08
3	RM	89.323	7.61
3	R	66.767	10.19

L = Low range H = High range M = Torque multiplier engaged

Rear tyre size: 18.4-38

*Calculated with a tyre dynamic radius index of: 820 mm (ISO 4251/1-1984)

Number of revolutions of front wheels for one revolution of rear wheels: 1.41

POWER TAKE-OFF

Main power take-off

Type: Hydraulically operated, independent of main clutch

Method of engagement: By hand lever

Number of shafts: 1

Method of changing power take-off speeds: Manually, by exchanging shafts

Clutch

Make: Ursus

Type: Independent, multi-plate, wet

Number of plates: 6

Model: 89 153 610

Power take-off proportional to engine speed

540 rev/min

Location:	At rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	6 to ISO standard 500 - 1979
Height above ground:	667 mm
Distance from the median plane of the tractor:	Central
Distance behind rear axle:	510 mm
Pto speed at rated engine speed:	628 rev/min
Engine speed at standard power take-off speed:	1890 rev/min
Engine to pto ratio:	3.50:1
Power restriction and maximum torque:	45.0 kW (Manufacturers recommendation)
Direction of rotation (viewed facing driving end):	Clockwise

1000 rev/min

Location:	At rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	21 to ISO standard 500 - 1979
Height above ground:	667 mm
Distance from the median plane of the tractor:	Central
Distance behind rear axle:	510 mm
Pto speed at rated engine speed:	1146 rev/min
Engine speed at standard power take-off speed:	1920 rev/min
Engine to pto ratio:	1.92:1
Direction of rotation (viewed facing driving end):	Clockwise

Power take-off proportional to ground speed

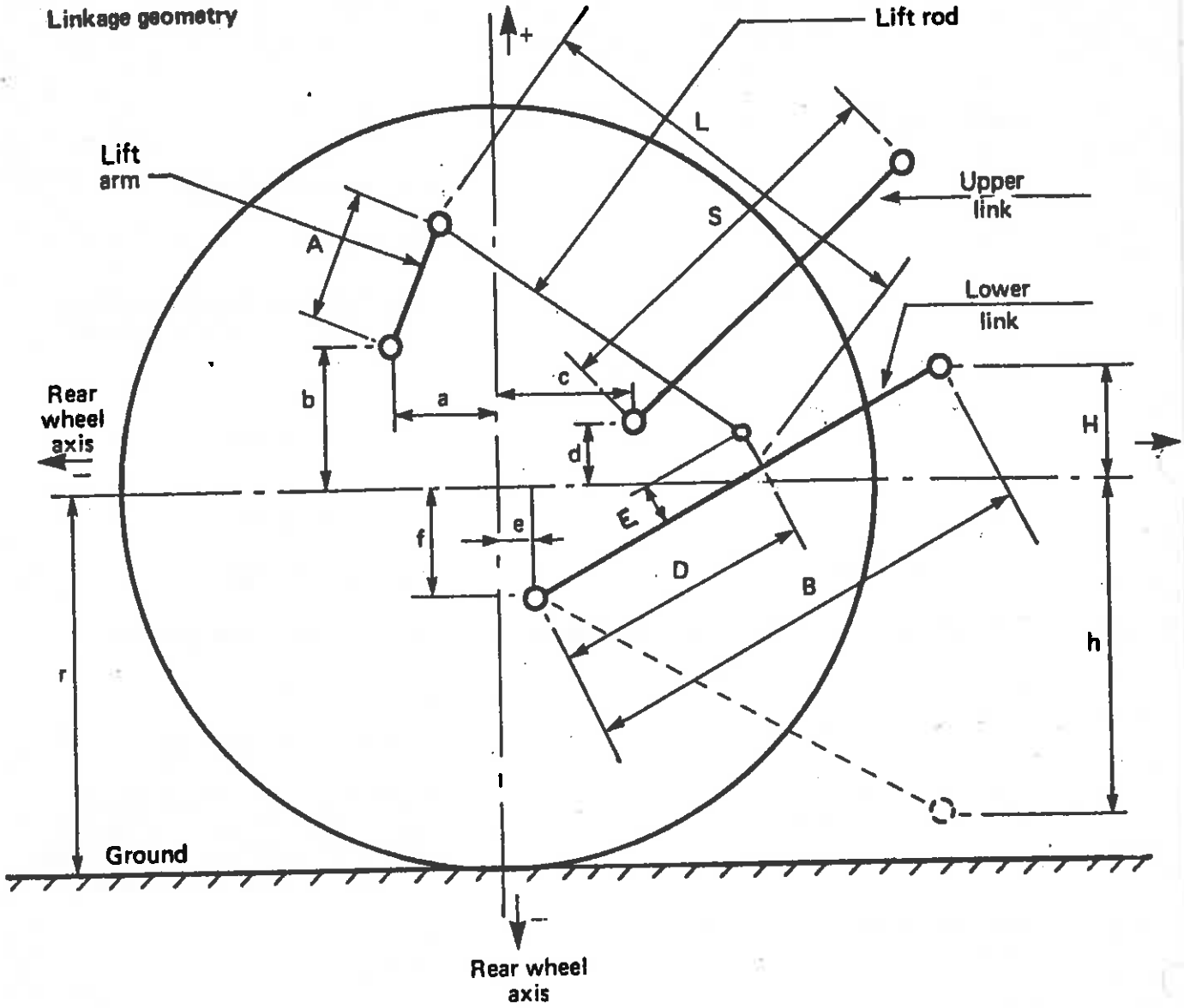
Speed of shaft:	1000 rev/min
Travelling distance for one revolution of power take-off shaft:	188 mm
Number of pto shaft revolutions for one revolution of rear wheels:	27.4
Direction of rotation with forward gear engaged:	Clockwise

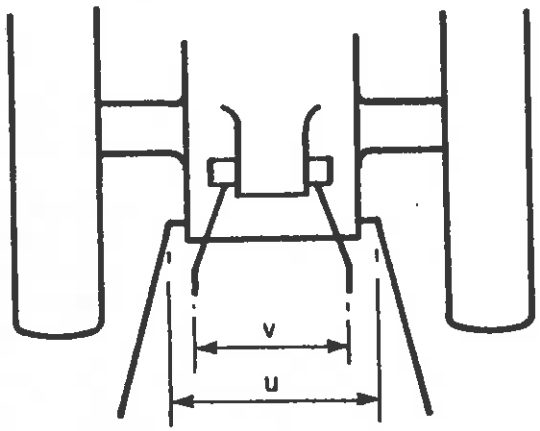
POWER LIFT

Make:	PZL Hydral Wroclaw
Type:	88 400 000
Type and number of cylinders:	One internal single acting, two external single acting
Type of linkage lock for transport:	Hydraulic
Relief valve pressure setting:	18.0 - 20.5 MPa
Opening pressure of cylinder safety valve:	20.5 - 21.5 MPa
Lift pump type:	Gear, PZ 2-18KS
Transmission between pump and engine:	Gear driven from gearbox
Make and number of filters:	ZPC, 2
Site of oil reservoir	Transmission housing
Type and number of tapping points:	4 pressure or return spool valve controlled, 1 pressure only and 1 return only, quick release at rear of tractor
Maximum volume of oil available to external cylinders:	15.0 l

Three-point linkage

Category:	3 to ISO standard 730/1 - 1977
Category adapter:	At end of lower links to category 2
Controls	Draught or position control, or combined plus pressure control for semi-mounted implements, lower link sensing, adjustable speed on drop.


Linkage geometry
+
Lift rod
L
Lift
arm
S
Upper
link
A
Lower
link
b
a
c
Rear
wheel
axis
H
d
E
f
e
D
B
h
r
Ground
−
Rear wheel
axis


v
u

Dimensions of linkage when attached to the standard frame (ISO 730/3-1982 CAT 3)

			Dimensions or range	Setting used in test
Length of lift arms:		(A)	330 mm	330 mm
Length of lower links:		(B)	942 mm	942 mm
Distance of lift arm pivot point from rear wheel centre line	horizontally:	(a)	170 mm	170 mm
	vertically:	(b)	286 mm	286 mm
Horizontal distance between the two lower link points:		(u)	520 mm	520 mm
Horizontal distance between the two lift arm end points:		(v)	640 mm	640 mm
Length of upper link:		(S)	620-810 mm	694 mm
Distance of upper link pivot point from rear wheel centre line	horizontally:	(c)	385 mm	385 mm
	vertically:	(d)	100,160,210 mm	210 mm
Distance of lower link pivot point from rear wheel centre	horizontally:	(e)	130 mm to rear	130 mm to rear
	vertically:	(f)	255 mm	255 mm
Distance of lower link points to lift rod pivot points on lower link centre line:	horizontal:	(D)	459,498 mm	498 mm
	vertical:	(E)	0	0
Length of lift rods:		(L)	515-610 mm	590 mm
Height of lower hitch points relative to the rear wheel centre line				
- in low position:		(h)	412-677 mm	615 mm
- in high position:		(H)	92-298 mm	95 mm
Height of lower hitch points when locked in transport position:			Any height within lift range	

SWINGING DRAWBAR

Height above ground, maximum:	421 mm
minimum:	337 mm
Type of adjustment:	Inverting drawbar
Distance of hitch point from rear axle centre:	1005 and 905 mm to rear
Distance of hitch point from power take-off shaft ends:	
vertically:	330 and 246 mm
horizontally:	495 and 395 mm
Distance of pivot point from rear axle horizontally:	330 mm to rear
Lateral adjustment:	372 and 320 mm
Diameter of drawbar pin holes:	32 mm
Maximum vertical permissible load:	7 kN (drawbar out)
	9 kN (drawbar in)

TRAILER HITCH

Height above ground, maximum:	890 mm
minimum:	740 mm
Distance of hitch point from rear axle centre:	841 mm
Distance of hitch point from power take-off shaft end:	
vertically above maximum:	223 mm
minimum:	73 mm
horizontally:	331 mm
Pin diameter	35 mm
Maximum vertical permissible load:	10 kN

LINKAGE DRAWBAR

Height above ground, maximum:	954 mm
minimum:	230 mm
Horizontal distance to power take-off shaft end:	562 mm
Number of holes:	9
Distance between holes:	82 mm
Hole diameter:	32 mm
Thickness and width of drawbar:	70 mm x 105 mm with 32 mm lateral slot

FRONT TOWING HITCH

Vertical height to centre of clevis:	855 mm
Width of clevis	70 mm
Diameter of pin hole:	32 mm

STEERING

Method of operation:	Hydrostatic system with hand operated steering motor powered from gear box mounted gear pump
Pump:	Pilmet, gear type ZCT-16L
Motor:	Danfoss OSPB 160 - ON
Oil cooler:	Mounted to front of radiator
Ram	Pilmet, double acting
Working pressure:	14 MPa

FILTER

Make:	Ursus
Model:	PP8-4
Type:	Replaceable canister and metal strainer

BRAKES

Service brake

Make:	Zetor
Model:	89 227 000
Type:	Dry disc, multiplate
Number of plates:	4
Method of operation:	Hydraulically by pedals, coupled or independent
Trailer brakes:	Air brake operated by tractor pedals

Parking brakes

Type:	Mechanical
Method of operation:	Hand lever with ratchet operating mechanical linkage on service brakes

WHEELS

Number:	4
Front	2, driving/steering
Rear:	2, driving
Wheelbase:	2700 mm

Track width adjustment

	Minimum, mm	Maximum, mm	Adjustment method
Front	1600	1800	By changing wheel discs to either side of wheel centre
Rear	1500	1875	Reversing wheels and off-set lug rims

PROTECTIVE STRUCTURE

OECD approval number:	CSS 0116/2, CSD 1211/2
Make:	Vlad, Presov
Model:	UR II M87
Type:	Six Post ROPS
Protective device:	Safety cab

DRIVER'S SEAT

Make:	Mars Suratka
Model:	Zetor 62115409
Type:	Suspension seat
Type of suspension:	Parallelogram linkage
Type of damping:	Hydraulic
Range of adjustment, longitudinal:	150 mm
vertical:	90 mm

LIGHTING

	Height above ground of centre, mm	Size, mm	Distance from outside edge of tractor to centre, at 1725 mm track width, *mm
Headlights	1155	120 dia	923
Sidelights	1687	65 x 60	360
Rear lights	1755	105 x 75	254
Reflectors	1172	80 dia	129

*Mudguards: 2205 mm being outside edge

TEST CONDITIONS

Overall dimensions (unballasted tractor)

Length: 4.51 mm

Width

Minimum: 2.21 m
Maximum: 2.35 m

Height

Top of protective structure: 2.72 m
Top of exhaust: 2.91 m

Ground clearance (unballasted tractor): 277 mm

Clearance - limiting part: Drawbar clevis in lowest position

Tractor mass (with cab)

		Without driver, kg	With driver, kg
Unballasted	Front	2040	2050
	Rear	3026	3094
	Total	5066	5144
Ballasted	Front	2718	2728
	Rear	3978	4046
	Total	6696	6774

Ballast

	Number of weights	Mass (total) kg	Water kg
Front	-	-	-
Rear	4	206	884
Additional front frame and weights	14	540	-

Tyres and track width specification

	Front wheels	Rear wheels
Tyres:		
Dimensions	14.9-24	18.4-38
Ply rating	8	8
Type	Cross ply	Radial ply
Maximum load (tyre manufacturer's), kg	1760	2715
Maximum load for tyres up to 30 km/h (tractor manufacturer's), kg	1760	2715
Inflation pressure (tyre manufacturer's), kPa	180	140
Dynamic radius index, mm	590	820
Chosen track width, mm	1700	1725

Oils and lubrication

Capacity and change interval

	Capacity l	Oil change h	Filter change h
Engine	19.0	200	200
Air cleaner	2.2	When req.	-
Gearbox	52.0	1200	600
Rear axle	Common with gearbox		
Final drive (rear)	4.0 x 2	1200	-
Hydraulic system	Common with gearbox		
Front axle	3.5	1200	-
Final drive (front)	1.3 x 2	1200	-
Steering	8.0	1200	1200
Brakes	0.8	2 years	-

Specifications

	Recommended	Used during test
Engine + Air Cleaner		
Type:	S.A.E. 10W/30	
Viscosity:	71.5 cSt at 50°C	As recommended
Classification:	M.I.L. L-451993	
Transmission, Gearbox, rear axle and powerlift		
Type:	S.A.E. 80	
Viscosity:	44.2 cSt at 50°C	As recommended
Classification:	API GL4	
Rear final drives		
Type:	S.A.E. 90	
Viscosity	44.2 cSt at 50°C	As recommended
Classification:	API GL-4	
Front differential and final drives		
Type:	S.A.E. 80	
Viscosity:	44.2 cSt at 50°C	As recommended
Classification:	API GL-4	
Hydraulic brakes		
Type	HD-205P (S.A.E. J1703F)	
Viscosity:	4.2 cSt at 50°C	As recommended
Classification:	I.S.O. 4925	
Steering		
Type:	OL-N2	
Viscosity:	15-2 cSt at 50°C	As recommended
Classification:	I.S.O. WG-22	
Recommended grease:	Mobilgrease MP	As recommended
Number of grease points:	18	

Fuel

Type:	Diesel oil
Viscosities:	3.30 cSt at 40°C (To British Standard 2869 1983, Class A)
Density at 15°C:	0.8345 For PTO tests 0.8327 For Drawbar

TEST RESULTS

COMPULSORY TESTS

1. MAIN POWER TAKE-OFF PERFORMANCE

Date of tests: 19th February 1988

Type of dynamometer: Water brake, Heenan & Froude

Power, kW	Speed, rev/min		Fuel consumption, Hourly,		Specific,	Specific energy,
	Engine	P.t.o.	l/h	kg/h	kg/kWh	kWh/l
MAXIMUM POWER - 2 HOUR TEST						
93.7	2200	1146	26.83	22.34	0.238	3.50
POWER AT RATED ENGINE SPEED						
93.7	2200	1146	26.83	22.34	0.238	3.50
POWER AT STANDARD POWER TAKE-OFF SPEED						
87.9	1920	1000	23.69	19.73	0.225	3.70
PART LOADS						
(i) The torque corresponding to maximum power at rated engine speed						
93.7	2200	1146	26.83	22.34	0.238	3.50
(ii) 85% of the torque obtained in (i)						
81.6	2257	1175	24.20	20.15	0.247	3.37
(iii) 75% of the torque defined in (ii)						
62.3	2295	1195	19.92	16.59	0.266	3.13
(iv) 50% of the torque defined in (ii)						
42.1	2327	1212	15.58	12.98	0.308	2.70
(v) 25% of the torque defined in (ii)						
21.4	2371	1235	11.48	9.56	0.447	1.86
(vi) Unloaded						
0	2400	1250	7.66	6.38	-	-

Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (1000 rev/min).

Power, kW	Speed, rev/min		Fuel consumption, Hourly,		Specific,	Specific energy,
	Engine	P.t.o.	l/h	kg/h	kg/kWh	kWh/l
(i) The torque corresponding to maximum power at standard p.t.o. speed						
87.9	1920	1000	23.69	19.73	0.225	3.70
(ii) 85% of the torque obtained in (i)						
76.3	1961	1021	21.05	17.53	0.230	3.62
(iii) 75% of the torque defined in (ii)						
58.5	2003	1043	17.30	14.41	0.246	3.38
(iv) 50% of the torque defined in (ii)						
39.9	2052	1069	13.40	11.16	0.280	2.97
(v) 25% of the torque defined in (ii)						
20.5	2104	1096	9.76	8.13	0.400	2.08
(vi) Unloaded						
0	2150	1120	6.12	5.09	-	-

Standard specific fuel consumption, kg/kWh

(a) 0.247 (c) 0.230
(b) 0.308 (d) 0.280

No load, maximum engine speed		2400 rev/min
Equivalent crankshaft torque at maximum power		406.5 Nm
Maximum equivalent crankshaft torque		485.0 Nm at 1599 rev/min engine speed
Mean atmospheric conditions	temperature	21°C
	pressure	1029 m bar
	relative humidity	28%
Maximum temperature	coolant	83°C
	engine oil	93°C
	fuel	38°C
	air intake	25°C

2. HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 1st December 1987

2.1 Hydraulic power test

Sustained pressure with relief valve open 19.0 MPa

Pump delivery rate at minimum pressure 45.5 l/min

Flow rate corresponding to a hydraulic pressure equivalent to 90 per cent of the actual relief valve pressure setting and corresponding hydraulic power

Flow rate	27.0 l/min
Pressure	17.1 MPa
Power	7.7 kW

Flow rate and hydraulic pressure corresponding to maximum hydraulic power

Flow rate	40.8 l/min
Pressure	15.5 MPa
Power	10.5 kW

Tapping point used for test: External spool valve connection

Temperature of hydraulic fluid, if different from 60° ±5°C: Not applicable

Opening pressure of the unloading valve: Not applicable

Closing pressure of the unloading valve: Not applicable

2.2 Power lift test

	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 the hitch point	205	710	42.6	15.5	45.7	-
On the frame	205	788	32.0	15.5	53.8	10

Main linkage dimensions - see drawings and table on pages 8 and 9

Lifting heights relative to the horizontal plane including the lower link pivot points

mm	-338	-360	-320	160	0	100	350	450

Lifting forces at hitch points
(corresponding pressure 15.5 MPa)

kN	-	42.6	42.7	44.0	47.8	45.0	45.0	-

Lifting forces at test frame
(corresponding pressure 15.5 MPa)

kN	43.6	42.5	41.8	39.9	38.5	37.0	33.2	32.0

3. DRAWBAR PERFORMANCE

Date of tests: 26th April and 20th May 1988

Type of track: Concrete

	Height of drawbar above ground, mm	Inflation pressure, kPa Front	Rear
Unballasted	280	80	80
Ballasted	290	110	120

Gear	Group No.	Speed, km/h	Power, kW	Drawbar pull, kN	Engine speed, rev/min	Wheel-slip, %	Specific fuel consumption, kg/kWh	kWh/l	Temperature, °C Fuel	Coolant	Engine oil	Atmospheric conditions Temperature, °C	Relative humidity,%	Pressure, m bar
(i) MAXIMUM POWER (unballasted)														
*2	LM	3.42	50.4	53.0	2285	15.0	0.352	2.36	40	79	87	16	22.5	1025
*2	L	4.50	66.2	53.0	2236	15.0	0.326	2.55	40	80	88	16	25.1	1025
3	LM	5.99	77.4	46.5	2197	7.2	0.291	2.86	39	79	87	16	12.2	1025
1	HM	7.04	78.8	40.3	2203	6.0	0.285	2.92	40	79	88	17	19.5	1025
3	L	8.31	79.8	34.6	2199	4.7	0.283	2.95	39	79	88	15	23.9	1024
1	H	9.59	80.4	30.2	2199	2.8	0.282	2.95	37	78	87	13	28.8	1025
2	HM	11.80	77.7	23.7	2202	2.5	0.292	2.85	37	79	84	15	18.7	1025
(ii) MAXIMUM POWER (ballasted)														
*1	LM	2.14	37.6	63.2	2313	15.0	0.403	2.07	34	75	83	10	40.0	1006
+1	L	2.92	49.6	61.1	2292	12.0	0.350	2.38	34	77	84	10	41.0	1002
*2	LM	3.38	59.4	63.2	2260	15.0	0.342	2.43	34	77	85	10	46.0	1004
2	L	4.69	76.1	58.4	2200	9.4	0.302	2.76	32	77	84	10	47.4	1004
3	LM	6.14	79.0	46.3	2200	5.7	0.288	2.89	33	78	86	10	46.0	1005
1	HM	7.14	80.2	40.5	2200	4.9	0.285	2.92	32	78	84	10	51.2	1005
3	L	8.42	80.4	34.4	2200	4.1	0.286	2.92	34	78	85	10	49.5	1006
1	H	9.68	80.4	29.9	2200	3.5	0.284	2.93	34	78	85	11	50.1	1005
2	HM	11.90	76.9	23.3	2200	2.7	0.296	2.82	34	77	84	10	50.5	1006
(iii) FIVE HOUR TEST AT 75% of PULL AT MAXIMUM POWER														
1	HM	7.47	63.1	30.4	2270	3.2	0.306	2.72	40	78	87	14	50.6	1008
(iv) FIVE HOUR TEST AT PULL CORRESPONDING TO 15% WHEELSLIP IN TEST (ii)														
2	LM	3.66	-	63.2	2255	-	-	-	45	79	88	20	21.9	1015

Total oil consumption during ten hours duration of tests (iii) and (iv) 75.0 g/h
*Maximum power available at 15% wheelslip
Test (iv) was carried out with additional ballast and the results for power, slip and fuel consumption have no practical significance
+Limited by wheel bounce

4. TURNING SPACE AND TURNING CIRCLE

Details of wheel equipment:

	Tyre size	Track
front	14.9-24	1700
rear	18.4-38	1725

		With brakes		Without brakes	
		Left-hand	Right-hand	Left-hand	Right-hand
2 WD	Radius of turning space, m	5.18	5.04	6.30	6.25
	Radius of turning circle, m	4.95	4.81	6.08	6.03
4 WD	Radius of turning space, m	4.75	4.74	6.99	7.14
	Radius of turning circle, m	4.52	4.50	6.77	6.92

5. LOCATION OF CENTRE OF GRAVITY

Height above ground, mm	930
Distance forward from the vertical plane containing the axis of the rear wheels, mm	1061
Distance from the median plane of the tractor, mm	0

6. BRAKING

Date of tests: 11th and 12th May 1988

Type of track: Concrete

Masses during brake tests

	Front, kg	Rear, kg	Total, kg
Ballasted	3520	5438	8958
Unballasted	2050	3094	5144

6.1 Cold service braking device test

Speed before application of brakes, 29.5 km/h

Ballasted tractor	Braking device control force, N	100	200	300	400	500	600
	Mean deceleration, m/s^2	0.5	1.1	1.6	2.1	2.5	2.7
Unballasted tractor	Braking device control force, N	-	200	300	400	500	600
	Mean deceleration, m/s^2	-	1.3	1.8	2.4	2.9	3.1

6.2 Fade test

Speed before application of brakes, 29.5 km/h

Ballasted tractor	Braking device control force, N	100	200	300	400	500	600
	Mean deceleration, m/s^2	0.3	0.7	1.0	1.3	1.7	2.0

Brakes were heated by: Driving

Comments on deviation and vibration: None

6.3 Parking braking device test

	Force applied on slope of 18%	
	Up	Down
Braking device control force, N	275	270

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests:	11th April 1988
Type of sound level meter:	Bruel and Kjaer 2209
Type of track:	Concrete
Results of test	(Two wheel only in top gear)
Gear:	3 Group No: H
Travelling speed before acceleration:	22.1 km/h
Sound level:	87 dBA (2 wheel drive only in high gears

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

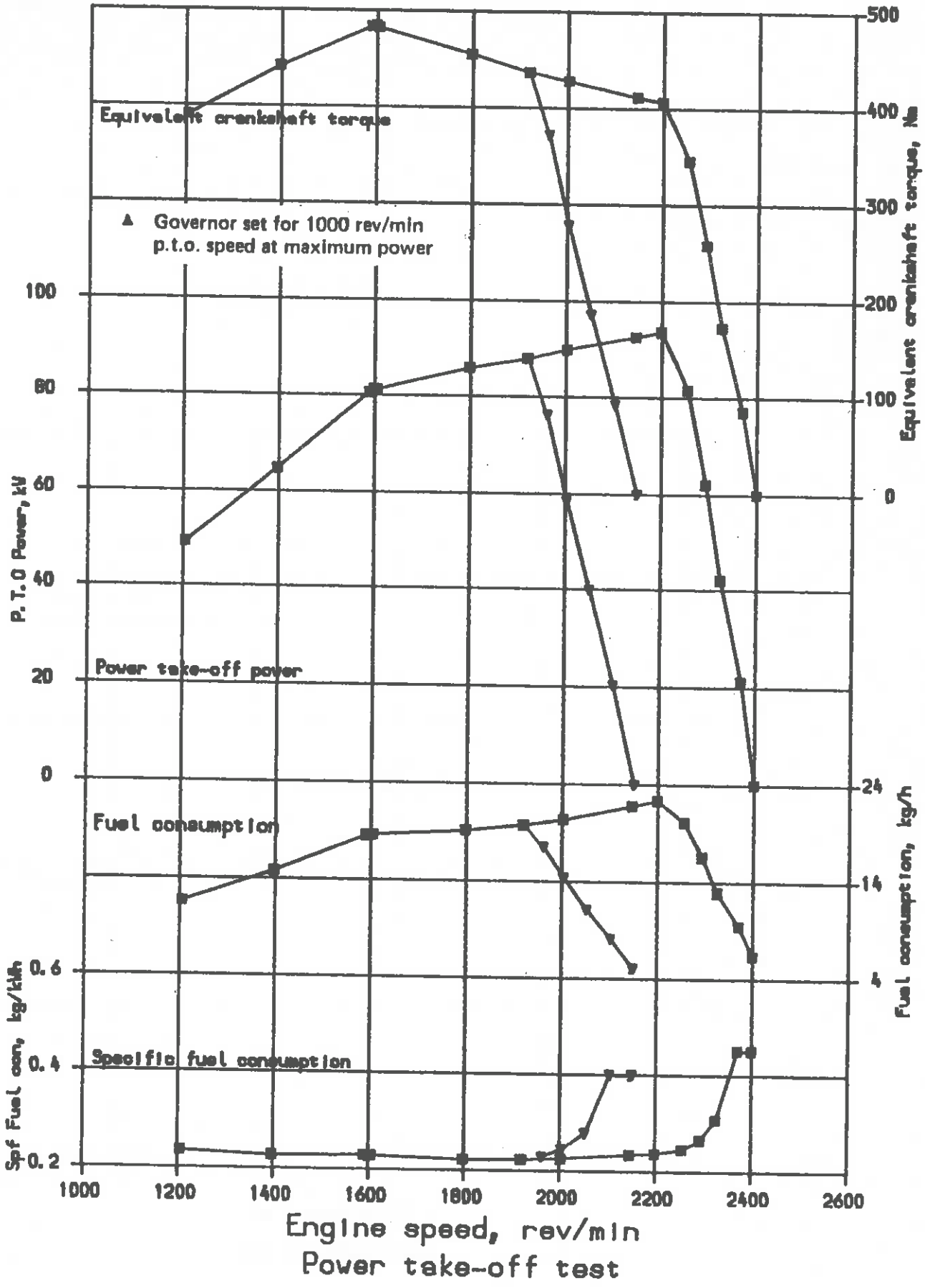
Test carried out by: A.D. Stockton, F. Thistlethwaite

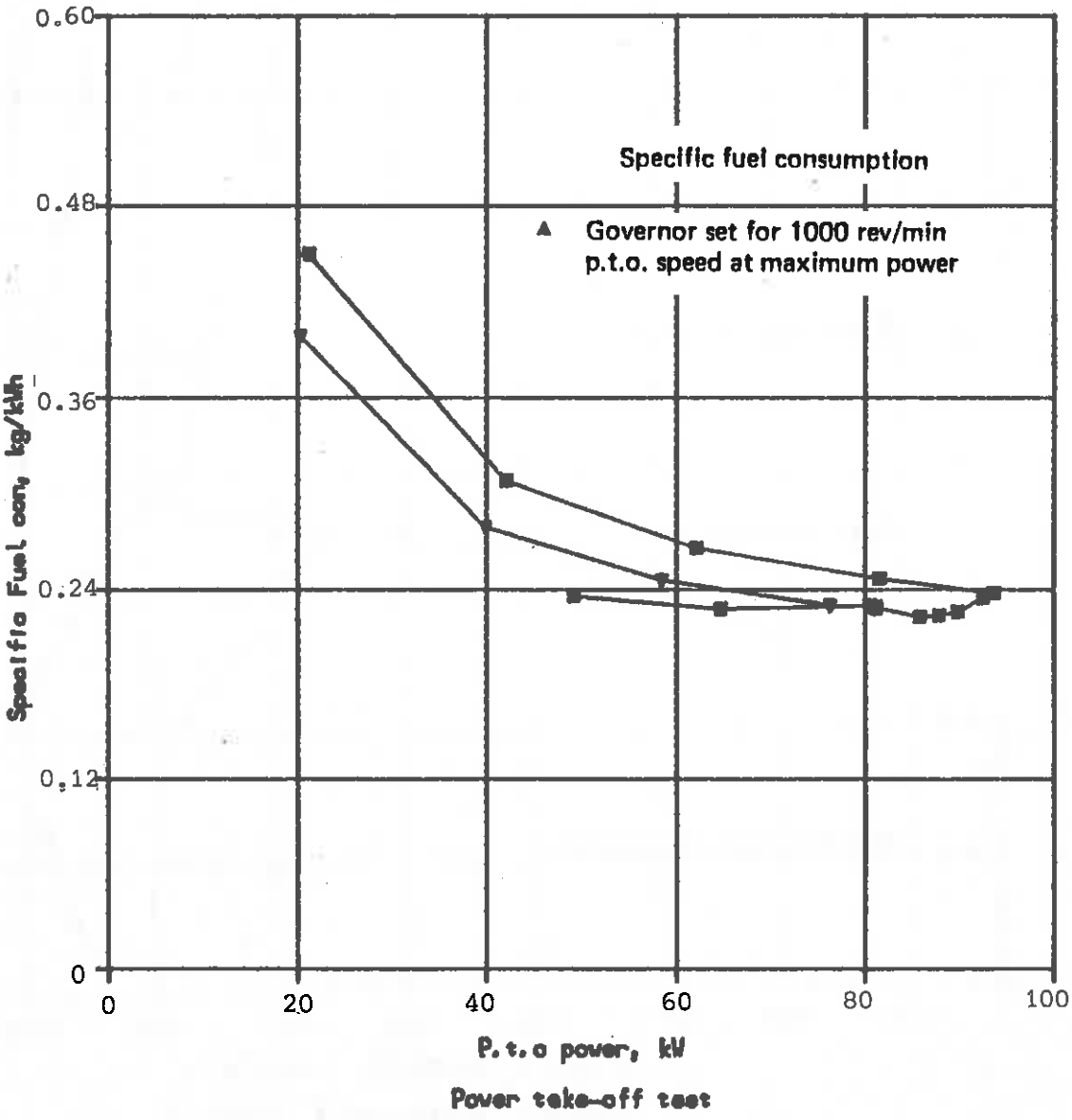
Officer in charge: P.C. Seward

Signed:  Head of Testing Group

 for the Director

Date: 29.11.88


Equivalent crankshaft torque
Governor set for 1000 rev/min
p.t.o. speed at maximum power
Power take-off power
Fuel consumption
Specific fuel consumption
P.T.O Power, kW
Spf Fuel con, kg/kWh
Equivalent crankshaft torque, Nm
Fuel consumption, kg/h
100
80
60
40
20
0
0.6
0.4
0.2
500
400
300
200
100
0
24
14
4
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed, rev/min
Power take-off test



Power take-off test