

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

Report on Test of Zetor 16245 Tractor with 4 Wheel-Drive



<b>Manufactured by</b>	Zavody Tazkeho Strojarsstva, Narodny Podnik, Box 03657 Martin, Czechoslovakia.
<b>Test No.</b>	R88/70644/OECD
<b>Report No.</b>	736
<b>Date</b>	September 1988

**THE BRITISH SOCIETY FOR RESEARCH IN AGRICULTURAL ENGINEERING**

**AFRC Institute of Engineering Research**  
Wrest Park Silsoe Bedford MK45 4HS



## TABLE OF CONTENTS

	Page No.
<b>SPECIFICATION OF TRACTOR</b>	1
<b>TEST CONDITIONS</b>	14
<b>TEST RESULTS</b>	
<b>A COMPULSORY TESTS</b>	17
1. Main power take-off performance	17
2. Power lift and hydraulic pump performance	18
3. Drawbar performance	21
4. Turning space and turning circle	22
5. Location of centre of gravity	22
6. Braking	23
7. Measurement of external noise level	24
<b>REPAIRS AND ADJUSTMENTS DURING TESTS</b>	24
<b>REMARKS</b>	24
<b>ANNEX: MAIN POWER TAKE-OFF CURVES</b>	25



Tractor manufacturer's name and address:	Zavody Tazkeho Strojarsva, 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 16245
Type:	4 wheel-drive, unit construction
Serial No:	16245 0001
1st Serial No:	16245 0001

**ENGINE**

Make:	Z.T.S. N.P. Martin
Model:	Z 8602.12
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 <sup>3</sup>
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):** Autobrzdzy, dual, 03-9800.00  
**Capacity of fuel tank:** 195 l  
**Make, type and model of injection pump:** Motorpal, in line, PP6 M9 KLe3120  
**Serial No:** KS 0060  
**Manufacturer's production setting of injection pump:**  
**Flow rate:** 28.6-33.2 l/h 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:** 2.2 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

- 3 -

**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**

**Rating:** 2, Prazska, Akumulatorka  
2 x 100 Ah at 20-hour rating

**Exhaust system**

**Make:** Z.T.S.  
**Type:** Oval, baffle  
**Model:** 89 014 500  
**Location:** Left-hand side of engine, vertical

- 4 -

## 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, synchromesh, 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
<b>Forward</b>			
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
<b>Reverse</b>			
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

- 6 -

## 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:	45.0 kW (Manufacturers recommendation)
Direction of rotation (viewed facing driving end):	Clockwise

1000 rev/min

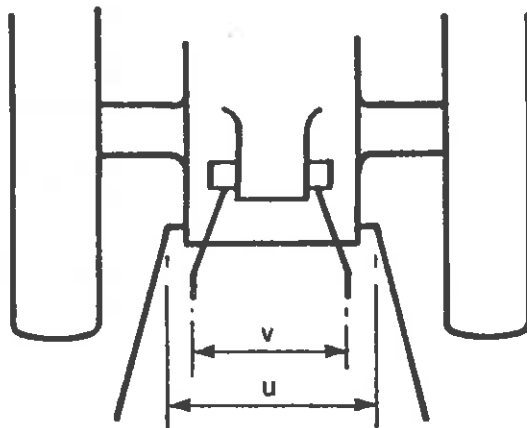
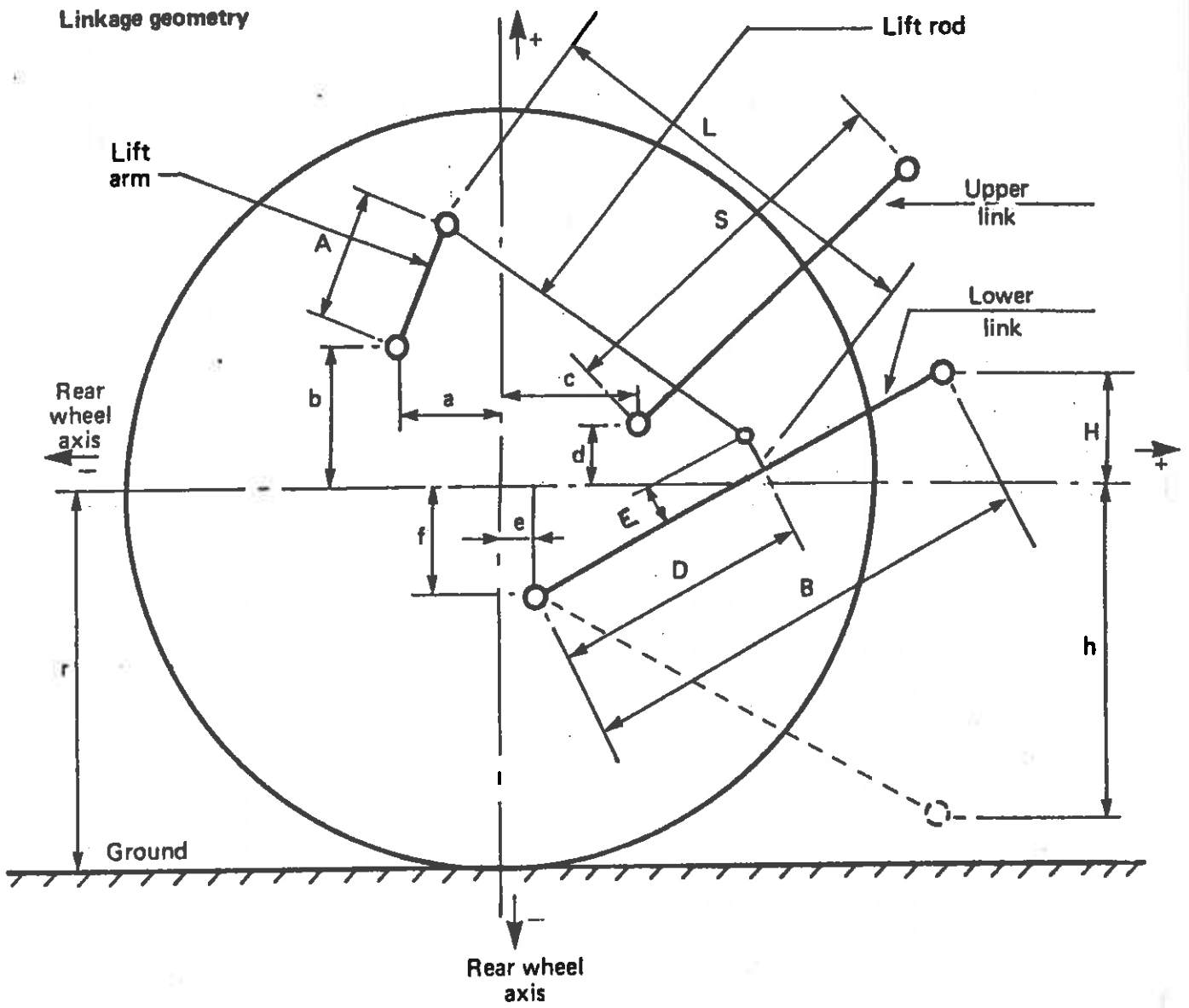
Location:	At rear of tractor
Diameter of power take-off shaft:	34.9 mm
Number of splines:	21 to ISO standard 500 - 1979
Height above ground:	667 mm
Distance from the median plane of the tractor:	Central
Distance behind rear axle:	510 mm
Pto speed at rated engine speed:	1146 rev/min
Engine speed at standard 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 rear wheels:	27.4
Direction of rotation with forward gear engaged:	Clockwise

**POWER LIFT**

<b>Make:</b>	PZL Hydral Wroclaw
<b>Type:</b>	88 400 000
<b>Type and number of cylinders:</b>	One internal single acting, two external single acting
<b>Type of linkage lock for transport:</b>	Hydraulic
<b>Relief valve pressure setting:</b>	18.0 - 20.5 MPa
<b>Opening pressure of cylinder safety valve:</b>	20.5 - 21.5 MPa
<b>Lift pump type:</b>	Gear, PZ 2-18KS
<b>Transmission between pump and engine:</b>	Gear driven from gearbox
<b>Make and number of filters:</b>	ZPC, 2
<b>Site of oil reservoir</b>	Transmission housing
<b>Type and number of tapping points:</b>	4 pressure or return spool valve controlled, 1 pressure only and 1 return only, quick release at rear of tractor
<b>Maximum volume of oil available to external cylinders:</b>	15.0 l
<b>Three-point linkage</b>	
<b>Category:</b>	3 to ISO standard 730/1 - 1977
<b>Category adapter:</b>	At end of lower links to category 2
<b>Controls</b>	Draught and position control or combined plus pressure control for semi-mounted implements, lower link sensing, adjustable speed on drop.



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	702 mm
Distance of upper link pivot point from rear wheel centre line	horizontally:	(c) 385 mm	385 mm
	vertically:	(d) 100,160,210 mm	160 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	605 mm
Height of lower hitch points relative to the rear wheel centre line			
- in low position:	(h)	412-677 mm	590 mm
- in high position:	(H)	92-298 mm	85 mm
Height of lower hitch points when locked in transport position:		Any height within lift range	

- 10 -

## 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:	1118 mm
minimum:	143 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 brake**

**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



- 13 -

## PROTECTIVE STRUCTURE

OECD approval number: CSS 0116/1, CSD 1211/1  
 Make: Vlad, Presov  
 Model: UR II M87  
 Type: Six post ROPS  
 Protective device: Safety cab

## DRIVER'S SEAT

Make: Mars Svratka  
 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 out- side edge of tractor to centre, at 1725 mm track width, *mm
Headlights	1206	120 dia	923
Sidelights	1689	65 x 60	360
Rear lights	1736	105 x 75	254
Reflectors	1150	80 dia	129

\*Mudguards: 2205 being outside edge

- 14 -

**TEST CONDITIONS**

Overall dimensions (unballasted tractor)

Length: 4.51 mm

Width

Minimum: 2.21 m

Maximum: 2.35 m

Height

Top of protective structure: 2.73 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	2046	2071
	Rear	3111	3161
	Total	5157	5232
Ballasted	Front	2556	2581
	Rear	4304	4354
	Total	6860	6935

Ballast

	Number of weights	Mass (total) kg	Water kg
Front	Nil	Nil	Nil
Rear	14	518	755
Additional front frame and weights	13	430	

## Tyres and track width specification

	Front wheels	Rear wheels
<b>Tyres:</b>		
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
<b>Engine + Air Cleaner</b>		
Type:	S.A.E. 10W/30	
Viscosity:	71.5 cSt at 50°C	As recommended
Classification:	M.I.L. L-451993	
<b>Transmission, Gearbox, rear axle and powerlift</b>		
Type:	S.A.E. 80	
Viscosity:	44.2 cSt at 50°C	As recommended
Classification:	API GL4	
<b>Rear final drives</b>		
Type:	S.A.E. 90	
Viscosity:	44.2 cSt at 50°C	As recommended
Classification:	API GL-4	
<b>Front differential and final drives</b>		
Type:	S.A.E. 80	
Viscosity:	44.2 cSt at 50°C	As recommended
Classification:	API GL-4	
<b>Hydraulic brakes</b>		
Type:	HD-205P (S.A.E. J1703F)	
Viscosity:	4.2 cSt at 50°C	As recommended
Classification:	I.S.O. 4925	
<b>Steering</b>		
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	
<b>Fuel</b>		
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: 25th September 1987

Type of dynamometer: Water brake, Heenan &amp; Froude

Power, kW	Speed, rev/min		Fuel consumption,			Specific energy, kWh/l
	Engine	P.t.o.	Hourly, l/h	kg/h	Specific, kg/kWh	
<b>MAXIMUM POWER - 2 HOUR TEST</b>						
101.3	2200	1146	28.67	23.93	0.236	3.54
<b>POWER AT RATED ENGINE SPEED</b>						
101.3	2200	1146	28.67	23.93	0.236	3.54
<b>POWER AT STANDARD POWER TAKE-OFF SPEED</b>						
99.0	1920	1000	26.97	22.51	0.227	3.68
<b>PART LOADS</b>						
<b>(i) The torque corresponding to maximum power at rated engine speed</b>						
101.3	2200	1146	28.67	23.93	0.236	3.54
<b>(ii) 85% of the torque obtained in (i)</b>						
89.9	2296	1196	26.64	22.23	0.247	3.38
<b>(iii) 75% of the torque defined in (ii)</b>						
68.5	2329	1213	21.71	18.12	0.265	3.15
<b>(iv) 50% of the torque defined in (ii)</b>						
46.1	2354	1226	16.92	14.12	0.306	2.73
<b>(v) 25% of the torque defined in (ii)</b>						
23.5	2390	1245	12.19	10.17	0.433	1.93
<b>(vi) Unloaded</b>						
0	2419	1260	7.93	6.62	-	-

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,			Specific energy, kWh/l
	Engine	P.t.o.	Hourly, l/h	kg/h	Specific, kg/kWh	
(i) The torque corresponding to maximum power at standard p.t.o. speed						
99.0	1920	1000	26.97	22.51	0.227	3.68
(ii) 85% of the torque obtained in (i)						
86.8	1980	1031	24.42	20.38	0.235	3.56
(iii) 75% of the torque defined in (ii)						
66.5	2022	1053	19.39	16.18	0.243	3.43
(iv) 50% of the torque defined in (ii)						
45.4	2074	1080	15.01	12.53	0.276	3.02
(v) 25% of the torque defined in (ii)						
23.3	2124	1106	10.56	8.81	0.378	2.21
(vi) Unloaded						
0	2160	1125	6.29	5.25	-	-

Standard specific fuel consumptions, kg/kWh

- |           |           |
|-----------|-----------|
| (a) 0.247 | (c) 0.235 |
| (e) 0.306 | (d) 0.276 |

No load, maximum engine speed	2419 rev/min
Equivalent crankshaft torque at maximum power	439.7 Nm
Maximum equivalent crankshaft torque	521.8 Nm at 1695 rev/min engine speed

Mean atmospheric conditions	temperature	19°C
	pressure	1006 m bar
	relative humidity	28%
Maximum temperature	coolant	90°C
	engine oil	99°C
	fuel	50°C
	air intake	27°C

- 19 -

## 2. HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 23rd March 1988

## 2.1 Hydraulic power test

Sustained pressure with relief valve open 18.4 MPa

Pump delivery rate at minimum pressure 45.6 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	42.5 l/min
Pressure	16.6 MPa
Power	11.8 kW

Flow rate and hydraulic pressure corresponding to maximum hydraulic power

Flow rate	44.5 l/min
Pressure	17.0 MPa
Power	12.6 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 (with two assist rams)

	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	230	675	45.6	16.6	48.9	-
On the frame	230	844	31.4	16.6	52.8	15

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	-389	-335	-200	-100	0	150	340	455
----	------	------	------	------	---	-----	-----	-----

Lifting forces at hitch points  
(corresponding pressure 16.6 MPa)

kN	-	45.6	46.8	47.8	48.3	48.6	48.8	-
----	---	------	------	------	------	------	------	---

Lifting forces at test frame  
(corresponding pressure 16.6 MPa)

kN	41.3	41.1	40.6	39.9	38.7	36.8	32.7	31.4
----	------	------	------	------	------	------	------	------



3. DRAWBAR PERFORMANCE

Date of tests: 26th October - 27th November 1987

Type of track: Concrete

Height of drawbar above ground, mm	Inflation pressure, kPa	
	Front	Rear
Unballasted	275	83
Ballasted	265	96

Gear	Group No.	Speed, km/h	Power, kW	Drawbar pull, kN	Engine speed, rev/min	Wheel-slip, %	Specific fuel consumption, kg/kWh	Specific fuel consumption, kWh/l	Temperature, °C		Atmospheric conditions			
									Fuel	Coolant	Engine oil	Temperature, °C	Relative humidity, %	Pressure, m bar
(i) MAXIMUM POWER (unballasted)														
+2	LM	3.71	55.2	53.5	2331	10.6	0.347	2.40	42	78	88	8	60	1018
2	L	4.56	71.0*	56.0	2273	15.0	0.313	2.67	40	78	88	7	60	1018
3	LM	5.95	81.7	49.4	2201	7.5	0.302	2.76	39	79	89	7	62	1018
1	HM	7.07	84.6	43.1	2197	5.0	0.288	2.90	38	78	87	8	57	1019
3	L	8.35	85.6	36.9	2200	3.7	0.285	2.93	39	79	87	8	58	1019
1	H	9.62	86.6	32.4	2197	3.0	0.284	2.94	38	79	87	7	59	1019
2	HM	11.81	83.0	25.3	2203	2.0	0.295	2.83	38	78	88	6	64	1019
(ii) MAXIMUM POWER (ballasted)														
1	LM	2.24	40.6*	65.0	2350	15.0	0.397	2.10	46	77	87	12	78	1018
1	L	3.09	53.3	62.1	2329	8.8	0.336	2.48	46	78	87	12	78	1018
2	LM	3.71	65.0	63.1	2317	10.0	0.340	2.46	45	79	84	12	77	1017
2	L	4.69	80.3	61.6	2198	8.2	0.304	2.75	45	80	90	12	79	1017
3	LM	6.19	84.5	49.2	2198	4.5	0.295	2.83	45	80	92	12	80	1017
1	HM	7.19	84.6	42.4	2204	3.5	0.289	2.89	45	80	91	12	80	1017
3	L	8.46	84.7	36.1	2206	2.6	0.291	2.87	45	80	91	12	81	1017
1	H	9.72	84.8	31.4	2201	2.1	0.288	2.90	45	80	91	12	83	1017
2	HM	11.91	80.9	24.4	2200	1.5	0.302	2.76	45	79	80	11	84	1017
(iii) FIVE HOUR TEST AT 75% OF PULL AT MAXIMUM POWER														
1	HM	7.63	67.3	31.8	2313	2.6	0.309	2.70	44	78	91	9	76	1007
(iv) FIVE HOUR TEST AT PULL CORRESPONDING TO 15% WHEELSLIP IN TEST (ii)														
1	LM	2.38	-	65.0	2357	-	-	-	47	79	90	12	54	1036

Total oil consumption during ten hours duration of tests (iii) and (iv) 89.3 g/h

\*Maximum power available at 15% wheel-slip

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 mm
rear	18.4-38	1725 mm

		With brakes		Without brakes	
		Left-hand	Right-hand	Left-hand	Right-hand
2WD	Radius of turning space, m	5.38	5.38	6.14	6.17
	Radius of turning circle, m	5.10	5.10	5.86	5.89
4WD	Radius of turning space, m	4.96	4.94	6.15	6.17
	Radius of turning circle, m	4.68	4.66	5.87	5.89

## 5. LOCATION OF CENTRE OF GRAVITY

Height above ground, mm	940
Distance forward from the vertical plane containing the axis of the rear wheels, mm	1069
Distance from the median plane of the tractor, mm	0

## 6. BRAKING

Date of tests: 16th November and 20th November, 1987

Type of track: Concrete

Masses during brake tests

	Front, kg	Rear, kg	Total, kg
Ballasted	3520	5430	8950
Unballasted	2071	3161	5232

## 6.1 Cold service braking device test

Speed before application of brakes, 29.6 km/h

Ballasted tractor	Braking device control force, N	100	200	300	400	500	600
	Mean deceleration, m/s <sup>2</sup>	0.6	1.0	1.4	1.8	2.2	2.6
Unballasted tractor	Braking device control force, N	100	200	300	400	500	600
	Mean deceleration, m/s <sup>2</sup>	1.1	1.6	2.1	2.6	3.1	3.5

## 6.2 Fade test

Speed before application of brakes, 29.6 km/h

Ballasted tractor	Braking device control force, N	100	200	300	400	500	600
	Mean deceleration, m/s <sup>2</sup>	0.5	0.9	1.3	1.7	2.1	2.5

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	226	216

## 7. MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests: 12th April 1988  
Type of sound level meter: Bruel and Kjaer 2209  
Type of track: Concrete  
Results of test  
Gear: 3 Group No: H  
Travelling speed before acceleration: 22.2 km/h  
Sound level: 87 dBA (2 wheel drive only in high gears)

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

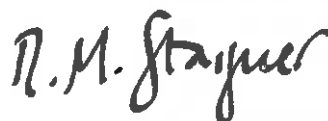
Test carried out by: P.C. Seward; F. Thistlethwaite

Officer in charge: P.C. Seward

Signed:



Head of Testing Group



for the Director

Date:

29. 11. 88

