STATENS MASKIN-PROVNINGAR

NATIONAL MACHINERY TESTING INSTITUE

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TEST BULLETIN: OECD No. 916

Date of approval 1985-02-01

REPORT ON TEST IN ACCORDANCE WITH OECD TEST CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS

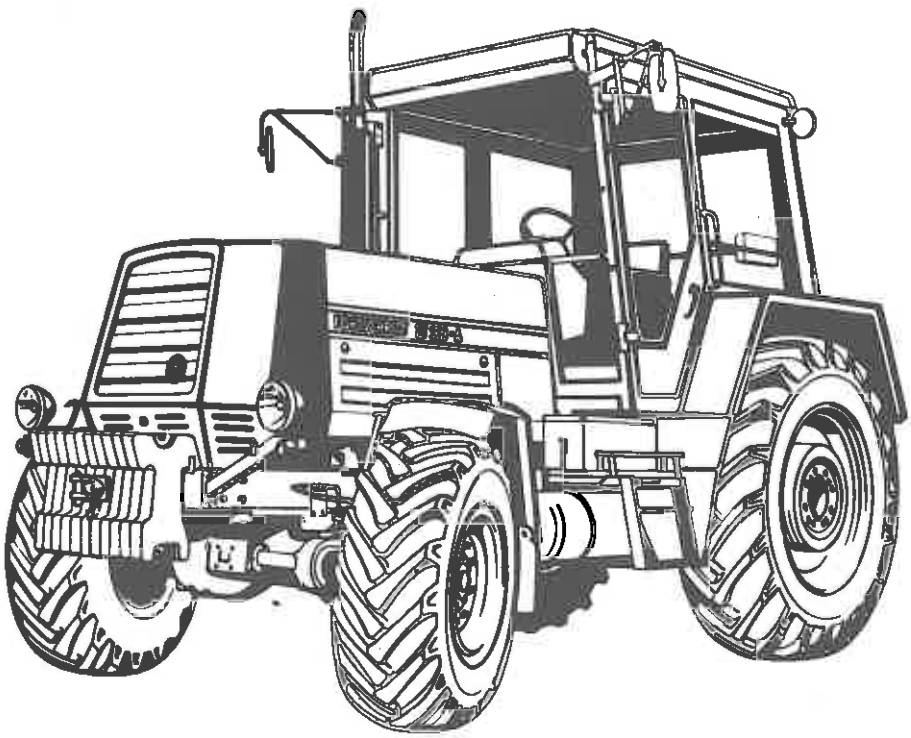
AGRICULTURAL TRACTOR FORTSCHRITT ZT 323 A

Manufactured by: Kombinat Fortschritt Landmaschinen,
VEB Traktoren- und Dieselmotorenwerk Schönebeck,
DDR

Test No. 6689

Test bulletin: OECD No. 916

Agricultural tractor Fortschritt ZT 323 A



This bulletin is based on engineering tests in accordance with the OECD Tractor Code.
It does not contain an evaluation of the performance of the tractor on practical farm work.

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[1] All specified dimensions refer to the tyre sizes 16-20/10 ply rating at front, 18.4-34/14 ply rating at rear and the track width 1835 mm at front and 1766 mm at rear.

Tractor manufacturer's name and address:	Kombinat Fortschritt Landmaschinen, VEB Traktoren- und Dieselmotorenwerk Schönebeck, DDR-3300 SCHÖNEBECK/ELBE
Submitted for test by:	The manufacturer
Selected for test by:	The manufaturer with the agreement of the testing institute
Place of running in:	Schönebeck, DDR
Duration of running in:	100 hours

Specifikation of tractor

Make	Fortschritt
Model	ZT 323 A
Type	Four wheel driven, unit construction
Serial No.	1011
First serial No.	1001

Engine

Make	IFA
Model	4 VD 14.5/12-1 SRW
Type	4-stroke, direct injection, diesel engine, water cooled
Serial No.	03555/83
Cylinder Number	4
Disposition	Vertical, in-line
Bore/Stroke	120/145 mm
Capacity	6.560 dm^3
Compression ratio	18:1
Arrangement of valves	Overhead
Cylinder liners	Wet, replaceable

Fuel system

Type of fuel feed	Mechanical, piston type fuel feed pump, ORSTA BRV TGL 12381
Make, type and model of fuel filters	2 filters, Filtrak 4EF 90F and EF 120F. Replaceable paper elements
Fuel tank capacity	125 dm^3
Make, type and model of injection pump	IFA/BARKAS S 859 DEP 4 B, in-line type
Manufacturer's production setting	17 kg/h at 1800 rev/min and full load, using fuel of density 0.83 g/cm^3 at 18 °C fuel inlet temperature, injection timing 22.5° + 1° before T.D.C.
Make, type and model of injectors	IFA/RENAK, SE 162-46-11, 1 hole, in nozzle holders SCN 120/130-W-002
Manufaturer's production setting	17.5 + 1 MPa

Governor

Make	IFA/BARKAS
Type	Mechanical, incorporated in fuel injection pump, 464-22
Range of engine speed	Governed range of engine speed 750–1970 rev/min
Rated engine speed	1800 rev/min

Air cleaner	
Make	BVF, FLT 500
Type and model of cleaner	Dry paper air cleaner including replaceable paper element Electrical maintenance indicator Cyclon pre-cleaner
Exhaust silencer/ spark arrester	Expansion chamber type Dimensions: 110×160×1524 mm Vertical through bonnet on right-hand side, debouch 3.01 m above ground
Lubrication system	
Type	Forced feed from gear type pump with metal strainer in oil sump
Make and type of filters	BVF. Full flow oil filter with by-pass valve and replaceable paper element (FOP-H 98/196-4200) electrical maintenance indicator. Centrifugal filter (oil flow direct to sump) Cleaning period 170 h
Oil capacity	17 m^3
Changing period	350 h
Recommended oil	Engine oil according to API CC Summer SAE 30 Winter SAE 10 W/20
Cooling system	
Type	Water cooled assisted by centrifugal pump, 540 mm dia 6-blade belt driven fan
Coolant capacity	28 dm^3
Means for temperature control	Thermostat and fan, controlled by thermostat.
Pressure	Over pressure 40 kPa
Starting system	Electrical
Make	Autovillamassag-Hungary
Type	JM 18-4/24, electrical sliding starting motor 4 kW, 24 V
Cold starting aids	Flame glow plug KA 01
Safety device	Reduction gear lever must be in neutral position
Electrical system	
Voltage	24 V
Generator	
Make	AKA-Electric
Model	Alternator 8043. 422/1 28 V/720 W
Battery	
Make	AKA-Electric
Type	12 D2, 2 batterie in serie
Capacity	135 Ah at 20 h rating

Transmission	
Clutch	
Make	Fortschritt
Type and diameter of disc	Double plate dry clutch DK 80, 350 mm dia, with organic friction material
Method of operation	2 step foot pedal. First step for the first disc with hydraulic support (only for travelling). Second step for the second disc with electro-pneumatic support
Gearbox	
Make	Fortschritt together with VEB Getriebwerk, Brandenburg
Type	Constant mesh, collar shifted gears and groups. Gear with 4 forward speeds. Reduction gear with 3 ranges forwards and 2 reverse. Torgque amplifier by electro-pneumatic operated reduction gear. Pressbutton operated
No. of speeds	Totally 24 forward and 16 reverse
Rear axle and final drive	
Make	Fortschritt together with VEB Getriebewerk, Brandenburg
Type	Crown wheel and pinion, differential and planetary final drive. Dog clutch differential lock on rear (and front) axle operated electro-pneumatically by means of only one press-button
Oil capacity	
Gearbox, rear axle and hydraulic tank	92 dm^3
Change period	1400 hours
Filter	Full-flow oil filter with one magnetic element and one nylon cartridge element (HYD 25/160-70) and by-pass valve Electrical maintenance indicator
Recommended oil	According to API GL-4 SAE 20 W/20
Final drive	2×4 dm^3
Changing period	1400 hours
Front axle and final drive	Driven from gearbox by drop-down gearbox and a universal joint shaft on right-hand side. Automatically engaged and disengaged by means of freewheel in the drop-down gearbox when the rear wheels are slipping more than 6%. The freewheel is lockable for reverse driving. Crown wheel and pinion and drop-down final drives at the end of front axle. Dog clutch differential lock on front (and rear) axle operated electro-pneumatically by means of only one press-button
Oil capacity	In the differential housing 2.3 dm^3 Final drive 2×1.05 dm^3
Changing period	2100 hours
Recommended oil	According to API GL, SAE 90

Gear					Number of engine revolutions for one revolution of driving wheels	Nominal travelling speed at rated engine speed*	
No	Position					km/h	m/s
Forward							
1 Group	I	Gear	1	Torque amp.	366.9	1.41	0.39
2	II		1	T	294.8	1.75	0.49
3	I		1		282.2	1.83	0.51
4	II		1		227.0	2.27	0.63
5	I		2	T	208.9	2.47	0.69
6	II		2	T	167.9	3.07	0.85
7	I		2		160.0	3.21	0.89
8	I		3	T	133.9	3.85	1.07
9	II		2		129.1	3.99	1.11
10	II		3	T	107.6	4.79	1.33
11	I		3		103.0	5.01	1.39
12	III		1	T	94.8	5.44	1.51
13	I		4	T	84.5	6.10	1.69
14	II		3		82.8	6.23	1.73
15	III		1		73.0	7.07	1.96
16	II		4	T	67.9	7.60	2.11
17	I		4		65.0	7.94	2.21
18	III		2	T	54.0	9.55	2.65
19	II		4		52.2	9.88	2.74
20	III		2		41.5	12.41	3.45
21	III		3	T	34.6	14.89	4.14
22	III		3		26.6	19.36	5.38
23	III		4	T	21.8	23.61	6.56
24	III		4		16.8	30.69	8.53
Reverse							
1	RI		1	T	354.7	1.45	0.40
2	RII		1	T	285.0	1.81	0.50
3	RI		1		272.8	1.89	0.53
4	RII		1		219.2	2.35	0.65
5	RI		2	T	202.0	2.55	0.71
6	RII		2	T	162.3	3.18	0.88
7	RI		2		155.4	3.32	0.92
8	RI		3	T	129.5	3.98	1.11
9	RII		2		124.8	4.13	1.15
10	RII		3	T	104.0	4.99	1.39
11	RI		3		99.6	5.18	1.44
12	RI		4	T	81.7	6.31	1.75
13	RII		3		80.0	6.45	1.79
14	RII		4	T	65.6	7.86	2.18
15	RI		4		62.8	8.21	2.28
16	RII		4		52.4	10.22	2.84

* With tyre rolling radius index of 760 mm (Tyres 18.4-34)

Power take-off

Make	Fortschritt
Location	At rear of tractor
Type of drive	Semi-independent p.t.o. Operated by main clutch step 2 and mechanically by hand lever, 2 shiftable speeds 540/1000 rev/min
Dimensions	According to ISO 500
No. of splines (540 rev/min)	6 (dia. 34.9 mm)
No. of splines (540/1000 rev/min)	21 (dia. 34.9 mm)
Height above ground	607 mm in tractor's median plane, distance to the rear axle centre 555 mm

Proportional engine speed p.t.o.

540 rev/min p.t.o. speed	547 rev/min at rated engine speed. Standard p.t.o. speed, 540 rev/min, at 1777 rev/min engine speed. Ratio: 3.291 Direction of rotation: clockwise, viewed facing driving end. Restrictions: Power maximum 57 kW Torgue maximum 1220 Nm (372 Nm on the crankshaft)
1000 rev/min p.t.o. speed	982 rev/min at rated engine speed. Standard p.t.o. speed, 1000 rev/min, at 1833 rev/min engine speed. Ratio: 1.833 Direction of rotation: clockwise, viewed facing driving end.
Belt pulley	(Not fitted for test)
Power lift	
Make	Fortschritt
Type	One cylinder, double acting. Piston type pump. Independent pump driven from the gearbox. Working pressure 17.5 MPa. Oil supplied from the hydraulic tank to ram cylinder. Oil capacity: 92 dm^3. Oil capacity available for external use with tractor stationary 25 dm^3 and moving 8 dm^3 Category 2 implement linkage according to ISO 730 with lower link sensing. Draught, position, mixed position, floating and anti-slip control. Four operating levers. External tappings: 4, double acting situated between the lift arms.
Dimensions	Length of lower links: 855 mm –"– top link: 585 – 825 mm –"– lift rods: 775 – 925 mm Vertical adjustment: – 60 – 300 mm above ground in down position 760 – 1000 mm above ground in top position.
Drawbar	Swinging drawbar. Height above ground 380/457 mm. Vertical distance relative to p.t.o. 150/227 mm below. Change by turning drawbar end. Horizontal distance from rear axle 950 mm. Horizontal distance relative to p.t.o. 395 mm behind. Lateral adjustment 270 mm from centre position. Pivot position relative to rear wheel centre 100 mm forward. Coupling pin diameter 30 mm. Permissible vertical load 5 kN.
Hitch (Continental type)	Height above ground 817 mm. Vertical distance relative to p.t.o. 210 mm above. Hitchhole diameter 38 mm. Horizontal distance from rear axle 850 mm, position relative to p.t.o. 295 mm. Permissible vertical load 0.5 kN.

Steering

Make	ORSTA
Type	Hydrostatic, hydraulic pump directly driven by the engine with oil supply from hydraulic tank. Working pressure 10.0 MPa (max), delivery rate at 800 rev/min 8 dm^3/min. Filter, metal screen, cleaning period 700 h. Oil cooler in front of the radiator.

Brakes

Make	Fortschritt
Type	Four-wheel braked, hydraulically actuated with hydraulic support, dry drum brakes mounted before final drive on rear axle and after final drive on front axle. Operated by single pedal, changed to left-hand side or right-hand side by separate hand lever. Parking brake with hand lever operated band brake on rear axle drum brakes. Trailer braking take-off for air brakes.

Wheels

Steering and driving wheels	Two at front. Type: Pneumatic, multirib 16-20/10-ply rating, cross-ply tyres. Maximum permissible mass on each tyre 1950 kg at 150 kPa pressure. Track width 1835 mm.
Driving wheels	Two at rear. Type: Pneumatic, multirib 18.4-34/14-ply rating, cross-ply tyres. Maximum permissible mass on each tyre 3000 kg at 220 kPa pressure. Track width 1766, 1790 mm changed by reversing wheel centres.

Wheelbase 2790 mm

Seat

Make and model	Fortschritt 320/323.
Type	Pneumatic suspension, adjustable to driver's mass. Damping by hydraulic shock absorber. Range of adjustment 132 mm forward and backwards.

Protective cab

Make	Fortschritt
Model	320/323

Number of grease points

Whole tractor	18

Overall dimensions

	Length, m	Width, m	Height*, m
With ballast	4.87	2.25	3.01
Without ballast	4.66	2.25	3.01

Minimum ground clearance 335 mm to underside of front axle.

* Measured to top of exhaust pipe

Lighting The lighting system is in accordance with the national DDR regulations for road traffic.

	Height above ground of centre mm	Size dia mm	Distance from outside edge of tractor to centre mm
Head lights	1085	135	365
Side lights	940	65	320
Rear lights	1450	135	185
Reflectors	870	85	185

Repairs during the test

Gearbox, reduction gear. Forkshifter repared.

Conditions During test

Masses	Tractor without driver but with tanks full	
Without ballast	Part of mass on front wheels	2300 kg
	Part of mass on rear wheels	3385 kg
	Total mass	5685 kg
With ballast	Part of mass on front wheels	2800 kg
	Part of mass on rear wheels	4155 kg
	Total mass	6955 kg
Ballast	Front: Frame and front weights	total 380 kg
	Rear: Weights	total 240 kg
	Liquid	total 650 kg
Track setting	Front: 1835 mm	
	Rear: 1766 mm	

Fuel and lubricants used in tests

Diesel fuel to Swedish Standard SS 155432. Density at 15°C 0.840 g/cm^3. Viscosity at 20°C 3.2 mm^2/s. Cetane number 49.
Engine oil. According to API CC, MD 302 (SAE 30)
Transmission oil. According to API GL-4, HLP 68 (SAE 20W/20)
Front axle: Transmission oil acc. to API GL, GL 125 (SAE90)

Compulsory tests

1. Main power take-off performance

Date and location of tests: 1984-03-21–22, Ultuna, Uppsala, Sweden
Type of dynamometer: Eddy current, make Zöllner

Power	Speed rev/min		Fuel consumption				Specific energy	
kW	Engine	p.t.o.	l/h	kg/h	g/MJ	kg/kWh	MJ/l	kWh/l
Maximum power*								
At 2-hour test								
67.7	1833	1000	19.74	16.58	68.0	0.245	12.35	3.43
At rated engine speed								
66.7	1800	982	19.49	16.37	68.1	0.245	12.33	3.42
Varying loads, *the governor hand lever in the position corresponding to maximum power at full load								
(1) 85% of the torque at max. power								
58.9	1877	1024	17.40	14.62	69.0	0.248	12.18	3.38
(2) Unloaded								
0.8	1963	1071	5.37	4.51	– –	– –	– –	– –
(3) 50% of the torque defined in (1)								
30.1	1923	1049	10.83	9.10	84.0	0.302	10.00	2.78
(4) Maximum power								
67.4	1833	1000	19.71	16.56	68.2	0.246	12.32	3.42
(5) 25% of the load defined in (1)								
15.2	1947	1062	8.00	6.72	122.5	0.441	6.86	1.90
(6) 75% of the load defined in (1)								
44.8	1903	1038	14.01	11.77	73.0	0.263	11.51	3.20

* Cooling fan constant working (usually intermittent working)

Standard specific fuel consumption:
69.0(0.248)/84.0(0.302) g/MJ(kg/kWh)

No load, maximum engine speed		1963 rev/min
Torque at maximum power		351 Nm
Maximum torque		426 Nm at 1199 rev/min engine speed
Mean atmospheric conditions:	Temperature	17°C
	Pressure	102.5 kPa
	Rel. humidity	28%
Maximum temperatures:	Coolant	92°C
	Engine oil	115°C
	Fuel	28°C
	Engine air intake	22°C

2. Drawbar performance

Date of tests: 1984-09-13, 1984-10-04/05/09
Type of track: Tarmac
Height of drawbar above ground

unballasted	810 mm
ballasted	810 mm

Tyre inflation pressure:

unballasted	rear, front	150 kPa
ballasted	rear, front	150 kPa

Results see Table 1.
Engine oil consumption during ten hours duration of test (iii and iv) was 248 g/h. Test (iv) was carried out with additional ballast. Power, speed, slip and fuel consumption do not correspond to test (ii) gear I 2.

Table 1. Drawbar performance

Gear		Power	Draw-bar pull	Speed		Engine speed		Wheel slip	Spec. fuel consumption		Spec. energy		Temperature			
													Coo-lant	Fuel	Engine oil	Transm. oil
		kW	kN	m/s	km/h	rev/s	rev/min	%	g/MJ	kg/kWh	MJ/l	kWh/l	°C	°C	°C	°C
i) Maximum power (unballasted tractor)																
I	3T	43.4	45.5	0.95	3.42	31.0	1860	15.3	89.5	0.322	9.38	2.60	91	36	113	44
II	2	44.5	45.0	0.99	3.56	31.0	1858	15.2	90.5	0.326	9.28	2.58	87	33	114	42
II	3T	53.7	44.8	1.20	4.32	30.0	1800	11.4	84.3	0.304	9.96	2.77	94	26	109	31
I	3	54.5	43.1	1.26	4.54	30.0	1800	10.4	83.0	0.299	10.12	2.81	93	25	107	25
III	1T	56.4	40.2	1.40	5.04	30.0	1800	8.2	80.8	0.291	10.39	2.89	86	33	114	46
I	4T	56.3	35.2	1.60	5.76	30.0	1800	7.1	80.9	0.291	10.39	2.88	91	32	112	43
II	3	55.4	34.1	1.62	5.83	30.0	1800	7.5	82.2	0.296	10.21	2.84	91	30	112	38
III	1	58.1	31.1	1.87	6.73	30.0	1800	5.9	78.4	0.282	10.71	2.98	91	28	101	41
II	4T	53.6	26.6	2.02	7.27	30.0	1800	5.2	85.0	0.305	9.89	2.75	88	28	110	34
I	4	57.4	26.3	2.18	7.85	30.1	1805	5.2	82.2	0.296	10.22	2.84	95	30	112	38
ii) Maximum power (ballasted tractor)																
I	1T	21.5	60.8	0.35	1.26	31.8	1911	15.3	111.0	0.400	7.56	2.10	91	29	104	29
II	1T	26.4	59.8	0.44	1.58	31.6	1899	15.8	98.9	0.354	8.50	2.36	94	30	108	34
I	1	27.0	59.7	0.45	1.62	31.6	1898	15.2	104.8	0.377	8.02	2.23	88	30	108	36
II	1	33.8	59.2	0.57	2.05	31.5	1888	14.4	94.5	0.340	8.89	2.47	88	28	110	40
I	2T	36.3	59.5	0.61	2.20	31.2	1874	15.2	93.3	0.336	9.00	2.50	93	30	112	42
II	2T	44.8	59.1	0.76	2.74	31.2	1871	15.0	89.8	0.323	9.35	2.60	95	29	110	42
I	2	48.8	58.8	0.80	2.88	31.1	1868	14.2	85.8	0.309	9.80	2.72	87	32	112	43
I	3T	53.4	56.0	0.95	3.42	30.1	1806	12.0	85.2	0.307	9.85	2.74	89	36	115	45
II	2	54.8	55.9	0.98	3.53	30.0	1798	12.1	83.1	0.299	10.11	2.81	95	33	112	44
II	3T	54.0	43.9	1.23	4.43	30.0	1800	7.7	84.3	0.304	9.96	2.77	90	38	111	43
I	3	55.3	42.9	1.29	4.64	30.0	1799	8.0	82.4	0.296	10.20	2.83	94	39	112	42
III	1T	56.9	40.1	1.42	5.11	30.2	1809	7.2	80.1	0.288	10.48	2.91	96	38	112	41
I	4T	56.1	35.0	1.60	5.76	30.0	1800	5.9	81.2	0.292	10.34	2.87	96	39	112	41
II	3	57.2	34.9	1.64	5.90	30.0	1801	6.0	79.7	0.287	10.59	2.93	94	39	113	41
III	1	57.7	30.8	1.87	6.73	30.1	1805	5.5	78.9	0.284	10.64	2.96	97	26	106	28
II	4T	54.2	26.7	2.03	7.31	30.2	1811	5.0	84.1	0.303	9.99	2.78	88	38	114	44
I	4	55.6	26.2	2.12	7.63	30.2	1809	4.7	81.9	0.295	10.27	2.85	87	38	113	44
iii) Five hour test at 75% pull at maximum power																
I	4	44.1	19.6	2.24	8.08	31.4	1885	3.6	89.4	0.322	9.40	2.61	89	47	116	55
iv) Five hour test corresponding to 15% wheelslip																
I	2	50.5	60.8	0.83	2.99	31.1	1868	10.4	– –	– –	– –	– –	90	– –	117	55

Atmospheric conditions

	Temperature	Relative humidity	Pressure
	°C	%	kPa
Maximum power			
unballasted tractor	10–15	83	101.6
ballasted tractor	13–17	86	101.2
Five hour tests			
at 75% pull at			
max power	11–14	97	101.3
at max. pull	10–20	66	99.9

3. Turning space and turning circle

Details of wheel equipment: As in specification without ballast
Track of wheels: Front 1835 mm
Rear 1766 mm

	With brakes*		Without brakes	
	Left-hand m	Right-hand m	Left-hand m	Right-hand m
Radius of turning space	6.49	6.54	6.93	6.96
Radius of turning circle	6.32	6.37	6.76	6.79

* not locked

4. Location of centre of gravity

Height above ground	929 mm
Distance forward from the vertical plane containing the axis at rear wheels	1128 mm
Distance from the median plane	1 mm (to the right)

5. Braking

Date of tests: 1984-09-12, 1984-10-11/12
Tractor masses during brake tests:
Front: 3000 kg Rear: 6000 kg Total: 9000 kg

Type 0 (ordinary cold service braking device performance) test

Speed before application of brakes:
ballasted tractor 32.7 km/h, unballasted tractor 33.2 km/h

Ballasted	Braking device control force,	N	650*	230	150	115	85
	Mean deceleration,	m/s^2	4.00	3.50	3.00	2.50	2.00
Unballasted	Braking device control force,	N	560*	340	195	125	75
	Mean deceleration,	m/s^2	5.35	5.00	4.00	3.00	2.00

* not locked

Type I (fade) test

Braking device control force,	N	630*	595	480	200	95
Mean deceleration	m/s^2	4.84	4.22	3.56	3.32	2.00

* not locked

Brakes were heated by: Towing
Comments on deviation and vibration: None

Parking braking device test

		18 per cent slope		12 per cent slope with trailer of 3000 kg	
		Up	Down	Up	Down
Braking device control force	N	320	120	260	140

6. Measurement of external noise level

Date of test: 1984-09-14
Type of sound level meter: Brüel & Kjær 2204
Type of track: Tarmac

Result of tests:

Gear: Group III Gear 4
Travelling speed before acceleration: 25 km/h
Sound level: 85 dB(A)

7. Noise measurement at the driver's ear

Date of test: 1984-09-13
Type of sound level meter: Brüel & Kjær 2204
Type of track: Tarmac
Cab fitted: Yes

Result of tests

Gear	Drawbar pull at which the tractor develops the maximum sound level	Measured travelling speed		Sound level	
	kN	m/s	km/h	dB(A)	N
II 4T*	18.6	2.14	7.7	85	– –
I 4	27.5	2.09	7.5	85	83.5
II 4T*	light load	2.33	8.4	81	– –
Top gear	light load	9.25	33.3	84.5	– –

* Gear corresponding to the nominal travelling speed nearest to 2.08 m/s (7.5 km/h)

8. Power lift and hydarulic pump performance

Date of tests: 1984-03-23/26/28

Hydraulic fluid

Make and type: The same as transmission
Viscosity: Min. 7.8 mm^2/s (cSt) at 100°C
Type of linkage lock for transport: Mechanical

Power lift

	Height above ground in down position	Vertical movement	Maximum force exerted through full range	Corresponding pressure of hydraulic fluid	Moment about rear axle	Tilt angle of mast
	mm	mm	kN	MPa	kNm	degrees
At the hitch points	189	727	29.8	15.5	34.2	– –
On the frame	189	885	20.3	15.5	35.7	14.5

Temperatur of hydraulic fluid at start of test 53°C

* Tilt angle of mast from vertical position to uppermost position 11°

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

mm	–357	–315	–200	–100	±0	+100	+200	+300	+400	+412	+500	+528
Lifting forces at the hitch points												
kN	– –	29.8	31.1	33.8	34.2	35.3	35.3	35.8	34.2	33.8	– –	– –
Lifting forces at the test frame												
kN	26.3	– –	27.6	28.9	28.2	27.1	26.3	25.4	23.2	– –	21.2	20.3

Hydraulic pump performance

Tapping point	Double acting external tapping
Opening pressure of the relief valve	14.8 MPa
Sustained pressure with relief valve open	17.2 MPa
Pump delivery rate at rated engine speed:	
at minimum pressure	0.78 l/s (47.5 l/min)
Hydraulic power at:	
90 per cent of relief valve setting	4.8 kW
corresponding delivery rate	0.31 l/s (18.5 l/min)
pressure	15.5 MPa
Maximum hydraulic power:	10.1 kW
corresponding delivery rate	0.69 l/s (41.3 l/min)
pressure	14.7 MPa
Temperature of hydraulic fluid	60 – 68°C

Table 2. Linkage geometry when connected to the standard frame

Projected length in side view		
Lower links	855 mm	
Lift arms	300 mm	
Lift rods	835 mm	
Toplink	673 mm	
Distance of lift rod connection point from pivot point of lower link	470 mm	
The following dimensions are given relative to the rear wheel centre line, situated 760 mm above the ground level		
Lower link pivot point	294 mm behind	259 mm below
Top link pivot point	471 mm behind	156 mm above
Lift arm pivot point	185 mm behind	415 mm above
Maximuim and minimum height of lower link hitch points	155 mm above	571 mm below
Height of lower link hitch points when locked in transport position	174 mm above	—

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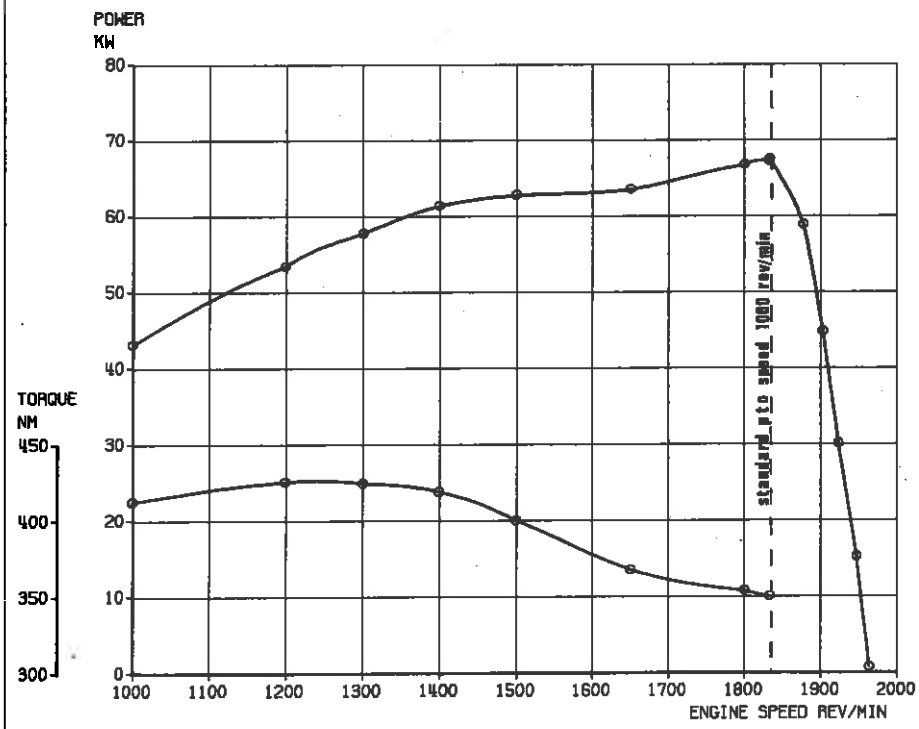
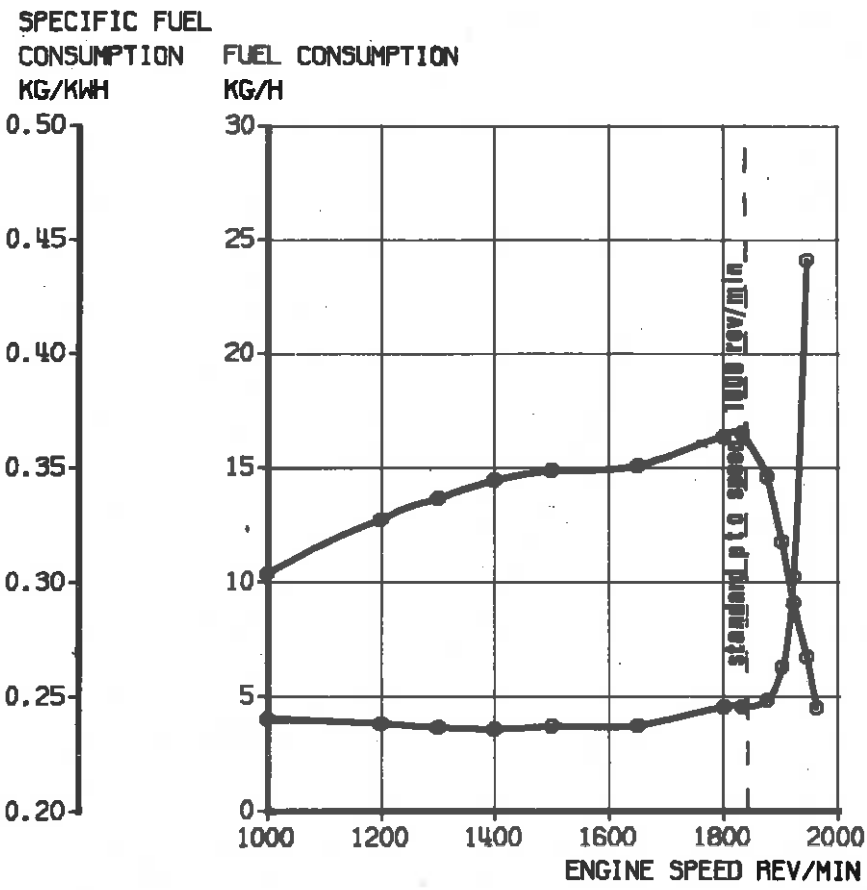
NATIONAL MACHINERY TESTING INSTITUTE

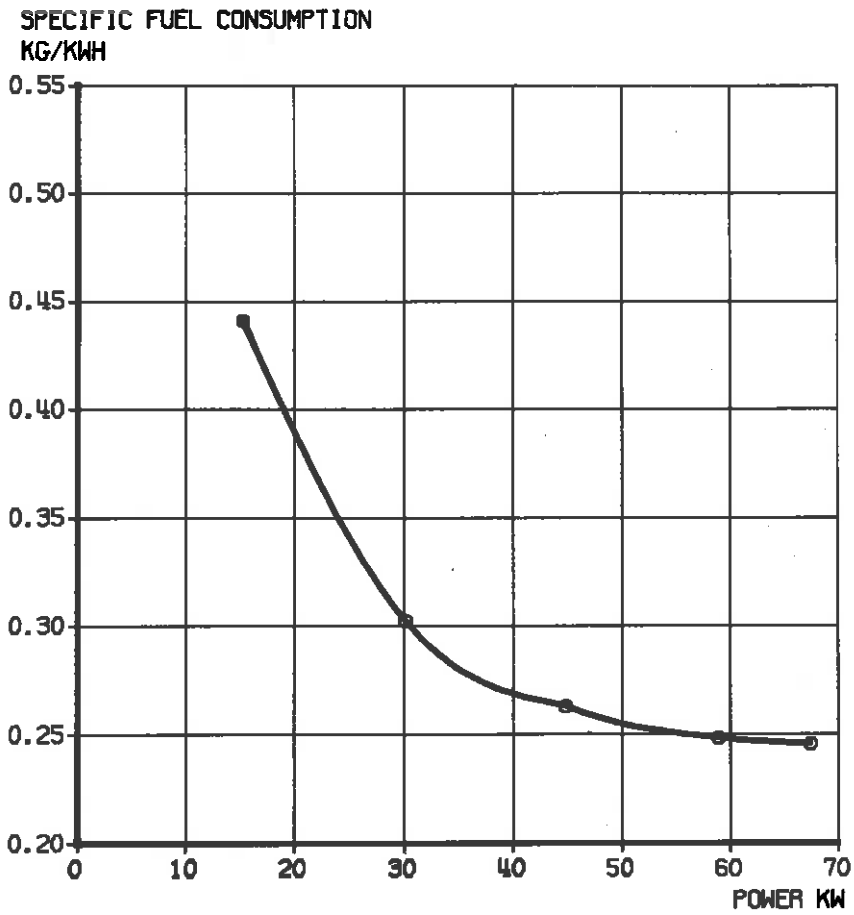
National Machinery Testing Institut	**Power take-off test Fortschritt ZT 323 A**	Figure 1



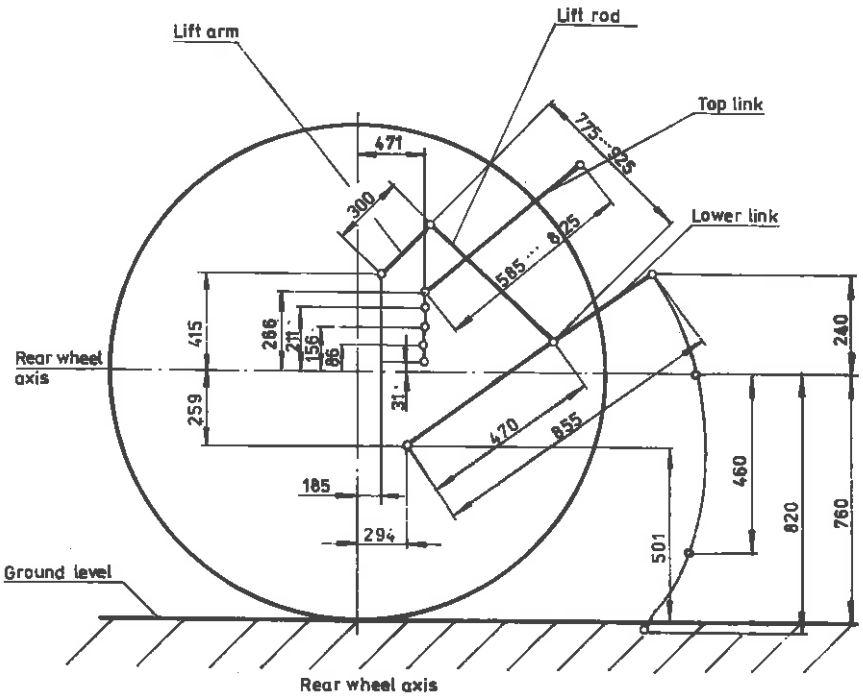
National Machinery Testing Institut	**Power take-off test Fortschritt ZT 323 A**	Figure 2



National Machinery Testing Institut	**Power take-off test Fortschritt ZT 323 A**	Figure 3



National Machinery Testing Institut	**LINKAGE GEOMETRY when connected to the standard frame**	Figure 4



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