Institut za mehanizaciju poljoprivrede - Zemun

O.E.C.D. Report N° 896
Printed: August 1984

Report on Test in Accordance with O.E.C.D. STANDARD CODE for the Official Testing of Agricultural Tractors



Agricultural tractor IMT 5106

Manufactured by: IMT – Industrija Mašina i Traktora
Novi Beograd – Yugoslavia

Date of test: November – December 1983

This Bulletin is based on engineering tests in accordance with the O.E.C.D. STANDARD–CODE for the Official Testing of Agricultural Tractors.

It does not contain an evaluation of the performance of the tractor on practical work.

This Report has been aporoved by the O.E.C.D. Co–ordinating Centre (C.E.M.A.G.R.E.F., France) as being in accordance with the O.E.C.D. STANDARD – CODE.

Date of Approval: July 10th, 1984

All rights (including the right of translation, reprint and photomehanical copying — also of excerpts) reserved by: Institut za mehanizaciju poljoprivrede, 11080 Zemun, Post box 41

Printed in Yugoslavia

TABLE OF CONTENTS

	Page
Specification of tractor	1 to 1o
Conditions during test	11
Fuel and lubricants used in tests	11
COMPULSORY TESTS	
(1) Main power-take-off performance	12 to 15
(2) Drawbar performance on a tarmacadam track	16 to 18
(3) Turning space and turning circle	19
(4) Location of centre of gravity	19
(5) Braking performance	2o
(6) Ambient noise emitted by the tractor	21
(7) Noise at the driver's ear level	21
(8) Power lift and hydraulic pump performance	22 to 25

Tractor manufacturer:	IMT - Industrija Mašina i Traktora Novi Beograd - Yugoslavia
Submitted for test by:	The manufacturer
Selected by:	Representatives of IMP
Place of running-in:	Laboratory of IMP
Duration of running-in:	cca 65 hours

SPECIFICATION OF TRACTOR

TRACTOR

Make:	IMT
Model:	IMT - 5106
Type:	Standard-unit construction, four wheels, all wheels driven
Serial N°:	301 000 123

ENGINE

Make:	PERKINS LTD., acc.to IMT specification
Model:	A 6.354.4
Type:	Four stroke, water cooled diesel, direct injection
Serial N°:	TW 80176o673797 J
Cylinders:	6, vertical, in-line, bore 98,4 mm, stroke 127 mm, displacement 5795 cm^3, compression ratio 16:1, overhead valves replaceable dry cast iron cylinder liners
Fuel system:	CAV membrane type feed pump with hand primer, camshaft driven, three CAV-DONIT paper element fuel filters, one on the suction side and two on the pressure side of feed pump, all filters with metalic sediment bowls; fuel tank capacity 215 l; CAV distributor type DPA 3269F 952 injection pump, Serial N° R 36599 RZ, manufacturers production setting 59 mm^3 at rated engine speed and full load; injection timing 28° before T.D.C.;

	CAV injector nozzles, model 5281636 GD, injection pressure 215 bar.
Governor:	CAV mechanical, all range, insorporated in fuel injection pump, governed range of engine speed 48o to 24oo rev/min, rated engine speed 225o rev/min
Air cleaner:	Main DONALDSON-TPR dry paper element filter, model FAG o2-o2oo, with maintenance indicator; Pre-cleaner DONALDSON, centrifugal, model PBH oo-o254
Lubrication system:	Forced feed from gear pump with strainer in sump, full flow replaceable paper element filter; total oil capacity 15,5 l; recòmmended oil quality acc. to MIL-L-21o4 C recommended oil viscosities: SAE 3o above 25°C SAE 2o between 0°C and 25°C SAE 1o below 0°C Recommended oil and filter change interval 2oo h, first shange after 5o hours
Cooling system:	Water cooling with impeller pump; pump capacity 194 l/min at 225o rev/min engine speed; pressurized system set to o,4-o,5 bar overpressure; fan with 6 blades, 5o8 mm diameter; coolant capacity 3o l; temperature control by thermostat
Starting system:	Electrical LUCAS solenoid-engaged starter motor M5o, 12 V, 2,95 kW heating plug in intake manifold as aid for cold starting
Exhaust:	Vertical, above banuet on the right hand side of the engine, silencer DONALDSON MOM o9-o158, 819 mm long, with elyptic cross-section 21o/292 mm; height of exhaust pipe above ground 272o mm, mouth shoving upwards with 88 mm dia.

Electrical system:	12 Volt, negative earth; LUCAS alternator 17 ACR, 12 V, 28 A; one lead acid battery 180 Ah 20-hour rating

TRANSMISSION

Clutch:	Fichtel & Sachs GN 380 KR; dry, single disc type clutch, disc dia 380 mm; mechanically pedal operated
Gearbox:	Own make; mechanical, 5 forward and 1 reverse gear; 1st, 2 nd and 4 th gear with sliding gears, 3rd and 5th gear synchronized; low and high speed selector of epicyclic (planetary) type; N° of speeds (totally) 10 forward 2 reverse
Rear axle and final drive:	Own make; Bevel gear drive with crown wheel and pinion; bevel gear type differential, with lock, pedal operated, self disengaging; planetary final drives in common housing with the rear axle
Driven front axle:	Own make; driven by universal joint shaft situated on the left hand side of gearbox; bevel gear drive with crown wheel and pinion; final reduction gear of epicyclic type; Note: 1° Front wheel drive is propelled through a free wheel device, which activates this drive at a determinated slip rate of rear wheels. For new tyres and drive in line this slip rate is about 5 %. 2° Front wheel drive is disconnected when reverse gears are engaged. the maximum tilting angle of front axle is 15° to either side;

Oil capacity: Gearbox, rear axle and final drives (with power lift-see page 5) 6o l

Front axle 9 l;
Front final drives 2x3 l

Recommended oil quality: Gearbox, rear axle and final drives:
Hydraulictransmission oil JOHN DEERE J14 B, MF M-1135, or engine oil acc.to MIL-L-21o4 C
Recommended oil changing interval 8oo h;
oil filter cleaning interval 8oo h;

Front axle and front final drives:
hypoid oil SAE 9o acc.to MIL-L-21o5 B

Total ratios and speeds

Gear	Total ratio engine driving wheel	Nominal travelling speed at rated engine speed	at standard p.t.o. speed 54o rev/min	looo rev/min
-	-	km/h	km/h	km/h
Forward speeds				
1 low	179,9o	3,91	3,49	3,79
2 low	129,38	5,38	4,8o	5,21
3 low	1o6,98	6,5o	5,8o	6,31
4 low	84,1o	8,27	7,38	8,o2
5 low	74,8o	9,3o	8,29	9,o2
1 high	59,3o	11,73	1o,46	11,37
2 high	43,13	16,13	14,39	15,64
3 high	35,65	19,51	17,4o	18,92
4 high	28,o2	24,82	22,14	24,o7
5 high	24,93	27,9o	24,89	27,o6
Reverse speeds				
low	162,8o	4,27	3,81	4,14
high	54,2o	12,83	11,45	12,45

Calculated with the rolling radius 82o mm, given in the tyre manufacturer`s specification

Power take-off

Main p.t.o.

Independent p.t.o.;
at rear of tractor in the median plane;
engine driven through a separate wet (in oil bath) multiplate clutch, located in the central housing:
operated by hand lever situated on the right side of the driver's seat:
height above ground 693 mm
(with rear wheel static radius 82o mm)
distance from rear axle center line:
horizontal 5o8 mm behind
vertical 127 mm below
direction of rotation clockwise, viewed from tractor rear;

two speeds are preselectable by changing the p.t.o. shaft end (the p.t.o. outlet is done with two coaxial shafts):

54o rev/min at 2oo7 rev/min engine speed (6o5 rev/min at 2250 rev/min engine speed) is available through the outer shaft with the shaft end 29x34,9x8,7 mm ($1\frac{3}{8}$"), 6 splines, acc.to ISO 5oo/1 and JUS M.L1.6o1;

looo rev/min at 2182 rev/min engine speed (1o31 rev/min at 2250 rev/min engine speed) is available through the inner shaft with the shaft end 34,9 mm ($1\frac{3}{8}$"), 21 splines, acc.to ISO 5oo/1 and JUS M.L1.6o1;

Power lift

Hydraulic system:

Own make;
Four cylinder piston pump of boxer type with 38 l/min delivery at 2250 rev/min engine speed, located in the central housing, driven by the p.t.o. shaft front end, with control valve at suction side;
control valve for lifting and sinking;

Power lift continuation	draught control, position control, both stepless mixable, floating positions; opening pressure of relief valve 175 bar, sustained pressure by the opened relief valve 185-2oo bar; two external single acting rams with 63 mm bore and 245 mm stroke; two paars of external oil tappings, single or double acting, at rear of tractor; Hydraulic oil tank in common with gearbox, oil capacity 6o l, max lo l may be taken off trough oil tappings when tractor is mooving, 18 l when tractor is stationary; Oil filter on the suction side of the power lift pump is maintained every 8oo hours by washing.
Implement linkage:	Three point linkage category II (category III linkage available on request); lift rods with fixed length 765 mm; lifting range above ground from 3oo mm to 97o mm; projected lower link length 84o mm; (rear wheels static radius 82o mm)
Pull atachment	
Swinging drawbar:	Height above ground 385 and 495 mm adjustable by turning drawbar; diameter of clevis hole 37 mm (clevis with 36 mm diameter); swingable about 23o mm to either side with fixing points in the median position and in four positions in 5o mm steps to either side; fixing of drawbar with two clevis; distance of clevis hole centre from rear axle axis: horizontal 917 mm and 832 mm behind vertical 325 mm and 435 mm below from p.t.o. shaft end: horizontal 4o9 mm and 324 mm behind vertical 198 mm and 3o8 mm below pivot point 7 mm behind rear axle;

Trailer hitch:	Fixted; height above ground 822, 857, 892, 927 and 962 mm; diameter of clevis hole 31 mm (clevis with 3o mm diameter) distance of clevis hole centre from rear axle axis: horizontal 5o6 mm behind vertical 2,37,72,1o7 and 142 mm above from p.t.o. shaft end: horizontal 2 mm in front vertical 129,164,199,234 and 269 mm above
Semitrailer hitch:	Fixted; max.permissible vertical load 3o KN; height above ground 495 mm; vertical connection pin 58 mm long, 43 mm dia distance of pin top surface from rear axle axis: horizontal 49o mm behind vertical 325 mm below from p.t.o. shaft end: horizontal 18 mm in front vertical 198 mm below
Holed bar:	Optional equipment, fitted on the tested tractor; Fitted on the clevis of the lower links; length between the ball joints 66o mm; thickness of the bar 25,4 mm; one hole in the median position and 4 holes on either side in 54 mm steps; all holes 2o mm diameter; height above ground adjustable by power lift within the range from 3oo to 97o mm continuoslly distance of centre hole with lower links in horizontal position: from rear axle: horizontal 1o55 mm vertical −18o mm from p.t.o. shaft end horizontal 547 mm vertical −53 mm (rear wheels static radius 82o mm)

Steering	DANFOSS; hydrostatic steering, model OSPB 1oo ON, with own oil circuit; engine driven gear pump with 6,66 cm^3/rev delivery, working pressure 12o bar; double acting ram with 5o mm bore and 28o mm stroke; oil capacity 13 l; recommended oil - GALAX D.A.C., or oil for automatic transmission; oil changing interval 8oo h; strainer in hydraulic reverse line, every 4oo hours maintained by waching;
Brakes	
Service brake:	model G.O.I.M.P.D. 8,75x7,4 (2o°) hydraulically acting disc type brake on the rear differential half shafts, in oil bath, with six discs on each side, disc diameter 222,2/187,9 mm
Steering brakes:	Divided pedals of service brake, for normal use locked together
Parking brake:	Service brake, but mechanically acting, hand lever operated
Trailer brake:	Optional equipment, fitted on the tested tractor; make PPT; single line air brake, operated by pedal mounted valve; compressor with 75 mm bore 34 mm stroke, displacement 15o cm^3, driven by the engine at 28oo rev/min speed at rated engine speed (225o rev/min); compressor delivery o,29 m^3/min (at atmospheric pressure) at rated engine speed; pressure control valve with filter and coupling for tyre pressurizing, operating within 4,8-5,3 bar (opening pressure); compressed air tank with 2o l capacity; standardized coupling head

Wheels

Front wheels:	Steering and driving; two pneumatics 12,4-24 AS, 6 ply, diagonal tyre casing; maximum permissible load per tyre 132o daN at 1,8 bar inflation pressure and 3o km/h; track width adjustable from 16oo to 21oo mm in 1oo mm steps by turning discs and wheels; rims W1o-24
Rear - wheels	driving; 2 pneumatics 18,4-38, 8 ply, diagonal tyre casing; maximum permissible load per tyre 238o daN at 1,1 bar inflation pressure and 3o km/h; track with adjustable from 17oo to 22oo mm steplessly; cast iron wheel discs; rims W14L - 38
Wheel base:	275o mm
Seat	Own make; upholstered seat with back rest; spring and shock absorber with possible adjustance from 6o to 12o daN; for and oft adjustable about 125 mm
Cab	Own make; cab with frame drivers platform with six elastic supports (two in front-connected to the gearbox housing, four at rear-connected to the rear axle housing); windows with safety glasses; back and side windows may be opened
Number of grease points:	with grease 17 with oil 6

Dimensions

Total length: 4816 mm with horizontal lower links, with and without front ballast (two front weights are fixed in the middle of the carrier)

Maximum width: 2565 mm with maximum rear track setting (21oo mm) with and without rear ballast

Total height: 282o mm to the top of the cab

Ground clearance: 38o mm below the front axle

Lighting equipment: Electrical, 12 Volt, negative earth

		Height above ground of centre mm	Size mm	Distance from outside edge of tractor to centre mm 1)
Head lights	2)	12oo	Ø 14o	86o
Side lights				
front	3)	181o	114 x 66	24o
rear	4)	182o	114 x 94	33o
Position lights				
front	3)	181o	114 x 66	24o
rear	4)	182o	114 x 94	33o
Stop lights	4)	182o	114 x 94	33o
Reflectors	5)	255o	Ø 14o	41o

1) with rear wheel track setting 17oo mm
2) unrestricted beam angle of Head lights in plan view 32°
3) in common box on the fender's front panel
4) in common box on the fender's rear panel
5) two reflectors at the rear of the cab

Running-time meter: Mechanical with tachometer combined driven by the engine; reference engine speed for one really counted hour 15oo rev/min

TEST CONDITIONS

Masses (as during drawbar, brake and noise tests)

		Without driver	With driver
Without ballast:	front	1990 kg	2005 kg
	rear	3330 kg	3390 kg
	total	5320 kg	5395 kg

Note: Two weights, 30 kg each, are fixed to the front ballast carrier

Front ballast:	additional eight weights, 30 kg each	8 x 30	240 kg
Rear ballast:	3 weights per wheel, one with 45, two with 47,5 kg weight	2 x 45 + 4 x 47,5	290 kg
	water in tyres		710 kg

With ballast:	front	2380 kg	2395 kg
	rear	4180 kg	4240 kg
	total	6560 kg	6635 kg

Track setting

front	1600 mm
rear	1700 mm

FUELS AND LUBRICANTS USED IN TESTS

Fuel: INA Diesel-fuel D_2 in all tests

Specific gravity at 15°C	0,829 kg/l
Cetane number	56
Viscosity	5,0 cSt at 15°C

Engine oil: Galax Super (S3) SAE 30 (11 cSt at 98,9°C)

Transmission and power lift oil:

rear: Galax Traktol HT (8,7 cSt at 98,9°)
front: Hena hypoid oil SAE 90

COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 14.November 1983. Institute for Agricultural Mechanization - Zemun

Type of dynamometer: Hydraulic brake SCHENCK U1-3o

Power	Speed engine	Speed p.t.o.	Fuel consumption hourly	Fuel consumption hourly	Fuel consumption specific	Specific energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
	MAXIMUM POWER					
	At 2-hour test					
72,9	225o	1o31	24,42	2o,2o	277	2,99
	At standard p.t.o. speed					
72,6	2182	1ooo	23,69	19,59	27o	3,o6
	At speed recommended by the manufacturer for drawbar work					
72,9	225o	1o31	24,42	2o,2o	277	2,99
	PART LOADS					
	Governor hand lever in position giving maximum power					
(i) 85 % of the torque at maximum power						
63,2	2294	1o51	21,24	17,57	278	2,98
(ii) unloaded						
1,5	2422	111o	7,19	5,95	-	-
(iii) 5o % of the load defined in (i)						
32,2	2339	1o72	13,2o	1o,	339	2,44
(iv) maximum power						
72,9	225o	1o31	24,42	2o,2o	277	2,99
(v) 25 % of the load defined in (i)						
16,4	2385	1o93	9,62	7,96	485	1,7o
(vi) 75 % of the load defined in (i)						
47,9	2318	1o62	17,o9	14,13	295	2,8o

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
Governor setting giving standard p.t.o. speed at full load						
(i) 85 % of the torque at full load						
62,9	2226	1o2o	2o,61	17,o5	271	3,o5
(ii) unloaded						
1,4	2363	1o83	6,92	5,72	-	-
(iii) 5o % of the load defined in (i)						
32,3	2291	1o5o	12,61	1o,43	323	2,56
(iv) full load						
72,6	2182	1ooo	23,69	19,59	27o	3,o6
(v) 25 % of the load defined in (i)						
16,6	2344	1o74	9,55	7,9o	476	1,74
(vi) 75 % of the load defined in (i)						
47,6	225o	1o31	16,71	13,8o	29o	2,85

STANDARD SPECIFIC FUEL CONSUMPTION: 278; 339
271: 323 g/kWh

No load, maximum engine speed: 243o rev/min

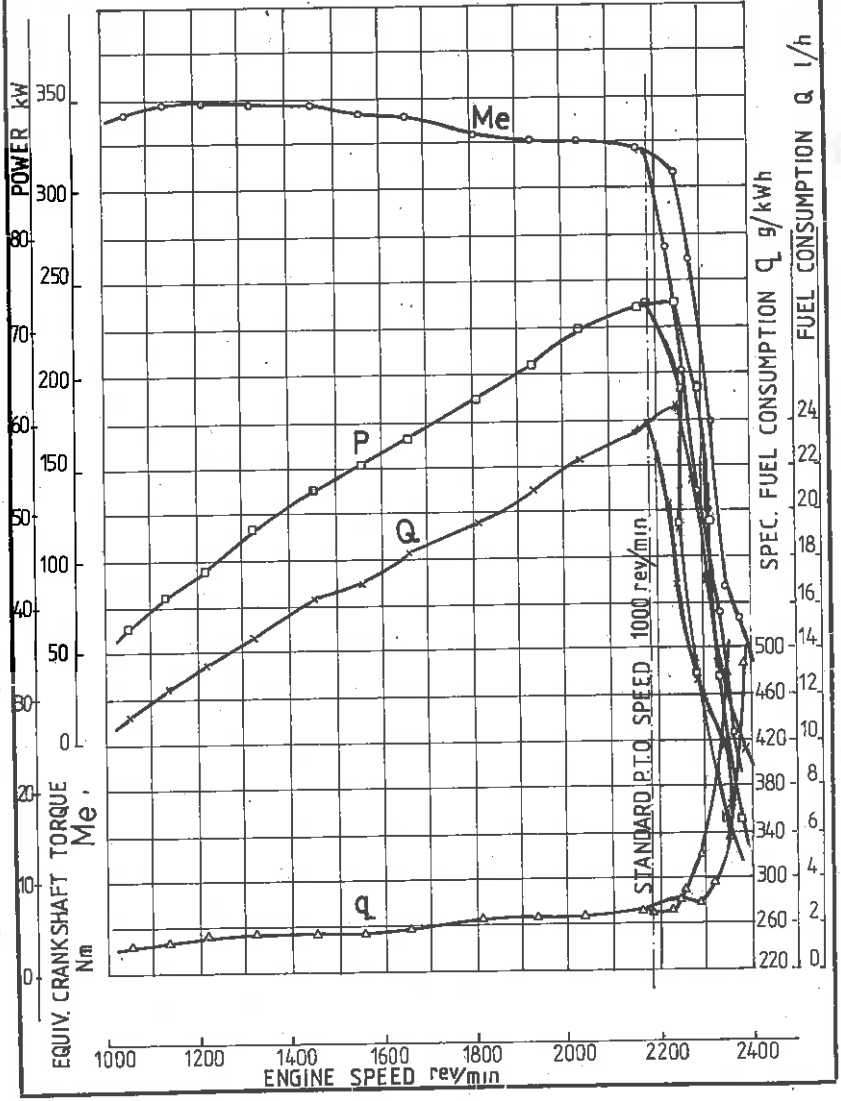
Equivalent crankshaft torque
at maximum power: 3o9 Nm

Maximum equivalent
crankshaft torque: 349 Nm
at 1213 rev/min engine speed

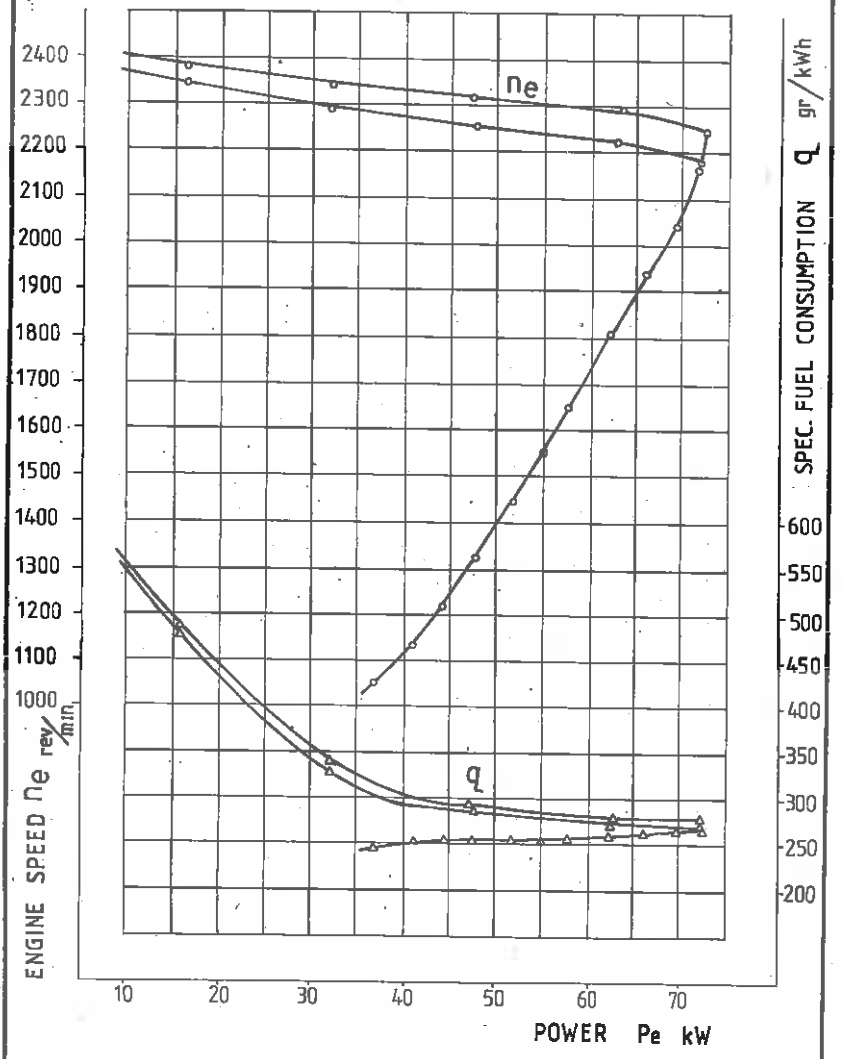
Mean atmospheric conditions
- temperature: 18°C
- pressure: 1oll mbar
- humidity: 61 %

Maximum temperatures
- coolant: 9o°C
- engine oil: 94°C
- fuel: 22°C
- air intake: 21°C

IMT-5106


POWER kW
EQUIV. CRANKSHAFT TORQUE Me, Nm
SPEC. FUEL CONSUMPTION q g/kWh
FUEL CONSUMPTION Q l/h
ENGINE SPEED rev/min
STANDARD P.T.O. SPEED 1000 rev/min
Me
P
Q
q
350
300
250
200
150
100
50
0
80
70
60
50
40
30
20
10
0
500
460
420
380
340
300
260
220
24
22
20
18
16
14
12
10
8
6
4
2
0
1000
1200
1400
1600
1800
2000
2200
2400

IMT-5106


ne
q
ENGINE SPEED ne rev/min
SPEC. FUEL CONSUMPTION q gr/kWh
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
600
550
500
450
400
350
300
250
200
10
20
30
40
50
60
70
POWER Pe kW

(2) DRAWBAR PERFORMANCE

Date of test: 24th November and 19th–21st December 1983

Type of track: Tarmacadam

Note: The drawbar test was started with new, run-in tyres

Gear	Driving speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumpt.	Temperatures: Fuel	Co-olant	Engine oil	Atmospheric condit.: Tempe-rature	Relative humidity	Pres sure
	km/h	kW	daN	rev/min	%	kWh/l	kg/kWh	°C	°C	°C	°C	%	mbar
1	2	3	4	5	6	7	8	9	1o	11	12	13	14
	(i) MAXIMUM POWER (unballasted) height of drawbar above ground 83o mm							tyre inflation pressure front 1,6 bar; rear 1,o bar					
1 L	3,3o	47,3	516o	2285	15,o	2,23	o,372	15	82	86	17	57	1oo9
2 L	4,67	57,5	4435	225o	11,6	2,36	o,351	16	84	89	17	57	1oo9
3 L	6,o4	61,1	364o	225o	5,6	2,5o	o,331	16	84	89	17	57	1oo9
4 L	7,93	62,2	2825	225o	2,6	2,54	o,325	17	85	9o	17	57	1oo9
5 L	9,oo	62,4	2495	225o	4,4*	2,56	o,324	18	86	91	18	54	1oo9
1 H	11,55	62,2	194o	225o	2,7*	2,54	o,325	18	86	91	18	54	1oo9
2 H	16,o3	61,o	137o	225o	1,6*	2,51	o,331	19	85	91	18	54	1oo9
3 H	19,5o	59,6	11oo	225o	1,2*	2,42	o,339	19	85	9o	18	54	1oo9
4 H	24,9o	57,4	83o	225o	o,8*	2,34	o,352	2o	84	91	18	54	1oo9
5 H	28,o5	55,7	715	225o	o,6*	2,26	o,362	2o	84	9o	19	49	1oo9

*The front wheel drive was still not automatically engaged

Gear	Driving speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumpt.	Temperatures Fuel	Co-olant	Engine oil	Atmospheric condit. Tempe-rature	Relative humidity	Pres-sure
-	km/h	kW	daN	rev/min	%	kWh/l	kg/kWh	°C	°C	°C	°C	%	mbar
1	2	3	4	5	6	7	8	9	1o	11	12	13	14
(ii) MAXIMUM POWER (ballasted) tyre inflation pressure: height of drawbar above ground 65o mm front 1,8 bar; rear 1,1 bar													
1 L	3,31	55,7	6o6o	225o	13,8	2,27	o,364	18	85	87	16	64	1oo6
2 L	5,o4	61,5	439o	225o	4,8	2,52	o,329	18	85	88	17	61	1oo6
3 L	6,22	62,2	36oo	225o	2,8	2,53	o,325	18	86	88	17	61	1oo6
4 L	8,o7	62,3	278o	225o	3,7*	2,54	o,324	19	86	89	17	61	1oo6
5 L	9,13	62,1	245o	225o	2,9*	2,52	o,326	19	87	89	16	61	1oo6
1 H	11,65	61,5	19oo	225o	1,8*	2,5o	o,329	18	86	9o	16	64	1oo6
2 H	16,1o	59,o	132o	225o	1,2*	2,4o	o,344	18	85	89	15	64	1oo6
3 H	19,55	57,3	1o55	225o	o,9*	2,33	o,354	18	85	89	15	65	1oo6
4 H	24,9o	54,o	78o	225o	o,7*	2,2o	o,374	17	84	88	15	65	1oo6
5 H	28,o5	51,8	665	225o	o,5*	2,12	o,39o	16	84	88	15	65	1oo6

*The front wheel drive was still not automatically engaged

Gear	Driving speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumpt.	Temperatures Fuel	Co-olant	Engine oil	Atmospheric condit. Temperature	Relative humidity	Pressure
-	km/h	kW	daN	rev/min	%	kWh/l	kg/kWh	°C	°C	°C	°C	%	mbar
1	2	3	4	5	6	7	8	9	1o	11	12	13	14
			(iii) FIVE-HOUR TEST at 75 % of drawbar pull at maximum power in 4thL gear										
4 L	8,32	48,1	2o8o	2295	2,3	2,47	o,332	22	82	87	17	54	1oo9
			(iv) FIVE-HOUR TEST at pull corresponding maximum wheel sleep in test (ii)										
1 L	-	-	6o5o	225o	-	-	-	21	85	89	18	54	1oo9

Total oil consumption during ten hours duration of tests (iii) and (iv) was 87 g/h

Test (iv) was carried out with additional ballast, the figures not quoted are therefore irrelevant

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 12,4 - 24 6 ply
rear: 18,4 - 38 8 ply

Track of wheels front: 16oo mm
rear: 17oo mm

	without brakes		with brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	5,72	5,68	4,81	4,79
Radius of turning circle	5,55	5,5o	4,63	4,6o

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	94o mm
Distance forward from rear axle axis	loo4 mm
Distance from tractor's median plane	17 mm to the left

(5) BRAKING PERFORMANCE

Date of test: 6th and 14th December 1983

Type of track: Tarmacadam

Mass of tractor with driver (kg)

	front	rear	total
ballasted	2395	424o	6635
unballasted	2oo5	339o	5395

Type O (ordinary cold service braking device performance) test

Speed before application of brakes 28,6 km/h

Ballasted	Braking device control force	daN	25	3o	35	4o	45
	Mean deceleration	m/s^2	2,2o	2,7o	3,oo	3,25	3,3o
Unballasted	Braking device control force	daN	2o	25	3o	35	4o
	Mean deceleration	m/s^2	2,4o	3,oo	3,2o	3,4o	3,4o

Type I (fade) test

Speed before application of brakes 28,6 km/h

Ballasted	Braking device control force	daN	3o	35	4o	45	5o
	Mean deceleration	m/s^2	2,6o	2,9o	3,o5	3,15	3,3o
Unballasted	Braking device control force	daN	25	3o	35	4o	45
	Mean deceleration	m/s^2	2,5	3,o5	3,3o	3,4o	3,4o

Maximum deviation of tractor from its original course less than o,2 m to the left

No abnormal vibrations occured

The brakes were heated by towing the tractor with the braking force lo % of the mass of tractor at the speed 22,9 km/h (8o % of the maximum speed)

Parking braking device test

	18 per cent slope		12 per cent slope with trailer of three tonnes	
	Up	Down	Up	Down
Braking device control force, daN	29	29	27	27

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 6th December 1983
Type of track: Tarmacadam
Type of sound level meter: BRUEL &.KJAER mod.22o9

Results of test

Gear: 5th high
Travelling speed before acceleration: 21,5 km/h
Sound level: 89,7 dB(A)

(7) NOISE AT DRIVER'S EAR LEVEL

Date of test: 6th December 1983
Type of track: Tarmacadam
Type of sound level meter: BRUEL &.KJAER mod.22o9

Results of test

+) Tractor with cab and with vertical exhaust pipe

Gear	Drawbar pull at which the tractor developes the maximum sound level daN	Travelling speed nominal km/h	Travelling speed efective km/h	Sound level dB(A)
1 L	51oo	3,91	3,4	89,2
2 L	44oo	5,38	5,2	89,7
3 L	36oo	6,5o	6,5	9o,2
4 L+)	28oo	8,27	8,2	9o,8
4 L+)	light load	8,27	8,4	89,1
5 L	245o	9,3o	9,2	9o,9
1 H	192o	11,73	11,8	91,1
2 H	135o	16,13	16,3	89,6
3 H	1o7o	19,51	19,7	89,4
4 H	81o	24,82	25,o	89,5
5 H	71o	27,9o	28,1	88,7

+) The 4th L low gear corresponds to the travelling speed nearest to 7,5 km/h

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date and location of test: 17th November 1983
Institute for Agricultural Mechanization - Zemun

Hydraulic fluid

Make and type: Galax Traktol HT
Viscosity: 8,7 cSt at 98,9°C
Viscosity index: over 85

Note: Power lift operates with the oil from the gearbox

Type of linkage lock for transport: hydraulic

Power lift

	Height of lower hitch point above ground in down position 1) mm	Vertical movement mm	Maximum force exerted through full range daN	Corresponding pressure of hydraulic fluid MPa (bar)	Moment about rear axle 2) daNm	Max.tilt angle of mast over range of lift deg.
At hitch points	3oo	67o	333o	15,9o (159)	418o	-
On the frame	19o	89o	248o	15,9o (159)	489o	-11° 15' +11°

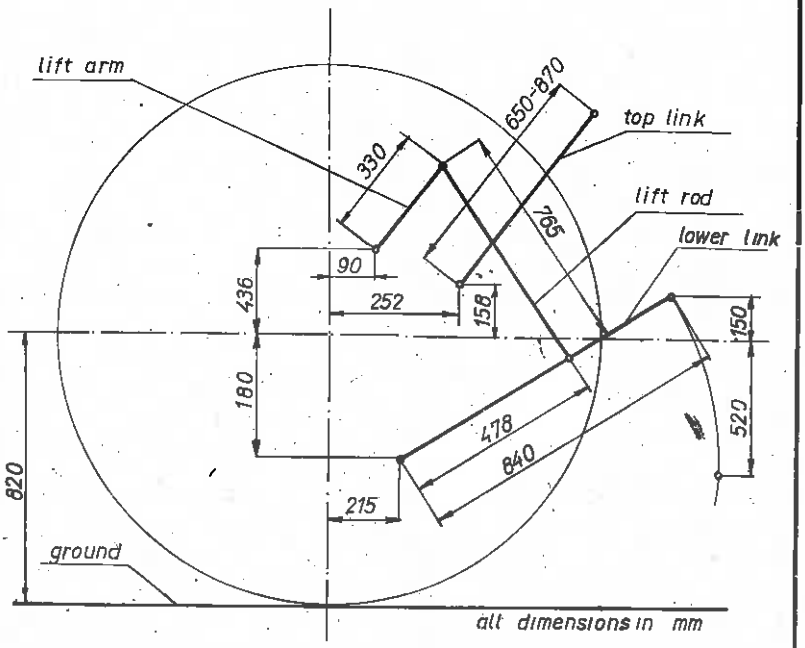
1) with the rear wheel static radius 82o mm
2) Calculated with the maximum force exerted through the full range of lower links movement and with maximum oil pressure (18,9 MPa)
3) The front of tractor does not lifts when maximum force is applied on the frame

Temperature of hydraulic fluid at start of test 62°C

Hydraulic pump performance

Opening pressure of the relief valve:	17,7 MPa (177 bar)
Sustained pressure with relief valve open: (pump was not stalled)	18,9 MPa (189 bar)
Pump delivery rate at minimum pressure, the governor control lever being set for maximum power:	39,o l/min
Pump delivery rate at 9o % of relief valve setting, the governor control lever being set for maximum power:	35,5 l/min
Hydraulic power at 9o % of relief valve setting:	9,39 kW

Dimensions of linkage geometry for the table on page 25



LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-45o	-4oo	-34o	-3oo	-2oo	-1oo	0	+1oo	+2oo	+3oo	+33o	+4oo	+44o
				At hitch points									
daN	-	-	342o	349o	35oo	36oo	36oo	36oo	355o	343o	333o	-	-
				At test frame (61o mm behind lower link hitch points)									
daN	254o	259o	-	263o	266o	271o	275o	273o	267o	262o	-	255o	248o

1° The forces are measured at sustained pressure with relief valve open (18,9 MPa) and calculated on the pressure 15,9 MPa which corresponds 9o % of relief valve setting

2° The hydraulic fluid temperature during the test was 62°C - 65°C

Linkage geometry when connected to the standard frame

Projected length in side view

lower links	84o mm
lift arms	33o mm
lift rods	765 mm
top link	825 mm
Distance of lift rod connection point from pivot point of lower link	478 mm

The folloving dimensions are given relative to the rear wheel centre line, situated 82o mm above the ground level:

Lower link pivot point	215 mm behind,	18o mm below
Top link pivot point	252 mm behind,	158 mm above
Lift arm pivot point	9o mm behind,	436 mm above
Maximum and minimum height of lower link hitch points	15o mm above,	52o mm below
Height of lower link hitch points when locked in transport position	19o mm above	