Institut za mehanizaciju poljoprivrede - Zemun

O.E.C.D. Report N° 865
Printed: July 1983

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



Agricultural tractor IMT 5100

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

Date of test: February – May 1982

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: April 13th, 1983

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 - 5loo
Type:	Standard-unit construction, four wheels, rear wheels driven
Serial N°:	2ol ooo o29

ENGINE

Make:	PERKINS LTD., acc.to IMT specification
Model:	A 6.354.4
Type:	Four stroke, water cooled diesel, direct injection
Serial N°:	J633C23
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 95o injection pump, Serial N° R 32339o Y-248o 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, incorporated 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; recommended 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 change 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 bonnet on the right hand side of the engine, silencer DONALDSON HON o9-o158, 819 mm long, with elyptic cross-section 21o/292 mm; height of exhaust pipe above ground 272o mm, mouth showing upwards with 88 mm dia.

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front 11,00 - 16 8 ply
rear: 18,4 - 38 8 ply

Track of wheels front: 1600 mm
rear: 1700 mm

	Without brakes		With brakes	
	left-hand	right-hand	left-hand	right-hand
	m	m	m	m
Radius of turning space	4,89	4,91	4,25	4,29
Radius of turning circle	4,78	4,79	4,13	4,18

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	948 mm
Distance forward from rear axle axis	911 mm
Distance from tractor's median plane	4 mm to the left

(5) BRAKING PERFORMANCE

Date of test: 2oth and 26th July 1982

Type of track: Tarmacadam

Mass of tractor with driver (kg)

	front	rear	total
ballasted	17o5	344o	5145
unballasted	17o5	449o	6195

Type 0 (ordinary cold service braking device performance) test

Speed before application of brakes 28,3 km/h

Ballasted	Braking device control force	daN	25	3o	35	4o	45
	Mean deceleration	m/s^2	1,8o	2,3o	2,8o	3,1o	3,2o
Unballasted	Braking device control force	daN	2o	25	3o	35	4o
	Mean deceleration	m/s^2	2,2o	2,7	3,1o	3,35	3,5o

Type I (fade) test

Speed before application of brakes 28,3 km/h

Ballasted	Braking device control force	daN	3o	35	4o	45	5o
	Mean deceleration	m/s^2	2,2o	2,75	3,o	3,o5	3,1o
Unballasted	Braking device control force	daN	25	3o	35	4o	45
	Mean deceleration	m/s^2	2,5	3,o	3,3o	3,4o	3,45

Maximum deviation of tractor from its original course less than o,5 m to the right

No abnormal vibrations occured

The brakes were heated by towing the tractor with the braking force 1o % of the mass of tractor at the speed 22,5 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	26	26	25	25

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 13th September 1982
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: 86,8 dB(A)

(7) NOISE AT DRIVER'S EAR LEVEL

Date of test: 13th September 1982
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	43oo	3,91	3,4	87,7
2 L	42oo	5,38	5,1	88,6
3 L	34oo	6,5o	6,3	89,1
4 L+)	27oo	8,27	8,2	89,9
4 L+)	light load	8,27	8,3	87,5
5 L	24oo	9,3o	9,2	89,9
1 H	19oo	11,73	11,7	91,2
2 H	13oo	16,13	16,1	87,9
3 H	1ooo	19,51	19,6	87,9
4 H	8oo	24,82	25,o	87,o
5 H	7oo	27,9o	28,o	86,7

+) 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: 9th September 1982
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 mm[1]	Vertical movement mm	Maximum force exerted through full range daN	Corresponding pressure of hydraulic fluid MPa (bar)	Moment about rear axle daNm[2]	Max.tilt angle of mast over range of lift deg.
At hitch points	3oo	67o	33oo	15,75 (157,5)	4115	-
On the frame	19o	89o	245o	15,75 (157,5)	4815	-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 (18,6 MPa)

3) The front of tractor lifts if a force of 276o daN is applied on the frame (moment about rear axle 46oo daNm)

Temperature of hydraulic fluid at start of test 63°C

Pull atachment
continuation

Semitrailer hitch: Fixted; max. permissible vertical load 3o KN
height above ground 495 mm;
vertical connection pin 58 mm long,
with 43 mm diameter;
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

Note: All pull atachment heights are given with the rear wheel static radius 82o mm

Steering: DANFOS;
hydrostatic steering, model OSPB loo 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

Brakes

Service brake: model G.O.I.M.P.D. 8,75x7,4 ($2o^o$)
hydraulically acting disx 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

Brakes
continuation

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

Steering wheels: 2 pneumatics in front 11,oo-16, 8 ply, diagonal tyre casing;
maximum permissible load per tyre 132o daN at 2,5 bar inflation pressure and 3o km/h;
track width adjustable from 15oo to 2ooo mm in 1oo mm steps;
rims W1o x 16

Driving wheels: 2 pneumatics at rear 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

Note: as optional equipment tractor may be fitted with
- steering wheels 7,5o-2o, 8 ply,
- driving wheels 18,4 -34, 8 ply,
or 9,5 -48,8 ply (duals)

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 safety frame; the 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 3

Dimensions

Total length:	4521 mm with horizontal lower links and without front ballast (front ballast may be fitted on the tractor, but manufacturer does not recommend use of it for drawbar work)
Maximum width:	2565 mm with maximum rear track setting (21oo mm) with and without rear ballast
Total height:	282o mm to the top of cab
Ground clearance:	46o mm below the swinging drawbar support

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	169o kg	17o5 kg
	rear	338o kg	344o kg
	total	5o7o kg	5145 kg
Front ballast:	As recommended by the manufacturer, the tractor was tested without front ballast		
Rear ballast:	3 weights per wheel 5o kg each		3oo kg
	water in tyres		75o kg
With ballast:	front	169o kg	17o5 kg
	rear	443o kg	449o kg
	total	612o kg	6195 kg

Track setting

front	16oo mm
rear	17oo mm

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	INA Diesel-fuel D_2 in all tests
	Specific gravity at 15°C: o,827 kg/l
	Cetane number: 57
	Viscosity: 4,9 cSt at 15°C
Engine oil:	Galax Super (S3) SAE 3o (11 cSt at 98,9°C)
Transmission and power lift oil:	Galax Traktol HT (8,7 cSt at 98,9°C)

COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 28.June 1982. Institute for Agricultural Mechanization - Zemun

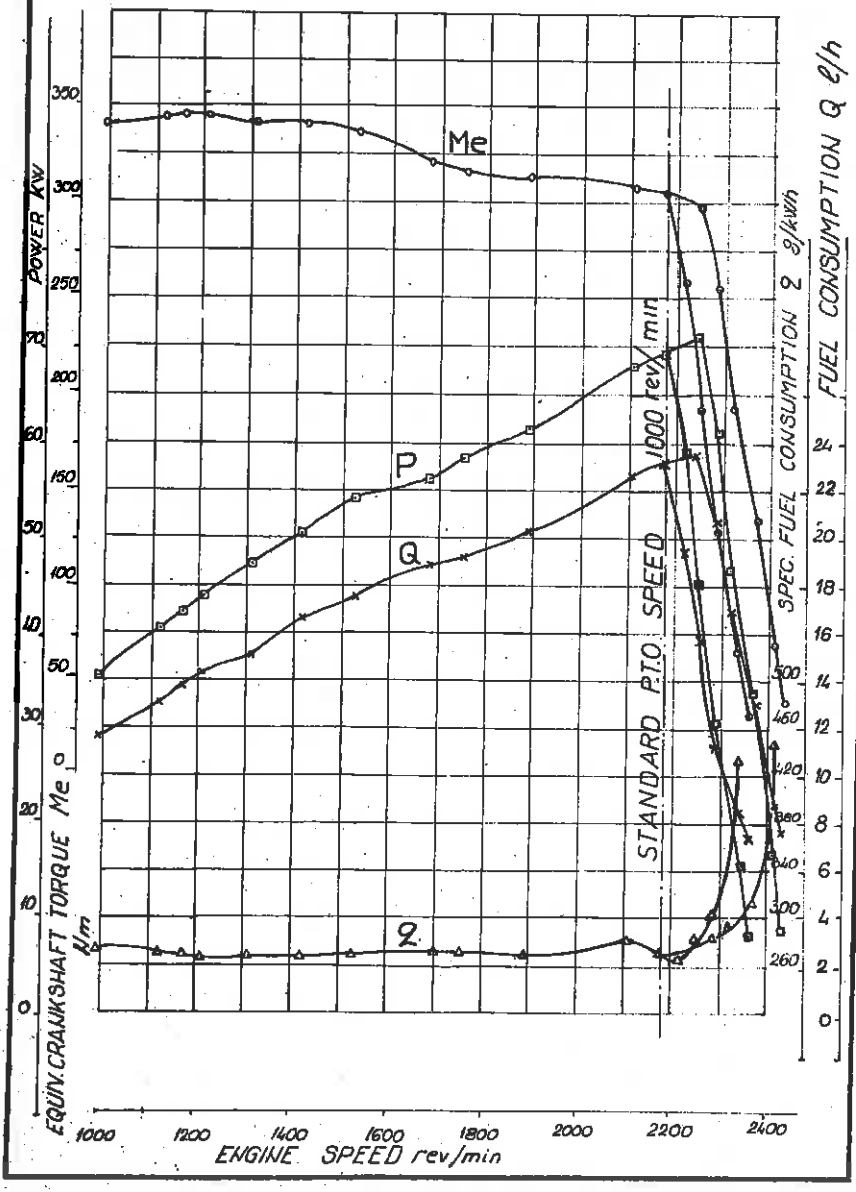
Type of dynamometer: Hydraulic brake SCHENCK U1-3o

Power	Speed engine	Speed p.t.o.	Fuel consumption total		Fuel consumption specific	Specific energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
	MAXIMUM POWER					
	At 2-hour test					
7o,2	225o	1o31	23,4o	19,29	275	3,oo
	At standard p.t.o. speed					
68,9	2182	1ooo	22,66	18,67	271	3,o4
	At speed recommended by the manufacturer for drawbar work					
7o,2	225o	1o31	23,4o	19,29	275	3,oo
	PART LOADS					
	Governor hand lever in position giving maximum power					
(i) 85 % of the torque at maximum power						
6o,6	229o	1o49	2o,19	16,6o	274	3,oo
(ii) unloaded						
8,9	2431	1114	7,44	6,12	-	-
(iii) 5o % of the load defined in (i)						
31,4	2369	1o86	11,92	9,82	313	2,63
(iv) maximum power						
7o,2	225o	1o31	23,4o	19,29	275	3,oo
(v) 25 % of the load defined in (i)						
16,1	241o	11o4	8,62	7,1o	441	1,87
(vi) 75 % of the load defined in (i)						
46,o	2317	1o62	16,41	13,5o	293	2,8o

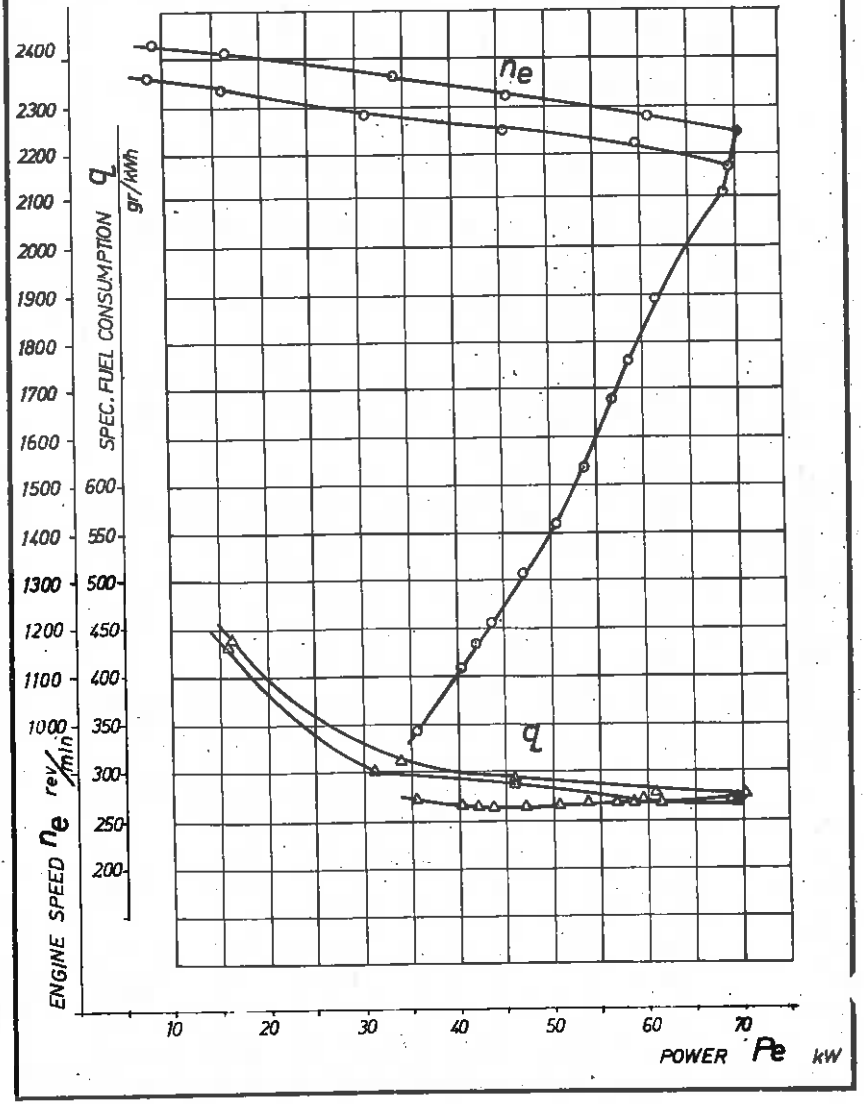
Power	Speed engine	Speed p.t.o.	Fuel consumption total		Fuel consumption specific	Specific energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
Governor setting giving standard p.t.o. speed at full load						
(i) 85 % of the torque at full load						
59,3	2222	1018	19,22	15,83	267	3,09
(ii) unloaded						
8,3	2359	1081	7,27	5,99	-	-
(iii) 50 % of the load defined in (i)						
30,7	2293	1051	11,18	9,21	300	2,73
(iv) full load						
68,9	2182	1000	22,66	18,67	271	3,04
(v) 25 % of the load defined in (i)						
15,8	2339	1072	8,36	6,89	436	1,90
(vi) 75 % of the load defined in (i)						
45,5	2251	1032	15,96	13,15	289	2,85

STANDARD SPECIFIC FUEL CONSUMPTION:	274; 313 267; 300 g/kWh
No load, maximum engine speed:	2440 rev/min
Equivalent crankshaft torque at maximum power:	298 Nm
Maximum equivalent crankshaft torque:	347 Nm at 1169 rev/min engine speed
Mean atmospheric conditions	
temperature:	24 °C
pressure:	1003 mbar
humidity:	69 %
Maximum temperatures	
coolant:	91 °C
engine oil:	96 °C
fuel:	26 °C
air intake:	26 °C

IMT-5100


Me
P
Q
g
STANDARD P.T.O. SPEED 1000 rev/min
POWER KW
EQUIV. CRANKSHAFT TORQUE Me kgm
SPEC. FUEL CONSUMPTION g g/kWh
FUEL CONSUMPTION Q g/h
ENGINE SPEED rev/min
1000
1200
1400
1600
1800
2000
2200
2400

IMT – 5100


ne
q
ENGINE SPEED ne rev/min
SPEC. FUEL CONSUMPTION q gr/kWh
POWER Pe kW
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

(2) DRAWBAR PERFORMANCE

Date of test: 19th 23rd July 1982

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 1,1 bar													
1 L	3,42	43,1	433o	23oo	15,o	2,29	o,36o	24	87	87	24	59	loo9
2 L	4,63	55,7	433o	225o	15,1	2,36	o,348	24	88	89	24	57	loo9
3 L	6,o5	59,8	356o	225o	8,2	2,53	o,324	25	9o	9o	24	57	loo9
4 L	7,96	6o,8	275o	225o	5,1	2,58	o,319	25	94	9o	25	54	loo9
5 L	9,o4	61,3	244o	225o	4,2	2,6o	o,316	26	9o	92	25	54	loo9
1 H	11,58	61,6	1915	225o	2,7	2,61	o,315	27	9o	93	25	54	loo9
2 H	16,1o	6o,4	135o	225o	1,5	2,56	o,322	27	89	92	25	54	loo9
3 H	19,55	59,2	1o9o	225o	1,1	2,51	o,327	28	88	9o	26	52	loo9
4 H	24,9o	56,7	82o	225o	o,7	2,4o	o,343	29	88	9o	27	5o	loo9
5 H	28,oo	55,2	71o	225o	o,6	2,34	o,352	28	88	9o	27	5o	loo9

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)						Driving wheels				
			height of drawbar above ground 5oo mm						inflation pressure 1,4 bar				
1 L	3,4o	47,8	5o6o	2275	15,1	2,28	o,36o	2o	85	85	21	69	1oo2
2 L	5,o1	6o,o	431o	225o	7,9	2,54	o,324	22	87	86	21	69	1oo2
3 L	6,23	61,1	353o	225o	5,4	2,58	o,318	23	88	88	22	66	1oo2
4 L	8,1o	61,4	273o	225o	3,6	2,6o	o,317	24	89	88	23	62	1oo2
5 L	9,15	61,3	241o	225o	2,8	2,6o	o,317	24	89	89	23	62	1oo2
1 H	11,65	6o,8	188o	225o	1,9	2,57	o,319	25	89	9o	24	59	1oo2
2 H	16,1o	58,6	131o	225o	1,2	2,47	o,332	25	87	9o	24	59	1oo2
3 H	19,6o	57,2	1o5o	225o	o,9	2,42	o,34o	25	87	9o	25	57	1oo2
4 H	24,9o	54,9	78o	225o	o,6	2,28	o,36o	26	86	89	25	57	1oo2
5 H	27,9o	51,9	67o	225o	o,4	2,19	o,375	26	86	89	25	56	1oo2

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
			(iii) FIVE-HOUR TEST at 75 % of drawbar pull at maximum power in t^{th}_{L} gear										
4 L	8,35	47,5	2o5o	23oo	2,2	2,5o	o,329	27	82	87	25	56	1oo3
			(iv) FIVE-HOUR TEST at pull corresponding 15 % wheel sleep in test (ii)										
1 L	-	-	5o5o	227o	-	-	-	29	87	9o	26	51	1oo6

Total oil consumption during ten hours duration of tests (iii) and (iv) was 1o3 g/h

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

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, 2nd and 4th 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:	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
Oil capacity:	Gearbox, rear axle and final drives (with power lift-see page 5) 60 l
Recommended oil quality:	Hydraulictransmission oil JOHN DEERE J14 B, MF M-1135, or engine oil acc.to MIL-L-2104 C Recommended oil changing interval 800 h; oil filter cleaning interval 800 h;

Total ratios and speeds

Gear	Total ratio engine driving wheel	Nominal travelling speed at rated engine speed	at standard p.t.o. speed 540 rev/min	1000 rev/min
–	–	km/h	km/h	km/h
Forward speeds				
1 low	177,90	3,91	3,49	3,79
2 low	129,38	5,38	4,80	5,21
3 low	106,98	6,50	5,80	6,31
4 low	84,10	8,27	7,38	8,02
5 low	74,80	9,30	8,29	9,02
1 high	59,30	11,73	10,46	11,37
2 high	43,13	16,13	14,39	15,64
3 high	35,65	19,51	17,40	18,92
4 high	28,02	24,82	22,14	24,07
5 high	24,93	27,90	24,89	27,06
Reverse speeds				
low	162,80	4,27	3,81	4,14
high	54,20	12,83	11,45	12,45

Calculated with the rolling radius 820 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 820 mm)
distance from rear axle center line:
horizontal 508 mm behind
vertical 127 mm below
direction of rotation clockwise, viewed from tractor rear;

Power take-off

continuation

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

540 rev/min at 2007 rev/min engine speed (605 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 500/1 and JUS M.L1.601;

1000 rev/min at 2182 rev/min engine speed (1031 rev/min at 2250 rev/min engine speed) is available through the unner shaft with the shaft end 34,9 mm ($1\frac{3}{8}$"), 21 splines, acc.to ISO 500/1 and JUS M.L1.601;

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;
draught control, position control, both stepless mixable, floating position;
opening pressure of relief valve 175 bar, sustained pressure by the opened relief valve 185-200 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 60 l, max 10 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 800 hours by washing.

Power lift
continuation

Implement linkage:	Three point linkage category II (category III linkage available on request); lift rods with fixed length 845 mm lifting range above ground from 34o mm to lolo mm (rear wheels static radius 82o mm)

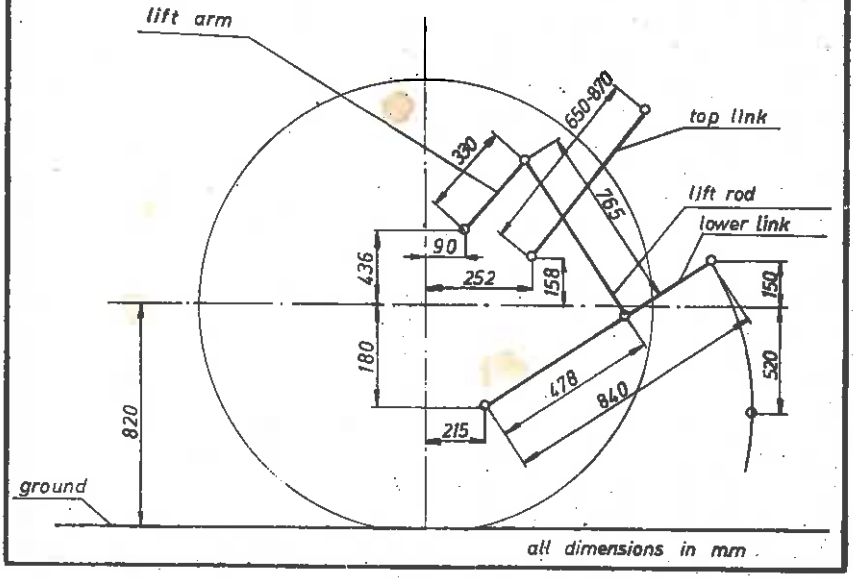
Pull atachment

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:	Fixed; 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

Hydraulic pump performance

Opening pressure of the relief valve:	17,5 MPa (175 bar)
Sustained pressure with relief valve open: (pump was not stalled)	18,6 MPa (186 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:	35,4 l/min
Hydraulic power at 9o % of relief valve setting:	9,3o 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	-	-	338o	345o	347o	356o	356o	356o	351o	341o	33oo	-	-
				At test frame (61o mm behind lower link hitch points)									
daN	25oo	256o	-	259o	262o	268o	27oo	269o	263o	258o	-	251o	245o

1° The forces are measured at sustained pressure with relief valve open (18,6 MPa), and calculated on the pressure 15,75 MPa which corresponds 9o % of relief valve setting

2° The hydraulic fluid temperature during the test was 63°C - 67°C

Linkage geometry when connected to the standard frame

Projected length in side view

lower links	840 mm
lift arms	330 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 820 mm above the ground level:

Lower link pivot point	215 mm behind,	180 mm below
Top link pivot point	252 mm behind,	158 mm above
Lift arm pivot point	90 mm behind,	436 mm above
Maximum and minimum height of lower link hitch points	150 mm above,	520 mm below
Height of lower link hitch points when locked in transport position	190 mm above	