O. E. C. D. Report No. 520

Printed: September 1976

Report on Test in Accordance with O. E. C. D.

STANDARD-CODE for the Official Testing of

Agricultural Tractors



TRACTORS IMT - 586 AND IMT - 589

Manufactured by: Industrija mašina i traktora (IMT)
Beograd - Yugoslavia

Date of Tests: January - December 1974

INSTITUT "KIRILO SAVIĆ" - BEOGRAD

INSTITUT ZA MEHANIZACIJU POLJOPRIVREDE - ZEMUN

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 tranctor on practical work.

This Report has been approved by the O.E.C.D. Co-ordinating Centre (C.N.E.E.M.A., France) as being in accordance with the O.E.C.D. STANDARD-CODE.

Date of Approval: August 13 st, 1976

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Yugoslavia

Printed in Yugoslavia

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Tractor manufacturer's name and address:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Submitted for test by:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Selected by:	The representatives of the Institute from series production
Place of running-in:	Institute for Agricultural Mechanization, Beograd - Zemun, Yugoslavia
Duration of running-in:	70 hours

SPECIFICATION OF TRACTOR

Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Model:	IMT - 586 and IMT - 589
Type:	Four wheel drive
Serial No.:	301000790

Remark: Specification of tractors IMT models 586 and 589 are identical, except for characteristics of power lift. The characteristics of power lift are specified for each model separately.

Engine

Make:	PERKINS, according to specifications of factory IMT
Model:	4.248
Type:	Diesel, direct injection, 4 stroke engine
Serial No.:	4678
Cylinders	
Number:	4
Disposition:	Vertical in line
Bore/Stroke:	100,96 / 127,00 mm (3,976 / 5,000 in)
Capacity:	4067 cm^3 (248,19 in^3)
Compression ratio:	16,1 : 1
Arrangement of valves:	Overhead valves
Cylinder liners:	Dry replaceable liners of cast iron alloy

Fuel system

Type of fuel feed:	Membrane type feed pump A.C. Delco
Type and model of fuel filter(s):	Two filters with replaceable elements
Capacity of fuel tank:	90 lit (19,8 UK gal)
Make, type and model of injection pump:	Rotary C.A.V. injection pump, mark DPA 3248 F 850
Serial No.:	78488
Manufacturer's production setting:	64 mm^3 (0,0039 in^3) per stroke at full load and 1600 engine r.p.m. Injection timing 22° before T.D.C.
Make, type and model of injectors:	C.A.V., mark CU
Manufacturer's production setting:	Injection pressure: 170 kg/cm^2 (2417,92 lb/in^2)

Governor

Make:	C.A.V.
Type:	Mechanical, all-range
Range of speed:	500 - 2450 r.p.m. of engine
Rated speed:	2250 r.p.m. of engine

Air cleaner (main)

Make:	Donaldson
Type:	Dry with element of impregnated paper and indicator which shows when the element should be cleaned

Pre-cleaner

Make:	Ikarus
Type:	Cyclon

Lubrication system

Type:	Circulation type under pressure
Type and number of filters:	Filter with replaceable element
Oil capacity:	8 lit (1,76 UK gal)
Changing period:	250 hours
Recomended oil	Super HD # 1 SAE 30 above 25 °C SAE 20 from 0 °C to 25 °C SAE 10 below 0 °C

Cooling system

Type:	Water cooling with compulsory circulation
Details of pump and fan:	Fan ϕ 432 mm (17,01 in) with 6 blades

Coolant capacity:	17,5 lit (3,85 UK gal)
Means of temperature control:	Thermostat
Pressure details:	0,4 - 0,5 kg/cm^2 (5,69 - 7,11 lb/in^2) over - pressure
Starting system	
Make:	Lukas
Type:	M 50 G
Aids for cold starting:	Heating plug in inlet pipe
Electrical system	
Voltage:	12 V, negative earth
Generator	
Make:	Lukas
Type:	22780 D C 40 A, direct current,0,4 kW
Battery	
Make:	Tesla, Brčko - Yugoslavia
Type:	With leaden plates
Capacity and rating:	135 Ah
Transmission	
Clutch	
Make:	Massey - Ferguson Mgf. Ltd., Coventry, England
Type:	Dry friction clutch of double acting type
Number of discs:	2
Type and diameter of discs:	Friction type. Disc diameters: for rear axle of tractor 305 mm (12,01 in) for p.t.o. shaft 228,6 mm (9,00 in)
Method of operation:	Operated mechanically by single foot pedal
Gearbox	
Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type:	Mechanical type, with sliding gears, with one permanently in contact pair of gears on entrance in gear box and with one epicyclic reduction gear on exit of gear box.
Number of gears:	6 forward gears 2 reverse gears

Rear axle and final drive:

Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type:	Differential of standard type with bevel gears and with 4 satelits. Final drive ratio at front axle 3,09 : 1. Final drive ratio at rear axle 3,455 : 1. Housing of differential is located in front of bevel gear of final drive.
Differential lock:	Exists for rear axle
Type:	Mechanical
Method of operating lock:	Pedal operated differential lock
Final drive:	Only on the rear axle Epicyclic gearing ratio 4,0 : 1 Total ratio of rear axle 13,82 : 1 The final drive epicyclic gears are located at the far ends of the rear axle half shafts
Details of transmission:	Front wheel drive is propelled by a special joint shaft. In entrance of the front wheel drive is located a special device for activating the front wheel drive at a determined slip rate of rear wheels.
Oil capacity	
Gearbox and rear axle:	35,5 lit (7,8 UK gal)
Recomended oil:	Traktol M - 80 above 10°C M - 75 below 10°C
Final drive:	2 x 1 lit (2 x 0,22 UK gal)
Changing period:	500 hours

No.	Gear number	Number of engine revolutions for one revolution of rear driving wheels		+ Nominal speed at nominal number of engine revolutions	
		Rear	Front	km/h	(m.p.h.)
Forward gears					
1	1 st	181,10	132,60	3,30	(2,051)
2	2 nd	120,70	88,38	5,00	(3,107)
3	3 rd	78,50	57,48	7,60	(4,723)
4	4 th	60,40	44,22	9,80	(6,091)
5	5 th	40,20	29,43	14,70	(9,134)
6	6 th	26,20	19,18	22,70	(14,106)
Reverse gears					
7	1 st	167,30	-	3,60	(2,237)
8	2 nd	55,70	-	10,70	(6,649)

+ Calculated with rear tyre rolling radius of 700 mm (27,56 in)

Remark: 1). Front wheel drive is automatically activated at the slip rate of rear wheels ammounting 7,02 %.
2). Front wheel drive is disconnected when reverse gears are engaged.

Power take-off

Main p.t.o.

Location:	At rear of tractor
Dimensions:	34,9 mm (1 3/8 in) dia (according to JUS M.L1. 601)
Type of drive:	Semi - independent
Number of splines:	6
Whether these are ISO Standard:	Yes
Height above ground:	573 mm (22,559 in) situated in the median plane of the tractor
Proportional p.t.o. speed at 2250 r.p.m. rated speed of engine:	
- slow	560 r.p.m.
- normal	720 r.p.m.
- fast	1060 r.p.m.
Engine speed at standard p.t.o. speed of 540 r.p.m.	1685 r.p.m. for normal p.t.o.
Direction of rotation:	Right (clock-wise) viewed from tractor's rear end

Ground p.t.o.

Distance travelled for one revolution of p.t.o.	
- slow	33,5 cm (13,19 in)
- normal	26,0 cm (10,24 in)
- fast	17,8 cm (7,01 in)

Remark: The tractor is delivered only with normal p.t.o. Slow and fast p.t.o. are delivered optionally.

Number of revolutions of p.t.o. for one revolution of rear driving wheel:	
- slow	13,70 r.p.m.
- normal	17,55 r.p.m.
- fast	25,40 r.p.m.
Direction of rotation:	Right (clock-wise) viewed from tractor's rear end when the forward gear is engaged
Details of p.t.o. shafts:	----------

Power lift

Basic hydraulic system	
Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type (for tractor model 586):	Four cylinder piston pump located in central housing, driven by front end of p.t.o. shaft with dividing valve on the intake side, with the cylinder of power lift and with three external tappings. Type of piston pump: boxer.
Oil capacity:	Power lift operates with the oil from gear box.
Description of controls:	Position and draught control.
Type (for tractor model 589):	Same as the model 586 with addition of a supplementary external power lift cylinder.
Auxiliary hydraulic system (built in only on the request of customer):	
Make:	Prva Petoletka, Trstenik, Yugoslavia
Type:	With external tappings
Oil capacity:	Power lift operates with the oil from gear box.

Remark: The coupling of basic and auxiliary hydraulic system by means of a tap located on the left side of the cover of power lift. The capacity of coupled pumps is 52 lit/min (11,44 UK gal) at 2250 r.p.m. of engine.

Three point linkage:	Category II Lifting rods length adjustable from 463 to 550 mm (18,23 to 21,65 in) Lifting height above ground with short lifting rods from 380 to 920 mm (14,96 to 36,22 in) and with long lifting rods from 520 to 997 mm (12,60 to 39,25 in)
Swinging drawbar:	
Type:	Fixed, with horizontal adjustment
Height above ground:	
- maximum:	335 mm (13,19 in)
- minimum:	325 mm (12,80 in)
Method of changing position:	Lateral adjustment
Distance from rear axle:	530 mm (20,87 in), respectively 795 mm (31,30 in)
Position relative to p.t.o.:	238 mm (9,37 in), respectively 304 mm (11,97 in) behind of p.t.o.
Lateral adjustment:	40 mm (1,57 in), 80 mm (3,15 in) and 120 mm (4,72 in) to the left and to the right in relation to the medium position.
Pivot position relative to rear wheel centre:	530 mm (20,87 in), respectively 795 mm (31,30 in)

Diameter of the coupling pin:	30 mm (1,18 in)
Hitch	
Height above ground:	335 mm (13,19 in)
Distance from rear axle:	389 mm (15,32 in)
Position relative to p.t.o.:	265 mm (10,43 in)
Diameter of the coupling pin:	30 mm (1,18 in)
Steering	
Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type:	Worm gear with one connecting rod.
Method of operation:	The hydraulic servo-steering with cylinder and piston in connecting rod.
Brakes	
Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type:	Disc brake, with 2 pedals coupled by a latch, located before the final drive.
Method of operation:	Hydraulic
Type of parking brake:	Band brake acting to the shaft of final drive. Command by hand by means of a lever.
Front wheels (steering and driving)	
Number:	2
Arrangement:	At the front
Type of tyre (s):	For agriculture
Size:	9,5 / 9 - 24
Ply rating:	6
Rim size:	8 x 24
Maximum permissible weight on each tyre at 2,1 kg/cm^2 (29,87 lb/in^2) pressure:	940 kg (2072,7 lbs) according to JUS GE 3.602
Track width:	1535 mm (60,43 in)
Method of changing:	----------
Rear wheels (driving)	
Number:	2
Position:	At the rear
Type of tyre (s):	For agriculture
Size:	15 x 30
Ply rating:	8
Rim size:	W 14 L x 30

Maximum permissible weight on each tyre at 1,1 kg/cm² (15,64 lb/in²) pressure: 2085 kg (4596,6 lbs) for tyres 15 x 30, according to JUS GE 3.602

Track widths: 1500 mm (59,06 in) - minimum
2000 mm (78,74 in) - maximum

Method of changing: Continually

Wheelbase: 2220 mm (87,20 in)

Lighting

	Height above ground of centre		Diameter		Distance from outside edge of tractor to centre	
	cm	(in)	cm	(in)	cm	(in)
Head lights	120,0	(47,244)	12,5	(4,921)	57,8	(22,756)
Side lights	152,0	(59,842)	6,0	(2,362)	25,0	(9,843)
Rear Lights	151,0	(59,449)	7,5	(2,953)	12,0	(4,724)
Reflectors	174,0	(68,504)	13,5	(5,315)	40,0	(15,748)

Unrestricted beam angle of headlight in plan view 32 °.

Number of lubrication points

- grease	31
- oil	12

Weights

Tractor (without driver, but with tanks full)

	Front		Rear		Total	
	kg	(lb)	kg	(lb)	kg	(lb)
Without ballast	1600	(3526,4)	2215	(4881,9)	3815	(8408,3)
With ballast	1765	(3890,1)	2960	(6523,8)	4725	(10413,9)

Ballast

	No. of weights	Total weight kg	(lb)	Water kg	(lb)
Front	-	-	-	165	(363,66)
Rear	-	-	-	745	(1641,98)
Additional (on the frame in front of the engine)	6	180	(396,72)	-	-

Remark: The tractor is permanently provided with additional weights (stated as "without ballast")

Track widths
(during the test)

Front	1535 mm (60,43 in)
Rear	1600 mm (62,99 in)

Clearance: Minimum ground clearance 317 mm (12,48 in) under the front axle drive casing

Overall dimensions

	Length	Width	Height with exhaust pipe	Height without exhaust pipe
Tractor without ballast m (ft in)	4,235 (13ft 10,7in)	2,040 (6ft 8,3in)	2,470 (8ft 1,2in)	1,812 (5ft 11,3in)
Tractor with ballast m (ft in)	4,235 (13ft 10,7in)	2,040 (6ft 8,3in)	2,470 (8ft 1,2in)	1,812 (5ft 11,3in)

Remark: Height of tractor measured to the highest position of steering wheel

Seat

Make:	Industrija mašina i traktora (IMT), Beograd - Yugoslavia
Type of suspension:	Back support with longitudinal adjustment
Type of damping:	With spring and shock - absorber
Range of adjustment:	Longitudinal adjustment 7,5 cm (2,95 in) lateral adjustment in 3 positions

FUELS AND LUBRICANTS USED IN TESTS

Laboratory and track tests

Fuel

Type:	Diesel oil D_2 (commercially available quality acc. to JUS B.H.2.411)
Specific gravity at 15 °C (59 °F):	0,828 gr/cm^3 (0,03 lb/in^3)
Cetane number:	57

Engine oil

Type:	INA Super HD S 1
Viscosity:	SAE 30 (61 cSt at 50 °C, 11 cSt at 98,9 °C)
Index of viscosity:	Minimum 90

Transmission oil

Type:	Traktol
Viscosity:	M - 80 (83,6 - 91,2 cSt at 50 °C)
Index of viscosity:	Minimum 125
Oil for power lift	Power lift operates with the oil from the gear box

COMPULSORY TESTS

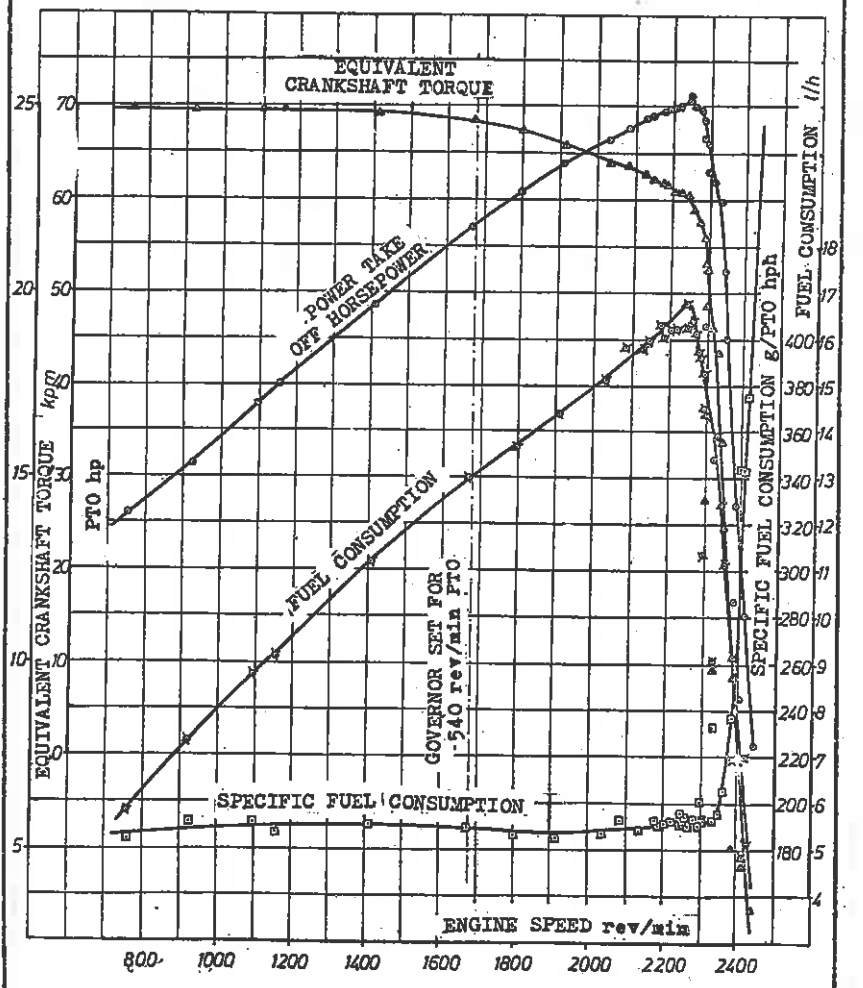
(1) MAIN POWER TAKE-OFF PERFORMANCE

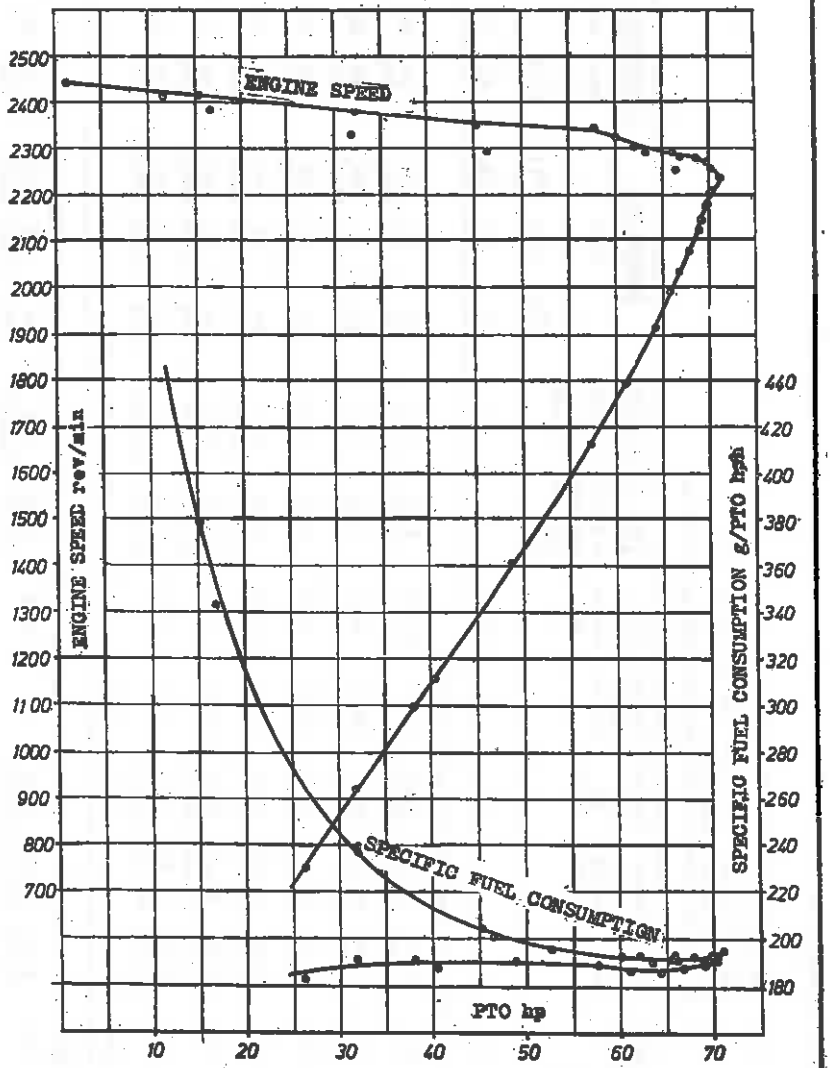
Date and location of tests: 3rd January 1974
Institute for Agricultural Mechanization, Beograd-Zemun, Yugoslavia

Type of dynamometer: Hydraulic brake "SCHENCK", U1 - 30

Horsepower metric hp (U.K.HP)	Speeds: Engine r.p.m.	Speeds: P.T.O. r.p.m.	Fuel consumption: Per hour l/h (UK gal/h)	Fuel consumption: Specific g/net hph (lb/HPh)	Fuel consumption: hp hours/unit of volume metric hph/lit (HPh/UK gal)
MAXIMUM POWER - 2 HOUR TEST					
70,95 (69,98)	2246	720	16,46 (3,63)	192,15 (0,430)	4,31 (19,28)
STANDARD P.T.O. SPEED (540 r.p.m.)					
57,46 (56,67)	1685	540	13,00 (2,86)	187,33 (0,419)	4,42 (19,81)
THE SPEED RECOMMENDED BY THE MANUFACTURER FOR DRAWBAR WORK					
71,43 (70,45)	2250	723	16,35 (3,60)	189,50 (0,424)	4,37 (19,57)
PART LOADS					
(i) 85 % of the torque at maximum power					
62,09 (61,24)	2306	741	14,49 (3,19)	193,27 (0,430)	4,28 (19,19)
(ii) unloaded					
1,16 (1,14)	2414	776	4,84 (1,07)		
(iii) 50 % of the load defined in (i)					
31,90 (31,46)	2330	749	9,01 (1,98)	233,83 (0,523)	3,54 (15,89)
(iv) maximum power					
71,43 (70,45)	2250	723	16,35 (3,60)	189,50 (0,424)	4,37 (19,57)
(v) 25 % of the load defined in (i)					
16,79 (16,56)	2387	767	6,96 (1,53)	343,06 (0,767)	2,41 (10,82)
(vi) 75 % of the load defined in (i)					
46,49 (45,85)	2298	738	11,30 (2,49)	201,33 (0,450)	4,11 (18,41)

No load, maximum engine speed:	2450 r.p.m.
Equivalent crankshaft torque at maximum power:	22,74 kgm (164,4 lbft)
Maximum equivalent crankshaft torque:	24,86 kgm (179,76 lbft) at 1095 r.p.m. engine speed
Mean atmospheric conditions:	
- temperature:	19 °C (66 °F)
- pressure:	760 mm Hg (29,92 in Hg)
- relative humidity:	58 %
Maximum temperature:	
- coolant:	84 °C (183 °F)
- engine oil:	98 °C (208 °F)
- fuel:	25 °C (77 °F)
- air at the entrance of cleaner:	23 °C (73 °F)


EQUIVALENT CRANKSHAFT TORQUE
POWER TAKE OFF HORSEPOWER
FUEL CONSUMPTION
SPECIFIC FUEL CONSUMPTION
GOVERNOR SET FOR 540 rev/min PTO
EQUIVALENT CRANKSHAFT TORQUE kpm
PTO hp
FUEL CONSUMPTION l/h
SPECIFIC FUEL CONSUMPTION g/PTO hph
ENGINE SPEED rev/min
800 1000 1200 1400 1600 1800 2000 2200 2400


ENGINE SPEED
SPECIFIC FUEL CONSUMPTION
ENGINE SPEED r.o.v/min
SPECIFIC FUEL CONSUMPTION g/PTO hph
PTO hp
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
440
420
400
380
360
340
320
300
280
260
240
220
200
180
10
20
30
40
50
60
70

(2) DRAWBAR PERFORMANCE OF TRACTOR

Date of tests: 9th, 10th and 11th July 1974

Type of track: Concrete

Height of drawbar above ground: 375 mm (14,76 in)

Gear number	Speed km/h (mph)	Horse power net.hp (UK HP)	Drawbar pull kg (lb)	Engine speed r.p.m.	Slip of wheels %	FUEL CONSUMPTION Drawbar m.hph/l (drawbar HPh / UK gal)	FUEL CONSUMPTION Specific g/m.hph (lb/ /drHPh)	TEMPERATURE Fuel °C (°F)	TEMPERATURE Coolant °C (°F)	TEMPERATURE Engine °C (°F)	ATMOSPHERIC CONDITIONS Temper. °C (°F)	ATMOSPHERIC CONDITIONS Rel. hum. %	ATMOSPHERIC CONDITIONS Pressure mm Hg (in Hg)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
I. MAXIMUM POWER OF BALLASTED TRACTOR													
1.	2,97 (1,84)	44,01 (43,41)	3995 (8805)	2316	15,00	3,10 (13,88)	267 (0,597)	29 (84)	84 (183)	94 (201)	30 (86)	62	759,2 (29,89)
2.	4,48 (2,78)	55,30 (54,74)	3345 (7372)	2246	4,01	3,32 (14,86)	249 (0,557)	29 (84)	84 (183)	94 (201)	30 (86)	62	759,2 (29,89)
3.	7,20 (4,47)	57,47 (56,68)	2155 (4750)	2238	5,10+	3,42 (15,31)	242 (0,541)	29 (84)	84 (183)	95 (203)	30 (86)	62	759,2 (29,89)
4.	9,76 (6,06)	57,48 (56,69)	1590 (3504)	2212	4,25+	3,40 (15,22)	244 (0,546)	30 (86)	86 (188)	95 (203)	31 (88)	61	759,2 (29,89)
5.	14,31 (8,89)	53,01 (52,28)	1000 (2204)	2175	2,86+	3,15 (14,15)	262 (0,586)	30 (86)	86 (188)	95 (203)	31 (88)	61	759,2 (29,89)
6.	20,60 (12,79)	47,84 (47,18)	627 (1382)	2130	1,63+	2,85 (12,76)	291 (0,651)	30 (86)	85 (185)	94 (201)	31 (88)	61	759,2 (29,89)
Maximum drawbar pull: 3995 kg (8805 lb) at 15 % of average wheelslip													
II. FIVE HOUR TEST OF BALLASTED TRACTOR AT 75 % OF PULL AT MAXIMUM POWER IN TEST (I)													
3.	7,12 (4,42)	42,72 (42,13)	1620 (3570)	-	4,58	3,43 (15,36)	241 (0,539)	29 (84)	85 (185)	95 (203)	30 (86)	61	759,2 (29,89)

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1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
III. FIVE HOUR TEST OF BALLASTED TRACTOR AT PULL CORRESPONDING TO 15 % OF AVERAGE WHEELSLIP IN T.3T (I)													
D.	-	-	3995 (8805)	-	-	-	-	29 (84)	85 (185)	95 (203)	30 (86)	61	759,2 (29,89)
IV. MAXIMUM POWER OF UNBALLASTED TRACTOR													
1.	2,96 (1,84)	36,02 (35,53)	3285 (7240)	2328	15,01	3,09 (13,83)	267 (0,597)	28 (84)	83 (181)	94 (201)	27 (81)	60	758,8 (29,87)
2.	4,49 (2,79)	54,55 (53,80)	3280 (7229)	2286	14,96	3,32 (14,86)	254 (0,568)	28 (84)	84 (183)	94 (201)	27 (81)	60	758,8 (29,87)
3.	7,27 (4,45)	55,77 (55,01)	2100 (4628)	2242	3,50	3,32 (14,86)	250 (0,559)	28 (84)	84 (183)	96 (205)	28 (82)	62	758,8 (29,87)
4.	9,68 (6,01)	56,83 (56,07)	1585 (3493)	2234	5,36*	3,35 (15,00)	247 (0,553)	30 (86)	84 (183)	96 (205)	29 (84)	62	758,8 (29,87)
5.	14,45 (8,98)	52,08 (52,25)	990 (2182)	2193	3,98*	3,12 (13,97)	263 (0,588)	30 (86)	84 (183)	95 (203)	28 (82)	62	758,8 (29,87)
6.	21,65 (13,45)	48,11 (47,45)	600 (1322)	2167	2,11*	2,86 (12,80)	289 (0,647)	29 (84)	84 (183)	96 (205)	28 (82)	62	758,8 (29,87)

Maximum drawbar pull: 3285 kg (7240 lb) at 15 % of average wheelslip

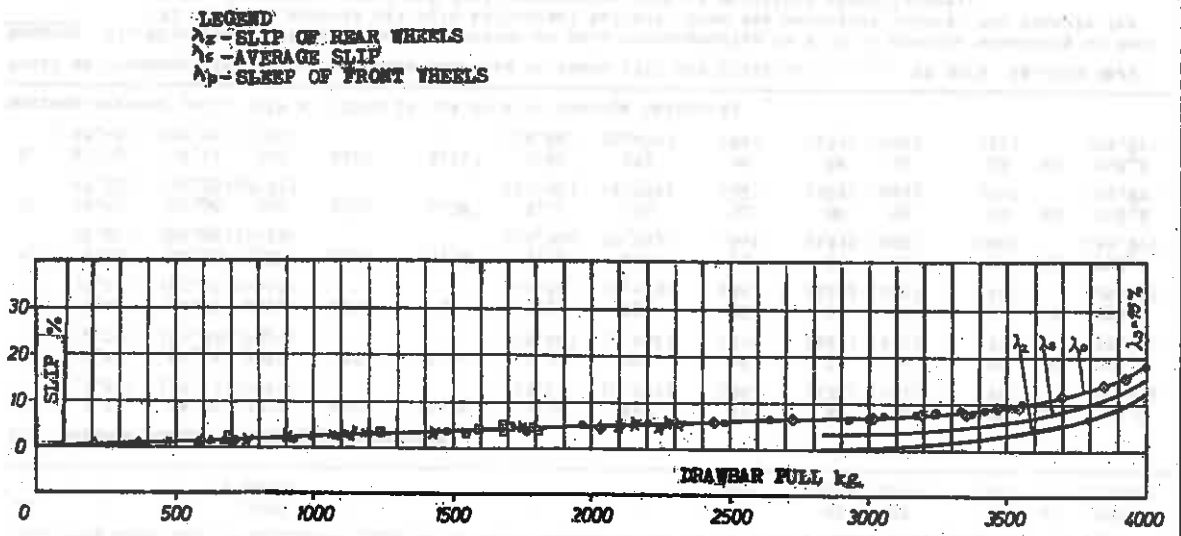
Total oil consumption during ten hours duration of tests (II) and (III):..... 90 gr/h (0,1980 lb/h)

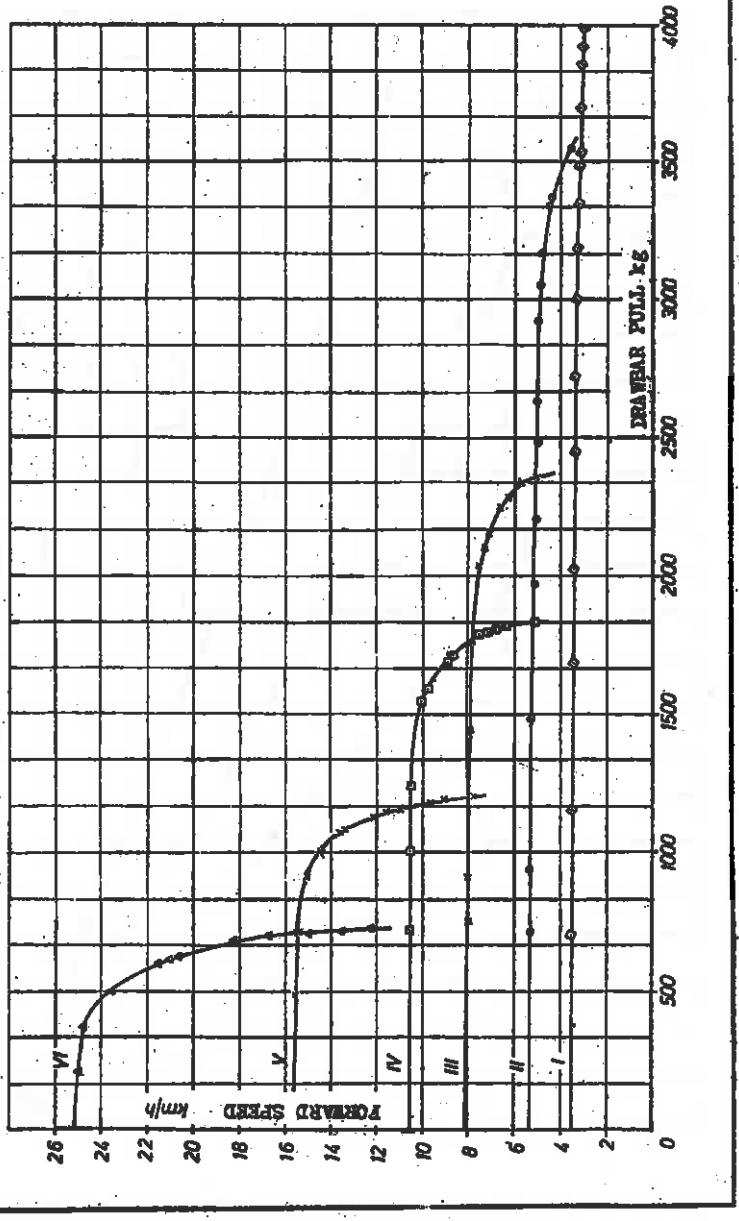
Remark: 1). Five hour test of ballasted tractor at pull corresponding to 15 % of average wheelslip in test (I) has been carried out with additional ballast. From the mentioned reason, the results for power, wheelslip, speed and fuel consumption have no practical significance.

2). Average slip means the mean value of front and rear wheels slips.

3). Asterisk (*) means the slip of rear wheels only.

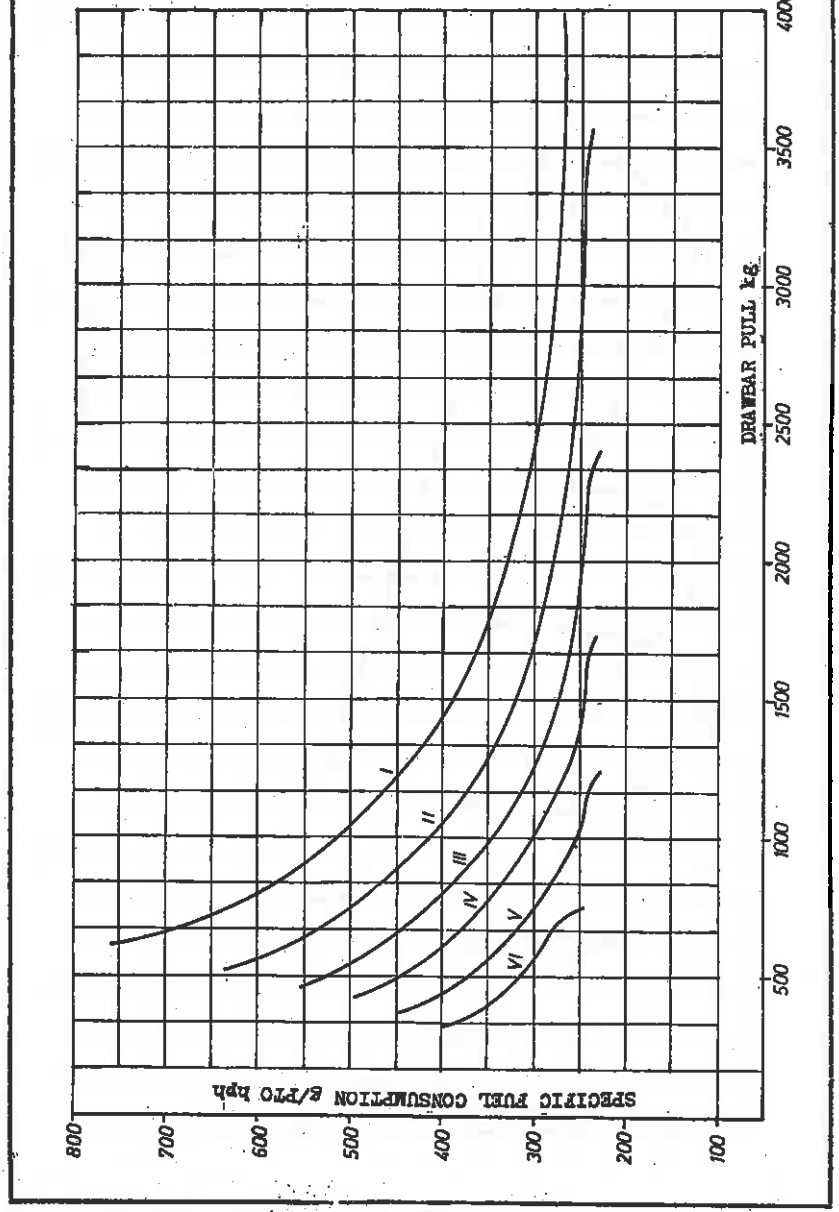
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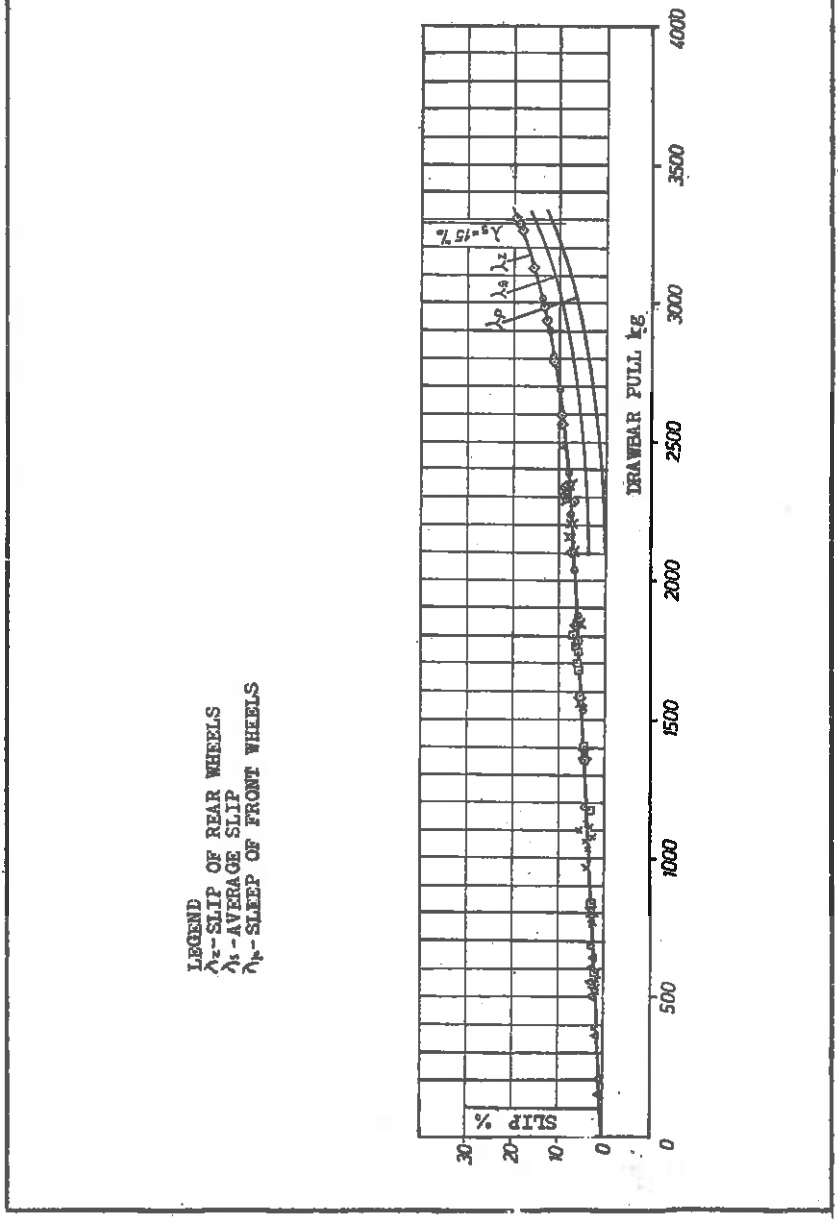

LEGEND
λz - SLIP OF REAR WHEELS
λs - AVERAGE SLIP
λp - SLIEP OF FRONT WHEELS
SLIP %
30
20
10
0
DRAWBAR PULL kg.
0
500
1000
1500
2000
2500
3000
3500
4000
λz
λs
λp

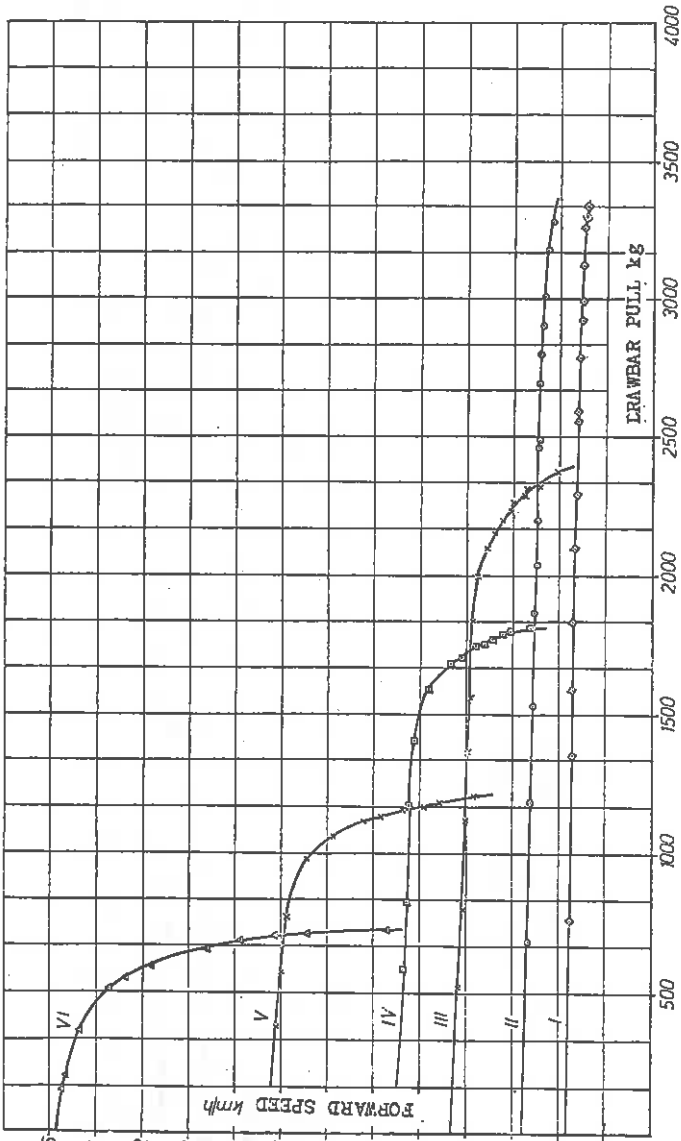

DRAWBAR PULL, kg
0
500
1000
1500
2000
2500
3000
3500
4000
FORWARD SPEED km/h
2
4
6
8
10
12
14
16
18
20
22
24
26
I
II
III
IV
V
VI

DRAWBAR METRIC hp
DRAWBAR PULL kg
0
500
1000
1500
2000
2500
3000
3500
4000
10
20
30
40
50
60
70
I
II
III
IV
V
VI

FUEL CONSUMPTION l/h
DRAWBAR PULL kg
I
II
III
IV
V
VI
0
500
1000
1500
2000
2500
3000
3500
4000
4
5
6
7
8
9
10
11
12
13
14
15
16
17


SPECIFIC FUEL CONSUMPTION g/PTO hph
800
700
600
500
400
300
200
100
DRAWBAR PULL kg
4000
3500
3000
2500
2000
1500
1000
500
I
II
III
IV
V
VI


LEGEND
λz - SLIP OF REAR WHEELS
λs - AVERAGE SLIP
λp - SLIEP OF FRONT WHEELS
SLIP %
30
20
10
0
0
500
1000
1500
2000
2500
3000
3500
4000
DRAWBAR PULL kg
λs=15%
λz
λs
λp


DRAWBAR PULL kg
0
500
1000
1500
2000
2500
3000
3500
4000
FORWARD SPEED km/h
2
4
6
8
10
12
14
16
18
20
22
24
26
I
II
III
IV
V
VI

DRAWBAR METRIC hp
DRAWBAR PULL kg
0
10
20
30
40
50
60
70
500
1000
1500
2000
2500
3000
3500
4000
II
III
IV
V
VI

DRAWBAR PULL kg
0
500
1000
1500
2000
2500
3000
3500
4000
FUEL CONSUMPTION l/h
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
I
II
III
IV
V
VI

SPECIFIC FUEL CONSUMPTION g/PTO hph
DRAWBAR PULL kg
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000
I
II
III
IV
V
VI

(3) TURNING SPACE AND TURNING CIRCLE

Details of wheel equipment: front: 9,5/9 - 24
rear: 15 x 30

Track of wheels: front: 1535 mm (60,43 in)
rear : 1600 mm (62.99 in)

	With brakes		Without brakes	
	Right hand	Left hand	Right hand	Left hand
Radius of turning space	4,01 m (13,16 ft)	3,92 m (12,86 ft)	5,40 m (17,71 ft)	5,37 m (17,62 ft)
Radius of turning circle	3,86 m (12,66 ft)	3,77 m (12,36 ft)	5,25 m (17,22 ft)	5,22 m (17,13 ft)

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground: 793 mm (31,22 in)

Distance forward from the vertical plane containing the axis of the rear wheels: 932 mm (36,69 in)

Distance from the median plane: 8 mm (0.31 in) to the right

(5) BRAKING

Date of tests: 16 th Septembar 1974

Type of track: Concrete

Type of decelerometer: SIEMENS B 4

Weight of tractor (no additional ballast permitted for the road work) 3815 kg (8408 lb)

Cold brakes

Travelling speed of the tractor: 23,3 km/h (14,47 m.p.h.)

i) Deceleration: 4,10 m/sec^2 (13,45 ft/sec^2)

ii) Stopping distance: 8,22 m (26,97 ft)

iii) Force exerted on the brake pedal: 46 kg (101,38 lb)

iv) Force exerted on the brake pedal to achieve a deceleration of 2,5 m/sec^2 (8.2 ft/sec^2): 24 kg (52,90 lb)

Brake fade characteristics (hot tests)

Deceleration hot / Deceleration cold x 100:	99 %
Stopping distance cold / Stopping distance hot x 100:	97 %
Force on pedal, cold / Force on pedal, hot x 100:	85 %

Parking brake

Efficacy of handbrake:

- facing up slope:	Satisfactory
- facing down slope:	Satisfactory
Pull on handbrake:	36 kg (79,34 lb)

(6) MEASUREMENT OF AMBIENT NOISE

Date of tests:	18. th October 1974
Type of sound level meter:	Group of instruments BRUEL & KJAER
Type of track:	Asphalt
Results of tests:	
- gear:	6. th
- travelling speed:	18,7 km/h (11,61 m.p.h.)
- sound level:	88,9 dB(A)

(7) NOISE MEASUREMENT AT THE DRIVER'S EAR LEVEL
(The test was carried out without a cab or frame on the tractor)

Date of tests:	18 th October 1974
Type of sound level meter and octave filter:	Group of instruments BRUEL & KJAER, Type 2204
Type of track:	Asphalt

Results of tests

Gear	Speed km/h	Speed (m.p.h.)	dB(A)	Sones
3 rd	7,21	(4,48)	99,8	165,1

(8) POWER LIFT PERFORMANCE

Date and location of tests:	16 th January 1975 Institute for Agricultural Mechanization, Beograd - Zemun polje
Hydraulic fluid:	
- make and type:	HEMA Tractol M - 80

- viscosity:	83,6 - 91,2 cSt at 50 °C
- viscosity index:	Minimum 125
Manner of fixing of power lift levers in transport position:	By means of chains
Release pressure of the safety valve on the cylinder:	----------
Pump characteristics	
Release pressure of the relief valve:	175 kg/cm^2 (2488 lb/in^2)
Pressure by fully opened relief valve and maximum flow:	190 - 196 kg/cm^2 (2701 - 2786 lb/in^2)
Pump delivery at minimum pressure and nominal engine speed:	14 lit/min (3,09 UK gal/min)
Pump delivery	13 lit/min (2,86 UK gal/min)
- Work pressure:	170 kg/cm^2 (2416 lb/in^2)
- Power:	4,91 metric hp (4,84 U.K.HP)

Tractor model IMT - 586

LIFTING HEIGHT IN RELATION TO THE HORIZONTAL LINE PASSING THROUGH THE LOWER LINK PIVOTING POINTS

A. Lifting force without frame

- Stroke														
cm	-17,50	-14,00	- 9,00	- 4,00	0	+ 6,00	+11,00	+21,00	+26,00	+30,50	+35,50	+37,50	+40,50	+43,00
(in)	- 6,89	- 5,51	- 3,54	- 1,58	0	+ 2,37	+ 4,33	+ 8,27	+10,24	+12,01	+13,98	+14,76	+15,95	+16,93
- Maximum lifting force														
kg	1760	1780	1795	1820	1830	1825	1790	1730	1710	1700	1680	1665	-	-
(lb)	3879	3923	3956	4011	4033	4022	3945	3813	3769	3747	3703	3670	-	-
- Minimum lifting force														
kg	-	1695	1715	1740	1760	1710	1655	1506	1425	1365	1310	1295	1270	1220
(lb)	-	3735	3780	3835	3879	3769	3648	3306	3141	3008	2887	2854	2799	2689

- Maximum force exerted through whole range 1665 kg (3670 lb)
- Forces were measured at 192 kg/cm^2 (2729 lb/in^2) (maximum pressure) and the reported data were calculated to correspond to the forces obtained at 170 kg/cm^2 (2416 lb/in^2) (maximum hydraulic power pressure)

B. Lifting force with frame

- Stroke														
cm	-18,00	-14,00	- 9,00	- 4,00	0	+ 6,00	+18,50	+26,00	+33,50	+41,00	+44,00	+48,00	+50,00	-
(in)	- 7,09	- 5,51	- 3,54	- 1,58	0	+ 2,37	+ 7,28	+10,24	+13,19	+16,14	+17,32	+18,90	+19,69	-
- Maximum lifting force														
kg	1565	1565	1575	1585	1595	1565	1495	1435	1385	1315	1220	-	-	-
(lb)	3449	3449	3471	3493	3515	3449	3295	3163	3053	2898	2689	-	-	-
- Minimum lifting force														
kg	-	-	1495	1515	1525	1495	1365	1235	1130	1050	990	890	790	-
(lb)	-	-	3295	3339	3361	3295	3008	2722	2491	2314	2182	1962	1741	-

- Maximum force exerted through whole range 1220 kg (2689 lb)
- Forces were measured at 192 kg/cm^2 (2729 lb/in^2) (maximum pressure) and the reported data were calculated to correspond to the forces obtained at 170 kg/cm^2 (2416 lb/in2) (maximum hydraulic power pressure)

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Tractor model IMT - 589

LIFTING HEIGHT IN RELATION TO THE HORIZONTAL LINE PASSING THROUGH THE LOVER LINK PIVOTING POINTS

A. Lifting force without frame

- Stroke														
cm	-17,50	-14,00	- 9,00	- 4,00	0	+ 6,00	+11,00	+21,00	+26,00	+30,50	+35,50	+37,50	+40,50	+ 43,00
(in)	- 6,89	- 5,51	- 3,54	- 1,58	0	+ 2,37	+ 4,33	+ 8,27	+10,24	+12,01	+13,98	+14,76	+15,95	+ 16,93
- Maximum lifting force														
kg	2485	2400	2410	2465	2435	2430	2400	2340	2310	2295	2290	2270	-	-
(lb)	5478	5291	5313	5434	5368	5357	5291	5159	5093	5059	5048	5004	-	-
- Minimum lifting force														
kg	-	2300	2320	2345	2370	2330	2260	2280	2165	2130	2070	2050	2020	1860
(lb)	-	5069	5113	5168	5223	5135	4981	5025	4772	4695	4562	4518	4452	4099

- Maximum force exerted through whole range 2270 kg (5003 lb)
- Forces were measured at 192 kg/cm^2 (2729 lb/in^2) (maximum pressure) and the reported data were calculated to correspond to the forces obtained at 170 kg/cm^2 (2416 lb/in^2) (maximum hydraulic power pressure)

B. Lifting force with frame

- Stroke														
cm	-18,00	-14,00	- 9,00	- 4,00	0	+ 6,00	+18,50	+26,00	+33,50	+41,00	+44,00	+48,00	+50,00	-
(in)	- 7,09	- 5,51	- 3,54	- 1,58	0	+ 2,37	+ 7,28	+10,24	+13,19	+16,14	+17,32	+18,90	+19,69	-
- Maximum lifting force														
kg	2160	2170	2175	2200	2210	2170	2100	2040	1990	1930	1830	-	-	-
(lb)	4761	4783	4794	4849	4871	4783	4628	4496	4386	4254	4033	-	-	-
- Minimum lifting force														
kg	-	-	2095	2120	2130	2100	1970	1840	1695	1655	1605	1515	1410	-
(lb)	-	-	4617	4672	4695	4628	4342	4055	3736	3648	3537	3339	3108	-

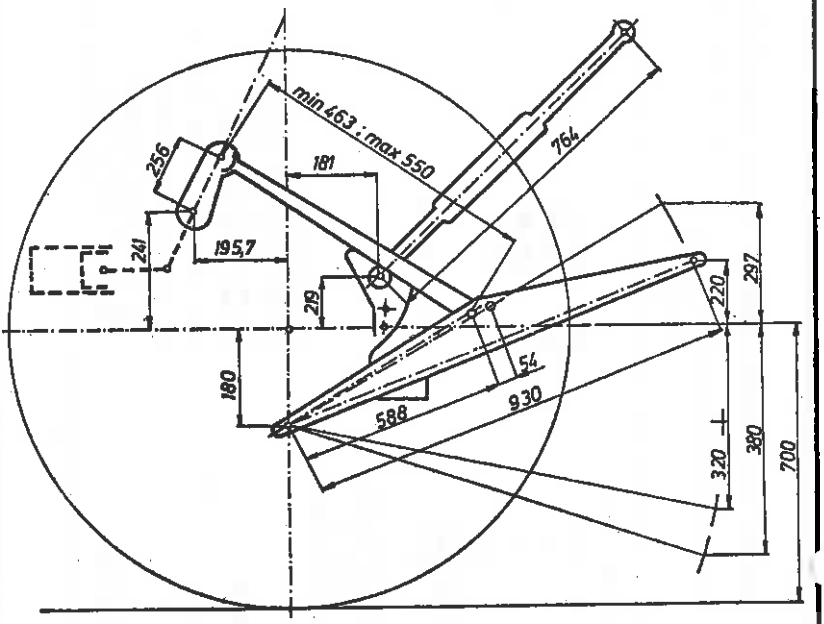
- Maximum force exerted through whole range 1830 kg (4033 lb)
- Lifting force when front of tractor lifts 2322 kg (5118 lb)
- Forces were measured at 192 kg/cm^2 (2729 lb/in^2) (maximum pressure) and the reported data were calculated to correspond to the forces obtained at 170 kg/cm^2 (2416 lb/in^2) (maximum hydraulic power pressure)

LINKAGE GEOMETRY WHEN CONNECTED TO THE STANDARD FRAME FOR TRACTORS MODEL IMT-586 AND IMT-589

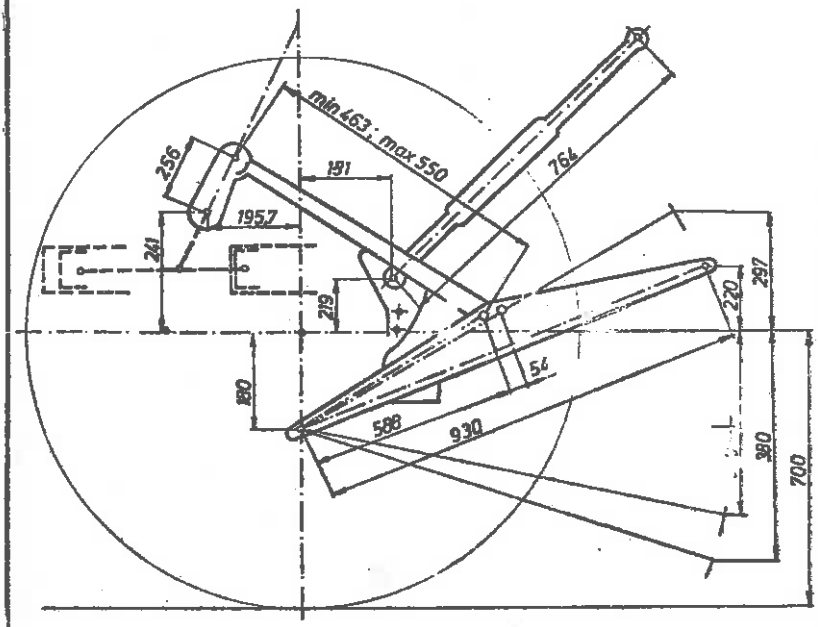
	Maximum lifting force	Minimum lifting force
Projection of length in side view		
- lower links mm (in)	930 (36,62)	930 (36,62)
- lift arms mm (in)	256 (10,08)	256 (10,08)
- lift rods mm (in)	550 (21,66)	463 (18,23)
- top link mm (in)	752 (29,60)	751 (29,57)
Distance of lift rod connection point from pivot point of lower link mm (in)	642 (25,29)	588 (23,15)
Following dimensions are given in relation to the rear wheels centre line, which is on the height of 700 mm (27,56 in) above the ground		
- lower link pivoting point	in vertical plane 180 mm (7,09 in) below	in vertical plane 180 mm (7,09 in) below
- top link pivoting point	181 mm (7,13 in) behind 219 mm (8,62 in) above	185 mm (7,28 in) behind 185 mm (7,28 in) above
- lift arm pivoting point	195,7 mm (7,71 in) in front of 241 mm (9,49 in) above	195,7 mm (7,71 in) in front of 241 mm (9,49 in) above
- maximum and minimum height of lower link hitch points	195 mm (7,68 in) above 355 mm (13,98 in) below	250 mm (9,84 in) above 320 mm (12,60 in) below

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LIFTING MECHANISM – TRAKTOR-IMT-586



LIFTING MECHANISM -TRAKTOR IMT -589



Test Engineer: M. ŽIVKOVIĆ
Officer in charge: N. MILOVANOVIĆ
Director: R. OROVIĆ
Date: 5th January 1975