Institut za mehanizaciju poljoprivrede – Zemun

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



Agricultural Tractor IMT–569 DV DE LUXE (4 WD)

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

Date of test: Decembar 1985 – April 1986

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 (CEMAGREF, France) as being in accordance with The O.E.C.D. STANDARD –CODE.

Date of Approval January 13th, 1988

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Tractor manufacturer:	IMT - Industrija Mašina i Traktora Novi Beograd - Yugoslavia
Submited for test by:	The manufacturer
Selected by:	Representatives of IMP
Place of running-in:	Laboratory of IMP
Duration of running-in:	cca 6o hours

SPECIFICATION OF TRACTOR

TRACTOR

Make:	IMT
Model:	IMT - 569 DV DE LUXE (4 WD)
Type:	Standard-unit construction, four wheels, all wheels driven
Serial N°:	7o1oooo 84 (Start of series)

ENGINE

Make:	IMR - Industrija Motora Rakovica
Model:	DM 34
Type:	Four stroke, water cooled diesel, direct injection, naturally aspirated
Serial N°:	V 8o3L 421o
Cylinders:	4, vertical, in-line, bore 91,4 mm, stroke 127 mm, displacement 333o cm^3, compression ratio 16,5:1, overhead valves, replaceable dry cylinder liners
Fuel system:	IPM membrane type feed pump with hand primer and sediment bowl, two CAV-DONIT paper element fuel filters on the pressure side of feed pump, first filter with sediment bowl; fuel tank capacity 9o l; CAV-IPM distributor type DPA 3241F 9oo injection pump, serial N° 37625 CCG, manufacturer's production setting 5o-52 mm^3/stroke at rated engine speed and full load; injection timing 26° before T.D.C.;

	CAV-IPM injector nozzles, model EE with four holes, injection pressure 18,6±5 MPa
Governor:	CAV-IPM, mechanical, all range, incorporated in fuel injection pump, governed range of engine speed 5oo to 24oo rev/min, rated engine speed 225o rev/min, idle engine speed 5oo±3o rev/min;
Air cleaner:	DONALDSON-TPR dry paper element filter with maintenance indicator; horizontal with air inlet bellow bonnet, in front of engine; maintenance indicator with signal light on the instrument panel;
Lubrication system:	Forced feed from excentric rotor pump; oil filter with replaceable cartridge; recommended oil and filter change period 25o hours; recommended oil quality acc. MIL-L-21o4 A -2o°C to - 5°C SAE 1o - 5°C to +3o°C SAE 2o or SAE 15W4o over 3o°C SAE 4o or SAE 15W4o Oil capacity 6,8 l
Cooling system:	Water cooling with impeller pump, pressurized system set to 5o KPa overpressure; fan with 6 blades 4o6 mm dia; water capacity 2o,2 l; temperature control by piston-type thermostat
Starting system:	Electrical, ISKRA solenoid-engaged starter motor AZJo4o4 12V, 3kW Z1o; heating plug in intake manifold as aid for cold starting; hand lever of speed selector in neutral position as starting safety device;
Electrical system:	12 Volt, negative earth; 3-phase alternator ISKRA AAG 13o2, 14V, 28A 1 lead acid battery, 135 Ah at 2o hours rating;

Exhaust: Vertical, on the left hand side of tractor's body;
single chamber expansion type silencer with a 100 mm dia and 600 mm length;
exhaust outlet 50 mm dia, with mouth showing upwards, 2730 mm above ground;

TRANSMISSION

Clutch: KRON - Novi Beograd;
dry dual friction disc type double acting clutch, tractor drive disc dia 300 mm, p.t.o. chaft drive disc dia 250 mm, mechanically pedal operated

Gearbox: Own make;
mechanical, 5 forward and 1 reverse gear, 1st, 2nd and 3rd gear with sliding gears, 4th 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;
final drives of epicyclic type

Front axle: Own make; driven axle
Crown wheel and pinion with final reduction gear of epicyclic type;
bevel gear type differential;
no differential lock exist;
the power to the front axle is transmitted through the side reduction unit located on the central housind and the shaft with universal joints;

the front drive is engaged and disengaged mechanically with a sliding gear and by means of hand lever located on the right hand side of drivers seat

Oil capacities:
- Gearbox and rear axle (With hydraulic power lift) 32 l
- Front axle (differential gearbox) 5,5 l
- Final drives (front and rear) 4 x 1 l

Recommended oil qualities:
Gearbox, rear and front axle:
hydraulic transmission oil GALAX Traktol HT, INA Transhidrol 85 or HENA Traktol M 8o, or engine oil acc to MIL-L-21o4 C;
oil changing interval 8oo h;
oil filter cleaning interval 8oo h;

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 km/h	at standard p.t.o. speed 54o rev/min km/h
Forward speeds			
1 low	279,55	2,o3	1,5o
2 low	186,37	3,o5	2,29
3 low	121,14	4,69	3,52
4 low	98,6o	5,76	4,32
5 low	8o,59	7,o5	5,29
1 high	69,88	8,13	6,1o
2 high	46,57	12,2o	9,15
3 high	3o,28	18,77	14,o8
4 high	24,66	23,o5	17,29
5 high	2o,15	28,2o	21,15
Reverse speeds			
low	258,o	2,2o	1,65
high	64,5	8,81	6,61

Calculated with the driving wheel radius index 67o mm

Power take-off

Main P.T.O. Semi-independent p.t.o. driven by the pedal operated second disc of the double acting clutch; at rear of tractor, in the median plane; height above ground 543 mm (with 16,9-28 rear tyres and radius index 67o mm); distance of the p.t.o. shaft end from the rear axle axis:

- below 127 mm
- behind 45o mm

dimensions 35 mm Ø, 6 splines acc. to JUS M.Ll.6o1 and ISO 5oo type 1

Proportional to engine speed p.t.o.: Standard p.t.o. speed 54o rev/min; direction of rotation clockwise, viewed from tractor rear; p.t.o. speeds may be set by aid of tractormeter

p.t.o. speed rev/min	engine speed rev/min	transmission ratio engine: p.t.o.
54o	1982	3,67 : 1
613	225o	

Power restriction and maximum torque: Maximum engine power and torque equivalent to maximum engine torque

Note: The looo rev/min p.t.o. with shaft end with 21 splines acc. to ISO 5oo type 1 is avaliable optionally.

Ground speed p.t.o.: Driven by rear axle drive, sence of rotation clockwise, at forward movement

p.t.o.	travel distance per p.t.o. revolution m	number of p.t.o. revolutions per rear wheel revolution
54o	o,48	8,77

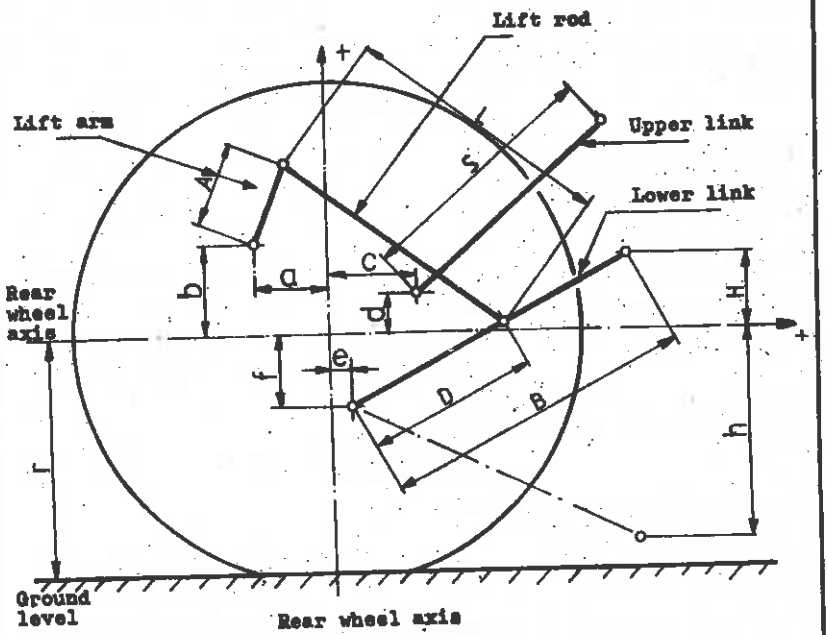
Load restriction (maximum torque): 85o Nm

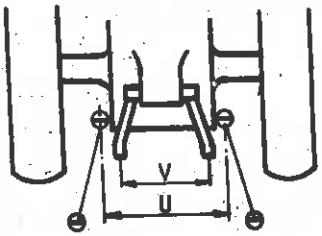
Power lift: Own make;

Hydraulic system: Four cylinder piston pump of boxer type with 26,4 cm^3/rev delivery, located in central housing, driven by 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;
opening pressure of relief valve 17,5 MPa, sustained pressure by the opened relief valve 18,0-18,5 MPa;
No cylinder safety valve exist;
two single acting rams with 63 mm bore, 215 mm stroke;
4 external oil tappings, single or double acting are located at rear of tractor;
hydraulic oil tank in common with gearbox, oil capacity 32 l, max 5 l may be taker off through oil tappings when tractor is mooving, lo l when tractor is stationary;
strainer in hydraulic pump suction line, every 5oo working hours maintained by washing.
Optional (not fited on the tested tractor) hydraulic system with additional gear pump, pump delivery 33 l/min at 225o rev/min engine speed;
opening pressure of relief valve 16 MPa

Implement linkage: See pages 7 and 8

Implement linkage: Three point linkage, joint balls category 2 acc. to ISO 730/I





Dimensions of implement linkage (projected lengths, in mm)
underlined dimensions are valid for power lift test page 25

Rear tyres (size 16,9 - 28)	radius index	(r)	67o
Front tyres (size 9,5 - 24)	radius index	(r')	52o
Length of lift arms		(A)	3oo
Length of lower links		(B)	78o
Distance of lift arm pivot point from rear wheel centre line	horizontally	(a)	-11o
	vertically	(b)	42o
Horizontal distance between the 2 lower link points		(u)	57o
Horizontal distance between the 2 lift arm end points		(v)	41o
Length of upper link		(S)	65o to 87o, 82o
Distance of upper link pivot point from rear wheel centre line	horizontally	(c)	185 or 181
	vertically	(d)	185 or 219
Distance of lower link pivot point from rear wheel centre line	horizontally	(e)	215
	vertically	(f)	185
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	34o or 38o
Length of lift rods		(L)	6o5 to 725, 665

Height of lower link hitch points relative to rear axle centre line (situated 67o mm above ground) in mm

These data are valid for unloaded power lift

		lift rod length L		
		6o5 mm	665 mm	725 mm
Lowest position	(h)	31o mm	46o mm	61o mm
Highest position	(H)	38o mm	26o mm	145 mm
Transport position	(H')	38o mm	26o mm	145 mm

Pull attachment

Holed bar: Fitted on the clevis of lower links;
length between ball joints 86o mm;
thickness of the bar 3o mm, width 8o mm centre hole and 4 holes on either side in 48 mm steps;
all holes with 2o mm diameter;
height above ground adjustable by power lift within the range from 6o to 1o5o mm continuosly
distance of centre hole with lower links in horizontal position:

from rear axle:
horizontal 995 mm behind
vertical 185 mm below

from p.t.o. shaft end
horizontal 545 mm behind
vertical 58 mm below

Trailer hitch: Automatically acting by means of power lift,
height above ground 374 mm in working position;
distance of hitch centre

from rear axle:
horizontal 529 mm behind
vertical 296 mm below

from p.t.o. shaft end
horizontal 79 mm behind
vertical 169 mm below

diameter of the coupling pin 48 mm;
maximum admissible vertical load 15oo daN

Towing hitch: Fixted;
height above ground 67o, 71o;
75o and 79o mm distance of the hitch centre:

from the rear axle
horizontal 561 mm behind
vertical in line, 4 ; 8o and 12o mm above

from the p.t.o. shaft end
horizontal 111 mm behind
vertical 127, 167, 2o7 and 247 mm above

diameter of the coupling pin 3o mm

Note:

1° All pull attachment heights are given for the radius index of rear wheels 67o mm (16,9-28 tyres).

2° Holed bar, trailer hitch and towing hitch are available optionally.

Steering: PPT-ORSTA
hydrostatic steering, model LAGB 1oo,
with own oil cirquit;
engine driven pump with constant delivery
12 l/min, maximum working pressure 1o MPa;
double acting ram with 5o/25 bore and
235 mm stroke;
oil capacity 1,5 l;
recommended oil - GALAXMATIC DAC or DEXTRON B,
ZF ATF, ALLISON C-2 and C-3, oil changing
interval 8oo.

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 four 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 braking take-off:	Optional equipment, fitted on the tested tractor; make PPT; single line air brake, operated by pedal mounted valve;

compressor with 75 mm bore 28 mm stroke, driven by the engine at 2340 rev/min speed at rated engine speed (2250 rev/min compressor delivery 0,29 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 20 l capacity; standardized coupling head;

Wheels

Front wheels: (Steering and driving)
2 pneumatics 9,5-24 A8, 6 ply, diagonal type tyre casing; maximum permissible load per tyre 940 kg at 2,1 bar inflation pressure and 30 km/h; track width 1535 mm; rims 8 x 24

Driving wheels:
2 pneumatics at rear 16,9-28, 6 ply, diagonal type tyre casing; maximum permissible load per tyre 1925 kg at 1,4 bar inflation pressure and 30 km/h; cast iron wheel discs, track width adjustable from 1540 to 2140 mm in four steps by turning of wheel discs; rims W 12L x 28

Wheel base:
2220 mm

Seat:
Own make; model 5220 0400; upholstered seat with back rest; adjustable spring (60 to 120 kg) with shock absorber; for and aft adjustable about 125 mm

Cab
Safety cab IMT 527 39 6000 with drivers platform IMT 527 39 5000 (O.E.C.D. Approval CSD 0999/1-a(C); joined to the tractor body in four points by means of elastic supports; interior padding of the cab is from sound deadening materials;

windows with sefety glasses, back window may be opened;
heating and ventilating unit make TAF-Ptuj, with filter and air inlet in cab's roof front panel.

Number of grease points: with grease 19
with oil 12

OVERALL DIMENSIONS

Total lenght: 41o5 mm with horizontal lower links and with front ballast
3815 mm with horizontal lower links and without front ballast

Maximum width: 2245 mm with maximum rear track setting with and without rear ballast

Minimum width: 193o mm between the outside edges of rear tyres (track setting 154o mm)

Total height: 2615 mm to the top of the cab
273o mm to the top of the exhaust outlet

Ground clearance: 434 mm in the middle of tractor
317 mm below the front axle housing

Note: Total heights and ground clearance are given for the radius index of rear tyres 67o mm (16,9-28 tyres) and radius index of front tyres 52o mm (9,5-24 tyres)

Lighting equipment: Electrical, 12 Volt, negative earth

	Dimensions mm	Height above ground to centre mm	Distance from outside edge of tractor to centre mm 1)
Head lights: 2)	Ø 135	115o	64o
Side lights:			
front 3)	12o/35	155o	13o
rear 4)	6o/55	156o	15o
Position lights:			
front 3)	12o/35	158o	13o
rear 4)	12o/35	152o	18o
Stop lights: 4)	6o/55	156o	21o
Reflectors:			
rear 5)	Ø 135	172o	13o

1) distance from autside edge of cab's fender (rear wheel track width 154o mm)

2) unrestricted beam angle of Head lights in plan view 32°

3) on common plate 12o/7o mm

4) on common plate 12o/9o mm

5) only one reflector on the rear edge of right hand fender

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 Ready for use as tested

		without driver kg	with driver kg
Without ballast:	front	1335	1345
	rear	2090	2155
	total	3425	3500
With ballast:	front	1870	1880
	rear	2675	2740
	total	4545	4620
Ballast:	front	10 weights 30 kg each	300 kg
		water in tyres	160 kg
	rear	4 weights 50 kg each	200 kg
		water in tyres	460 kg
Track setting:	front	1535 mm	
	rear	1540 mm	

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	INA Diesel-fuel D_2 in all tests
	Density at 15°C: 0,831 kg/l
	Cetane number: over 50
	Viscosity at 50°C 2,5 cSt
Engine oil:	GALAX SUPER HD 83, SAE 30 (11 cSt at 98,9°C)
Transmission and power lift oil:	GALAX TRAKTOL HT 8,7 cSt at 98,9°C)
Final drives and front ayle:	HYPOL 90 B (17 cSt at 98,9°C)
Steering oil:	GALAXMATIC DAC

COMPULSORY TESTS

(1) MAIN POWER-TAKE-OFF PERFORMANCE

Date and location of test: 4th December 1985
Institut za mehanizaciju poljoprivrede - Zemun

Type of dynamometer: Hydraulic brake SCHENCK U1-3o with auxilary band brake

Power	Speed		Fuel consumption			Specific energy
	engine	p.t.o.	hourly		specific	
kW	rev/min	rev/min	l/h	kg/h	kg/kWh	kWh/l
	MAXIMUM POWER					
	At 2-hour test					
39,8o	225o	613	13,97	11,58	o,291	2,85
	At standard p.t.o. speed (54o rev/min)					
37,36	1982	54o	12,62	1o,46	o,28o	2,96
	At speed recommended by the manufacturer for drawbar work					
39,8o	225o	613	13,97	11,58	o,291	2,85
	PART LOADS					
	Governor hand lever in position giving maximum power					
(i) 85% of torque at maximum power						
34,88	232o	632	12,33	1o,22	o,293	2,83
(ii) unloaded						
o,49	2423	66o	4,5o	3,73	-	-
(iii) 5o% of the load defined in (i)						
17,85	2375	647	7,97	6,6o	o,37o	2,24
(iv) maximum power						
39,8o	225o	613	13,97	11,58	o,291	2,85
(v) 25% of the load defined in (i)						
9,o6	24o4	655	6,14	5,o9	o,562	1,48
(vi) 75% of the load defined in (i)						
26,39	2342	638	9,87	8,18	o,31o	2,67

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific kg/kWh	Specific energy kWh/l
Governor setting giving standard p.t.o. speed at full load						
(i) 85% of the torque at full load						
32,85	2o5o	599	11,17	9,26	o,282	2,95
(ii) unloaded						
o,38	2151	586	3,49	2,89	-	-
(iii) 5o% of the load defined in (i)						
16,96	21o3	573	7,32	6,o7	o,358	2,33
(iv) full load						
37,36	1982	54o	12,62	1o,46	o,28o	2,96
(v) 25% of the load defined in (i)						
8,48	2131	581	5,61	4,65	o,548	1,53
(vi) 75% of the load defined in (i)						
23,94	2o69	564	8,61	7,13	o,298	2,78

STANDARD SPECIFIC FUEL CONSUMPTION: o,293; o,37o; o,282; o,358 g/kWh

No load, maximum engine speed: 2423 rev/min

Equivalent crank-shaft torque at maximum power: 17o Nm

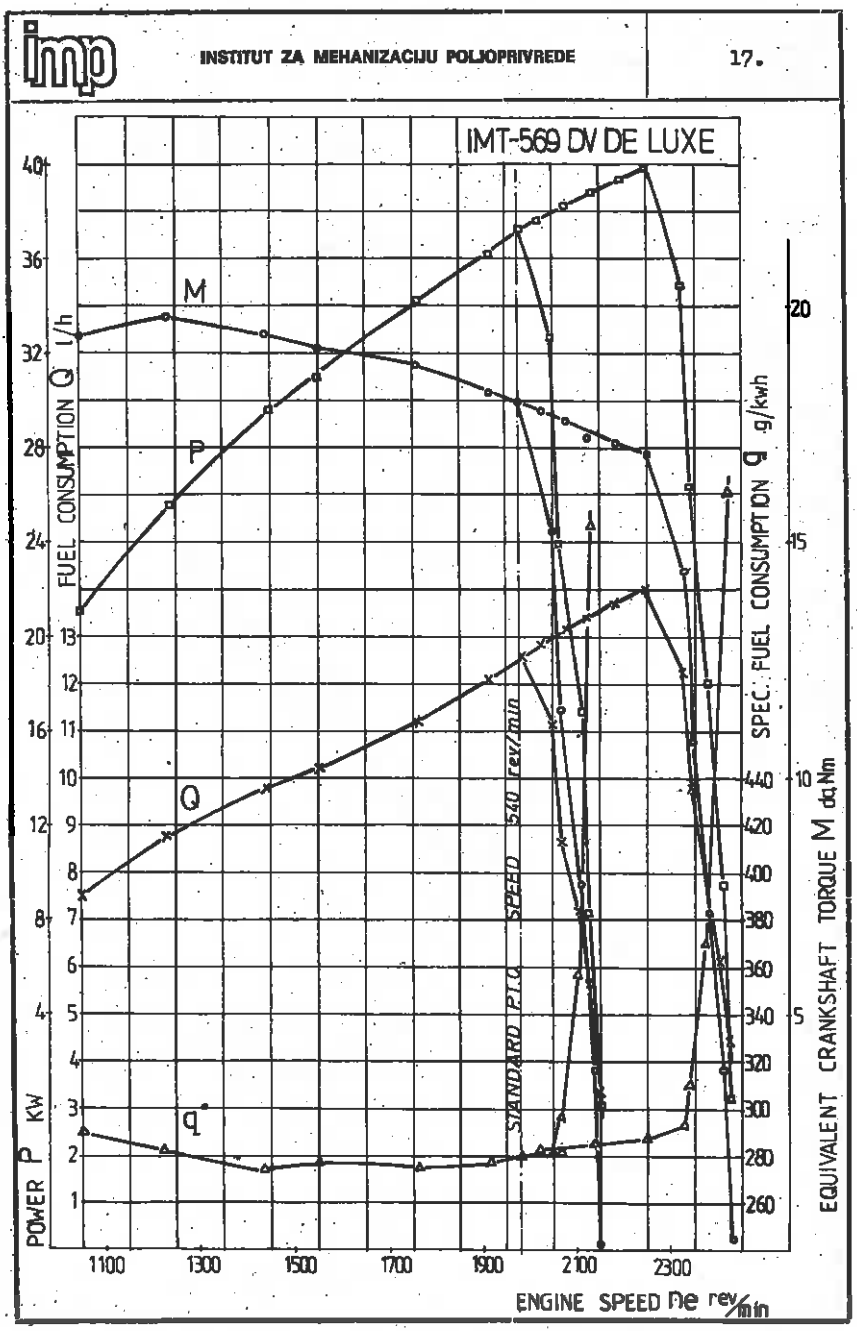
Maximum equivalent crankshaft torque: 197 Nm at 1237 rev/min engine speed

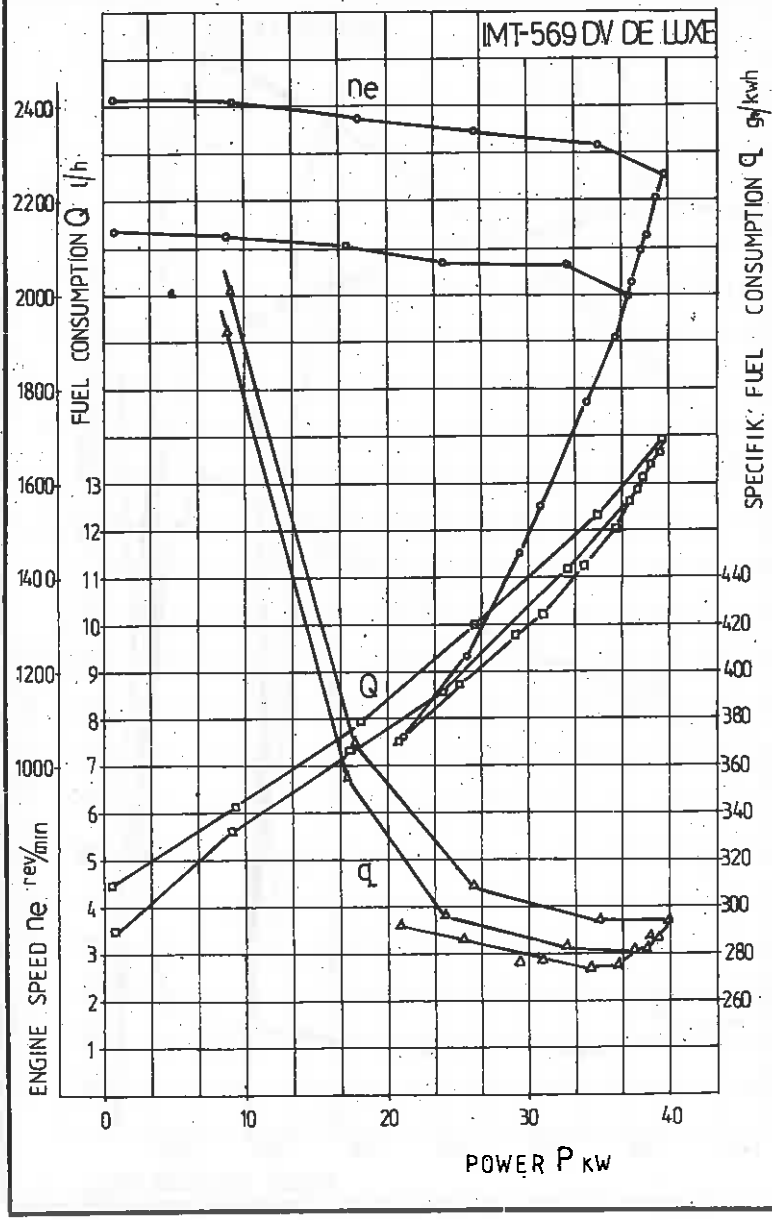
Mean atmospheric conditions:

- temperature: 16°C
- pressure: 1oll mbar
- humidity: 63%

Maximum temperatures

- coolant: 85°C
- engine oil: 97°C
- fuel: 18°C
- air intake: 18°C


IMT-569 DV DE LUXE
M
P
Q
q
FUEL CONSUMPTION Q l/h
POWER P KW
SPEC. FUEL CONSUMPTION q g/kwh
EQUIVALENT CRANKSHAFT TORQUE M daNm
STANDARD P.T.O. SPEED 540 rev/min
ENGINE SPEED ne rev/min
1100
1300
1500
1700
1900
2100
2300


IMT-569 DV DE LUXE
ne
Q
q
ENGINE SPEED ne rev/min
FUEL CONSUMPTION Q l/h
SPECIFIK FUEL CONSUMPTION q g/kwh
POWER P kW
2400
2200
2000
1800
1600
1400
1200
1000
13
12
11
10
9
8
7
6
5
4
3
2
1
440
420
400
380
360
340
320
300
280
260
0
10
20
30
40

(2) DRAWBAR PERFORMANCE

Date of test: 16th and 28th April 1986

Type of track: Tarmacadam

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

Gear	Driving speed	Power	Drawbar pull	Engine speed	Mean 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	10	11	12	13	14
			(1) MAXIMUM POWER (unballasted)					tyre inflation pressure					
			height of drawbar above ground 750 mm					front 1,7 bar, rear 0,9 bar					
1 L	1,81	15,69	3120	2360	15,0	1,81	0,458	15	80	80	15	67	1001
2 L	2,67	23,14	3120	2330	15,0	2,09	0,397	16	80	82	15	67	1001
3 L	4,12	32,04	2800	2250	11,8	2,29	0,362	16	80	83	15	67	1001
4 L	5,35	33,59	2260	2250	6,9	2,39	0,346	16	81	84	15	67	1001
5 L	6,70	34,06	1830	2250	4,6	2,43	0,342	16	81	84	15	67	1001
1 H	7,79	34,08	1575	2250	3,7	2,43	0,341	16	83	85	15	67	1001
2 H	11,86	33,11	1005	2250	2,4	2,36	0,352	16	83	85	15	67	1001
3 H	18,30	31,52	620	2250	1,7	2,24	0,370	17	84	86	15	67	1001
4 H	22,50	30,31	485	2250	1,5	2,15	0,385	17	84	86	15	67	1001
5 H	27,60	28,75	375	2250	1,0	2,04	0,406	17	84	86	16	64	1001

Gear	Driving speed	Power	Drawbar pull	Engine speed	Slip of sheels	Specific energy	Specific fuel consumpt.	Temperatures Fuel	Co-olant	Engine oil	Atmospheric conditions 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 75o mm							front 2,1 bar, rear 1,2 bar		
1 L	1,78	2o,27	41oo	234o	15,o	2,o3	o,4o7	18	8o	82	18	54	1olo
2 L	2,61	29,73	41oo	228o	15,o	2,19	o,377	18	82	83	18	54	1olo
3 L	4,35	33,47	277o	225o	6,8	2,38	o,347	18	82	83	18	54	1olo
4 L	5,46	33,82	223o	225o	4,9	2,41	o,344	19	83	84	18	54	1olo
5 L	6,8o	33,9o	1795	225o	3,7	2,41	o,343	19	84	84	19	52	1olo
1 H	7,84	33,54	154o	225o	3,3	2,39	o,347	19	84	85	19	52	1olo
2 H	11,86	31,96	97o	225o	2,4	2,27	o,365	19	84	85	19	52	1olo
3 H	18,4o	29,64	58o	225o	1,5	2,11	o,392	2o	84	86	19	52	1olo
4 H	22,7o	28,37	45o	225o	1,2	2,o2	o,411	2o	84	86	19	52	1olo
5 H	27,9o	27,13	35o	225o	o,8	1,93	o,43o	2o	83	86	19	52	1olo

Gear	Driving speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumpt.	Temperatures Fuel	Co-olant	Engine oil	Atmospheric conditions 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 5thL gear									
5 L	7,o6	26,48	135o	233o	2,7	2,31	o,358	2o	8o	84	19	56	1oo9
			(iv)	FIVE-HOUR-TEST at pull corresponding 15% wheel sleep in test (ii)									
1 L	-	-	4loo	225o	-	-	-	21	85	88	18	61	1oo7

Total oil consumption during the ten hours duration of tests (iii) and (iv) was 53 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:	9,5o - 24 AS 6 ply
	rear:	16,9 - 28 AS 6 ply
Track of wheels	front:	1535 mm
	rear:	154o mm

+Front wheel drive disengaged

	without brakes		With brakes	
	left-hand	right-hand	left-hand	right-hand
	m	m	m	m
Radius of turning space	4,91	4,95	4,42	4,46
Radius of turning circle	4,65	4,68	4,16	4,19

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground:	776 mm
Distance forward from rear axle centre:	853 mm
Distance from tractor`s median plane:	3 mm to the left

(5) BRAKING PERFORMANCE

Date of test: 21st and 30th April 1986

Type of track: Tarmacadam

Mass of tractor with driver (kg):

	front	rear	total
ballasted	1880	2740	4620
unballasted	1345	2155	3500

+Front wheel drive engaged

Type 0 (ordinary cold service braking device performance) test

Speed before application of brakes 28,5 km/h

Ballasted	Braking device control force	daN	30	35	40	45	50	55
	Mean deceleration	m/s^2	2,85	3,10	3,55	3,75	4,10	4,20
Unballasted	Braking device control force	daN	25	30	35	40	45	50
	Mean deceleration	m/s^2	3,00	3,30	3,60	3,90	4,35	4,50

Type I (fade) test

Speed before application of brakes 28,5 km/h

Ballasted	Braking device control force	daN	30	35	40	45	50	55
	Mean deceleration	m/s^2	2,65	3,00	3,35	3,60	3,90	4,00
Unballasted	Braking device control force	daN	30	35	40	45	50	55
	Mean deceleration	m/s^2	2,80	3,10	3,45	3,65	4,10	4,25

Maximum deviation of tractor from its original course: no deviation was observed

No abnormal vibrations occured

The brakes were heated by towing the tractor with the braking force about 10% of the mass at the speed 22,6 km/h (80% of the maximum speed)

Parking braking device test

	Tractor with ballast 18 per cent slope		Tractor without ballast 12 per cent slope with trailer of 3425 kg	
	Up	Down	Up	Down
Braking device control force, daN	28	28	25	25

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 23rd April 1986
Type of track: Tarmacadam
Type of sound level meter: BRUEL &. KJAER mod.2209

Results of test

Gear: 5th high
Travelling speed before acceleration: 21,5 km/h
Sound level: 87,2 dB(A)

(7) NOISE AT DRIVER'S EAR LEVEL

Date of test: 23rd April 1986
Type of track: Tarmacadam
Type of sound level meter: BRUEL &. KJAER mod.2209

Results of test

1) Tractor with cab and with vertical exhaust pipe
2) Front wheel drive engaged

Gear	Drawbar pull at which the tractor develops the maximum sound level daN	Travelling speed nominal km/h	Travelling speed efective km/h	Sound level dB(A)
1 L	3100	2,03	1,8	83,7
2 L	3100	3,05	2,7	83,9
3 L	2750	4,69	4,1	84,1
4 L	2250	5,76	5,4	84,2
5 L+)	1800	7,05	6,7	84,4
5 L+)	Light load	7,05	7,3	83,2
1 H	1550	8,13	7,8	83,5
2 H	1000	12,20	11,9	83,9
3 H	600	18,77	18,3	84,2
4 H	460	23,05	22,6	83,8
5 H++)	Light load	28,20	28,3	83,6

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

++) Front wheel drive disengaged

(8) POWER LIFT AND HYDRAULIC POWER TEST

Date and location of test: 16th December 1985, IPM - Zemun

Hydraulic fluid:

Make and type: Galax Traktol HT

Viscosity: 8,7 mm/s (cSt) at 98,9°C

Viscosity index: over 85

Hydraulic fluid temperature at the beginning of test: 64°C

Type of linkage lock for transport: hydraulic

Opening pressure of the cylinder overpressure safety valve (manufacturer's specification): No overpressure valve exist

Power lift:

Main linkage dimensions one on pages 6 and 7

	Height of lower hitch point above ground in down position mm	Vertical movement mm	Maximum force exerted through full range daN	Corresponding pressure of hydraulic fluid MPa	Moment around rear axle daNm	Max.tilt angle of mast over range of lift degr.
At hitch points	21o	72o	22oo	15,8	-	-
On the frame	15o	885	181o	15,8	29o5	-5° 25' +1o° 2o'

Note: The front wheels are raising when on the lover links hitch points is applied the lifting force of 298o daN (tractor without front ballast) or 4185 daN (tractor with front ballast)

Performance of power lift

Lifting heights in relation to a horizontal line through the lower link pivot points

mm	-335	-275	-2oo	-1oo	0	+1oo	+2oo	+3oo	+4oo	+445	+5oo	+55o
	At hitch points											
daN	-	22oo	228o	24oo	248o	258o	264o	271o	278o	28oo	-	-
	At test frame (61o mm behind lower link hitch points)											
daN	181o	-	191o	196o	2o1o	2o4o	2o6o	2o7o	2o8o	-	2o9o	2o9o

1° The forces are measured at sustained pressure with the relief valve open (18,1 MPa) and calculated on the pressure 15,8 MPa which corresponds 9o% of relief valve setting (17,5 MPa).

Hydraulic power test:

Systained pressure with relief valve open:	18,1 MPa (181 bar)
Opening pressure of relief valve:	17,5 MPa (175 bar)
Pump delivery rate on minimum pressure:	15,7 l/min at 225o rev/min
Flow rate corresponding to a hydraulic pressure equivalent to 9o% of the actual relief valve pressure setting and corresponding hydraulic power:	Flow rate: 15,o l/min Pressure: 15,8 MPa (158 bar) Power: 3,95 kW
Flow rate and hydraulic pressure corresponding to maximum hydraulic power:	Flow rate: 14,6 l/min Pressure: 16,3 MPa (163 bar) Power: 3,97 kW
Tapping point used for test:	At rear of tractor
Temperature of hydraulic fluid:	64–69°C
REMARKS and REPAIRS:	No