

**INSTITUTE FOR MECHANIZATION, TECHNOLOGY
AND BUILDINGS IN AGRICULTURE
ZAGREB, YUGOSLAVIA**

TEST BULLETIN: O.E.C.D.No. 1047

**Report on test in accordance with O.E.C.D. Standard Code for the
Official Testing of Agricultural Tractors**



AGRICULTURAL TRACTOR

TORPEDO RX 120 (4 WD)

Date of approval:

6th March 1987

Manufactured by:

Torpedo, Rijeka, Yugoslavia

Date of test:

October-November 1986

This report has been approved by the O. E. C. D. Coordinating Centre (CEMAGREF, Antony, France) as being in accordance with the O. E. C. D. Standard Code for the Official of Testing Agricultural Tractor Performance.

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This bulletin is based on engineering test in accordance with O.E.C.D. Tractor Code. It does not contain evaluation of the performance of the tractor on practical farm work.

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In this report all measurements are given in SI units. The relation with former Technical System of Units is given by following relations:

Forces:	$1 \text{ N} = 0.102 \text{ kp}$ or $1 \text{ kp} = 9.81 \text{ N}$
Powers:	$1 \text{ kW} = 1.36 \text{ HP}$ or $1 \text{ HP} = 0.736 \text{ kW}$
Pressures:	$100 \text{ kPa} = 1.02 \text{ kp/cm}^2 = 750.1 \text{ mm Hg}$ or $1 \text{ kp/cm}^2 = 98.1 \text{ kPa}$

Tractor manufacturer's name and address:	Torpedo, Industrijska 19, 51000 Rijeka
Submitted for test by:	Manufacturer
Selected for test by:	Manufacturer in agreement with the Institute
Place of running-in:	Zagreb
Duration of running-in:	50 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	Torpedo, Rijeka
Model:	RX 120
Type:	4 wheel drive, unit construction
Serial No.:	28452
1 st serial No.:	28378

Engine

Make:	Torpedo, Rijeka
Model:	BF 6L912T
Type:	Turbocharged, 4-stroke diesel engine, air cooled, direct ignition
Serial No.:	102610
Cylinders:	6, vertical in-line
Bore/Stroke:	100×120 mm
Capacity:	5652 cm ³
Compression ratio:	15.5:1
Cylinder liners:	Interchangeable cylinders
Valves:	Overhead

Supercharging

Make:	KKK
	K27 3060 UD 13.22
Supercharging pressure:	63.3 kPa at rated speed

Fuel system

Fuel feed system:	Piston fuel feed pump with sediment bowl, integral with injection pump
Fuel filters:	2, with replaceable cartridge
Capacity of fuel tank:	125 l
Injection pump:	In-line, Rikard Benčić, Rijeka BR 26 T9-12a 68 BII RVF
Serial No.:	12.86-19789
Manufacturer's production setting of injection pump:	61 mm ³ /stroke at rated engine speed and full load
Injection timing:	26° before TDC

Make, type and model of injectors: IPM; Y DLLA 149 S 394, 4 hole
Injection pressure: 17.6 ± 8MPa

Governor

Make: Rikard Benčić – Rijeka
Type: Mechanical, centrifugal
Governed range of speed: 650–2450 rev/min
Rated engine speed: 2300 rev/min

Air cleaner

Type: Centrifugal dust trap
Location: Under bonnet, front of the engine

Main

Make: KRON
Type: Horizontal, dry, with replaceable cartridge
Location: Front of the engine
Maintenance indicator: Yes

Lubrication system

Type of feed pump: Gear
Total oil capacity: 15 l
Oil change period: 200 hours
Type of oil filter: With replaceable cartridge
Filter change period: 200 hours
Recommended oil: acc. MIL-L-2104 B or C
Recommended viscosities: Winter SAE 10 W
Summer SAE 20 W/20
All-weather SAE 30

Cooling system

Type of cooling system: Air
Fan: Belt driven via hydraulic clutch
Number of blades: 10
Fan diameter: 275 mm

Starting system

Safety device: Gear selector lever to be in neutral position
Make: ISKRA
Type: Electrical, solenoid engaged
Starter motor power rating: 12 V; 3 kW
Cold starting aid: Flame plug in inlet manifold

Electrical system

Voltage:	12 V
Generator:	Alternator
Rating:	14; 55 A
Batteries:	1, lead acid type
Rating:	110 Ah at 20 hours rating

Exhaust system

Make:	Own
Type	Apsorption silencer 1080×220×100 mm
Location:	Left-hand side of engine, vertical
Height of outlet above ground:	2920 mm

TRANSMISSION**Clutch**

Make:	OMG – Gorizia
Type:	Dry, dual disc clutch
Number of plates:	2
Diameter of plates:	305 mm
Method of operation:	Driving clutch mechanically by pedal; p.t.o. clutch mechanically by hand lever

Gearbox

Make:	Own
Type:	TWT 360
Arrangement:	5 forward speeds × 3 forward + 1 reverse group gears; optional creep group (5 forward × 4 forward + 1 reverse group gears), not fitted on tractor tested
Number of speeds:	15 forward + 5 reverse (optionally 20 forward + 5 reverse)
Sinchromesh gears:	5 forward speeds; medium and reverse group gears

Rear axle and final drives

Make:	Own
Type:	Bevel gear drive with crown wheel and pinion; bevel gear differential; spur gear reduction final drives

Differential lock

Type:	Mechanical
Method of operation:	Manual by pedal
Method of disengagement:	Self-disengaging

Front axle and final drives

Make:	Own
Type:	Bevel gear drive with crown wheel and pinion; bevel gear differential; planetary reduction gear final drives in wheel hubs
Differential lock:	None

Transmission oil

Gear box and rear final drives:	40 l
Change period:	500 hours
Recommended oil:	SAE 15 W 40 HD engine oil acc. API service classification: service CC, CD

Front axle

Differential:	12 l
Final drives:	2×3 l
Change period:	500 hours
Recommended oil:	Acc. API service classification service GL-5, viscosity SAE 90

Power take-off

Type:	Independent p.t.o. driven by the second disc of the dual disc clutch
Method of engagement:	By hand lever
Number of shafts:	2; 1 for 540 rev/min, 1 for 1000 rev/min
Method of changing p.t.o. speeds:	By coupling proper propeller shaft to proper p.t.o. shaft
Location:	At rear of the tractor
Direction of rotation (viewed facing driving end):	Clockwise

(i) 540 rev/min

Diameter of p.t.o.	34.9 mm with 6 splines; ISO 500 type 1
Engine to p.t.o. ratio:	4.06
P.t.o. speed at rated engine speed:	567 rev/min
Engine speed at standard p.t.o. speed:	2192 rev/min
Distance from the median plane of the tractor:	50 mm to right
Distance behind rear axle:	523.5 mm
Tyre sizes, Front, Rear:	13.6/12-28; 18.4/15-38
Height above ground:	687 mm

Total ratios and speeds:

Group	Gear	Number of engine revolutions for one revolution of driving wheel	Nominal travelling speed for rated speed of the engine 2300 rev/min
Creep, K (optional, not fitted)	1	1758.73	0.39
	2	1151.92	0.60
	3	939.53	0.73
	4	647.94	1.06
	5	527.96	1.30
Low, L	1	329.29	2.08
	2	215.68	3.18
	3	175.91	3.89
	4	121.32	5.65
	5	98.85	6.93
Medium, Z	1	162.51	4.22
	2	106.44	6.44
	3	86.81	7.89
	4	59.87	11.44
	5	48.78	14.04
High, S	1	80.25	8.54
	2	52.56	13.03
	3	42.87	15.98
	4	29.57	23.17
	5	24.09	28.44
Reverse, R	1	132.41	5.17
	2	86.72	7.90
	3	70.73	9.68
	4	48.78	14.04
	5	39.75	17.23

Calculated with tyre radius index of 790 mm

(ii) 1000 rev/min

Diameter of p.t.o. 34.9 mm with 21 splines; ISO 500 type 2

Engine to p.t.o. ratio: 2.214

P.t.o. speed at rated engine speed: 1039 rev/min

Engine speed at standard p.t.o. speed: 2214 rev/min

Distance from the median plane of the tractor: 50 mm to left

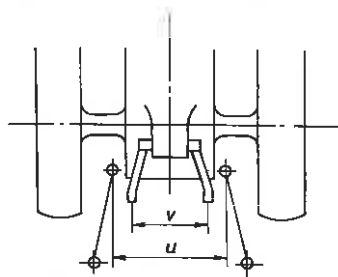
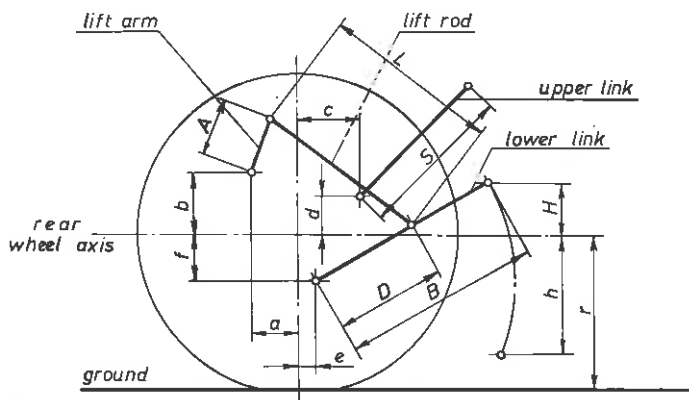
Distance behind rear axle: 523.5 mm

Tyre sizes, Front, Rear: 13.6/12-28, 18.4/15-38

Height above ground: 672 mm

LINKAGE DIMENSIONS FOR THE LIFTING TEST

Rear tyres (size 18.4/15-38)	loaded radius: (r)	842 mm
Front tyres (size 13.6/12-28)	loaded radius: (r')	660 mm
Length of lift arms:	(A)	330 mm
Length of lower links:	(B)	940 mm
Distance of lift arm pivot point from rear wheel centre line	horizontally: (a)	-120 mm
	vertically: (b)	412 mm
Horizontal distance between the two lower link points:	(u)	530 mm
Horizontal distance between the two lift arm points:	(v)	620 mm
Length of upper link:	(S)	703 mm
Distance of upper pivot point from rear wheel centre line	horizontally: (c)	383 mm
	vertically: (d)	202 mm
Distance of lower link pivot points from rear wheel centre line	horizontally: (e)	147 mm
	vertically: (f)	246 mm
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	570 mm
Length of lift rods:	(L)	828 mm
Height of lower hitch points:		
- in low position	(h)	642 mm
- in high position	(H)	69 mm
Height of lower hitch points when locked in transport position:		Any height within lift range



Power lift

Make:	Own
Type:	K 45.5
Type and number of cylinders:	One internal single acting Two external single acting

Type of linkage lock for transport:

Hydraulic

Relief valve pressure setting:

17.5 MPa

Opening pressure of cylinder safety valve:

22.0–25.0 MPa

Lift pump type:

Gear pump, BOSCH type HY/ZFFS 16/11, gear driven from the engine

Oil filters:

2; 1 in power lift unit, 1 in oil cooler circuit

Time between oil changes:

1500 hours

Time between filter changes:

500 hours

Oil capacity:

14 l

Site of reservoir:

Power lift housing

Type and number of tapping points:

4, quick release at rear of tractor

Maximum volume of oil available to external cylinders:

7 l

Recommended oil:

SAE 20 engine oil acc. MIL-L-2104

Three-point linkage

Category:

2 acc. to ISO 730

Controls:

Drought and position control, lower link sensing; floating position

Swinging drawbar

Height above ground:

457, 567, 667

Tyre sizes, Front, Rear:

13.6/12-28; 18.4/15-38

Type of adjustment:

Inverting drawbar

Distance of hitch point

from rear axle centre:

1580, 1650, 1720 mm

Distance of hitch point from p.t.o. shaft ends:

vertically:

185/200 mm

horizontally:

300 mm

Lateral adjustment:

170 mm right and left

Distance of pivot point from
rear axle horizontally: 380 mm
Diameter of drawbar pin
hole: 30 mm

Holed bar

Height above ground,
maximum: 1149 mm
minimum: 153 mm
Tyre sizes, Front, Rear: 13.6/12-28; 18.4/15-38
Horizontal distance to
p.t.o. shaft ends: 563 mm
Number of holes: 9
Hole diameter: 32 mm
Thickness and width of
drawbar: 30 mm × 80 mm

Trailer hitch

Height above ground: 867 or 907 mm
Tyre sizes, Front, Rear: 13.6/12-28; 18.4/15-38
Distance of hitch point
from rear axle centre: 602 mm
Distance of hitch point
from p.t.o. shaft ends
vertically maximum: 235/200 mm
minimum: 195/180 mm
Maximum permissible
vertical load: 20 kN
Diameter of pin hole: 32 mm

Steering

Method of operation: Hydrostatic power system with hand
operated steering motor powered by gear
pump mounted on the engine, single
acting cylinder on front axle
Make: Prva Petoletka – Trstenik
Working pressure: 16 MPa
Oil: Transmission oil from gearbox

Brakes

Service brake:

Type: Single dry disc brakes on rear axle half
shafts
Method of operation: Hydraulic by independent or coupled
pedals

Parking brakes

Type: Drum brakes on rear axle half-shafts
Method of operation: Hand lever with ratchet acting mechanically

Trailer brakes:

Optional pneumatic system operated by tractor pedals

Wheels

Front wheels: 2, steering and driving wheels
Make: Rekord-Rakovica
Size: 13.6/12-28
Ply rating: 6
Type of casing: Cross ply
Maximum permissible load on each tyre: 14.0 kN at 160 kPa overpressure
Track widths: 1670-2270 mm in steps of 100 mm
Method of adjustment: Reversing wheels and off-set lug rims
Rear wheels: 2, driving wheels
Make: Sava-Ruma
Size: 18.4/15-38
Ply rating: 8
Type of casing: Cross ply
Maximum permissible load on each tyre: 27.1 kN at 140 kPa overpressure
Track widths: 1760-2260 mm in steps of 100 mm
Method of adjustment: Reversing wheels and off-set lug rims

Wheelbase

2690 mm

Protective structure

Make: Torpedo – Progres
Model: Torpedo – Progres RX 120
Manufacturer's name and address: Torpedo – Progres, Jastrebarsko, Yugoslavia
Protective device: Fully closed cab, not tilting
O.E.C.D. approval number: CSD 01028/1-a(c)

Description

The protective structure is made of square steel tubes reinforced with steel plates as mudguards and roof. It is joined with tractor body by four rubber supports. The cabin has safety glass door and windows, noise insulation and heating – ventilating unit.

Driver's seat

Make: Grammer DS 85 H/90A
 Type of suspension: Paralelogram linkage
 Type of damping: Hydraulic
 Range of adjustment:
 Longitudinal: 150 mm
 Vertical: 60 mm
 Back rest: 20°

Passenger's seat

Number of places: One
 Location: Behind driver

Lighting

Tyre sizes:
 Front: 13.6/12-28
 Rear: 18.4/15-38

Lighting equipment in accordance with the national regulation

	Height from ground to centre mm	Dimensions mm	Distance from outside edge of tractor to centre at track width of 1970 mm
Headlights	1135	175×125	1005
Side lights	1910	120× 70	335
Rear lights	1680	115× 95	330
Front reflector	2650	140	560
Rear reflector	1810	140	650

TEST CONDITIONS**Tyres**

Front: 13.6/12-28
 Rear: 18.4/15-38

Track setting

Front: 1875 mm
 Rear: 1970 mm

Overall dimensions

	Length m	Width m	Height at top of exhaust silencer m	protective structure m
With ballast	4.52	2.77	2.92	2.73
Without ballast	4.28	2.45	2.95	2.73

Ground clearance: 440 mm limited by front axle

Tractor mass and ballasting

Tractor mass

(without driver but with tanks full – with cab)

	Front	Rear	Total
Without ballast, kg	2050	3320	5370
With ballast, kg	2790	4080	6870

Ballast

	No. of weights	Total mass, kg
Front	15	600
Rear	18	900

FUELS AND LUBRICANTS USED DURING TESTS

Laboratory and track tests:

Fuel: INA D-2 acc JUS B.H 2.411
Density at 15°C, 0.836 kg/l

Engine, transmission, hydraulic and steering oil

Type: INA AGRINA SAE 15W/30
Viscosity: 11.0 mm/s² at 100°C

Front axle

Type: INA Hypenol SAE 90
Viscosity: 194 mm/s² at 40°C

Recommended grease:

Number of lubrication
points:

INA LIS-2

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COMPULSORY TESTS

(1) Main power take-off preformance

Date and location of tests: 1986. 10. 06. Zagreb

Type of dynamometer: SCHENK hydraulic dynamometer U1-40

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 – 2 HOUR TEST

79.5	2293	1036	26.58	21.22	0.267	3.13
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POWER AT RATED ENGINE SPEED

79.5	2293	1036	26.58	21.22	0.267	3.13
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POWER AT STANDARD POWER TAKE-OFF SPEED

78.2	2214	1000	23.99	20,05	0.256	3.27
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PART LOADS

(i) The torque corresponding to maximum power at rated engine speed

79.5	2293	1036	26.58	21.22	0.267	3.13
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(ii) 85% of the torque obtained in (i)

70.2	2398	1083	22.77	19.03	0.271	3.08
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(iii) 75% of the torque defined in (ii)

54.0	2420	1093	18.71	15.64	0.290	2.88
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(iv) 50% of the torque defined in (ii)

35.8	2464	1113	14.41	12.05	0.336	2.49
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(v) 25% of the torque defined in (ii)

19.2	2508	1133	10.42	8.71	0.453	1.85
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(vi) Unloaded

3.8	2531	1143	6.97	5.82	1.540	0.54
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PART LOADS – the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (1000 rev/min)

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

(i) The torque corresponding to maximum power at standard p.t.o. speed

78.2	2214	1000	23.99	20.05	0.256	3.27
------	------	------	-------	-------	-------	------

(ii) 85% of the torque obtained in (i)

67.7	2232	1008	20.54	17.17	0.254	3.29
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(iii) 75% of the torque defined in (ii)

50.5	2265	1023	16.47	13.77	0.272	3.07
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(iv) 50% of the torque defined in (ii)

34.4	2309	1043	12.76	10.67	0.310	2.70
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(v) 25% of the torque defined in (ii)

17.5	2340	1057	8.96	7.49	0.428	1.95
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(vi) Unloaded

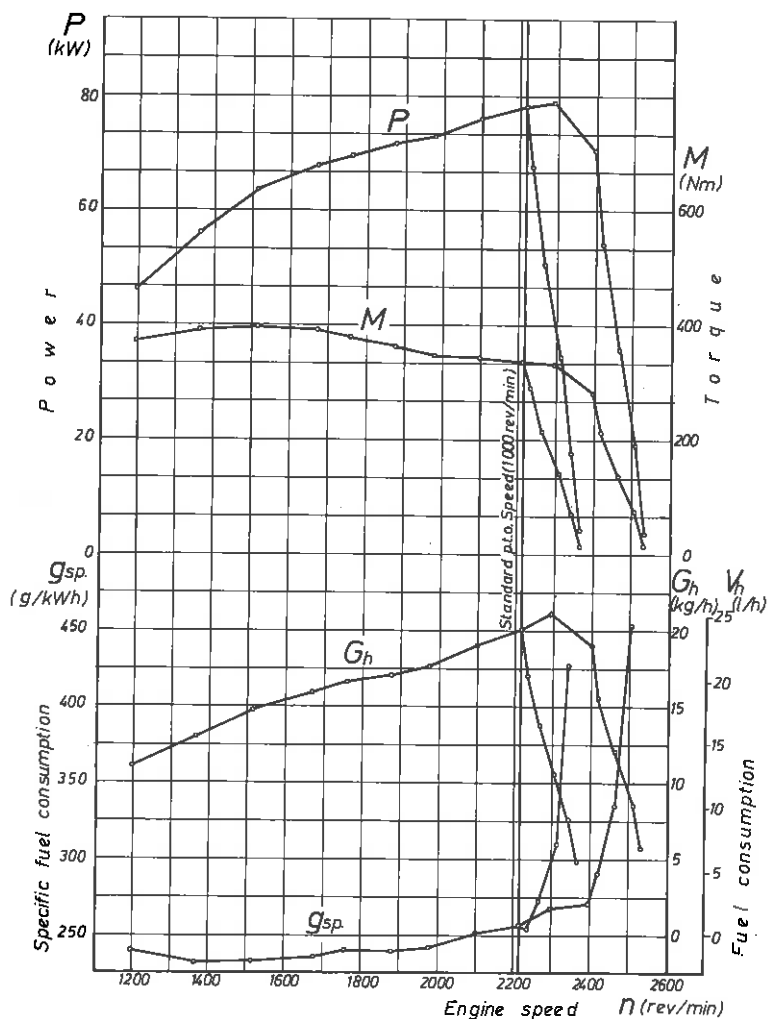
3.2	2365	1068	5.75	4.8	1.492	0.560
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Standard specific fuel consumption, kg/kWh

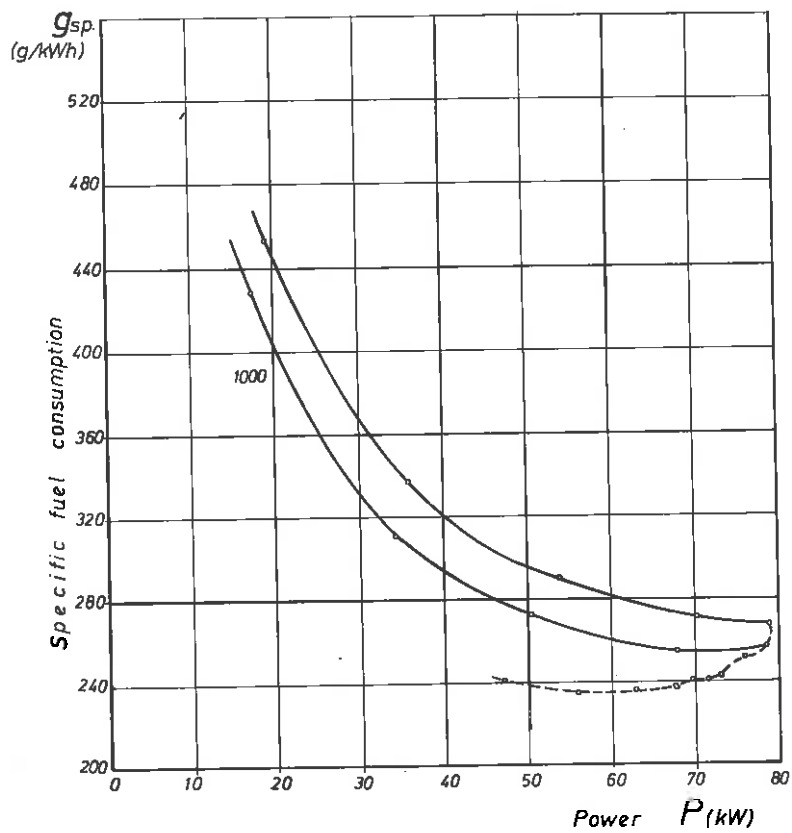
- a) 0.271
- b) 0.336
- c) 0.254
- d) 0.310

No load maximum engine speed:	2531 rev/min
Equivalent crankshaft torque at maximum power:	331 Nm
Maximum equivalent crankshaft torque:	396 Nm at 1514 rev/min engine speed
Mean atmospheric conditions:	temperature 19°C pressure 101.9 kPa relative humidity 68%
Maximum temperature:	engine head 123°C engine oil 114°C fuel 22°C air intake 20°C

Tractor „TORPEDO“ RX 120



Tractor „TORPEDO“ RX 120



(2) Drawbar performance

Date of tests: 1986. 10. 24. - 11. 07.

Type of track: Concrete

Gear	Speed km/h	Power kW	Drawbar pull kN	Engine speed rev/min	Wheel- slip per cent	Specific fuel consum- ption kg/kWh	Specific energy kWh/l	Temperature			Atmospheric conditions		
								Fuel °C	Coolant °C	Oil °C	Tempe- rature °C	Relative humidity per cent	Pressure kPa
Height of drawbar above ground: 670 mm tyre inflation pressure: front: 130 kPa rear: 110 kPa													
L1	2.00	25.6	46.0	2470	15.0	0.433	1.93	8	-	82	10	52	98.5
L2	3.02	38.5	45.9	2420	15.0	0.367	2.28	9	-	88	10	50	98.5
L3	3.65	46.6	45.9	2402	15.0	0.350	2.39	9	-	88	11	50	98.5
Z1	3.96	50.7	46.1	2400	15.0	0.338	2.47	10	-	92	11	48	98.5
L4	5.08	65.0	46.1	2273	15.0	0.320	2.61	11	-	90	11	48	98.5
Z2	6.08	70.1	41.5	2308	11.2	0.318	2.63	12	-	90	12	46	98.5
L5	6.62	71.3	38.8	2308	10.1	0.315	2.65	13	-	92	12	46	98.5
Z3	7.73	73.6	34.3	2313	8.2	0.310	2.67	15	-	96	13	44	98.5
S1	8.82	76.9	31.4	2310	7.0	0.296	2.82	15	-	94	13	44	98.5
Z4	11.08	75.4	24.5	2310	4.9	0.300	2.79	15	-	92	13	42	98.5
S2	14.16	75.5	19.2	2310	3.4	0.302	2.77	16	-	90	13	40	98.5
Z5	14.52	75.8	18.8	2308	3.4	0.298	2.81	15	-	92	14	40	98.4
S3	17.31	74.5	15.5	2308	2.9	0.305	2.74	15	-	90	14	36	98.6

(ii) Maximum power (ballasted)

Height of drawbar above ground: 5. nm
 Tyre inflation pressure: front: 130 kPa
 rear: 110 kPa

L1	2.01	31.8	56.9	2456	15.0	0.395	2.12	15	-	78	14	44	99.3
L2	2.97	46.7	56.6	2435	15.1	0.365	2.29	16	-	82	14	44	99.3
L3	3.68	57.9	56.6	2428	15.0	0.335	2.50	18	-	86	14	46	99.3
Z1	3.94	61.9	56.6	2411	15.0	0.330	2.53	19	-	84	14	46	99.3
L4	5.26	72.4	49.5	2298	11.3	0.312	2.68	20	-	85	14	48	99.3
Z2	6.32	74.0	42.2	2331	8.6	0.305	2.74	22	-	87	15	48	99.3
L5	6.79	76.3	39.0	2326	7.7	0.307	2.72	21	-	87	15	49	99.3
Z3	7.79	76.4	35.3	2322	6.8	0.298	2.81	18	-	76	15	49	99.3
S1	8.82	77.0	31.4	2310	5.7	0.300	2.77	19	-	84	15	50	99.3
Z4	11.69	81.2	25.0	2306	4.2	0.280	2.97	20	-	83	15	50	99.3
S2	14.17	79.5	20.2	2292	3.3	0.286	2.92	17	-	84	15	52	99.3
Z5	14.88	79.3	19.2	2288	3.1	0.287	2.91	17	-	84	15	53	99.3
S3	17.2	78.8	16.5	2302	2.6	0.282	2.96	18	-	85	15	56	98.3

(iii) Five hour test at 75 per cent of pull at maximum power (ii)

L5	7.17	58.6	29.4	2358	5.5	0.285	2.93	39	-	102	13	58	99.1
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(iv) Five hour test at pull corresponding to 15 per cent of wheelslip in test (ii)

Z1	3.79	58.8	55.9	2316	-	-	-	34	-	106	13	56	99.3
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Oil consumption during ten hours' testing (iii) and (iv): 120 g/h

(3) Turning space and turning circle

Details of wheel equipment: Tractor with ballast

Tyres: front: 13.6/12-28

rear: 18.4/15-38

Track of wheels:

front: 1875 mm

rear: 1970 mm

	With brakes		Without brakes	
	Left-hand	Right-hand	Left-hand	Right-hand
Radius of turning space, m	5.17	5.38	6.65	6.55
Radius of turning circle, m	4.95	5.17	6.42	6.34

(4) Location of centre of gravity

Height above ground: 980 mm

Distance forward from the vertical plane containing the axis of the rear wheels: 1018 mm

Distance from the median plane: 9 mm to left

(5) Braking

Date of tests: 1986. 10-29.

Tractor masses during brake test

	Front	Rear	Total
Unballasted, kg	2060	3380	5440
Ballasted, kg	2780	4110	6890

Type 0 (ordinary cold service braking device performance) test
Speed before application of brakes: 32.1 km/h

						locked
Ballasted	Braking device control force, N	137	167	245	285	334
	Mean deceleration m/s ²	1.4	1.8	2.2	3.7	4.9
Unballasted	Braking device control force, N	98	157	177	206	390
	Mean deceleration, m/s ²	1.2	2.2	2.4	2.9	3.4

Type 1 (fade) test

Type 1 (fade) test					locked
Braking device control force, N	147	265	392	432	491
Mean deceleration, m/s ²	1.7	2.4	2.9	3.6	5.4

Maximum deviation of tractor from its original course:

Ø m

Abnormal vibrations:

None

The brakes were heated by: By applying force of 90 N to brake pedal and driving tractor for 1 km

Parking braking device test

	18 per cent slope		12 per cent slope with trailer of 3.0 tonnes	
	up	down	up	down
Braking device control force, N	120	115	130	120

(6) Measurement of external noise level

Date of test: 1986. 10. 22.
Type of sound level meter: Brüel & Kjaer Type 2232
Type of track: Concrete

Results of test:
Gear: S5
Travelling speed before
acceleration: 24 km/h
Sound level: 86.8 dB(A)

(7) Noise measurement at the driver's ear

Date of tests: 1986. 10. 24.
Type of sound level meter: Brüel & Kjaer Type 2232
Type of track: Concrete
Cab fitted: Yes
Results of tests:

Gear	Drawbar pull at which the tractor develops the maximum sound level, kN	Measured travelling speed, km/h	Sound level, dB(A)
L5	38.8	6.62	82.9
L5	light load	8.15	79.8
S5	light load	32.1	82.3

The L5 gear corresponds to the minimal travelling speed nearest to 7.5 km/h.

(8) Lifting force and hydraulic power

Date and location of test: 1986. 10. 7, Zagreb

Hydraulic fluid
Make and type: INA AGRINA SAE 15W-30
Viscosity: 11 mm/s² at 100°C
Viscosity index: 135
Type of hydraulic system: Closed centre
Hydraulic fluid temperature
at beginnig of test 61°C

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

mm	-244	-239	-160	-154	-81	-76	0	79	87	157	170	234	246	331	368
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Lifting forces at hitch points (corresponding pressure 15.4 MPa)

kN	39.7		40.6		40.6		41.1	40.6		40.6		38.0			
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Lifting forces at test frame (corresponding pressure 15.4 MPa)

kN		38.8		38.4		37.1	36.2		35.3		34.0		32.7	31.3	30.9
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Power lift test

	Height of lower hitch points above ground in down position mm	Vertical movement mm	Maximum corrected force exerted through full range kN	Corresponding pressure of hydraulic fluid MPa	Moment about rear axle kNm	Max. angle of mast over range of lift degrees
At hitch points	200	711	38,0	15.4	41.3	–
On the frame	209	786	30.9	15.4	52.4	9

Hydraulic power test

Sustained pressure with relief valve open: 17.1 MPa

Pump delivery rate at minimum pressure: 47.3 l/min

Flow rate corresponding to a hydraulic pressure equivalent to 90 per cent of the actual relief valve pressure setting and corresponding power:

Flow rate 40 l/min

Pressure 15.4 MPa

Power 10.3 kW

Flow rate and hydraulic pressure corresponding to maximum hydraulic power:

Flow rate 45 l/min

Pressure 14.0 MPa

Power 10.5 kW

Tapping point used for test: at rear of the tractor

REMARKS:

No comment

4th December 1986

Head of Testing Division

Director

dipl. ing. Janko Dobričević

dr Josip Gašparac

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