DLG	Report on test in accordance with O.E.C.D. STANDARD CODE	O.E.C.D. No. 587

Agricultural Tractor IH 955 Four Wheel Drive

Manufacturer

International Harvester Company mbh, D-4040 Neuss

This bulletin is based on engineering tests in accordance with the O.E.C.D. STANDARD CODE for the Official Testing of Agricultural Tractor Performance. It does not contain an evaluation of the tractor performance on practical work.

Performance of tests: December 1977 till February 1978

DLG-Testing-Station for Agricultural Machinery, Max-Eyth-Weg 1, D-6114 Groß Umstadt

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

Date of Approval: 19th April 1978 O.E.C.D. No. 587

In this report all performance characteristics are given corresponding to the International System of Units.

The reference to the former used Technical System of Units is given by the following relations:

Forces	1 N = 0,102 kp	or 1 kp	= 9,81 N
Powers	1 kW = 1,36 PS	or 1 PS	= 0,736 kW
Pressures	1 bar = 1,02 kp/cm²	or 1 kp/cm²	= 0,981 bar
	1000 mbar = 750,1 mm Hg		

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Tractor manufacturer:	INTERNATIONAL HARVESTER COMPANY mbH D-4040 Neuss
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Neuss and Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 100 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	INTERNATIONAL HARVESTER COMPANY mbH
Model:	955 Allrad
Type:	Wheel tractor unit construction, all wheel driven
Serial no.:	D 030 711 D 00 1004

Engine

Make:	Own make
Model:	D-310
Type:	4 stroke DIESEL engine, with direct injection, water cooled
Serial no.:	310 DT 2 D 060 006
Cylinders:	6, in line, bore 98,4 mm, stroke 111,1 mm, displacement 5073 cm^3, compression ratio 16:1 replaceable wet cylinder liners
Valves:	Overhead
Fuel system:	PIERBURG fuel feed pump; BOSCH distributor injection pump: VA6/10 H 1150 CR 79-1; manufacturer's production setting 48,5 mm^3/stroke at rated engine speed and full load; injection timing 12° before TDC; BOSCH multihole injection nozzles DLLA 150 S 716 injection pressure 240 + 8 bar; BOSCH fuel filter with replaceable element; capacity of fuel tank 140 l
Governor:	BOSCH hydraulically acting variable speed type governor, incorporated in injection pump; governed range of engine speed 700 to 2540 rev/min; rated engine speed 2300 rev/min

Air cleaner:	MANN UND HUMMEL dry paper element filter with precleaner: PICLON 1-45 165 91 059; replaceable main and safety cartridge; automatically acting dust discharge valve
Exhaust-silencer:	LANGE absorption type silencer; 110 mm diameter, 1285 mm long; situated on the right hand side above bonnet; mouth showing upwards; mouth 2756 mm above ground
Lubrication system:	Forced feed from gear type pump; strainer in sump; MANN oil filter in full flow with by-pass valve; replaceable cartridge; cartridge change at all oil changes; oil capacity 12 l; oil changing interval 250 hours; recommended oil qualities: HD oils as per MIL-L-2104 C specification recommended oil viscosities: winter below -10°C SAE 5W/20 winter below 0°C to -10°C SAE 10W/30 summer above 0°C to +30°C SAE 10W/30 tropics above +30°C SAE 10W/30
Cooling system:	Water cooling with overpressure relief valve, adjusted to 0,6 bar; impeller assisted; thermostat with by-pass; fan with 6 blades, 500 mm diameter; water capacity 23,8 l
Starting system:	Electrically; BOSCH screw push starter motor: JD-12V/3 kW; BOSCH heating coil in intake pipe
Electrical equipment:	12 Volt, negative earth; BOSCH 3 phase alternator 12V/28A; 1 battery 110 Ah at 20 hours rating

Transmission

Clutch:	FICHTEL UND SACHS AG dry dual disc type clutch: DUT 310-310/310; driving part pedal operated; p.t.o. part hand lever operated
Gear box:	INTERNATIONAL HARVESTER FRANCE speed change gear with 4 speeds; all speeds synchronized; group gear with 2 forward groups (slow and fast group) and 1 reverse group; collar shifted; totally 8 forward speeds and 4 reverse speeds; (optional: either 1 creep speed group or 1 super creep speed group with further 8 forward and 4 reverse speeds each available; not fitted in tractor tested)
Rear axle and final drive:	Bevel gear drive with crown wheel and pinion; bevel gear differential with lock; pedal operated, self disengaging; planetary gear final drives
Driven front axle	ZAHNRÄDFABRIK FRIEDRICHSHAFEN AG APL-3052; driven by universal joint shaft; joint shaft situated on the left hand side of gear box; under load engageable or disengageable by a particular wet multiple disc type clutch; handlever operated; multiple disc type clutch serves as overload safety device; bevel gear drive with crown wheel and pinion; bevel gear differential (optional with automatic self locking device: LOC-O-MATIC, not fitted on tractor tested); planetary gear final drives

Oil capacity:	Speed change gear and group gear	46 l
	rear axle per side	7 l
	front axle differential	7 l
	final drive at front per side	1 l
Oil quality:	IH transmission oil SAE 90 EP	
Oil viscosities:	Speed change gear, group gear and rear axle: below -10°C	SAE 80
	above -10°C	SAE 90
	front axle	SAE 90
Oil changing interval:	1500 hours	

Total ratios and speeds

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h	at standard p.t.o. speed 540 rev/min km/h
field group	1	293,85	2,35	1,96
	2	213,90	3,22	2,69
	3	137,92	5,00	4,17
	4	91,07	7,57	6,32
road group	1	75,56	9,12	7,61
	2	55,00	12,53	10,46
	3	35,47	19,44	16,23
	4	23,42	29,44	24,57
reverse group	1	197,68	3,49	2,91
	2	143,90	4,79	4,00
	3	92,78	7,43	6,20
	4	61,27	11,25	9,39

*) calculated with the INDEX RADIUS 795 mm as per WDK 154

Power take-off

Main p.t.o.:	Two p.t.o. shaft stubs at rear of tractor; one for 540 rev/min, one for 1000 rev/min; both p.t.o. shafts are independent; driven through the hand lever operated second disc of the dual disc type clutch; both p.t.o. are engageable and disengageable in common by preselector and hand lever for p.t.o. disc clutch; both p.t.o. shafts rotate in common; direction of rotation of both p.t.o. shafts clockwise (viewed from tractor rear); all p.t.o. speeds may be set by aid of tractormeter 540 rev/min p.t.o.: 704 mm above ground; 62 mm on the right hand side of tractor's median plane; 29 x 34,9 x 8,7 mm = 1 3/8 in, 6 splines DIN 9611 Form A; BS 1495; ASAE S 203.7; 647 rev/min at rated engine speed; standard p.t.o. speed 540 rev/min at 1920 rev/min engine speed 1000 rev/min p.t.o.: 738 mm above ground; 36 mm on the left hand side of tractor's median plane; 29 x 34,9 x 8,7 mm = 1 3/8 in, 6 splines DIN 9611 Form 1; BS 1495; ASAE S 203.7; (optional involute profile 1 3/8 in, 21 splines; DIN 9611 Form 2; SAE J 719, ASAE S 204.4; not fitted on tractor tested); 1150 rev/min at rated engine speed; standard p.t.o. speed 1000 rev/min at 2000 rev/min engine speed
Ground speed p.t.o.:	Optional, not fitted on tractor tested; figures as per manufacturer's specification; main p.t.o. shafts may be shifted to ground speed p.t.o. when using the slow group of transmission

Travelling distance for one revolution of p.t.o. shafts:
0,155 m using the 540 rev/min p.t.o.
0,087 m using the 1000 rev/min p.t.o.
32,27 revolutions of 540 rev/min p.t.o. and
57,38 revolutions of 1000 rev/min p.t.o. for
1 revolution of the driving wheel

Belt pulley

Optional, not fitted on tractor tested;
figures as per manufacturer's specification;
at rear of tractor;
driving device attached to 1000 rev/min p.t.o. shaft with involute profile;
engaged and disengaged by hand lever like p.t.o.;
280 mm diameter, width 220 mm;
1488 rev/min at rated engine speed;
linear belt speed 21,8 m/s;
direction of rotation clockwise, viewed from the right hand side of tractor

Power lift

Hydraulic system:

Own make
IHC-EXAKT hydraulic power lift
unit construction; open system;
K 120;
BOSCH tandem gear type pump:
HY/ZFF S 11/11+8 L 158;
11 and 8 cm^3/rev delivery;
the 11 cm^3/rev part of pump feeds the power lift device;
directly driven by engine;
BOSCH control valve for lifting and sinking, power control, position control and floating position;
maximum working pressure in main circuit 160 + 10 bar;
1 single acting ram:
120 mm bore, 168 mm stroke
overpressure relief valve in ram adjusted to 200 ± 10 bar

up to 4 quick-opening valves and/or brake-away couplings and/or vise couplings optional with single or double acting BOSCH supplementary control valves for remote rams or oil motors available;
on tractor tested 1 oil tapping with single acting BOSCH supplementary control valve fitted;
oil pressure in the oil tapping circuit 170 bar;
hydraulic oil tank incorporated in the power lift unit with additional oil cooling tank;
oil capacity 34 l, up to 10 l may be taken off through oil tappings when the tractor is working stationary as well as driving;
hydraulically acting linkage lock for transport by sinking throttle;
recommended oil IH-HY-Tran Fluid;
oil changing interval 750 hours

Implement linkage:

Three point linkage category II DIN 9674;
lifting rods length adjustable from 615 to 750 mm;
lifting height above ground with
short lift rods from 372 to 1062 mm
long lift rods from 55 to 832 mm

Holed drawbar:

Short drawbar;
fitted on clevis of lower links;
length between the ball joints 824 mm;
thickness of the bar 30 mm, width 80 mm;
centre hole and 4 holes with 80 mm distance each on either side of centre hole;
all holes 33 mm diameter;
height above ground adjustable be power lift from 70 to 1085 mm depending on lift rods length, measured at the surface of the bar;
in 450 mm height above ground fixable,
mounting supports not fitted on tractor tested

With lower links in horizontal position
distance of holes centre line

to rear axle centre	1080 mm
to end of 540 rev/min p.t.o.	680 mm
to end of 1000 rev/min p.t.o.	
with 6 spline profile	685 mm
with involute profile	704 mm

Pull attachment

Swinging drawbar:

Height above ground 473 mm;
thickness 30 mm;
diameter of clevis hole 33 mm;
Distance of centre of clevis hole

to rear axle centre	785 mm
to end of 540 rev/min p.t.o.	387 mm
to end of 1000 rev/min p.t.o.	
with 6 spline profile	392 mm
with involute profile	411 mm

lateral oscillation of the axis of the clevis pin 14° to either side;
distance of pivot point before rear axle centre 51 mm;
lockable in median position

Trailer hitch:

CRAMER
KU 750, optional KU 850;
height above ground adjustable to:
909, 945, 981, 1017 and 1053 mm;
hitch hole 33 mm diameter;
distance of hitch hole to rear axle centre 509 mm;
permissible vertical load 1500 kg;
permissible pull 65000 N

Towing hitch:

688 mm above ground

Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
model SERVOSTAT
or DANFOSS GmbH
model OSPB 125
hydraulically assisted steering with mechanical-hydraulical force transfer on front axle acting

oil circuit is fed from the tandem part of the BOSCH hydraulic pump with 8 cm^3/revolution delivery;
HENGSTLER flow divider;
HENGSTLER differential ram on front axle;
60 mm bore, 225 mm stroke, 25 mm diameter of piston rod

Brakes

Parking brake: Mechanically acting wet band brake; acting on a drum at the right hand side of differential casing;
drum diameter 305 mm, width 39,6 mm;
operated by hand lever with ratchet

Service brake: INTERNATIONAL HARVESTER FRANCE
hydraulically acting disc type brake;
pedal operated;
the pedal acts on 1 WABCO braking force amplifier, fed by the hydraulic system of power lift;
mechanical-hydraulical brake force transfer from brake force amplifier to main brake cylinder and wheel brake cylinder;
single circuit;
2 brake discs right and left on the differential half shafts;
disc diameter 256 mm;
brake oil container on the main brake cylinder with 0,23 l capacity
compulsory oil IH-Hy-Tran-fluid

Steering brake: Divided pedal of service brake;
for normal use locked together

Wheels

Steered wheels: Two pneumatics at front
12,4-28 AS 6 ply DIN 7807
diagonal type tyre casing;
maximum permissible weight per tyre 1275 kg at 1,7 bar inflation pressure and 30 km/h;

or 1364 kg at 1,7 bar inflation pressure
and 25 km/h as tested;
track width 1740 mm, not adjustable;
rims W 11 x 28

Driving wheels: In front and in the rear;
specification of driving front wheels see
at steered wheels;
driving rear wheels:
2 pneumatics 16,9-38 AS 8 ply DIN 7807
radial type tyre casing;
maximum permissible weight per tyre 2520 kg
at 1,7 bar inflation pressure and 30 km/h;
track width adjustable from 1700 to 2200 mm
in steps of 100 mm each by turning wheels
and offset lug type rims;
rims W 15L x 38

Wheel base: 2587 mm

Weights: Ready for use as tested

		without driver	with driver
Without ballast:	front	1965 kg	1975 kg
	rear	2750 kg	2825 kg
	total	4715 kg	4800 kg
Front ballast:	11 front weights	46 kg each	506 kg
Rear ballast:	2 weights per wheel	58 kg each	232 kg
	water in the tyres		652 kg
With ballast:	front	2615 kg	2635 kg
	rear	3490 kg	3555 kg
	total	6105 kg	6190 kg

Cab: Own make in cooperation with
FRITZMEIER
safety cab, model 903 55
OECD tested:
approval no. CS 1280

Number of grease points 26

Seat

GRAMMER
DS 85 H/2BA;
upholstered seat with back rest;
adjustable spring with shock absorber;
height of platform above ground 1055 mm;
height of unloaded seat above platform
adjustable from 467 to 527 mm in 3 steps
for and aft adjustable about 150 mm

Dimensions

Total length:	4344 mm	with implement linkage
	4460 mm	with implement linkage with ballast
Total width:	2306 mm	at smallest track width
	2463 mm	at largest track width
Total height:	2675 mm	to top of cab
	2756 mm	to end of exhaust pipe
Ground clearance:	426 mm	below front differential

Lighting

Electrical 12 Volt
in accordance with German legislation

	Dimensions mm	Height above ground of centre mm	Distance from outside edge of tractor to centre mm
Head lights	125 x 140	1048	999
Side lights	65 x 65	1748	247
Rear lights	250 x 20	1662	345
Reflectors			
1st pair	91 x 47	1451	144
2nd pair	50 ø	786	683

Permissible total weights and axle loads

for all available wheel equipments

Wheel equipment front	Wheel equipment rear	Permissible total weight kg	Permissible front axle load kg	Permissible rear axle load kg
11,25-24 6 PR (13-24)	18,4-34 6 PR	6800	2300	4500
11,25-24 6 PR (13-24)	18,4-34 8 PR	7430	2300	5130
11,2-28 6 PR	18,4-34 6 PR	6730	2230	4500
11,2-28 6 PR	18,4-34 8 PR	7360	2230	5130
14,9-24 6 PR	16,9-38 8 PR	8060	3020	5040
12,4-28 6 PR	16,9-38 8 PR	7590	2550	5040

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL DIESEL fuel DIN 51601	
	specific gravity at 15°C	
	during engine tests	0,824 kg/l
	during p.t.o. tests	0,824 kg/l
	during drawbar tests	0,824 kg/l
Engine oil:	SHELL ROTELLA SX 30 MIL-L-2104 C	
Transmission oil:	Speed change gear and group gear: IH transmission oil SAE 90 EP	
	rear axle, front differential and final drives in front axle: IH transmission oil SAE 90 EP	
Hydraulic oil:	Power lift unit, steering and brakes: IH-Hy-Tran Fluid	

PRÜFUNGS-ABTEILUNG
IH 955 A

Test No. 77-163

COMPULSORY TESTS

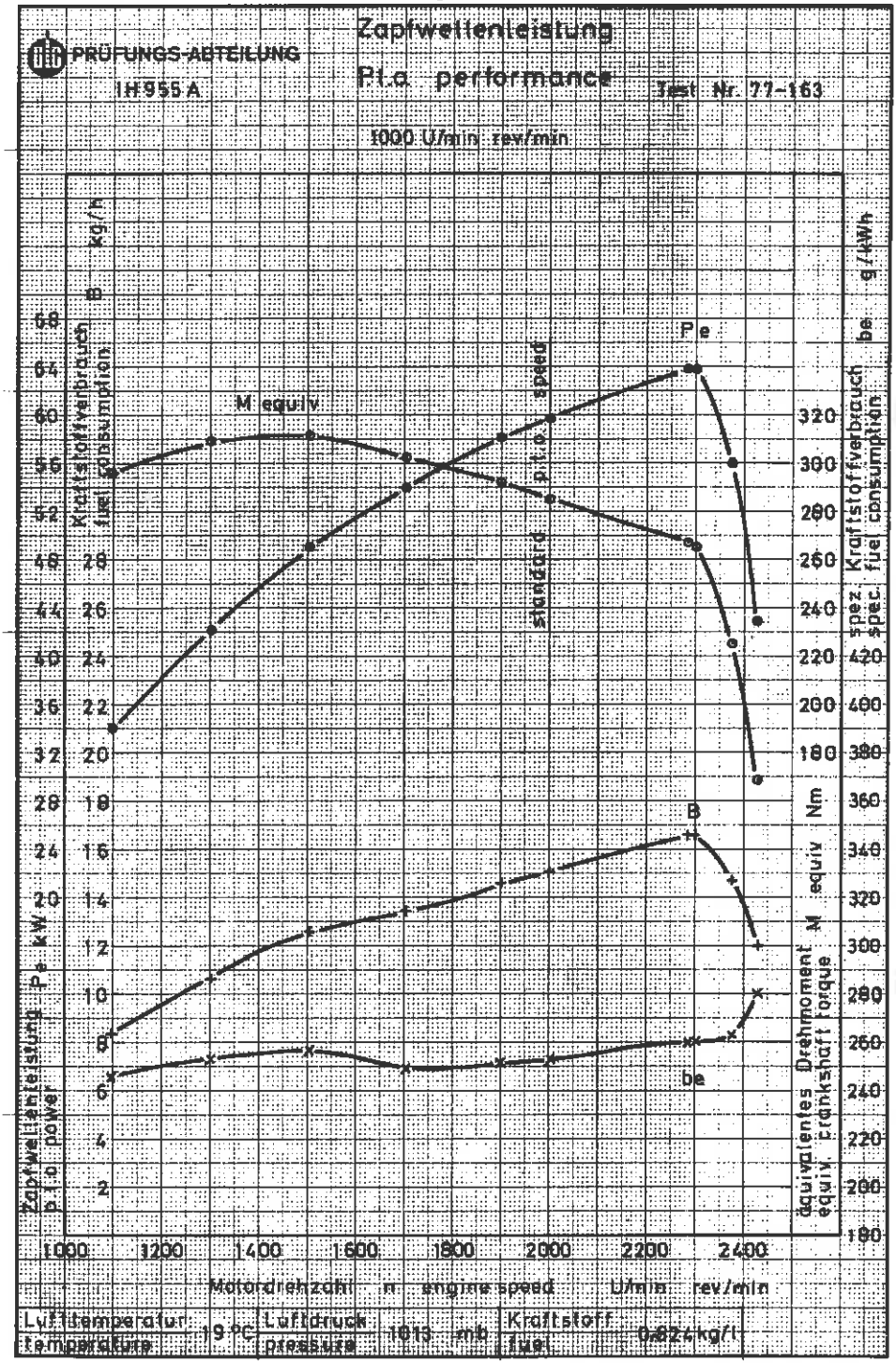
(1) MAIN POWER TAKE-OFF PERFORMANCE

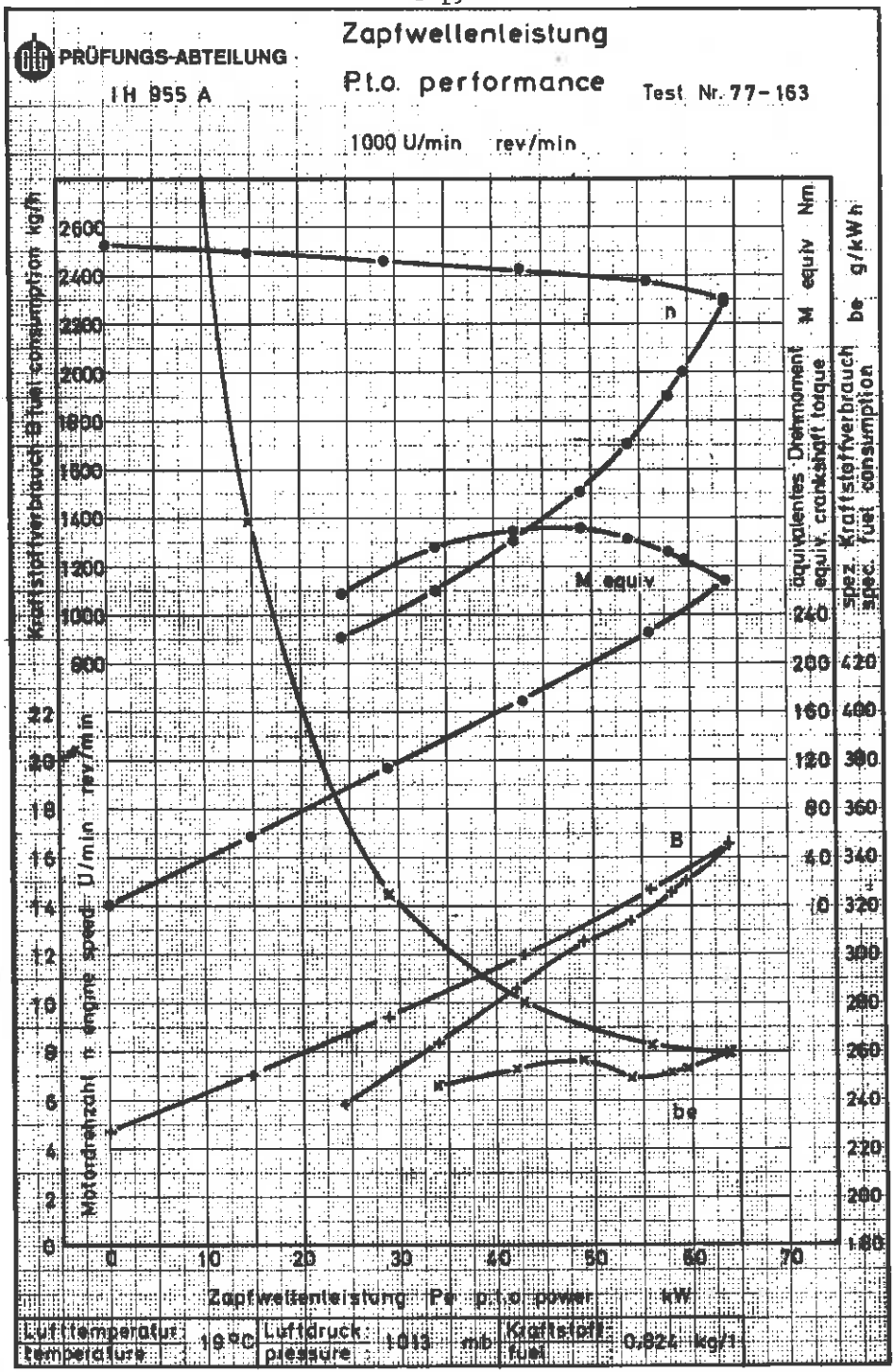
Date of tests: 15th December 1977
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power						
At 2-hour test						
63.7	2300	1150	20.13	16.57	260	3.16
At standard p.t.o. speed (1000 rev/min)						
59.6	2000	1000	18.31	15.08	253	3.25
At the speed recommended for drawbar work						
63.7	2300	1150	20.13	16.57	260	3.16
Part loads						
(i) 85% of the torque at maximum power at 2-hour test						
55.9	2374	1187	17.81	14.67	263	3.14
(ii) unloaded						
-	2523	1262	5.68	4.68	-	-
(iii) 50% of the load defined in (i)						
28.9	2459	1230	11.41	9.39	325	2.54
(iv) maximum power						
63.7	2300	1150	20.13	16.57	260	3.16
(v) 25% of the load defined in (i)						
14.7	2493	1246	8.51	7.01	478	1.72
(vi) 75% of the load defined in (i)						
42.8	2427	1213	14.57	12.00	280	2.94

No load maximum engine speed: 2523 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 264 Nm
Maximum equivalent crankshaft torque: 311 Nm at 1504 rev/min of the engine

Mean atmospheric conditions:	temperature	19 °C
	pressure	1013 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	85 °C
	engine oil	92 °C
	fuel	20 °C
	engine air intake	19 °C


Zapfwellenleistung
Pto performance
PRÜFUNGS-ABTEILUNG
IH 955 A
Test Nr. 77-163
1000 U/min rev/min
Kraftstoffverbrauch fuel consumption
kg/h
M equiv
Pe
standard p.t.o. speed
B
be
Zapfwellenleistung p.t.o. power Pe kW
äquivalentes Drehmoment M equiv Nm
equiv. crankshaft torque
spez. Kraftstoffverbrauch spec. fuel consumption be g/kWh
Motordrehzahl n engine speed U/min rev/min
Lufttemperatur temperature 19 °C
Luftdruck pressure 1015 mb
Kraftstoff fuel 0,824 kg/l


PRÜFUNGS-ABTEILUNG
IH 955 A
Zapfwellenleistung
P.t.o. performance
Test Nr. 77-163
1000 U/min rev/min
Kraftstoffverbrauch fuel consumption kg/h
Motordrehzahl n engine speed U/min rev/min
Äquivalentes Drehmoment equiv. crankshaft torque M equiv Nm
Spez. Kraftstoffverbrauch spec. fuel consumption be g/kWh
n
M equiv
B
be
Zapfwellenleistung Pe p.t.o. power kW
Luft temperatur temperature 19 °C
Luftdruck pressure 1013 mb
Kraftstoff fuel 0,824 kg/l

(2) DRAWBAR PERFORMANCE

Date of tests: 16th till 27th February, 1978
Type of track: Concrete

Gear No. and Group	Speed km/h	Power kW	Drawbar pull N	Engine speed rev/min	Slip of wheels %	Specific energy kWh/l
(i) MAXIMUM POWER with ballast height of drawbar above ground 445 mm						
1 field	2,25	39,6	63420	2429	15,0	2,84
2 field	3,02	53,2	63390	2363	15,0	2,93
3 field	4,81	59,8	44760	2300	8,2	3,02
4 field	7,50	59,8	28700	2300	3,6	3,01
1 road	9,08	59,8	23710	2300	2,9	3,00
2 road	12,45	56,6	16370	2300	2,0	2,83
(ii) FIVE-HOUR-TEST at 75% of pull at maximum power in 4th gear of field group						
4 field	7,89	47,2	21530	2369	2,6	2,56
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)						
2 field	-	-	63420	-	-	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 445 mm						
1 field	2,33	32,6	50340	2477	15,0	2,50
2 field	3,09	43,6	50760	2425	15,0	2,78
3 field	4,65	56,7	43910	2300	10,4	2,81
4 field	7,44	58,1	28090	2300	4,3	2,86
1 road	8,99	57,8	23150	2300	3,3	2,85
2 road	12,33	56,0	16350	2300	3,0	2,78

Total oil consumption during ten hours duration of tests (ii) and (iii): 30 g/h

PRÜFUNGS-ABTEILUNG

Test No. 77-163

Tyres make and size front: VEITH 12,4 - 28 6 ply
rear: KLEBER COLOMBES 16,9 R 38 8 ply

Tread bar height at the beginning of drawbar tests 88% of the value when new

Specific fuel consumpt. g/kWh	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,5 bar rolling radius of tyres under static load 788 mm						
291	14	85	84	4	95	982
282	15	85	93	4	99	984
273	15	85	88	4	100	984
274	15	85	85	4	100	984
275	15	85	88	4	99	984
292	14	85	88	4	95	982
322	15	85	88	4	90	982
-	15	85	89	4	92	982
tyre inflation pressure 1,1 bar rolling radius of tyres under static load 793 mm						
331	26	85	95	18	85	980
299	23	85	95	13	99	980
295	25	85	90	17	89	980
290	23	85	90	13	96	980
290	23	85	90	19	80	980
297	23	85	95	18	85	980

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

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 12,4-28 AS Front 6 ply
rear: 16,9 R 38 AS 8 ply

Track of wheels front: 1740 mm
rear: 1800 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	4,89	4,89	5,46	5,47
Radius of turning circle	4,65	4,65	5,22	5,25

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	950 mm
Distance forward from rear axle centre	1074 mm
Distance from tractor's median plane	0 mm

(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 9th and 14th February, 1978
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor with driver 6190 kg

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s²	3,7	3,7
Stopping distance	m	9,2	9,2
Force on pedal	N	450	385
Force on pedal to achieve a deceleration of 2,5 m/s²	N	335	285
Brake fade characteristics (hot tests)			
Deceleration hot/cold	%	100	100
Stopping distance cold/hot	%	94	100
Force on pedal cold/hot	%	84	98

B) PARKING BRAKE

Tractor facing up 16 % slope
Pull on hand brake 265 N, tractor does not roll

Tractor facing down 16 % slope
Pull on hand brake 265 N, tractor does not roll

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 8th February, 1978
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2203

Results of test

Gear: 4th fast speed
Travelling speed before acceleration: 23,2 km/h
Sound level: 89 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 8th February, 1978
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2607
Type of frequency analyzer: BRÜEL AND KJAER model 1614
(fitted with octave filter)

A safety cab was fitted on tractor
OECD tested, approval no. CS 1280

Results of tests

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 slow	47980	2,35	2,42	86,5
2 slow	47770	3,22	3,12	87
3 slow	44760	5,00	4,58	86,5
4 slow*)	17870	7,57	7,91	87,5
1 fast	23320	9,12	9,05	87,5
2 fast	16290	12,53	12,25	87
3 fast	9130	19,44	19,27	86
4 fast	light load	29,44	30,90	87

*) The 4th slow gear corresponds to the travelling speed nearest to 7,5 km/h

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 4th till 11th January 1978

HYDRAULIC PUMP

Main circuit of power lift

(1) Opening pressure of relief valve	147 bar
Sustained pressure by open relief valve	156 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	46,2 l/min
(3) Pump delivery rate	42,6 l/min
Delivery pressure	147 bar
Hydraulic power	10,5 kW

Remote circuit through oil tapping

(1) Opening pressure of relief valve	142 bar
Sustained pressure by open relief valve	172 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	46,4 l/min
(3) Pump delivery rate	44,0 l/min
Delivery pressure	142 bar
Hydraulic power	10,4 kW

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LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-538	-508	-500	-400	-300	-221	-200	-100
at hitch points maximum mechanical advantage								
N						35250	35750	38000
minimum mechanical advantage								
N	31200		32050	34050	35550		36150	36300

Max. force exerted throughout the whole range 35250 N

Front of tractor does not lift

at test frame maximum mechanical advantage								
N						37950	38100	40000
minimum mechanical advantage								
N		41600	41400	37950	36500		35600	34900

Max. force exerted throughout the whole range 30550 N

Force at which front of tractor lifts with maximum allowable front ballast 39570 N

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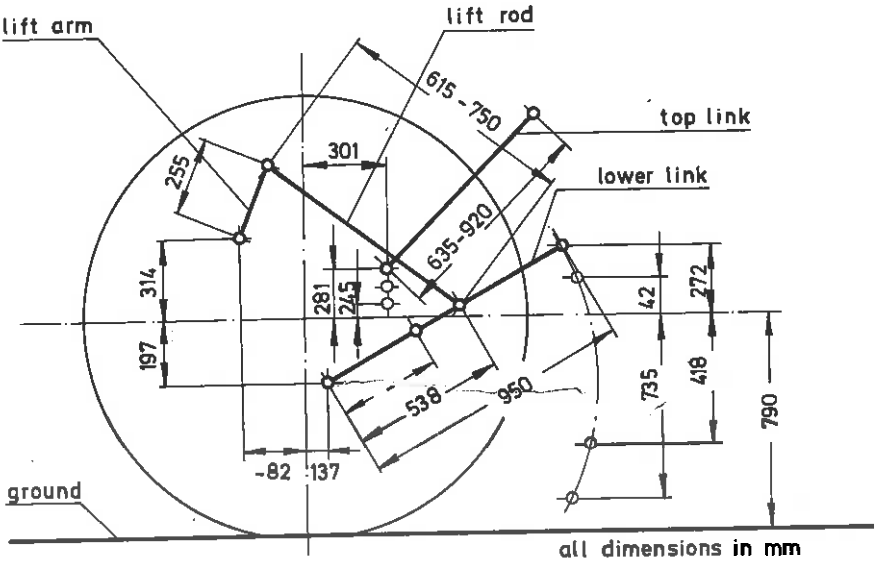
0	+100	+200	+239	+255	+300	+400	+469	+492
lift rods 615 mm long								
39550	39600	39600			39550	38700	37780	
lift rods 750 mm long								
36300	35750	35200	32450					
lift rods 615 mm long								
40000	38800	37250			35500	33050		30550
lift rods 750 mm long								
33950	32150	30600		29750				

All values of forces for pressure at max. hydraulic power 149 bar, see page 25; calculated from measurements at max. oil pressure 159 bar

Dimensions of linkage geometry for the table on page 29 (category II)



LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	950 mm	950 mm
Lift arms	255 mm	255 mm
Lift rods	615 mm	750 mm
Top link	760 mm	765 mm
Distance of lift rod connection point from pivot point of lower link	538 mm	538 mm
The following dimensions are given relative to rear axle centre line 790 mm above ground		
Lower link pivot point	137 mm behind, 197 mm below	137 mm behind, 197 mm below
Top link pivot point	301 mm behind, 281 mm above	301 mm behind, 281 mm above
Lift arm pivot point	82 mm behind, 314 mm above	82 mm behind, 314 mm above
Maximum and minimum height of lower link hitch points	272 mm above, 418 mm below	42 mm above, 735 mm below
Height of lower link hitch points above ground when locked in highest transport position	1062 mm	848 mm

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OPTIONAL TESTS

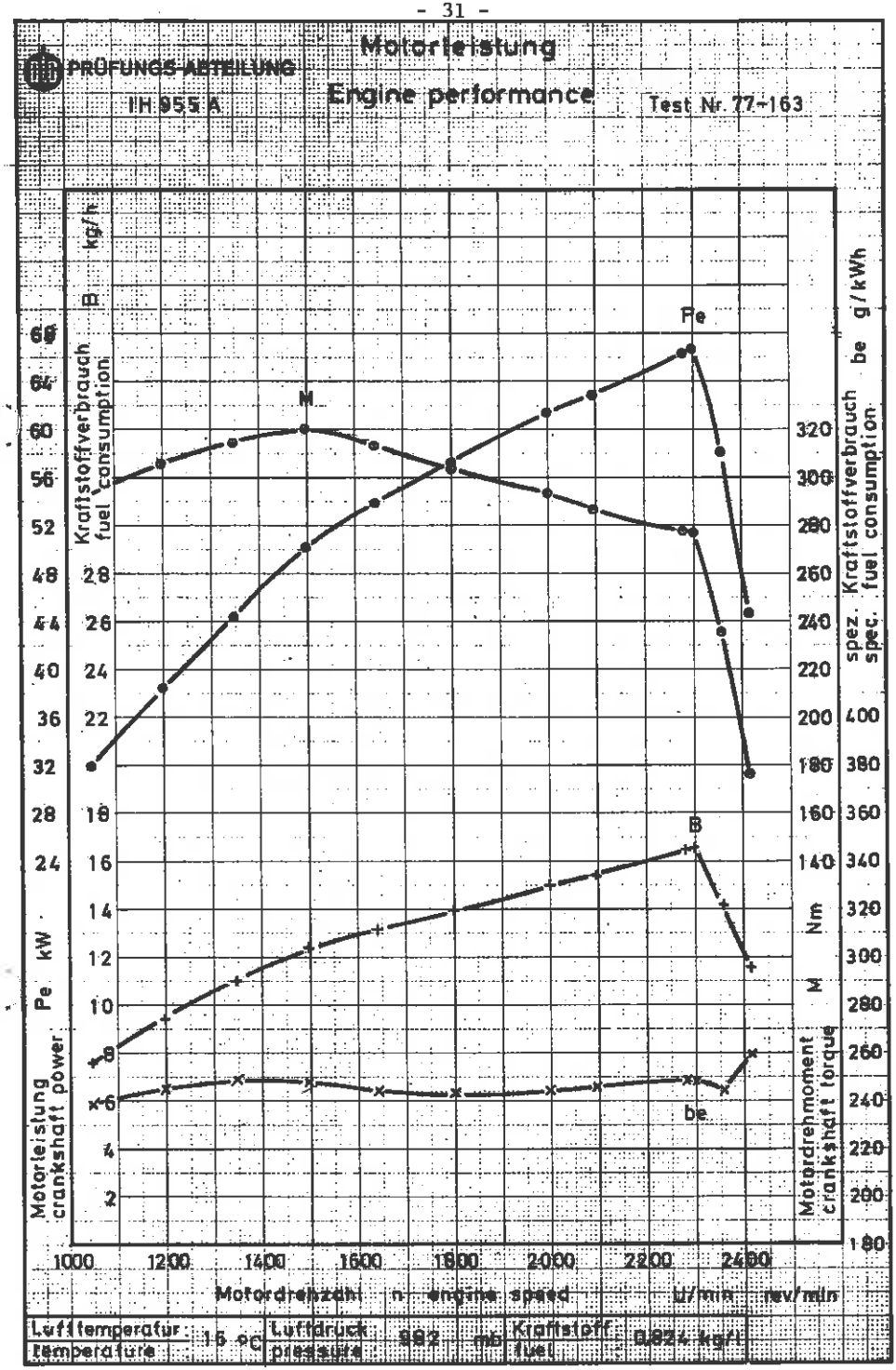
(1) ENGINE PERFORMANCE

Date of tests: 7th December 1977
Type of dynamometer: SCHENCK eddy-current dynamometer W 400

Power kW	Engine speed rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
At 2-hour test					
66.7	2300	20.11	16.56	248	3.32
At standard p.t.o. speed (1000 rev/min)					
61.4	2000	18.24	15.02	245	3.37
At the speed recommended for drawbar work					
66.7	2300	20.11	16.56	248	3.32
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
58.1	2358	17.25	14.21	244	3.37
(ii) unloaded					
-	2522	3.62	2.98	-	-
(iii) 50% of the load defined in (i)					
30.3	2454	10.61	8.73	289	2.85
(iv) maximum power					
66.7	2300	20.11	16.56	248	3.32
(v) 25% of the load defined in (i)					
15.3	2492	7.51	6.19	403	2.04
(vi) 75% of the load defined in (i)					
44.7	2415	14.08	11.60	260	3.17

Optimum fuel consumption: 228 g/kWh at 29.6 kW and 1200 rev/min
No load maximum engine speed: 2522 rev/min
Torque at maximum power (2 hours): 277 Nm
Maximum torque: 320 Nm at 1497 rev/min of the engine

Mean atmospheric conditions:	temperature	16 °C
	pressure	982 mbar
	relative humidity	55 %
Maximum temperatures:	coolant	85 °C
	engine oil	88 °C
	fuel	22 °C
	engine air intake	18 °C


PRÜFUNGS-ABTEILUNG
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Motorleistung
Engine performance
Test Nr. 77-163
Kraftstoffverbrauch B kg/h
fuel consumption
Motorleistung Pe kW
crankshaft power
Kraftstoffverbrauch be g/kWh
spez. fuel consumption
spec.
Motordrehmoment M Nm
crankshaft torque
Pe
M
B
be
Motordrehzahl n engine speed U/min rev/min
1000 1200 1400 1600 1800 2000 2200 2400
Lufttemperatur temperature 15 °C
Luftdruck pressure 992 mb
Kraftstoff fuel 0,824 kg/l

PRÜFUNGS-ABTEILUNG

Motorleistung

Engine performance

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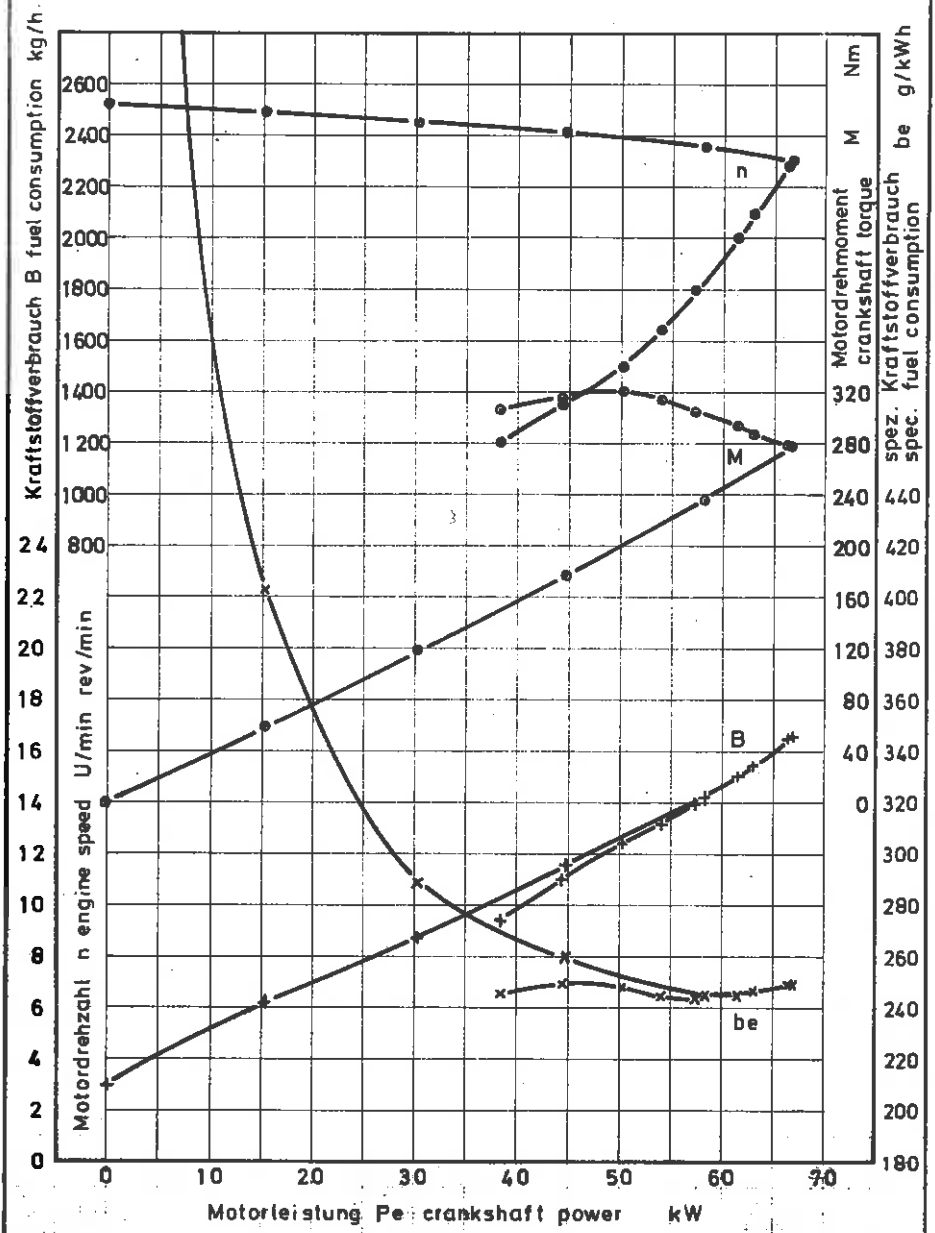

Lufttemperatur: temperature:	16 °C	Luftdruck: pressure:	982 mb	Kraftstoff: fuel:	0,824 kg/l

PRÜFUNGS-ABTEILUNG

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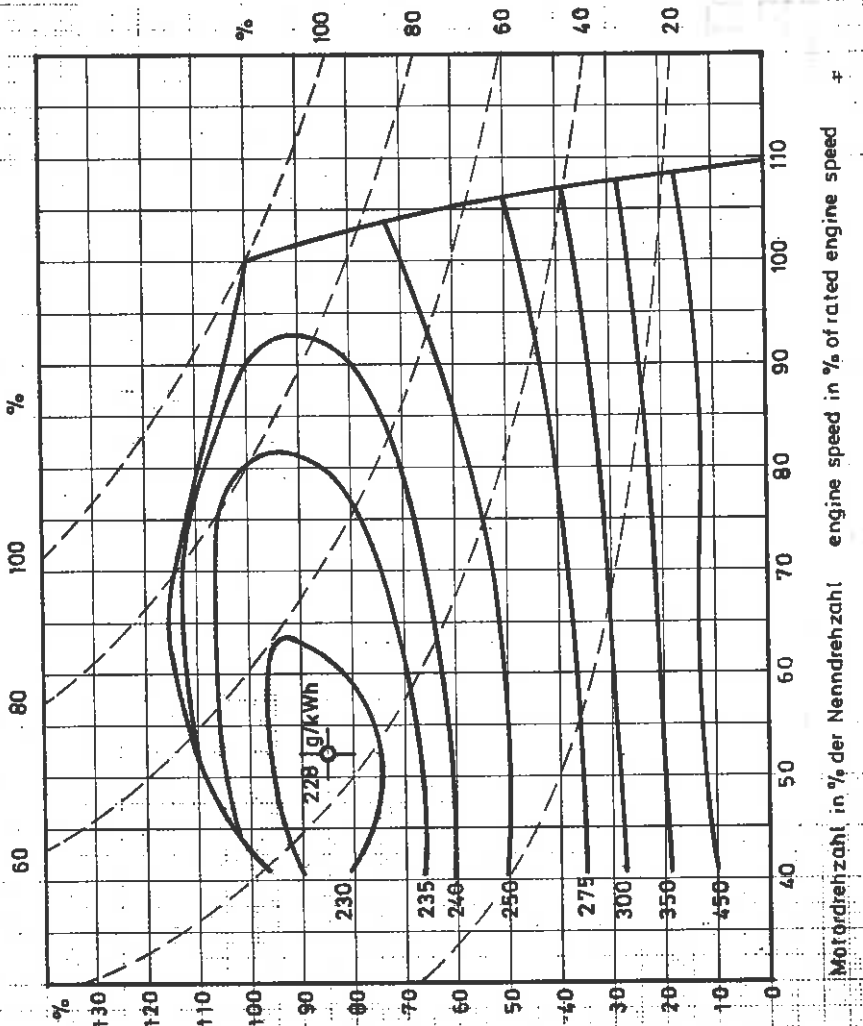
Motorleistung

Engine performance

Test Nr. 77-163

Motorleistung in % der Leistung bei Nenndrehzahl

engine power in % of power at rated engine speed



Lufttemperatur: temperature	16 °C	Luftdruck: pressure	982 mb	Kraftstoff: fuel	0,824 kg/l

ADDITIONAL TESTS

out of the O.E.C.D. CODE under the responsibility of the DLG-Testing Station

PRÜFUNGS-ABTEILUNG

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ADDITIONAL TEST

out of the O.E.C.D. CODE under the responsibility of the DLG Testing Station

(1) MAIN POWER TAKE-OFF PERFORMANCE

at engine speed corresponding to standard p.t.o. speed (1000 rev/min)

Date of tests: 15th December 1977
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power at standard p.t.o. speed						
59.6	2000	1000	18.34	15.10	253	3.25
Part loads at standard p.t.o. speed						
(i) 85% of the torque at maximum power						
52.2	2063	1032	15.77	12.99	249	3.31
(ii) unloaded						
-	2193	1097	4.21	3.47	-	-
(iii) 50% of the load defined in (i)						
27.1	2142	1071	9.77	8.04	297	2.78
(iv) maximum power						
59.6	2000	1000	18.34	15.10	253	3.25
(v) 25% of the load defined in (i)						
13.7	2166	1083	7.02	5.78	422	1.95
(vi) 75% of the load defined in (i)						
40.0	2107	1054	12.77	10.51	263	3.13

Equivalent crankshaft torque at standard p.t.o. speed 284 Nm

Mean atmospheric conditions:	temperature	18 °C
	pressure	1013 mbar
	relative humidity	69 %
Maximum temperatures:	coolant	85 °C
	engine oil	91 °C
	fuel	20 °C
	engine air intake	20 °C

ADDITIONAL TEST

out of the O.E.C.D. CODE under the responsibility of the DLG-Testing Station

(2) DRAWBAR PERFORMANCE

The manufacturer claimed for an Additional Drawbar Performance Test with supplementary ballast up to the maximum permissible load on the tyres

Ballast front:	1 frame		140 kg
	9 front weights	46 kg each	414 kg
	7 front weights	34 kg each	238 kg
Ballast rear:	2 weights per wheel	58 kg each	232 kg
	1 special drawbar		89 kg
	30 frame weights on this drawbar	34 kg each	1020 kg
	water in the tyres		652 kg

Date of tests: 20th February 1978

Gear No. and Group	Speed km/h	Power kW	Drawbar pull N	Engine speed rev/min	Slip of wheels %	Specific energy kWh/l
(i) MAXIMUM POWER with ballast height of drawbar above ground 430 mm						
1 field	2,27	46,6	74000	2399	15,0	2,85
2 field	3,01	59,2	70840	2300	12,2	2,93
3 field	4,94	61,4	44470	2300	5,2	3,04
4 field	7,53	61,5	29400	2300	3,0	3,04
1 road	9,09	60,5	23970	2300	2,5	3,02

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Tractor weight with ballast:

	without driver	with driver
front	2530 kg	2545 kg
rear	4970 kg	5040 kg
total	7500 kg	7585 kg

Specific fuel consumpt. g/kWh	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,3 bar rolling radius of tyres under static load 785 mm						
293	14	85	89	0	80	1000
285	15	85	89	3	78	1003
273	17	85	88	4	75	1003
273	8	85	85	-2	90	1002
277	10	85	80	0	80	1002

ADDITIONAL TEST

out of the O.E.C.D. CODE under the responsibility of the DLG Testing Station

(3) NOISE AT THE DRIVER'S EAR LEVEL

Octave analysis in the 4th field gear of which the nominal travelling speed is nearest to 7,5 km/h, reportet in the NOISE RATING diagram

Date of test:	8th February, 1978
Test track:	Concrete
Type of sound level meter:	BRÜEL AND KJAER model 2607
Type of frequency analyser: (fitted with octave filter)	BRÜEL AND KJAER model 1614

The tractor was fitted with a safety cab O.E.C.D. tested, approval no. CS 1280

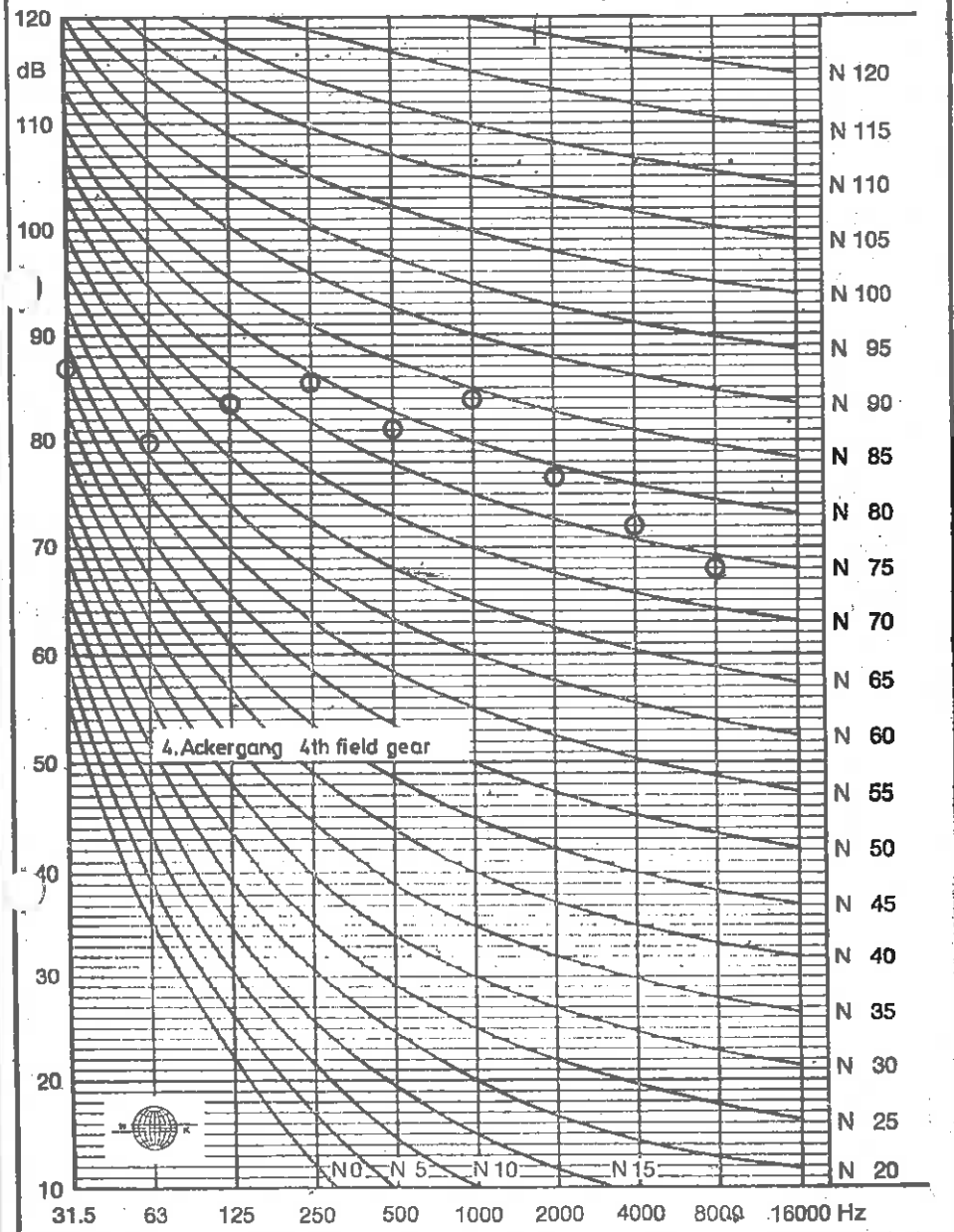
Results of test:

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed effective km/h	Sound level dB(A)	Sound level noise rating
4 field	17870	7,91	87,5	84

There is no gear combination with a NOISE RATING NUMBER higher than 85

PRÜFUNGS-ABTEILUNG	Schleppergeräusch am Ohr des Fahrers Noise at the driver's ear level	IH 955 A 77 - 163.

Noise Rating Zahlen noise rating numbers



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