COMITATO PER L'OMOLOGAZIONE
DELLE MACCHINE AGRICOLE

553

No. 498/O.E.C.D.

REPORT ON TEST IN ACCORDANCE WITH O.E.C.D
TEST CODE FOR AGRICULTURAL TRACTORS

# GOLDONI UNIVERSAL 236



**Manufactured by:** GOLDONI & C.
Migliarina di Carpi – MODENA (ITALY)

**Date of tests:** February 1975 – June 1975

CENTRO DI OMOLOGAZIONE DELL'ISTITUTO DI MECCANICA AGRARIA
UNIVERSITA' DEGLI STUDI DI BOLOGNA – ITALIA

# GOLDONI UNIVERSAL 236 TRACTOR

## Table of contents


| | page |
|---|---|
| Specification of tractor | 3 to 8 |
| Fuel and lubricants used in tests | 8 |
| **COMPULSORY TESTS** | |
| 1) Main power take-off performance | 9 to 11 |
| 2) Drawbar performance on a concrete track | 12 to 19 |
| 3) Turning space and turning circle | 20 |
| 4) Location of centre of gravity | 20 |
| 5) Braking performance | 21 |
| 6) Ambient noise emitted by the tractor | 22 |
| 7) Noise at the driver's ear level | 22 |
| 8) Power lift and hydraulic pump performance | 23 |

| | |
|---|---|
| Tractor manufacturer: | GOLDONI S.p.A. Migliarina di Carpi (Modena) |
| Submitted for test by: | Manufacturer |
| Selected by: | Manufacturer with the agreement of Istituto di Meccanica agraria - University of Bologna |
| Place of running-in: | GOLDONI S.p.A. workshop, Migliarina di Carpi |
| Duration of running-in: | 80 hrs for engine, 60 hrs for the tractor |

## SPECIFICATION OF TRACTOR

**Tractor**

| | |
|---|---|
| Make: | GOLDONI S.p.A. |
| Model: | Universal 236 |
| Type: | Four wheels drive, articuled steering frame |
| Serial No: | 36-94179 |

Engine

| | |
|---|---|
| Make: | SLANZI Fabbrica Italiana Motori S.p.A. Novellara |
| Model: | DVA 1550 |
| Type: | Four-stroke direct injection Diesel |
| Serial No: | 161376 |
| Cylinders: | 3, vertical, dry, in line;<br>bore 86 mm, stroke 88 mm, total capacity 1533 $cm^3$;<br>compression ratio 17.5;<br>overhead valves |
| Fuel system: | Forced with diaphragm pump SAVARA 6007/330;<br>FIAAM FNA S 120/00 replaceable paper cartridge-type filter;<br>BOSCH PFR 3 K 70 A injection pump, manufacturer's production setting for injection pump 30 $mm^3$ for stroke at 314.1 rad/s (3000 rev/min) of engine;<br>BOSCH KBL 73 S 111/4 injection nozzles, injection pressure 206 bar (210 $kp/cm^2$);<br>capacity of fuel tank 16 l |
| Governor: | SLANZI mechanical type with centrifugal weights governed<br>range of engine speeds 104.7 - 340.3 rad/s (1000-3250 rev/min);<br>rated engine speed 314.1 rad/s (3000 rev/min) |
| Air cleaner: | FIAAM FAR 242/A dry filter with cyclone pre-cleaner;<br>flow 3000 l/min |

| | |
|---|---|
| Lubrication system: | SLANZI forced feed from gear-type pump;<br>sieve filter in suction and paper cartridge replaceable filter FIAAM FOL 585/OOM1 at delivery;<br>oil capacity 6.8 l;<br>recommended oil: ESSOLUBE HDX SAE 40 (summer) and SAE 30 (winter);<br>recommended oil change period 100 hrs;<br>recommended filter change period 400 hrs |
| Cooling system: | Air forced with 8 blades flywheel axial impeller;<br>flywheel diameter 208 mm;<br>flow 1600 $m^3/h$ at 314.1 rad/s (3000 rev/min) of engine |
| Starting system: | Electric BOSCH JD(R), 12 V, 1.32 kW motor;<br>low temperature starting aid: manual operated fuel supplementary ratio device on injection pump |
| Electrical equipement: | 12 V;<br>DUCATI 4035168401 alternator, 0.3 kW;<br>one battery, capacity 92 Ah |

Transmission

| | |
|---|---|
| Clutch: | PITTERI and VIOLINI F 215 at simple effect;<br>single dry plate type diameter 215 mm;<br>pedal operated |
| Gear box: | Own make, mechanical;<br>sliding gear countershaft change gear with 3 gears and one group gear with 2 forward and 1 reverse gears. Total: 6 forward and 3 reverse speeds selected by means of 2 hand levers |
| Front and rear axles and final transmission: | Own make model Universal;<br>differential operated by bevel gear (ratio 1:4.778) and bull gears final drives (ratio 1:3.143).<br>Foot operated differential lock on two axles self disengaging. The front and rear axles are couples by an universal joint and is costantly mechanically connected |
| Oil capacities: | Gear box and front transmission 8.9 l;<br>rear transmission 5.2 l;<br>recommended oil change period: 1000 working hrs;<br>recommended oil: ESSO GEAR OIL CZ 90 |

Total ratios and speed

| Gear | No of engine revolutions for one revolution of driving wheels | Theoretical travelling speed for 314.1 rad/s rated speed of engine | |
|---|---|---|---|
| | | m/s | km/h |
| 1st lower | 347.088 | 0.34 | 1.23 |
| 2nd lower | 156.943 | 0.76 | 2.74 |
| 3rd lower | 104.939 | 1.14 | 4.09 |
| 1st high | 64.573 | 1.85 | 6.65 |
| 2nd high | 29.133 | 4.09 | 14.74 |
| 3rd high | 19.522 | 6.11 | 21.99 |
| 1st reverse | 264.450 | 0.45 | 1.62 |
| 2nd reverse | 119.580 | 1.00 | 3.59 |
| 3rd reverse | 79.935 | 1.49 | 5.37 |

Calculated with the tyre rolling circumference of 2383 mm in accordance to tyre manufacturer's specification

Power take-off

Main p.t.o.: Located at the rear of tractor, central position;
height above ground 445 mm;
dimensions 34.8x27.9x8.6 mm (1.3/8", ISO R 500), 6 splines;
hand lever engaged.
Speeds proportional at engine speed:
two, 58.4 or 92.0 rad/s (558 or 879 rev/min) at 314.1 rad/s (3000 rev/min) rated engine speed;
303.9 or 193.0 rad/s (2903 or 1843 rev/min) of engine at p.t.o. 56.5 rad/s (540 rev/min).
Direction of rotation, clockwise viewed from tractor rear.
Speeds proportional to travelling speed:
one, one p.t.o. revolution for 0.16 m;
15 p.t.o. rev/min for one revolution of driving wheels.
Direction of rotation, clockwise in forward speeds, anti-clockwise in reverse speed

Accessory p.t.o.: Located at the rear of tractor, central position under the main p.t.o.;
height above ground 365 mm;
dimensions 30x26x6 mm; 6 splines; hand lever engaged.
Speeds proportional at engine speed:
two, 58.4 ot 92.0 rad/s (558 or 879 rev/min) at 314.1 rad/s (3000 rev/min) rated engine speed;
303.9 or 193.0 rad/s (2903 or 1843 rev/min) of engine at p.t.o. 56.5 rad/s (540 rev/min).
Direction of rotation, anti-clockwise viewed from tractor rear.
Speeds proportional to travelling speed:
one, one p.t.o. revolution for 0.16 m;
15 p.t.o. rev/min for one revolution of driving wheels.
Direction of rotation, anti-clockwise in forward speeds, clockwise in reverse speeds.

| | |
|---|---|
| Facultative p.t.o.: | Located at the front of tractor, central position under the engine;<br>height above ground 295 mm;<br>dimensions 25x21x5 mm, 6 splines;<br>hand lever engaged.<br>Speeds proportional at engine speed:<br>two, 46.7 or 73.6 rad/s (446 or 703 rev/min) at 314.1 rad/s (3000 rev/min) rated engine speed.<br>Direction of rotation: anti-clockwise viewed from tractor front |
| Power lift: | Own make;<br>hydraulic power line in disintegrated construction;<br>floating position, no controls;<br>two single acting rams, 45 mm bore, 145 mm stroke;<br>SALAMI 2 PA 5.5/3 - BF hydraulic pump directly driven by engine;<br>maximum pressure 90 bar (92 kp/cm$^2$);<br>oil capacity 4.7 l<br>(2 oil tapping for 2 two remote ram optional, non fitted on tractor tested) |
| Three point linkage: | In special non unificated construction;<br>balls of links acc. to ISO I cat.<br>Lifting rods lenght: 556 mm;<br>lift height above ground from 185 to 585 mm |
| Holed drawbar: | Fitted on clevis of lower links;<br>length between the ball joints 415 mm;<br>thickness of holed bar 25 mm, width 65 mm;<br>7 holes, diameter 20 mm.<br>Height above ground level adjustable from 185 to 585 mm.<br>Distance of centre hole:<br>to rear axle centre 663 mm<br>to end of p.t.o - shaft 310 mm |
| Hitch: | Own make;<br>height above ground 320 or 630 mm;<br>adjustable by shifting hitch;<br>diameter of clevis hole 28 mm;<br>distance to rear axle centre 400 mm;<br>distance referred to the main p.t.o - shaft:<br>horizontal 45 mm, vertical 4 position, 168 or 116 mm (over) and 95 or 178 mm (under) |
| Steering: | Own make;<br>mechanical type working on centre, pivot of the tractor by mean of: steering wheels, worm gear box, connecting rod |

Brakes: Own make;
Foot brake: mechanically operated internal shoe type brake acting on 2 brake drums in the rear wheels;
pedal operated.
Parking brake: mechanically operated internal shoe type brake acting on 2 brake drums in the front wheels, operated by hand lever with ratchet

Drive wheels: In front and rear;
4 radial tyres 7.50 - 16, 4 ply rating pneumatic;
maximum permissible weight on each tyre 450 kg at 1.1 bar internal air pressure.
Track width 646, 746, 866, 936 mm changeable by reversing wheels centres and offset lugs on rims;
wheelbase 1050 mm

Weights: With full fuel tank, oil

| Weights kg | No driver | | | With driver | | |
|---|---|---|---|---|---|---|
| | on front wheels | on rear wheels | total | on front wheels | on rear wheels | total |
| Without additional weight | 630 | 255 | 885 | 640 | 320 | 960 |
| With maximum additional weight | 690 | 315 | 1005 | 700 | 380 | 1080 |

Ballast: four, 30 kg each, one for wheel

Seat: Own make;
elastic rubber mounting;
range of adjustement 50 mm, fore and aft in median plane of tractor

Number of grease points: (whole tractor) 5

Dimensions:

| Overall dimensions | Lenght m | Width m | Height m |
|---|---|---|---|
| Without ballast | 2.52 (1) | 0.85-0.95-1.07-1.14 | 1.09 (2) |
| With ballast | 2.52 (1) | 0.95-0.95-1.07-1.14 | 1.09 (2) |

(1) With three points linkage 2.78 m
(2) To top of steering wheel
Maximum ground clearance 0.24 m

Lighting:

| | Height above ground of centre cm | Diameter cm | Distance of centre from outside edge of tractor cm |
|---|---|---|---|
| Headlights | 81 | 11 | 41 (1) |
| Side lights | 81 | 11 | 41 (1) |
| Rear lights | 82 | 15.5x6.5(2) | 14 (1) |
| Reflectors | 69 | 4.5x5 | 14 (1) |

(1) With track width of 0.850 m
(2) In combination with direction indicator and stop ligth

FUEL AND LUBRICANTS USED IN TEST

| | |
|---|---|
| Fuel: | Agricultural Diesel oil;<br>density 15°C: 0.825 kg/l<br>cetane number: 69 |
| Engine oil: | ESSOLUBE HDX SAE 20W/40<br>viscosity index: 95 |
| Transmission oil: | ESSO GEAR OIL CZ 90 SAE 80/90<br>viscosity index: 95 |
| Hydraulic fluid: | ESSO NUTO H 54<br>viscosity index: 95 |

## COMPULSORY TEST

### 1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of test: 25th february 1975 - Experimental Centre of Cadriano - University of Bologna

Type of dynamometer: electrical, type I.M.A. Bo 65

| Power kW (metric h.p.) | Speed engine rad/s (rev/min) | Speed p.t.o rad/s (rev/min) | Fuel consumption hourly l/h | Fuel consumption specific g/kWh (g/h.p.h) | Fuel consumption kWh for liter kWh/l (h.p.h/l) |
|---|---|---|---|---|---|
| At maximum power 2-hours test | | | | | |
| 22.30 (30.34) | 314.1 (3000) | 58.4 (558) | 7.64 | 283 (208) | 2.92 (3.97) |
| At standard p.t.o. speed 56.5 ± 1 (540 ± 10 rev/min) | | | | | |
| 22.03 (29.97) | 304.6 (2909) | 56.6 (541) | 7.45 | 279 (205) | 2.96 (4.02) |
| At the speed recommanded by the manufacturer for drawbar work | | | | | |
| 22.30 (30.34) | 314.1 (3000) | 58.4 (558) | 7.64 | 283 (208) | 2.92 (3.97) |
| At part loads | | | | | |
| I) 19.97 (27.17) | 331.0 (3161) | 61.6 (588) | 7.16 | 295 (217) | 2.79 (3.80) |
| II) - | 340.1 (3247) | 63.2 (604) | 2.67 | - | - |
| III) 10.04 (13.66) | 334.3 (3193) | 62.2 (594) | 4.73 | 389 (286) | 2.12 (2.89) |
| IV) 22.30 (30.34) | 314.1 (3000) | 58.4 (558) | 7.64 | 283 (208) | 2.92 (3.97) |
| V) 5.03 (6.85) | 335.5 (3204) | 62.4 (596) | 3.52 | 575 (423) | 1.43 (1.95) |
| VI) 15.05 (20.48) | 333.3 (3183) | 62.0 (592) | 6.06 | 332 (244) | 2.48 (3.38) |

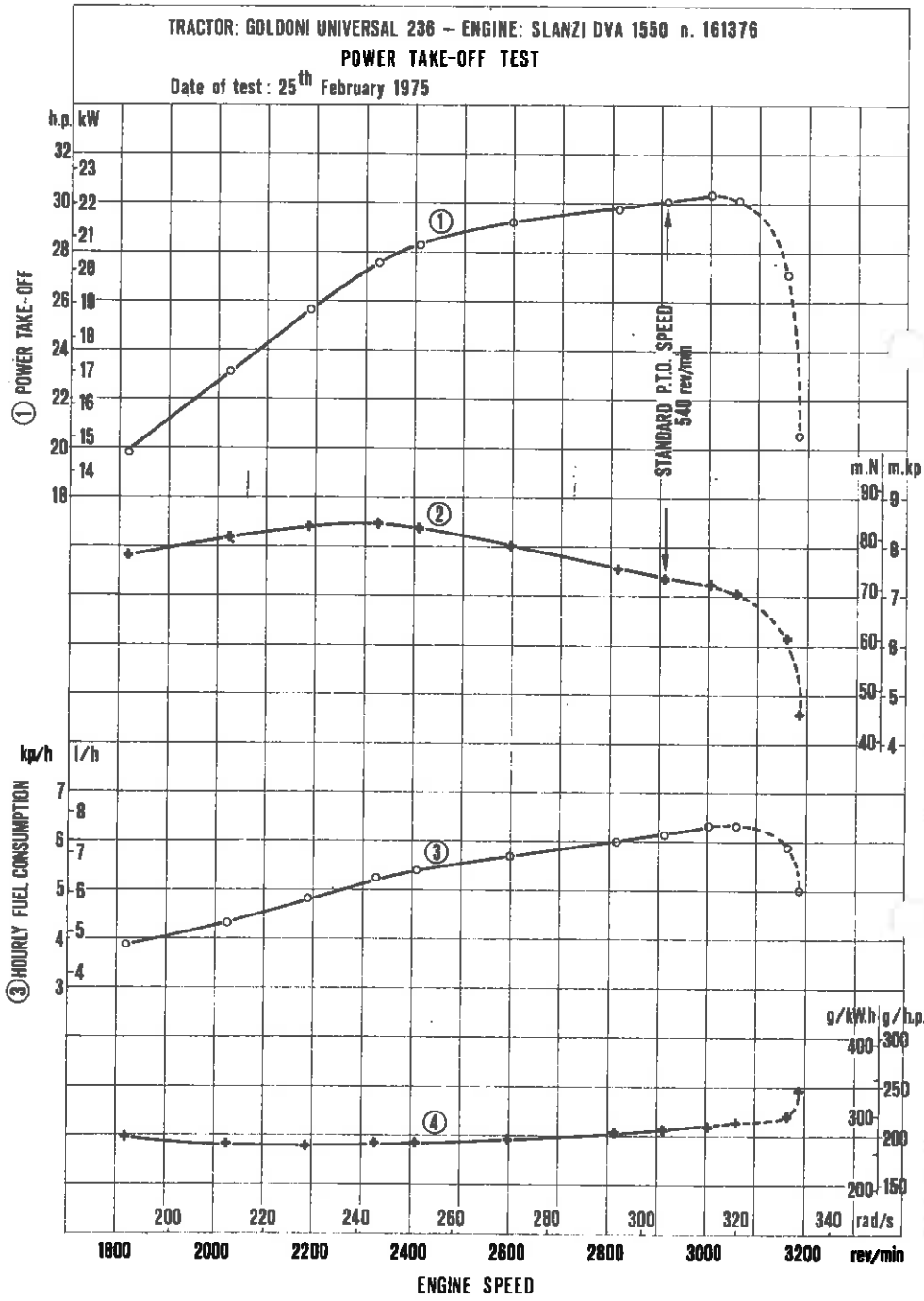
No load maximum engine speed: 340.1 rad/s (3247 rev/min)

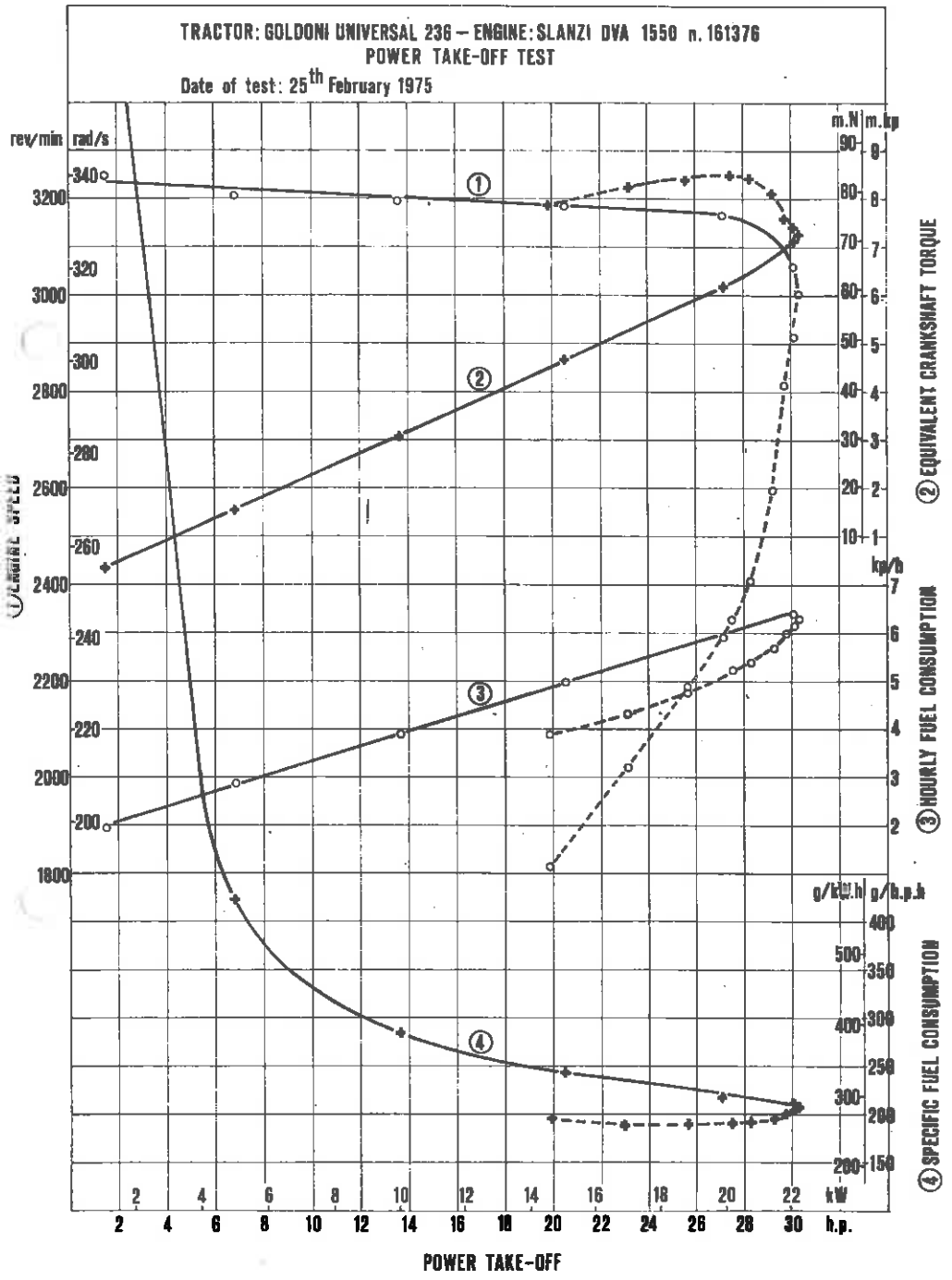
Equivalent crankshaft torque at maximum power: 71.0 mN (7.24 mkp)

Maximum equivalent crankshaft torque: 83.3 mN (8.49 mkp) at 243.2 rad/s (2323 rev/min) of the engine

Mean atmospheric conditions: temperature 19.5°C
pressure 1026 mbar
relative umidity 55%

Maximum temperature: coolant 80°C
engine oil 97°C
fuel 15°C


TRACTOR: GOLDONI UNIVERSAL 236 – ENGINE: SLANZI DVA 1550 n. 161376
POWER TAKE-OFF TEST
Date of test: 25th February 1975
h.p. kW
① POWER TAKE-OFF
STANDARD P.T.O. SPEED 540 rev/min
m.N m.kp
kp/h l/h
③ HOURLY FUEL CONSUMPTION
g/kW.h g/h.p.h
rad/s
1600 2000 2200 2400 2600 2800 3000 3200 rev/min
ENGINE SPEED


TRACTOR: GOLDONI UNIVERSAL 236 – ENGINE: SLANZI DVA 1550 n. 161376
POWER TAKE-OFF TEST
Date of test: 25th February 1975
rev/min
rad/s
m.N
m.kg
kg/h
g/kW.h
g/h.p.h
① EQUIVALENT CRANKSHAFT TORQUE
② HOURLY FUEL CONSUMPTION
③ SPECIFIC FUEL CONSUMPTION
④ ENGINE SPEED
kW
h.p.
POWER TAKE-OFF

.2) DRAWBAR PERFORMANCE

Date of test: 21th may - 6th june 1975

Type of track: concrete

| Gear | Speed km/h | Power kW (h.p.) | Drawbar pull N (kp) | Engine speed rad/s (rev/min) | Slip of wheels % | Drawbar fuel consumption kWh/l (h.p.h/l) |
|---|---|---|---|---|---|---|
| i) Maximum power (with ballast) | | | | | | |
| 1st l | 1.07 | 3.2 (4.3) | 10680 (1090) | 329 (3140) | 14.5 | 1.06 (1.44) |
| 2nd l | 2.32 | 6.9 (9.4) | 10680 (1090) | 328 (3130) | 15.1 | 1.69 (2.30) |
| 3rd l | 3.46 | 10.0 (13.6) | 10390 (1060) | 325 (3110) | 15.0 | 1.93 (2.62) |
| 1st h | 5.81 | 16.3 (22.2) | 10090 (1030) | 327 (3120) | 13.1 | 2.48 (3.37) |
| 2nd h | 12.86 | 19.6 (26.7) | 5490 (560) | 312 (2980) | 3.0 | 2.58 (3.51) |
| 3rd h | 19.29 | 18.9 (25.7) | 3530 (360) | 313 (2990) | 3.0 | 2.53 (3.44) |
| ii) Five hour test at 75% of pull at maximum power (in the 1st h gear) | | | | | | |
| 1st h | 6.21 | 13.2 (18.0) | 7640 (780) | 327 (3120) | 6.5 | 2.49 (3.40) |

Height of drawbar above ground: 316 mm

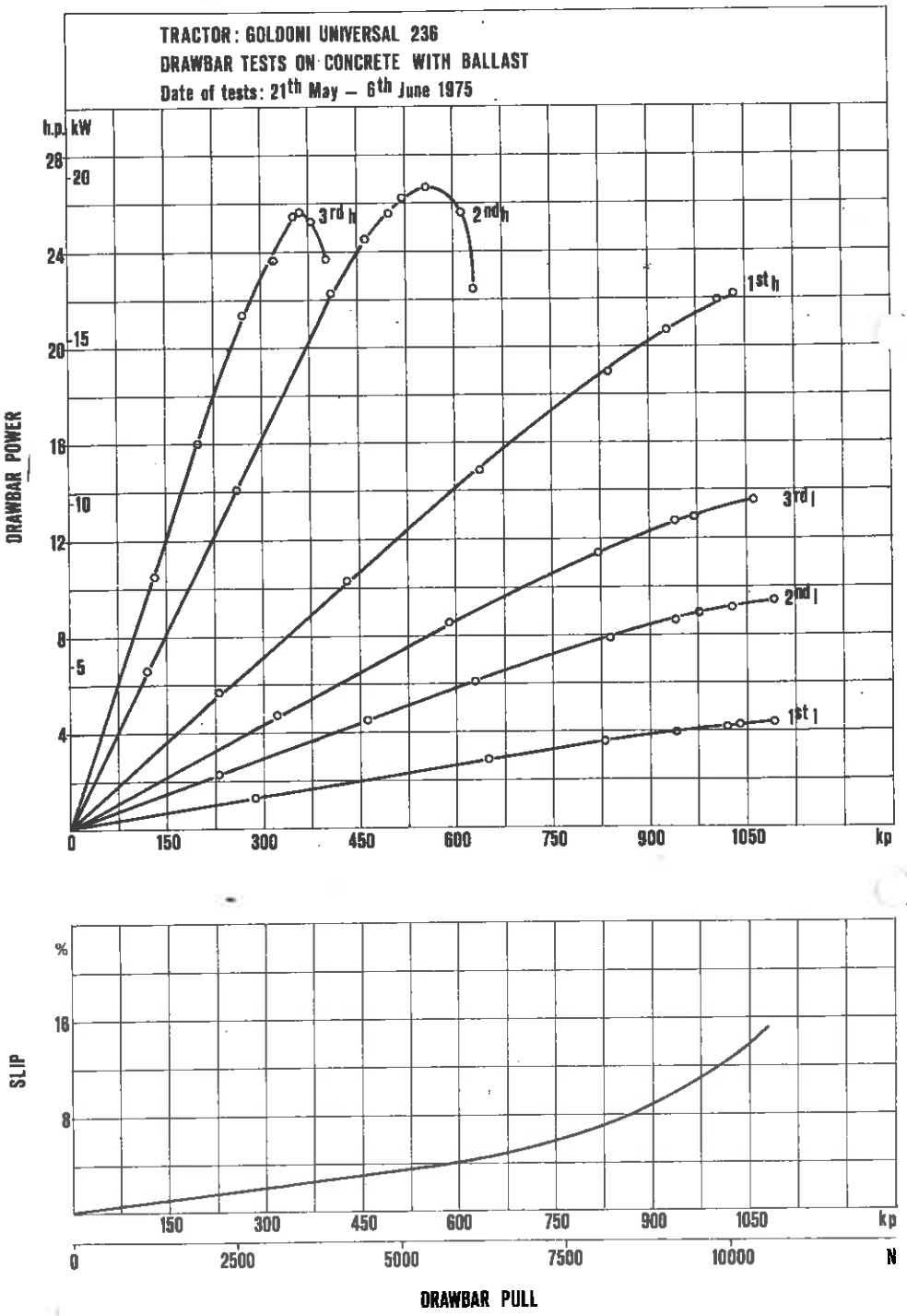
| Drawbar fuel consumption g/kWh (g/h.p.h) | Temperatures °C | | | Atmospheric conditions | | |
|---|---|---|---|---|---|---|
| | Fuel | Coolant | Engine oil | Temperature °C | Relative umidity % | Pressure mbar |
| 775 (570) | 20 | 64 | 70 | 25 | 37 | 1007 |
| 487 (358) | 20 | 77 | 73 | 26 | 38 | 1007 |
| 428 (315) | 21 | 78 | 73 | 26 | 40 | 1007 |
| 333 (245) | 19 | 78 | 75 | 23 | 44 | 1007 |
| 320 (235) | 19 | 74 | 68 | 23 | 44 | 1007 |
| 326 (240) | 19 | 74 | 68 | 23 | 44 | 1007 |
| 331 (243) | 19 | 67 | 84 | 23 | 42 | 1002 |

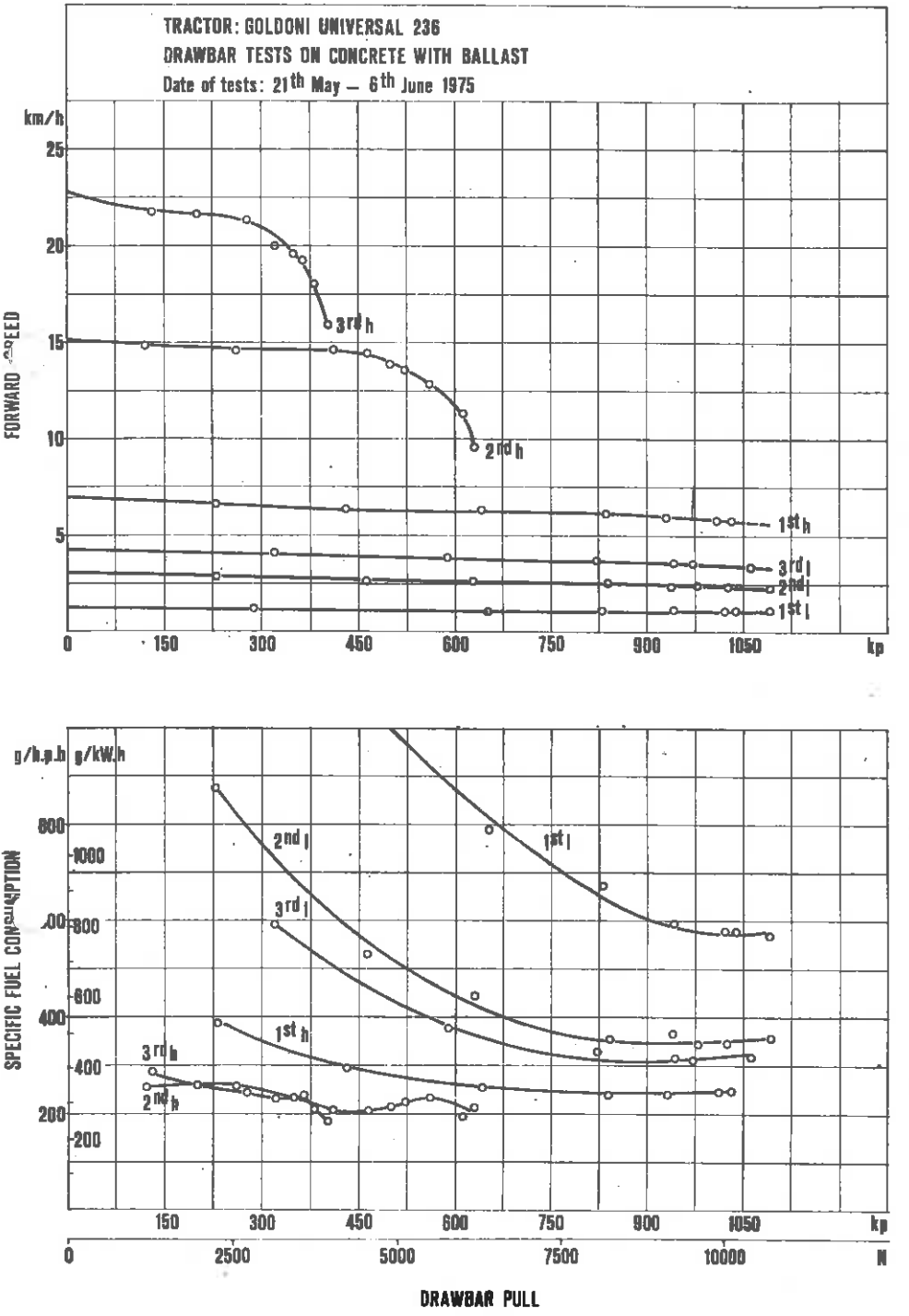
| Gear | Speed km/h | Power kW (h.p.) | Drawbar pull N (kp) | Engine speed rad/s (rev/min) | Slip of wheels % | Drawbar fuel consumption kWh/l (h.p.h/l) |
|---|---|---|---|---|---|---|
| iii) Five hour test at pull corresponding to 15% wheelslip in test i) | | | | | | |
| 1st h | 5.91 | 17.5 (23.9) | 10680 (1090) | 324 (3100) | 11.0 | 2.64 (3.59) |
| v) Maximum power (without ballast) | | | | | | |
| 1st l | 1.05 | 2.7 (3.6) | 9110 (930) | 329 (3140) | 15.0 | 0.90 (1.22) |
| 2nd l | 2.34 | 5.9 (8.0) | 9110 (930) | 328 (3130) | 15.0 | 1.60 (2.18) |
| 3rd l | 3.46 | 8.7 (11.8) | 9110 (930) | 320 (3100) | 15.0 | 1.99 (2.70) |
| 1st h | 5.68 | 14.2 (19.3) | 9020 (920) | 325 (3110) | 14.9 | 2.36 (3.20) |
| 2nd h | 13.22 | 19.2 (26.1) | 5190 (530) | 312 (2980) | 5.0 | 2.53 (3.44) |
| 3rd h | 20.43 | 18.9 (25.7) | 3330 (340) | 312 (2980) | 4.0 | 2.53 (3.44) |

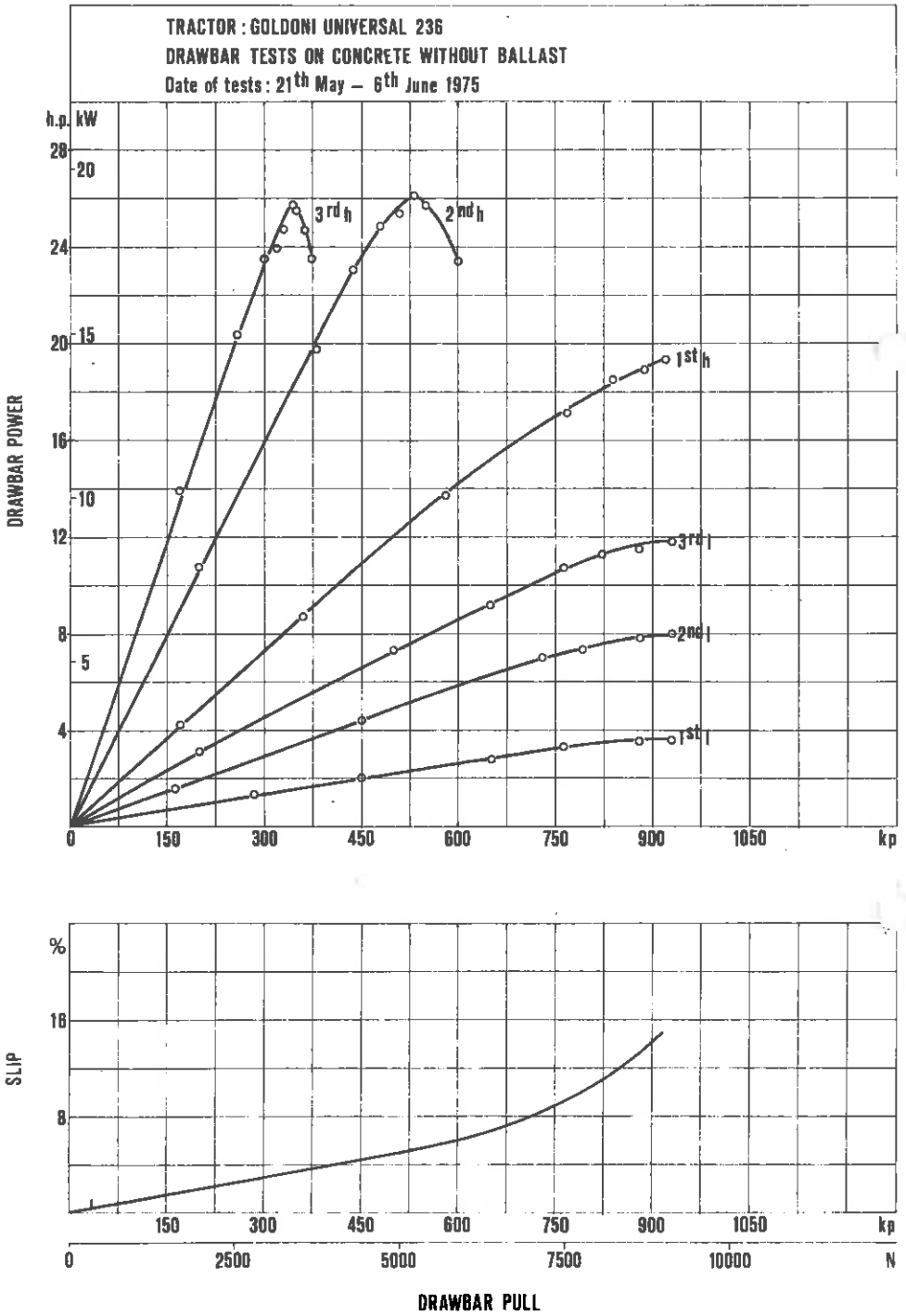
Oil consumption during ten hours duration of test ii) and iii): 47 g/h

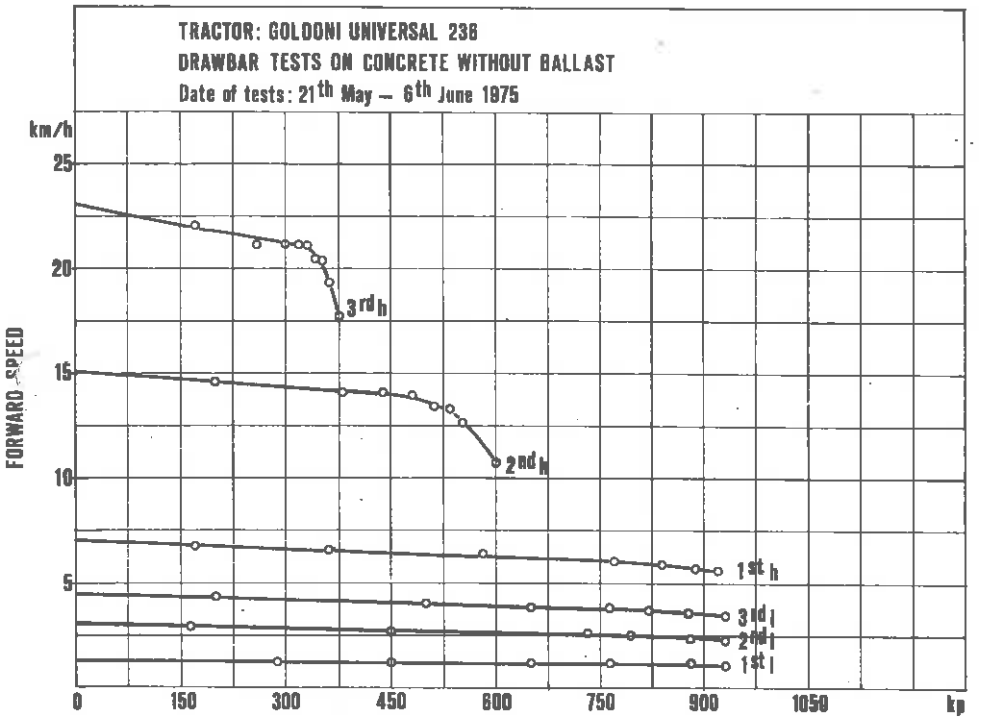
| Drawbar fuel consumption g/kWh (g/h.p.h) | Temperatures °C | | | Atmospheric conditions | | |
|---|---|---|---|---|---|---|
| | Fuel | Coolant | Engine oil | Temperature °C | Relative umidity % | Pressure mbar |
| 313 (230) | 19 | 98 | 84 | 24 | 40 | 1002 |
| 918 (675) | 22 | 69 | 65 | 27 | 48 | 1007 |
| 515 (379) | 23 | 71 | 71 | 27 | 48 | 1007 |
| 415 (305) | 23 | 72 | 73 | 28 | 50 | 1007 |
| 350 (258) | 20 | 78 | 80 | 28 | 45 | 1007 |
| 326 (240) | 21 | 77 | 68 | 25 | 54 | 1007 |
| 326 (240) | 21 | 80 | 70 | 25 | 54 | 1007 |

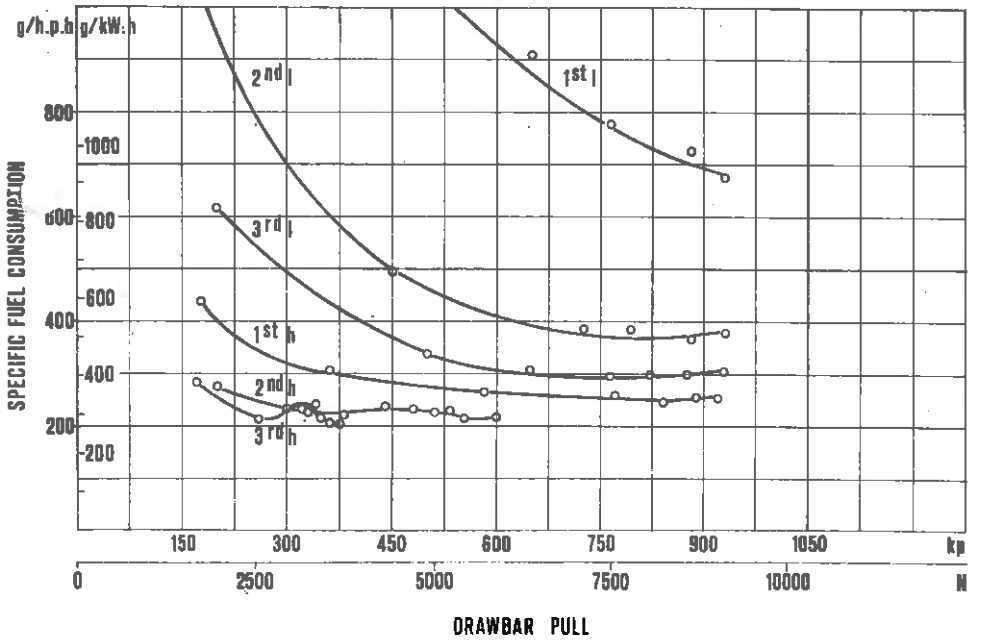
Test iii) was carried out with additional ballast of 150 kg (270 kg in total)


TRACTOR: GOLDONI UNIVERSAL 236
DRAWBAR TESTS ON CONCRETE WITH BALLAST
Date of tests: 21th May – 6th June 1975
h.p. kW
DRAWBAR POWER
3rd h
2nd h
1st h
3rd l
2nd l
1st l
kp
SLIP
%
DRAWBAR PULL
N


TRACTOR: GOLDONI UNIVERSAL 236
DRAWBAR TESTS ON CONCRETE WITH BALLAST
Date of tests: 21th May – 6th June 1975
km/h
25
20
15
10
5
FORWARD SPEED
3rd h
2nd h
1st h
3rd l
2nd l
1st l
0
150
300
450
600
750
900
1050
kp
g/h.p.h
g/kW.h
800
1000
600
800
400
600
200
400
200
SPECIFIC FUEL CONSUMPTION
2nd l
1st l
3rd l
1st h
3rd h
2nd h
150
300
450
600
750
900
1050
kp
0
2500
5000
7500
10000
N
DRAWBAR PULL


TRACTOR : GOLDONI UNIVERSAL 236
DRAWBAR TESTS ON CONCRETE WITHOUT BALLAST
Date of tests : 21th May – 6th June 1975
h.p. kW
28
20
24
15
20
16
10
12
8
5
4
3rd h
2nd h
1st h
3rd l
2nd l
1st l
DRAWBAR POWER
0
150
300
450
600
750
900
1050
kp
%
18
8
SLIP
0
2500
5000
7500
10000
N
DRAWBAR PULL


TRACTOR: GOLDONI UNIVERSAL 236
DRAWBAR TESTS ON CONCRETE WITHOUT BALLAST
Date of tests: 21th May – 6th June 1975
km/h
FORWARD SPEED
25
20
15
10
5
3rd h
2nd h
1st h
3rd l
2nd l
1st l
0
150
300
450
600
750
900
1050
kp


g/h.p.h
g/kW.h
SPECIFIC FUEL CONSUMPTION
800
600
400
200
1000
800
600
400
200
2nd l
1st l
3rd l
1st h
2nd h
3rd h
150
300
450
600
750
900
1050
kp
0
2500
5000
7500
10000
N
DRAWBAR PULL

3) TURNING SPACE AND TURNING CIRCLE

Details of wheels equipment: Front and rear 7.50-16, 4 p.r. pneumatic; no ballast; track width, front and rear axles, 850 mm

| | Without brakes | |
|---|---|---|
| | right hand | left hand |
| Radius of turning space, m | 2.32 | 2.35 |
| Radius of turning circle, m | 2.23 | 2.26 |

No "with brakes" test has been carried out since tractor is not provided with steering brakes

4) LOCATION OF CENTRE OF GRAVITY

| | |
|---|---|
| - Height above ground | 475 mm |
| - Distance forward from the vertical plane containing the axis of the rear wheels | 700 mm |
| - Distance of the median plane of the tractor to the right hand side | 0 mm |

## 5) BRAKING PERFORMANCE

Date of tests: 29th april 1975

Type of track: Concrete

Type of decelerometer: Moto Meter, at maximum, recorder

Weight of ballasted tractor: 1080 kg, with driver

### A) Foot brake

Cold brakes

| | | With ballast | Without ballast |
|---|---|---|---|
| Travelling speed | km/h | 22.5 | 22.5 |
| Deceleration | $m/s^2$ | 6.5 | 7.2 |
| Stopping distance | m | 3.70 | 3.50 |
| Force on pedal | N (kp) | 540 (55) | 490 (50) |
| Force on pedal for maximum deceleration of 2.5 $m/s^2$ | N (kp) | 175 (18) | 145 (15) |

Brake fade characteristics (hot tests)

| | | | With ballast | Without ballast |
|---|---|---|---|---|
| Deceleration | hot/cold | % | 88 | 83 |
| Stopping distance | cold/hot | % | 110 | 105 |
| Force on pedal | hot/cold | % | 98 | 97 |

### B) Park brake

Tractor facing up slope:
Pull on hand brake 340 N (35 kp), tractor does not roll

Tractor facing down slope:
Pull on hand brake 340 N (35 kp), tractor does not roll

6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 4th june 1975
Type of track: Concrete
Type of sound level meter: Brüel and Kjaer, type 2203

Results of test

Gear: 3rd h
Maximum travelling speed: 23 km/h
Travelling speed before acceleration: 18.4 km/h
Sound level: 86.4 dB(A)

7) NOISE AT THE DRIVER'S EAR LEVEL

Date of test: 4th june 1975
Type of track: Concrete
Type of sound level meter: Brüel and Kjaer, type 2203
Type of frequency analyser: Brüel and Kjaer, type 1613

No cab or safety frame fitted on tractor

Results of test

| Gear | Drawbar pull at which the tractor develops the maximum sound level N (kp) | Travelling speed km/h | | Sound level | |
|---|---|---|---|---|---|
| | | nominal | effective | dB(A) | Sones |
| 1st h* | 7640 (780) | 6.65 | 6.10 | 102.4 | 142.0 |

* The 1st h gear corresponds to the travelling speed nearest to 7.25 km/h

8) POWER LIFT PERFORMANCE

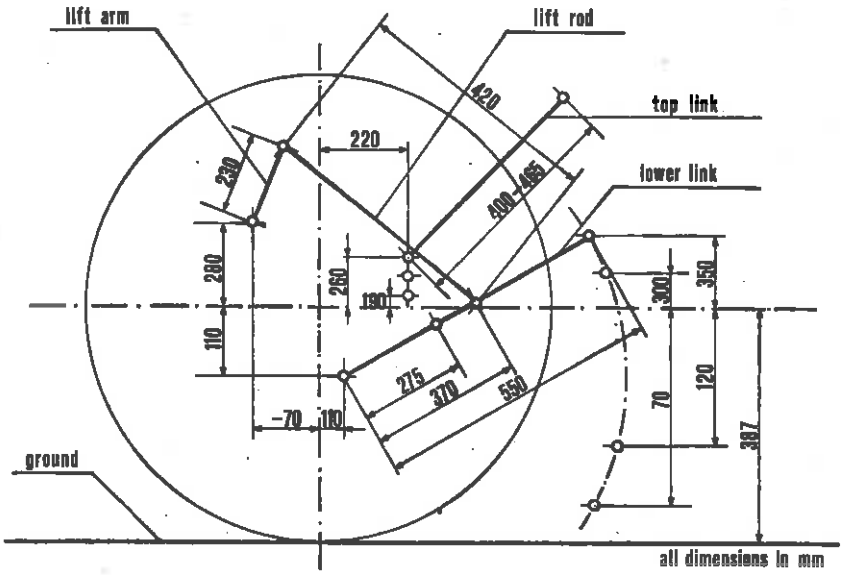
| | |
|---|---|
| Date and location of test: | 5th march 1975 - Experimental Centre of Cadriano |
| Hydraulic fluid: | Esso Nuto H 54 - Viscosity index: 95 |
| Type of linkage lok for transport: | Hydraulic |
| Opening pressure of the cylinder over pressure relief valve: | 90 bar (92 kp/cm$^2$) |

Hydraulic pump

| | | |
|---|---|---|
| i) | Opening pressure of relief valve: | 90 bar (92 kp/cm$^2$) |
| | Sustained pressure by open relief valve: | 98 bar (100 kp/cm$^2$) |
| ii) | Pump delivery rate at minimum pressure and maximum engine speed: | 12.6 l/min |
| iii) | Pump delivery rate: | 11.5 l/min |
| | Delivery pressure: | 69 bar (70 kp/cm$^2$) |
| | Hydraulic power: | 1.3 kW (1.8 metric h.p.) |

Power lift

Dimensions of implement linkage for the table on page 24



Linkage geometry (*)

| | | Maximum mechanical advantage | Minimum mechanical advantage |
|---|---|---|---|
| Projected length in side view | | | |
| lower links, | mm | 550 | 550 |
| lift arms, | mm | 230 | 230 |
| lift rods, | mm | 420 | 420 |
| top link, (*) | mm | 400-465 | 400-465 |
| Distance of lift rod connection point from pivot point of lower link, | mm | 370 | 275 |
| The following dimensions are given relative to the rear wheel centre line, situated 387 mm above the ground level | | | |
| Lower link pivot point | mm | 110 behind, 110 below | 110 behind, 110 below |
| Top link pivot point (*) | mm | 220-230-240 behind, 260-225-190 above | 220-230-240 behind, 260-225-190 above |
| Lift arm pivot point | mm | 70 behind, 280 above | 70 behind, 280 above |
| Maximum and minimum height of lower link hitch points | mm | 300 above, 70 below | 350 above, 120 below |
| Height of lower link hitch points when locked in transport position | mm | 100 above, - | - - |

(*) The standard test frame cannot be fitted because of the special construction of the implement linkage.

Lifting forces

| Lifting heights in relation to a horizontal line through the lower link pivoting point, cm | | - 12 | - 10 | - 7 | - 5 | 0 | + 5 | + 10 | + 15 | + 20 | + 25 | + 30 | + 35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lifting force at the hitch points N (kp) (Values for the pressure at maximum hydraulic horsepower, calculated from measurements made at maximum pressure) | max. mech. advantage | | | 11560 (1180) | 11470 (1170) | 10980 (1120) | 10390 (1060) | 10000 (1020) | 9600 (980) | 9110 (930) | 8670 (885) | 4900 (500) | |
| | min. mech. advantage | 8230 (840) | 8130 (830) | | 7940 (810) | 7740 (790) | 7550 (770) | 7450 (760) | 7350 (750) | 7250 (740) | 7150 (730) | 6960 (710) | 3920 (400) |
| | Maximum force exerted throughout whole range 4900 N (500 kp)<br>Force at wich front of tractor is calculated to lift with maximum allowable front ballast 10880 N (1110 kp) | | | | | | | | | | | | |

The standard test frame cannot be fitted because of the special construction of the implement linkage.

Bologna, July 1975

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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 evalutation of the performance of the tractor on pratical work.

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

Date of Approval: 19th February 1976

Serial No.: 498

In this report all performance characteristics are given according to the International System of Units and to the Technical System.

| | Equivalences | | | | | | |
|---|---|---|---|---|---|---|---|
| Forces: | 1 N | = 0,102 | kp | or | 1 kp | = 9,81 | N |
| Powers: | 1 kW | = 1,36 | h.p. | or | 1 h.p. | = 0,736 | kW |
| Pressures: | 1 bar | = 1,02 | $kp/cm^2$ | or | 1 $kp/cm^2$ | = 0,981 | bar |
| Angular velocity: | 1 rad/s | = 9,554 | rev/min | or | 1 rev/min | = 0,1047 | rad/s |