ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

CASE INTERNATIONAL 2120 E "4WD"
TEST no. 054.

O.E.C.D. no. 1270

Test in accordance with the O.E.C.D. Restricted Standard Code
for the official testing of agricultural tractors.



Report test of: CASE INTERNATIONAL 2120 E "4WD"

Submitted for test by: JI CASE GmbH
Industriestr. 39-40, 4040 Neuss
GERMANY

Date of O.E.C.D. approval: 03.09.1990
Period of test: April 1990

ISMA - SOP Treviglio - Via Milano,43 - (BG) - ITALY

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The tractor CASE INTERNATIONAL 2120 E, serial no. 58502524, Code 585 ABAGAE had been tested in 2 variants:
As model 2120 E "4WD" and as model 2120 E "2WD".

Model 2120 E "2WD" was converted into model 2120 E "4WD" by mounting the front axle drive and by exchange of front axle and steering.

All stated dimensions and tests referred to tyre sizes 7.50/18(6 ply) at front and 13.6/28 (6 ply) at rear, as well as to track widths 1099 mm at front and 998 mm at rear.

- Tractor manufacturer
. Name: JI CASE GmbH;
. Address: Industriestr. 39-40, 4040 Neuss GERMANY;
- Location of tractor assembly: CARRARO S.p.A. ROVIGO ITALY;
- Submitted for test by: the manufacturer;
- Selected by: the manufacturer with the agreement of ISMA;
- Place of running in: Campodarsego (PD) - ITALY;
- Duration of running: 50 hours.
- Location of test: I.S.M.A. Via Milano, 43 - Treviglio (BG) ITALY

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## I - SPECIFICATION OF TRACTOR

### TRACTOR

- Make: CASE INTERNATIONAL;
- Model: 2120 E "4WD";
- Type: Wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels: 4;
- Serial number: CGC 58502524, Code: 585 ABAGAE;
- First serial number: CGC 58500001, Code: 585 ACAGAE.

### ENGINE

- Make: SAME;
- Model: 1000.3A/45;
- Type: aircooled 4 stroke diesel engine direct injection;
- Serial number: 07627.

#### Cylinders

- Number/disposition: 3, vertical in line;
- Bore/stroke: 105/115,5 mm;
- Capacity: 3000 cm;
- Compression ratio: 17.1 / 1;
- Arrangement of valves: overhead;
- Cylinder liners: without liners.

#### Supercharging none.

Fuel system

- Fuel feed system: AC corone fuel feed pump;
- Make, model and type of fuel filter: FIAMM FNA 160/00;
- Capacity of fuel tank: 60 dm³;
- Make, model and type of injection pump: BOSCH PFR 1K 90A 503, immersed pump, one per cylinder, without serial number, in line injection pump;
- Manufacturer's production setting of injection pump:
  .flow rate: 44+/-2 mm³ /stroke at rated speed and full load corresponding to 9.37 dm³/h;
  .timing: 18+/-0.5 before TDC;
- Make, model and type of injectors: BOSCH KBE 58 S 4/4;
- Injectors pressure: 18 +/-1 MPa.

Governor

- Make: SAME;
- Model: 065.1652.4;
- Type: mechanical variable speed;
- Governor range of engine speed: from 675 to 2510 rev/min.;
- Rated engine speed: 2350 rev/min.

Air cleaner

- Main filter
  . make: VF VIRGIS;
  . model: 1530236C1;
  . type: dry paper element filter;
  . location: behind of engine;
- Maintenance indicator: with the warning lamp on the dashboard;

Lubrication system

- Type of feed pump: forced feed from gear pump;
- Total oil capacity including filter: 6.7 dm³;
- Oil change period: 150 hrs;
- Type of filter: FIAMM FT 4803 IN;
- Number: 1;
- Filter change period: 300 hrs;
- Oil specifications: see page 18.

Cooling system

- Type and detail: air cooling with axial blower;
- Specification of fan: propeller fan driven by engine shaft;
- Number of fan blades: 13;
- Fan diameter: 220 mm;
- Type of temperature control: none;
- Warming indicator: with the warning lamp on the dashboard.

Starting system

- Make: BOSCH;
- Model: JF R 12 V;
- Type: electromagnetic engagement;
- Starter motor power rating: 2.4 kW;
- Safety device: preventig engine from starting in gear;
- Starting system for low temperatures: none.

Electrical equipement

- Voltage: 12 V;
- Generator:
  . make: BOSCH;
  . model: K1 R 14V 55A;
  . type: alternator;
  .power: 630 W;
- Battery: 1 lead acid;
  .capacity: 100 Ah at 20 hours.

Exhaust system

- Make: IMA SAF;
- Model: 1967893C1;
- Type: at chamber reflection absorption;
- Location: on the left hand side of engine cowling, horizontal position;
- Height of outlet above ground: 500 mm.

## TRANSMISSION

Clutch: utilized only for travelling of tractor.

- Make: OMG;
- Model: 121947;
- Type: double disk dry clutch;
- Number of plates: 2;
- Plates diameter: 280 mm;
- Control system: by pedal for transmission, by lever for p.t.o..

Gear box

- Make: CARRARO;
- Model: 121947;
- Type: mechanical no-syncromesh speed change gear;
- Arrangement: four speeds forward with three ranges of speed and one reverse group;
- Number of speeds : 12 forward and 12 reverse;
- Available options: 8 forward and 8 reverse.

Rear axle and final drives

- Make: CARRARO;
- Model: 121266/1;
- Type: bevel gear differential and epicyclic reduction final drives.

Differential lock

- Make: CARRARO;
- Model: 121266/1;
- Type: mechanical;
- Control system: engaged or disengaged by pedal.

Front axle and final drives

- Make: CARRARO;
- Model: 121310;
- Type: central shaft with bevel gear drive, differential and epicylic reduction gear final drives.

Differential lock

- none.

Transmission lubrication

- Gear box, rear axle, final drives, power lift and hydraulic system (in common);
  . total capacity including filter: 38 $dm^3$;
  . change period: 1000 hrs;
  . filter change period: 1000 hrs;
- Front axle and final drive:
  . total capacity: 5.1 $dm^3$;
  . change period: 1000 hrs;

- Recommended oil: see page 18.

Total rations and speeds

| Gear | Group | Number of engine revolutions for one revolution of the driving wheels | Nominal travelling speed at a rated engine speed of 2350 rev/min (*) (km/h) |
|---|---|---|---|
| | FORWARD | | |
| 1 | S | 1140.223 | 0.47 |
| 2 | S | 769.196 | 0.70 |
| 3 | S | 526.198 | 1.03 |
| 4 | S | 374.442 | 1.44 |
| 1 | N | 244.283 | 2.21 |
| 2 | N | 164.982 | 3.27 |
| 3 | N | 112.753 | 4.79 |
| 4 | N | 80.238 | 6.73 |
| 1 | F | 56.375 | 9.58 |
| 2 | F | 38.071 | 14.19 |
| 3 | F | 26.019 | 20.76 |
| 4 | F | 18.516 | 29.18 |
| | REVERSE | | |
| 1 | S | 1359.167 | 0.40 |
| 2 | S | 917.696 | 0.59 |
| 3 | S | 627.336 | 0.86 |
| 4 | S | 446.429 | 1.21 |
| 1 | N | 291.274 | 1.85 |
| 2 | N | 196.702 | 2.75 |
| 3 | N | 134.432 | 4.02 |
| 4 | N | 95.668 | 5.65 |
| 1 | F | 67.216 | 8.05 |
| 2 | F | 45.393 | 11.90 |
| 3 | F | 31.023 | 17.42 |
| 4 | F | 22.077 | 24.47 |

(*) Calculated with a tyre dy ic radius index of 610 mm.
ISO 4251/1 - 1984)
- Number of revolutions of front wheels for one revolution of rear wheels: 1.5367.

POWER TAKE-OFF

Power take-off proportional to engine speed

- Type: independent, at rear of tractor, in tractor's median plane, engaged or disengaged by hand lever.
  Driven by multiplate wet clutch independent from travel clutch; ISO Standard 500-1979;
- Number of shafts: 1;
- Method of changing of speed: speed selection by external hand lever;
- Location : at rear of tractor;

| | P.T.O. |
|---|---|
| - Height above ground (with tyre size 13.6/28 ) .. | 610 mm |
| - Distance from the median plane of the tractor .. | 0 mm |
| - Distance behind rear axle..... | 387 mm |
| - Direction of rotation (viewed facing driving end): | clockwise |

1) 540 rev/min

- Dimension: ISO Standard 500-1979 type 1 (35 mm - 6 splines);
- PTO speed at rated engine speed .....: 600 rev/min;
- Engine speed at standard power take-off speed: 2115 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 3.916666;
- Maximum power and torque transmissible: 55 kW and 97 daNm.

2) 1000 rev/min

- Dimension: ISO Standard 500-1979 type 2 (35 mm - 21 splines);
- PTO speed at rated engine speed .....: 1116 rev/min;
- Engine speed at standard power take-off speed: 2105 rev/min;
- Ratio of rotation speeds (engine speed/pto speed): 2.105734;
- Maximum power and torque transmissible: 55 kW and 52 daNm.

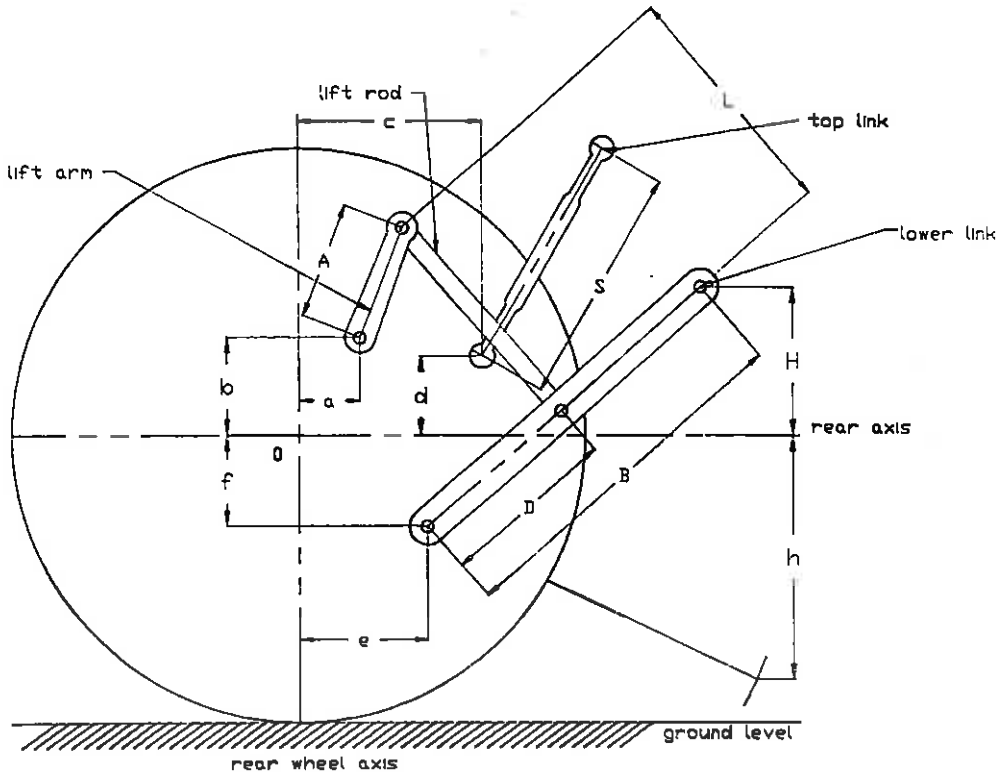
Power take-off proportional to ground speed : none.

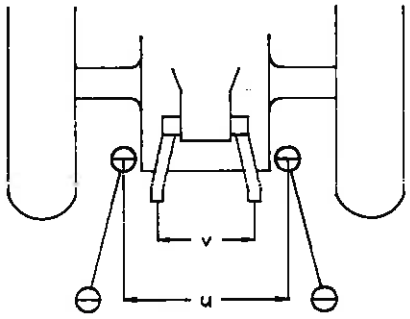
POWER LIFT

- Make: MITA;
- Model: M 60 SRF;
- Type: load sensing;
- Type of hydraulic system: open centre system;
- Type and number of cylinders: 1 internal hydraulic jack at single effect;
- Type of lock for transport: mechanical, with screwed tie rods that lock the lower links;
- Relief valve pressure setting: 18 +/- 1 MPa;
- Opening pressure of anti-shock valve: 20 MPa;
- Lift pump type: hydraulic rotary pump, driven by engine shaft;
- Transmission between pump and engine: mechanical;
- Type and number of filters: 1, repeaceable paper cartridge;
- Changing: when the filter clogging warning lamp is lighted;
- Oil capacity: 38 $dm^3$ in common with gear box;
- Site of oil reservoir : gear box;
- Position, type and No. of additional oil plugs: 4 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 4 $dm^3$;
- Recommended oil: see page 18.

Three-point linkage

- Category: 1 in conformity with ISO 730/1 - 1977;
- Category adapter: none.


lift rod
c
L
top link
lift arm
lower link
A
S
H
b
a
d
rear axis
0
f
B
D
h
e
ground level
rear wheel axis


v
u

Dimensions of linkage geometry (when connected to the standard frame)

| | | Dimension or range (mm) | Settings used in test (mm) |
|---|---|---|---|
| Length of lift arms | (A) | 260 | 260 |
| Length of lower links | (B) | 848 | 848 |
| Distance of lift arm :horizontally | (a) | 25 | 25 |
| Pivot point from rear :vertically | (b) | 306 | 306 |
| wheel axis (behind) | | | |
| Horizontal distance between the 2 lower link points | (u) | 479 | 479 |
| Horizontal distance between the 2 lift arm and points | (v) | 375 | 375 |
| Length of upper link | (S) | from 500 to 780 | 681 |
| Distance of upper link :horizontally | (c) | 244 | 244 |
| pivot point from rear :vertically | (d) | 261 | 261 |
| wheel axis | | | |
| Distance of lower link :horizontally | (e) | 72 | 72 |
| pivot point from rear :vertically | (f) | 192 | 192 |
| wheel axis | | | |
| Distance of lower link pivot point to lift rod pivot points on lower links | (D) | 496 | 496 |
| Length of lift rods | (L) | from 500 to 670 | 600 |
| Height of lower hitch points relative to the rear wheel axis | | | |
| - in Low position | (h) | from 191 to 568 | 410 |
| - in High position | (H) | from 153 to 395 | 260 |
| Height above ground of lower hitch points when locked in transport position (*) | | | 870 |

(*) Assuming the dynamic radius index = 610 mm (ISO 4251/1 - 1984).

SWINGING DRAWBAR : not fitted.

HOLED DRAWBAR : not fitted.

TRAILER HITCH

- Type: J.I CASE;
- Hole diameter: 28 mm;
- Height above ground: 373 min. - 733 max. mm;
- Distance of hitch point from rear wheel axis, horizontally: 515 mm ;
- Distance of hitch point from power take-off shaft end
  . vertically : below 237 mm, above 122 mm;
  . horizontally : 130 mm;
- Maximum vertical permissible load: 1471 daN.

STEERING

- Specification: hydrostatic steering with SAVER SUNDESTRAND gear pump, one steering cylinder at double effect acting directly on front axle.
- Make: DANFOSS;
- Model: OSPC 80 LS with priority valve OLSA 40;
- Type: hydrostatic;
- Working pressure: 1.1 MPa;
- Oil capacity: 17 dm³, in common with hydraulic system;
- Oil change period: 1000 hrs;
- Filter change period: 1000 hrs;
- Recommended oil: see page 18.

BRAKES

Service brake

- Make: SIRMAC;
- Model: 1967573C1;
- Type: oil immersed multiplate disc, 4 per side total 8 discs, mounted before each epicyclic reduction gear. SK Welman HDT 303 lining material, rear disc diameter 165,25mm;
- Method of operation: mechanical acting with 2 pedals;
- Trailer braking take-off: none.

Parking brake

- Type: mechanical acting on the service brake;
- Method of operation: mechanically by hand lever.

Steering brake : divided pedal of service brake for normal use locked together.

STEERING WHEELS

- Number: 2;
- Location : at front;
- Track widths: 1099 min. - 1280 max. mm;
- Regulation: changing the position of the rims with respect to the disc.

DRIVING WHEELS

- Number: 4;
- Location: 2 at front and 2 at rear;
- Rear track widths: 850 min. 1648 max. mm;
- Regulation: changing the position of the rims with respect to the disc.

WHEELBASE: 1945 mm.

ROLL - BAR

Specifications

- NFU approval number: 013401;
- Make: CARRARO;
- Model: X 260-4;
- Type: tiltable;
- Manufacturer's name: CARRARO S.p.A.;
  . address: Via Olmo, 29 - Campodarsego (PD) ITALY;
- Protective device: roll-bar tiltable.

Materials used in the construction and dimensions

See N.F.U. (France) Test Report on Protective Structures.

DRIVER'S SEAT

- Make: SIFRA;
- Model: 15 M;
- Type: upholstered seat;
- Type of suspension: adjustable spring;
- Type of damping: shock absorber;
- Range of adjustment, longitudinal 210 mm;
  vertical ... 100 mm.

PASSENGER'S SEAT : none.

LIGHTING

Lighting system in accordance with E.E.C. 78/933

| | Height above ground of centre with tyre (*) (mm) | Size (mm) | Distance from outside edge of tractor to centre at 998 mm track width (mm) |
|---|---|---|---|
| Headligths | 1035 | 155*90 | 548 |
| Front park. lights | 1403 | 120*40 | 85.5 |
| Front finger post | 1443 | 120*40 | 85.5 |
| Rear park. lights | 1443 | 120*40 | 85.5 |
| Rear finger post | 1403 | 120*40 | 85.5 |
| Stop | 1443 | 120*40 | 85.5 |
| Reflectors | 1148 | 88*52 | 214.5 |

(*) Tyre size: 7.50/18 front - 13.6/28 rear.

TEST CONDITIONS

Overall dimensions with tyres 7.50/18 front and 13.6/28 rear

| | Length (mm) | Width (mm) min | Width (mm) max | Height (mm) at top of protect. struc. |
|---|---|---|---|---|
| Without ballast | 3464 | 1157 | 1977 | 2354 |

. Ground clearance (unballasted tractor): 278 mm;
. Clearance-limiting part: front axle.

Tractor mass (with tanks full, with frame, water in tyres none)

| | Units | Front | Rear | Total |
|---|---|---|---|---|
| **Without driver** | | | | |
| Without ballast | kg | 990 | 1170 | 2160 |
| With ballast | kg | - | - | - |
| With driver | | | | |
| Without ballast | kg | 1000 | 1235 | 2235 |
| With ballast | kg | - | - | - |

Ballast

| | no. of weights | total weight (kg) | water (kg) |
|---|---|---|---|
| front | - | - | - |
| rear | - | - | - |
| additional | - | - | - |

Tyres and track width specifications

| | front | rear |
|---|---|---|
| - Tyres | | |
| . dimensions ..... | 7.50/18 | 13.6/28 |
| . ply rating ..... | 6 | 6 |
| . type ..... | radial | radial |
| . maximum load (tyre manufacturer's) daN | 932 | 1403 |
| . maximum load (tractor manufact.) daN | 932 | 1403 |
| inflation pressure (tyre manufact.)kPa | 225 | 160 |
| . dynamic radius index .....mm | 405 | 610 |
| - Chosen track width .....mm | 1099 | 998 |
| - Tyres on request ..... | - | pr |
| | - | pr |
| | - | pr |

Oils, lubrication and fuel
Capacity and change interval

| | capacity dm³ | oil change h | filter change h |
|---|---|---|---|
| Engine ..... | 9.2 | 150 | 300 |
| Gear box ..... | 38 | 1000 | 1000 |
| Front axle and final drives ... | 5.1 | 1000 | - |
| Rear axle and final drives .... | in common with gear box | | |
| Hydraulic system ..... | " | " | |
| Other (steering, etc.) ..... | " | " | |

Fuel and lubricants reccomended and used in tests

Fuel
- Type: AGIP DIESEL, DIN 51601
  (in accordance with the national standard)
- Specific gravity at 15° C: 0.828 g/cm³.

Engine oil
- Type: AGIP 15/W40 Super Diesel;
- Viscosity: 15.6 cSt;
- Classification: API SE-CD.

Transmission oil

| | front axle and final drive | rear axle, final drive and gear box |
|---|---|---|
| -Type<br>-Viscosity<br>-Viscosity index<br>-Classification | ELF BF12<br>10.50 cSt<br>146 | ELF BF12<br>10.50<br>146 |

Hydraulic fluid
- Type: ELF BF12;
- Viscosity: 10.50 cSt;
- Classification:

Steering oil
- Type: ELF BF12;
- Viscosity: 10.50 cSt;
- Classification:

Grease
- Type:ESSO BEACON 2;
- Number of lubrication points: 15.

## II - TEST RESULTS

### A. COMPULSORY TESTS RESULTS

#### (1) MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 04.04.1990 - I.S.M.A. TREVIGLIO (BG) ITALY
- Type of dynamometer: ZOELLNER 350 AC

| Power | Speed | | Fuel consumption | | | Specific |
|---|---|---|---|---|---|---|
| | Engine | P.T.O. | Hourly | Specific | | Energy |
| kW | rev/min | rev/min | l/h | kg/h | g/kWh | kWh/l |
| MAXIMUM POWER - 2 HOUR TEST | | | | | | |
| 30.4 | 2346 | 599 | 9.37 | 7.76 | 255 | 3.24 |
| POWER AT RATED ENGINE SPEED | | | | | | |
| 30.4 | 2346 | 599 | 9.37 | 7.76 | 255 | 3.24 |
| STANDARD POWER TAKE-OFF SPEED ( 540 +/- 10 rev/min) | | | | | | |
| **29.4** | 2115 | **540** | 8.09 | **6.70** | 228 | 3.63 |
| PART LOADS | | | | | | |
| i) The torque corresponding to maximum power at rated engine speed | | | | | | |
| 30.4 | 2346 | 599 | 9.37 | 7.76 | 255 | 3.24 |
| ii) 85% of torque obtained in i) | | | | | | |
| 27.1 | 2408 | 615 | 8.76 | 7.25 | 268 | 3.09 |
| iii) 75% of torque defined in ii) | | | | | | |
| 20.2 | 2448 | 625 | 6.88 | 5.70 | 282 | 2.94 |
| iv) 50% of torque defined in ii) | | | | | | |
| 13.8 | 2466 | 630 | 5.83 | 4.83 | 350 | 2.37 |
| v) 25% of torque defined in ii) | | | | | | |
| 6.9 | 2488 | 635 | 5.11 | 4.23 | 613 | 1.35 |
| vi) unloaded | | | | | | |
| 0 | 2510 | 641 | 3.16 | 2.61 | - | - |

PART LOADS AT STANDARD POWER TAKE-OFF SPEED ( 540 rev/min)

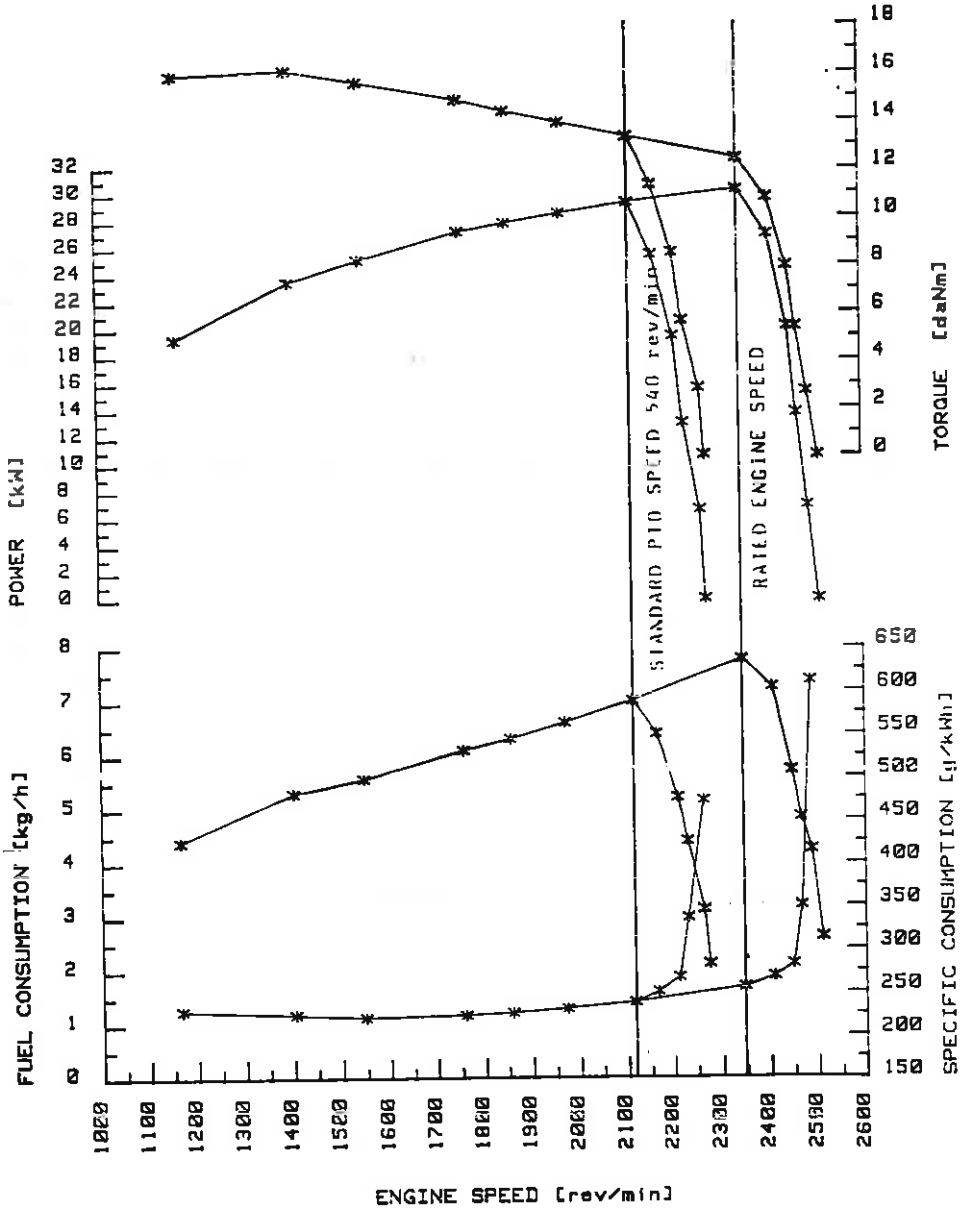
| Power | Speed | | Fuel consumption | | | Specific |
|---|---|---|---|---|---|---|
| | Engine | P.T.O. | Hourly | | Specific | Energy |
| kW | rev/min | rev/min | l/h | kg/h | g/kWh | kWh/l |
| i) The torque corresponding to maximum power available | | | | | | |
| 29.4 | 2115 | 540 | 8.09 | 6.70 | 228 | 3.63 |
| ii) 85% of torque obtained at maximum power | | | | | | |
| 25.5 | 2165 | 553 | 7.71 | 6.39 | 251 | 3.31 |
| iii) 75% of torque defined in ii) | | | | | | |
| 19.5 | 2210 | 564 | 6.28 | 5.20 | 267 | 3.10 |
| iv) 50% of torque defined in ii) | | | | | | |
| 13.1 | 2230 | 569 | 5.31 | 4.39 | 335 | 2.47 |
| v) 25% of torque defined in ii) | | | | | | |
| 6.6 | 2264 | 578 | 3.77 | 3.12 | 473 | 1.75 |
| iv) unloaded | | | | | | |
| 0 | 2296 | 586 | 2.86 | 2.37 | - | - |

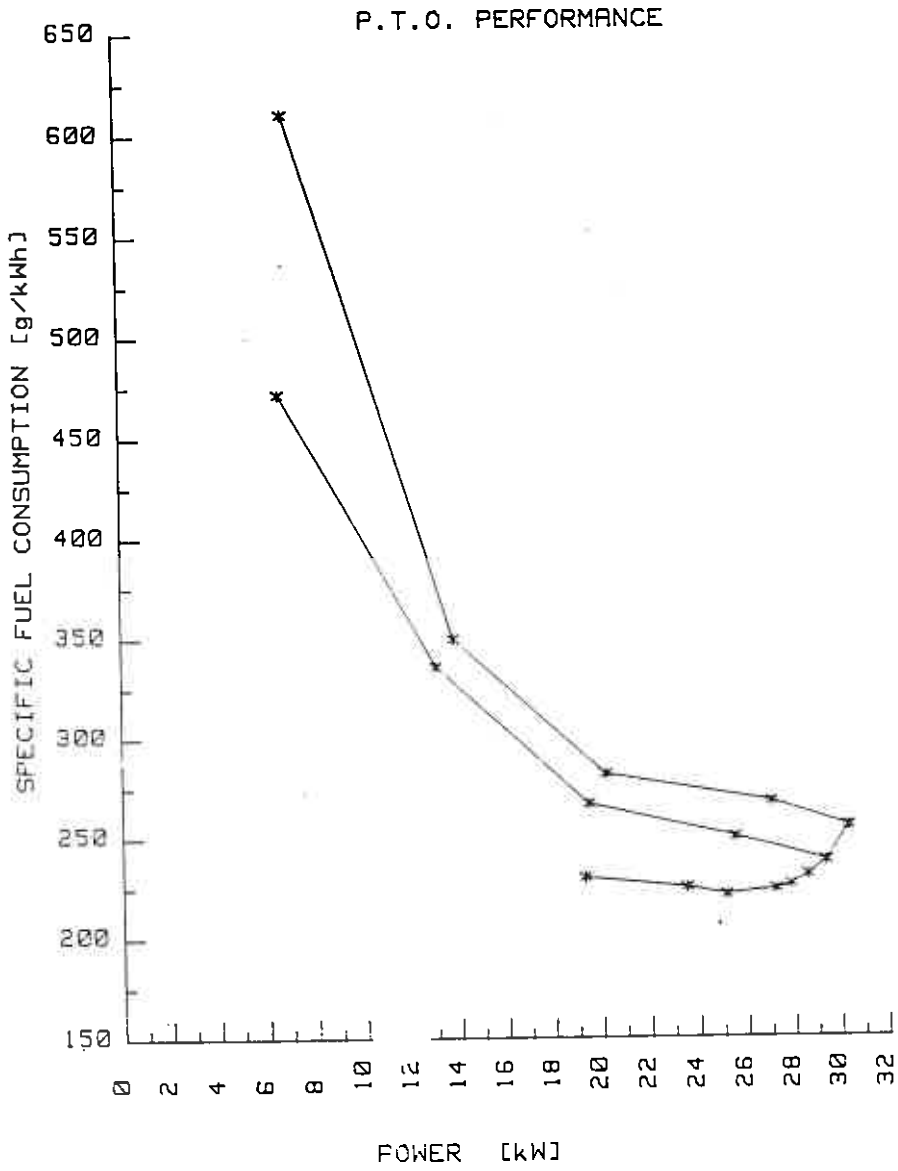
STANDARD SPECIFIC FUEL CONSUMPTION: 268/350/251/335 g/kWh

- No load maximum engine speed: 2510 rev/min
- Torque (1) at maximum power: 12.37 daNm
- Maximum torque (1) (engine speed: 1402 rev/min) 16.03 daNm
- Mean atmospheric conditions: Temperature ..... 19 C°
  Pressure ..... 99.3 kPa
  Relat. humidity ... 84 %
- Maximum temperatures: Coolant ..... 82 C°
  Engine oil ..... 113 C°
  Fuel ..... 26 C°
  Engine air intake ..... 21 C°

(1) The torque is the equivalent crankshaft torque.

CASE INTERNATIONAL 2120 E "4WD"
TEST no. 054.




P.T.O. PERFORMANCE
SPECIFIC FUEL CONSUMPTION [g/kWh]
650
600
550
500
450
400
350
300
250
200
150
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
POWER [kW]

## 2) POWER LIFT AND HYDRAULIC POWER TEST

- Date and location of tests: 04.04.1990 - ISMA Treviglio (BG)

### 2.1 POWER LIFT

| | | at hitch point | on the frame |
|---|---|---|---|
| Height of lower hitch point above ground in down position | mm | 200 | 200 |
| vertical movement | mm | 670 | 724 |
| Maximum corrected force exerted trough full range | daN | 2992 | 2261 |
| Corresponding pressure of hydraulic fluid | MPa | 18.0 | 18.0 |
| Moment about rear axle | daNm | 2753 | 3459 |
| Maximum tilt angle of mast over range of lift | degress | -- | 5 |

| Lifting heights relative to the horizontal lower links | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | -218 | -200 | -100 | 0 | 100 | 200 | 300 | 400 | 452 | 500 | 506 |
| Lifting forces at hitch points | | | | | | | | | | | |
| daN | 3105 | 3107 | 3105 | 3109 | 3082 | 3021 | 3013 | 3007 | 2992 | --- | --- |
| Lifting forces at test frame | | | | | | | | | | | |
| daN | 2907 | 2911 | 2904 | 2766 | 2583 | 2407 | 2325 | 2289 | --- | 2258 | 2261 |

### 2.2) HYDRAULIC POWER TEST

Sustained pressure with relief valve open: 18.0 MPa;
Pump delivery rate at min pressure: 40.1 l/min;

| Hydraulic power | kW | flow rate l/min | pressure MPa | oil temp. °C |
|---|---|---|---|---|
| At 90% of the actual relief valve setting ..... | 9.2 | 35.1 | 16.0 | 65 |
| Maximum ..... | 9.2 | 35.1 | 16.0 | 65 |
| . opening pressure of the relief valve: 17.5 MPa | | | | |

Tapping point used for test : at rear of tractor;
Hydraulic fluid: see page 18.

## 3) DRAWBAR PERFORMANCE

- Date of test: 12.04.1990
- Type of track: concrete
- Type and size of tyres front: 7.50/18 - 6 ply
  rear : 13.6/28 - 6 ply

Height of drawbar above ground: 445 mm (unballasted)

Tyre inflation pressure: unballasted .front: 225 kPa .rear: 160 kPa

### 3.1) MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

| Gear | Power | Draw. pull | Speed | Eng. speed | Slip of whell | Specific ener.cons. | fuel | Temperatures cool.eng. | | Atm. temp. | cond. hum. | pres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | daN | km/h | rev/min | % | kWh/l | g/kWh | °C | °C | °C | °C | % | kPa |
| 1S | 1.9 | 1756 | 0.4 | 2501 | 15 | 0.452 | 1842 | 19 | 52 | 88 | 18 | 77 | 99.9 |
| 2S | 3.1 | 1839 | 0.6 | 2499 | 15 | 0.674 | 1226 | 20 | 52 | 88 | 18 | 77 | 99.9 |
| 3S | 4.5 | 1814 | 0.9 | 2484 | 15 | 0.918 | 912 | 20 | 52 | 90 | 18 | 78 | 99.9 |
| 4S | 6.7 | 1853 | 1.3 | 2480 | 15 | 1.196 | 687 | 20 | 53 | 90 | 19 | 78 | 100.0 |
| 1N | 10.2 | 1838 | 2.0 | 2464 | 15 | 1.619 | 510 | 21 | 53 | 91 | 18 | 78 | 100.0 |
| 2N | 14.5 | 1797 | 2.9 | 2439 | 15 | 1.812 | 455 | 21 | 54 | 93 | 18 | 79 | 99.9 |
| 3N | 19.3 | 1651 | 4.2 | 2413 | 15 | 2.121 | 389 | 21 | 53 | 93 | 19 | 79 | 99.8 |
| 4N | 23.0 | 1359 | 6.1 | 2351 | 9 | 2.371 | 348 | 23 | 53 | 92 | 19 | 80 | 99.8 |
| 1F | 23.0 | 908 | 9.1 | 2350 | 5 | 2.371 | 349 | 22 | 53 | 93 | 18 | 80 | 99.9 |
| 2F | 20.5 | 539 | 13.7 | 2350 | 3 | 2.113 | 390 | 22 | 53 | 93 | 18 | 80 | 99.7 |

## 4) TRANSMISSION AND FUEL CONSUMPTION CHARACTERISTICS

| Gear | Power | Draw. pull | Speed | Eng. speed | Slip of wheel | Specific ener.cons. | fuel | Temperatures cool. | eng. | temp. | Atm. cond hum. | pres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | daN | km/h | rev/min | % | kWh/l | g/kWh | °C | °C | °C | °C | % | KPa |
| 4.1) Selected gear at maximum power | | | | | | | | | | | | | |
| 1F | 23.0 | 908 | 9.1 | 2350 | 5 | 2.371 | 349 | 22 | 53 | 93 | 18 | 80 | 99.9 |
| 4.1.1) 75% of pull at maximum power at rated speed | | | | | | | | | | | | | |
| 1F | 17.7 | 680 | 9.4 | 2425 | 4 | 2.107 | 395 | 21 | 53 | 92 | 19 | 80 | 99.7 |
| 4.1.2) 50% of pull at maximum power at rated speed | | | | | | | | | | | | | |
| 1F | 12.2 | 454 | 9.7 | 2446 | 2 | 1.718 | 484 | 22 | 52 | 92 | 19 | 80 | 99.8 |
| 4.1.3) next higher gear giving the same pull as in 4.1.1 red. eng. speed | | | | | | | | | | | | | |
| 2F | 17.8 | 681 | 9.4 | 1636 | 4 | 2.618 | 315 | 22 | 52 | 92 | 19 | 79 | 99.9 |
| 4.1.4) next higher gear giving the same pull as in 4.1.2. red. eng. speed | | | | | | | | | | | | | |
| 2F | 12.3 | 458 | 9.7 | 1654 | 2 | 1.952 | 423 | 23 | 51 | 91 | 19 | 81 | 100.1 |

| Gear | Power | Draw. pull | Speed | Eng. speed | Slip of wheel | Specific ener.cons. | fuel | Temperatures cool.eng. | | temp. | Atm. cond hum. | pres |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kW | daN | km/h | rev/min | % | kWh/l | g/kWh | °C | °C | °C | % | KPa |
| 4.2) Selected gear nearest to 7.5 Km/h | | | | | | | | | | | | |
| 4N | 23.0 | 1359 | 6.1 | 2351 | 9 | 2.371 | 348 | 23 | 53 | 92 | 19 | 80 | 99.8 |
| 4.2.1) 75% of pull at maximum power at rated speed | | | | | | | | | | | | |
| 4N | 18.1 | 1004 | 6.5 | 2426 | 6 | 2.155 | 381 | 24 | 53 | 92 | 19 | 81 | 100.0 |
| 4.2.2) 50% of pull at maximum power at rated speed | | | | | | | | | | | | |
| 4N | 12.4 | 668 | 6.7 | 2444 | 4 | 1.746 | 476 | 24 | 54 | 93 | 19 | 80 | 99.9 |
| 4.2.3) next higher gear giving the same pull as in 4.2.1 red. eng. speed | | | | | | | | | | | | |
| 1F | 18.1 | 1003 | 6.5 | 1710 | 6 | 2.662 | 312 | 25 | 54 | 94 | 19 | 80 | 99.9 |
| 4.2.4) next higher gear giving the same pull as in 4.2.2 red. eng. speed | | | | | | | | | | | | |
| 1F | 12.4 | 668 | 6.7 | 1715 | 4 | 1.968 | 423 | 25 | 53 | 92 | 19 | 82 | 99.9 |

REPAIRS AND REMARKS: none.

TEST CARRIED OUT BY
(P.a. Giovanni LAMORATTA)

THE DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA - ROMA
(Prof. Alfio CAMMILLI)

Text and graphics processed by: P.a. Gianluigi ROZZONI
Software written by: Ing. Giampaolo GIACOMETTI