OECD Approval No. 684

**Test in accordance with the OECD standard code for the official testing of agricultural tractors**

**Report on test of** Leyland 272SQM Tractor


**Manufactured by** Leyland Vehicles Limited,
Medium and Light Vehicle Division,
Bathgate,
West Lothian, Scotland.

**Test No.** R80/2/7246/O.E.C.D.

**Report No.** 669

**Date** February 1980

THE BRITISH SOCIETY FOR RESEARCH IN AGRICULTURAL ENGINEERING

**National Institute of Agricultural Engineering**
Wrest Park Silsoe Bedford MK45 4HS

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## SPECIFICATION OF TRACTOR

| | |
|---|---|
| Manufacturer: | Leyland Vehicles Limited,<br>Medium and Light Vehicle Division,<br>Bathgate,<br>West Lothian, Scotland. |
| Submitted for test by: | The manufacturer |
| Selected for test by: | The manufacturer with the agreement of the testing station |
| Place of running-in: | Leyland Vehicles Factory, Bathgate |
| Duration of running-in: | 50 hours |

### Tractor

| | |
|---|---|
| Make: | Leyland |
| Model: | 272SQM |
| Type: | Four wheel, rear wheel driven, unit construction |
| Serial No.: | 272SQM/308249/Z 216718 |

### Engine

| | |
|---|---|
| Make: | Leyland |
| Model: | 498 NT |
| Type: | 4-stroke, direct injection diesel |
| Serial No.: | 498 NT 1777 41689 |
| Cylinders: | 4 cylinders, vertical, in-line, 98 mm (3.9 in) dia bore x 125 mm (4.9 in) stroke, capacity 3771 $cm^3$ (230 $in^3$), compression ratio 17.8:1 (nominal), replaceable wet cylinder liners, overhead valves. |
| Fuel System: | A.C.Delco mechanical fuel feed pump with hand primer, C.A.V. paper element filter with sediment bowl on pressure side of feed pump; fuel tank capacity 68.2 l (15.0 UK gal); C.A.V. distributor type DPA 3342F260 injection pump, Serial No. R341770T, manufacturer's production setting 15.3-17.3 l/h (26.9-30.4 pt/h) with fuel temperature of 15°C-20°C (59°F-68°F) at 2200 rev/min engine speed using fuel of 0.844 specific gravity at 15°C (59°F); C.A.V. type BDLL 150S 6582 injector nozzles, injection pressure 17.73 MPa (175 atm), pump delivery starts 14° before T.D.C. |

| | |
|---|---|
| Governor: | C.A.V. mechanical, incorporated in fuel injection pump, governed range of engine speed 600 to 2330 rev/min, rated engine speed 2200 rev/min |
| Air cleaner | Burgess, 2-stage dry paper element filter, situated under bonnet forward of radiator, centrifugal pre-cleaner in cleaner body |
| Lubrication system: | Forced feed from eccentric rotor type pump with metal strainer in sump, Purolator replaceable paper element full flow filter, total oil capacity 9.7 l (17.1 pt), recommended oil S.A.E.20W/30, viscosity 54 cSt at 50 °C (122 °F), MIL-L-21043, oil change period 200 hours, filter change period 400 hours |
| Cooling system: | Water cooled, pressurised at 28 kPa (4 lb/in$^2$), impeller assisted, 413 mm (16.3 in) dia 4-blade belt driven fan, thermostat for temperature control, cooling water capacity 13.6 l (24.0 pt) |
| Starting system: | Electrical, Lucas M50 G solenoid operated starter motor, rating 5.6 kW at 2200 rev/min, operable only with gear selector lever in neutral position, manually operated retarding device on fuel injection pump for cold starting |
| Exhaust: | Chilcott, single chamber silencer, 95 mm (3.7 in) dia x 1216 mm (47.9 in) long, vertical on left-hand side |

Electrical system

| | |
|---|---|
| Voltage: | 12, negative earth |
| Generator: | Lucas 17 ACR alternator, 36 A maximum output at 6000 rev/min |
| Battery: | Lucas ATV 17T, lead acid, 128 Ah at 20-hour rating |

Transmission

| | |
|---|---|
| Clutch: | Borg and Beck dual dry, two 280 mm (11.0 in) dia plates, one hydraulically operated by pedal for gearbox drive and the other mechanically actuated by hand-lever for p.t.o. drive |

Gearbox: Own make, constant mesh, 9 forward and 3 reverse speeds, comprising 3 forward and 1 reverse speed gearbox with high, medium and low range selector, synchromesh operating in all gears.

Rear axle and final drives: Own make, crown wheel and pinion and differential and spur gear final drives, pedal operated self-disengaging differential lock

Oil capacities: Gearbox and transmission housing 59.3 l (104.4 pt), recommended oil S.A.E. 20W/30, viscosity 54 cSt at 50 °C (122 °F), MIL-L-21043, oil change period 1200 hours, filter change period 400 hours

| Gear | Number of engine revolutions for one revolution of driving wheel | Nominal travelling speed for 2200 rev/min rated engine speed,* km/h | (mile/h) |
|---|---|---|---|
| Forward | | | |
| L1 | 176.58 | 3.38 | (2.10) |
| L2 | 139.23 | 4.29 | (2.67) |
| L3 | 102.69 | 5.82 | (3.62) |
| M1 | 77.44 | 7.71 | (4.79) |
| M2 | 61.06 | 9.78 | (6.08) |
| M3 | 45.04 | 13.26 | (8.24) |
| H1 | 32.52 | 18.36 | (11.41) |
| H2 | 25.64 | 23.29 | (14.47) |
| H3 | 18.91 | 31.58 | (19.63) |
| Reverse | | | |
| L | 120.67 | 4.95 | (3.08) |
| M | 52.92 | 11.28 | (7.01) |
| H | 22.22 | 26.87 | (16.70) |

*Calculated with a tyre rolling radius of 720 mm (28.3 in)

Power take-off

At rear of tractor in vertical centre plane, height above ground 775 mm (30.5 in), distance behind rear axle centre 548 mm (21.6 in), 6-spline, 34.9 mm (1 3/8 in) dia to I.S.O. Standard, independent of main clutch, engaged by hand-lever operating second plate of clutch, proportional engine speed giving 655 rev/min at 2200 rev/min rated engine speed, 540 rev/min (standard p.t.o. speed) at 1813 rev/min engine speed, direction of rotation clockwise viewed facing driving end

| | |
|---|---|
| Power lift | Own make, hydraulic, Plessey double chamber gear pump, driven from rearward end of p.t.o. shaft, independent of main clutch, operated with or independent of the p.t.o. by selector lever; oil supplied from transmission housing to ram cylinder and external tapping. Category 2 implement linkage with top link sensing, draught and position control, optional assister ram in parallel with ram cylinder operated from external tapping. |
| Drawbar | Swinging drawbar, vertical height to centre of clevis 315 mm (12.4 in) and 496 mm (19.5 in), changed by inverting drawbar, distance behind rear axle centre 627 mm (24.7 in), distance behind p.t.o. 79 mm (3.1 in), lateral adjustment 363 mm (14.3 in), pivot position 212 mm (8.3 in) to rear of rear wheel centre, drawbar pin hole 23 mm (0.9 in) dia |
| Steering | Danfoss hydrostatic, incorporating manual control for emergency, oil supplied from Plessey type C10 gear pump with integral reservoir |
| Brakes | Girling, multi-disc, dry, on final drive pinion shafts, independent or combined pedal and hydraulically operated, hand-lever with ratchet operating both brakes for parking |
| Wheels | |
| Steering wheels: | Two at front, Dunlop T81 7.50-16 cross-ply tyres, 8-ply rating, maximum permissible mass on each tyre 870 kg (1918 lb) at 370 kPa (54 lb/in$^2$), track width 1320 mm (52.0 in) by 51 mm (2.0 in) steps to 1932 mm (76.0 in), changed by extending axle and reversing wheels |
| Driving wheels: | Two at rear, Goodyear Traction Sure Grip 18.4/15-30 cross-ply tyres, 10-ply rating, maximum permissible mass on each tyre 2815 kg (6206 lb) at 180 kPa (26 lb/in$^2$), track width 1575 mm (62.0 in) and 1778 mm (70.0 in), changed by reversing wheels |
| Wheelbase: | 2032 mm (80.0 in) |

Seat

Bostrom Angus with R.S. suspension, upholstered pan, adjustable torsion spring suspension with hydraulic damping, range of adjustment 143 mm (5.6 in) forwards and backwards, 110 mm (4.3 in) vertical, on a 20° sloping base

Safety Cab (CS 1384)

Leyland, welded and bolted hollow section and sheet steel, anti-vibration mounts, door and mounting step on each side, heating, ventilating and demisting system

Lighting

Unrestricted beam angle of headlight in plan view 160°

| | Height above ground of centre, mm | (in) | Size, mm | (in) | Distance from outside edge of tractor at 1575 mm (62.0 in) wheel track, to centre, mm | (in) |
|---|---|---|---|---|---|---|
| Head lights | 1095 | (43.1) | 127 | (5.0)dia | 856 | (33.7) |
| Side lights | 1554 | (61.2) | 90<br>70 | (3.5) x<br>(2.8) | 393 | (15.5) |
| Rear lights | 1474 | (58.0) | 65<br>70 | (2.6) x<br>(2.8) | 360 | (14.2) |
| Reflectors | 1474 | (58.0) | 55<br>70 | (2.2) x<br>(2.8) | 305 | (12.0) |

Number of grease points

Whole tractor: 11

## CONDITIONS DURING TEST

### Masses

Tractor (without driver but with tanks full)

| | Front, kg | (lb) | Rear, kg | (lb) | Total, kg | (lb) |
|---|---|---|---|---|---|---|
| Without ballast | 1082 | (2385) | 1950 | (4299) | 3032 | (6684) |
| With ballast | 1412 | (3113) | 3565 | (7859) | 4977 | (10972) |

Ballast

| | Number of weights | Total mass, kg | (lb) | Water, kg | (lb) |
|---|---|---|---|---|---|
| Front wheels | Nil | Nil | | Nil | |
| Rear wheels | 20 | 916 | (2019) | 782 | (1724) |
| Additional | 8 | 247 | (545) | Front frame weights | |

### Track settings

Front - 1320 mm (52.0 in)
Rear - 1575 mm (62.0 in)

### Overall dimensions

| | Length, m | (in) | Width, m | (in) | Height To top of exhaust pipe, m | (in) | To top of cab, m | (in) |
|---|---|---|---|---|---|---|---|---|
| With ballast | 3.88 | (152.8) | 2.50 | (98.4) | 2.54 | (100.0) | 2.48 | (97.6) |
| Without ballast | 3.73 | (146.9) | 2.04 | (80.3) | 2.54 | (100.0) | 2.51 | (98.8) |

Minimum ground clearance 402 mm (15.8 in) to underside of drawbar frame.

## FUEL AND LUBRICANTS USED IN TESTS

### Fuel

| | |
|---|---|
| Laboratory tests: | Diesel oil to Class A2 British Standard 2869:1970, specific gravity 0.849 at 15 °C (59 °F), viscosity 2.90 cSt at 50 °C (122 °F), Cetane No. 55.0 |
| Track tests: | Diesel oil to Class A2 British Standard 2864:1970, specific gravity 0.848 at 15 °C (59 °F) viscosity 2.43 cSt at 50 °C (122 °F), Cetane No. 56.0 |

### Oil

| | |
|---|---|
| Engine and transmission: | Agricastrol M.P. S.A.E. 20W/30, viscosity 54 cSt at 50 °C (122 °F). |

## COMPULSORY TESTS

### 1. MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 31st January 1979, N.I.A.E., Silsoe, Bedford, U.K.

Type of dynamometer: Water brake, Heenan and Froude

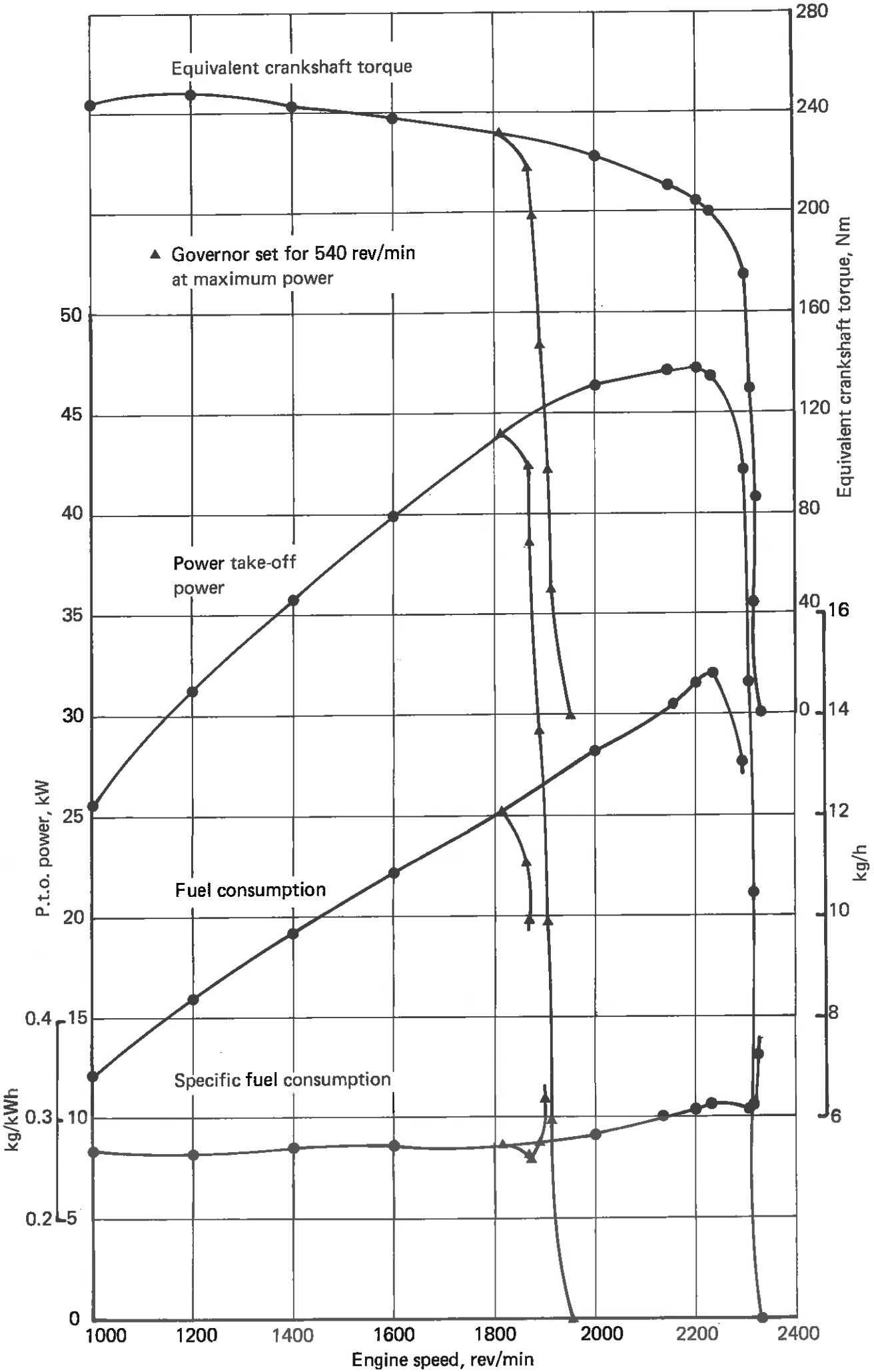
| Power, kW (hp) | Speed, rev/min | | Fuel consumption, | | | |
|---|---|---|---|---|---|---|
| | Engine | P.t.o. | l/h (UKgal/h) | kg/h (lb/h) | kg/kWh (lb/hph) | kWh/l (hph/UKgal) |
| Maximum power - 2 hour test | | | | | | |
| 47.4 (63.6) | 2200 | 655 | 17.26 (3.80) | 14.65 (32.30) | 0.309 (0.508) | 2.75 (16.8) |
| The speed recommended by the manufacturer for drawbar work | | | | | | |
| 47.4 (63.6) | 2200 | 655 | 17.26 (3.80) | 14.65 (32.30) | 0.309 (0.508) | 2.75 (16.8) |
| Part loads | | | | | | |
| (1) 85% of the torque obtained at maximum power | | | | | | |
| 42.1 (56.5) | 2297 | 684 | 15.35 (3.38) | 13.03 (28.73) | 0.310 (0.510) | 2.74 (16.7) |
| (2) Unloaded | | | | | | |
| 0 | 2330 | 694 | 4.39 (0.97) | 3.73 (8.22) | - | - |
| (3) 50% of the torque defined in (1) | | | | | | |
| 21.2 (28.4) | 2318 | 690 | 9.15 (2.01) | 7.77 (17.13) | 0.367 (0.603) | 2.32 (14.1) |
| (4) Maximum power | | | | | | |
| 47.4 (63.6) | 2200 | 655 | 17.26 (3.80) | 14.65 (32.30) | 0.309 (0.508) | 2.75 (16.8) |
| (5) 25% of the torque defined in (1) | | | | | | |
| 10.6 (14.2) | 2312 | 689 | 6.60 (1.45) | 5.60 (12.35) | 0.528 (0.868) | 1.61 (9.8) |
| (6) 75% of the torque defined in (1) | | | | | | |
| 31.7 (42.5) | 2305 | 687 | 11.63 (2.56) | 9.87 (21.76) | 0.311 (0.511) | 2.73 (16.6) |

| Power, kW (hp) | Speed, rev/min | | Fuel consumption, | | | |
|---|---|---|---|---|---|---|
| | Engine | P.t.o. | l/h (UKgal/h) | kg/h (lb/h) | kg/kWh (lb/hph) | kWh/l (hph/UKgal) |
| Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (540 rev/min) | | | | | | |
| (1) 85% of the torque obtained at maximum power | | | | | | |
| 38.6 (51.8) | 1873 | 558 | 11.66 (2.56) | 9.90 (21.83) | 0.256 (0.421) | 3.31 (20.2) |
| (2) Unloaded | | | | | | |
| 0 | 1947 | 580 | 3.13 (0.69) | 2.66 (5.86) | - | - |
| (3) 50% of the torque defined in (1) | | | | | | |
| 19.7 (26.4) | 1906 | 568 | 7.23 (1.59) | 6.14 (13.54) | 0.312 (0.513) | 2.72 (16.6) |
| (4) Maximum power | | | | | | |
| 44.0 (59.0) | 1813 | 540 | 14.16 (3.11) | 12.02 (26.50) | 0.273 (0.449) | 3.11 (19.0) |
| (5) 25% of the torque defined in (1) | | | | | | |
| 9.9 (13.3) | 1913 | 570 | 5.03 (1.11) | 4.27 (9.41) | 0.431 (0.709) | 1.97 (12.0) |
| (6) 75% of the torque defined in (1) | | | | | | |
| 29.2 (39.2) | 1890 | 563 | 9.31 (2.05) | 7.90 (17.42) | 0.271 (0.446) | 3.14 (19.1) |

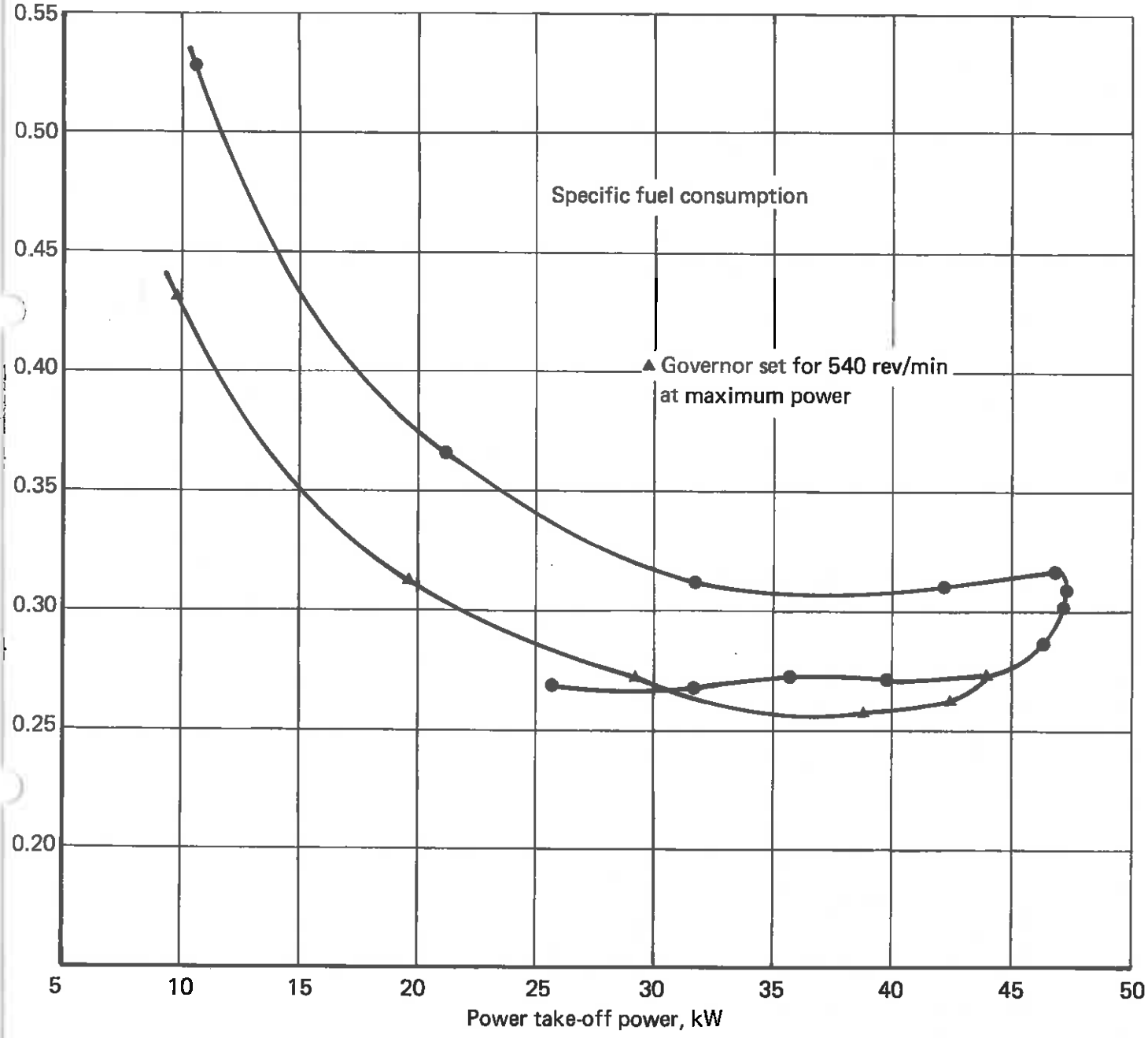
Standard specific fuel consumption, kg/kWh (lb/hph)

(a) 0.310 (0.510) (b) 0.367 (0.603) (c) 0.256 (0.421) (d) 0.312 (0.513)

| | | | |
|---|---|---|---|
| No load, maximum engine speed | | 2330 rev/min | |
| Equivalent crankshaft torque at maximum power | | 205.7 Nm | (151.9 lb ft) |
| Maximum equivalent crankshaft torque | | 248.4 Nm | (183.2 lb ft) at 1200 rev/min engine speed |
| Mean atmospheric conditions | temperature | 16 °C | ( 61 °F) |
| | pressure | 1011 m bar | ( 29.85 in Hg) |
| | relative humidity | 62% | |
| Maximum temperature | coolant | 96 °C | (205 °F) |
| | engine oil | 116 °C | (241 °F) |
| | fuel | 35 °C | ( 95 °F) |
| | air intake | 22 °C | ( 72 °F) |




Power take-off test




Power take-off test

## 2 DRAWBAR PERFORMANCE

Date of Tests: Sept.-October 1979 Type of track: Concrete Height of drawbar above ground: Ballasted: 455 mm (17.9 in)
Unballasted: 495 mm (19.5 in)

| Gear | Power, kW (hp) | Drawbar pull, kN (lb) | Speed, km/h (mile/h) | Engine speed, rev/min | Wheel-slip, % | Specific fuel consumption, kg/kWh (lb/hph) | Specific fuel consumption, kWh/l (hph/UKgal) | Temperature, °C (°F) Coolant | Fuel | Engine oil | Atmospheric conditions Temperature, °C (°F) | Relative humidity, % | Pressure, m bar (in Hg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (i) MAXIMUM POWER (ballasted) | | | | | | | | | | | | | |
| L1 | *35.4 (47.5) | 45.0 (10120) | 2.83 (1.76) | 2240 | 15.0 | 0.413 (0.679) | 2.05 (12.5) | 84 (183) | 25 (77) | 96 (205) | 15 (59) | 70 | 1003 (29.62) |
| L2 | 38.9 (52.2) | 37.8 (8500) | 3.70 (2.30) | 2192 | 11.5 | 0.379 (0.623) | 2.24 (13.7) | 85 (185) | 21 (70) | 98 (208) | 15 (59) | 70 | 1003 (29.62) |
| L3 | 40.2 (53.9) | 27.8 (6250) | 5.21 (3.24) | 2193 | 7.9 | 0.361 (0.593) | 2.35 (14.3) | 86 (187) | 22 (72) | 104 (219) | 15 (59) | 70 | 1003 (29.62) |
| M1 | 39.3 (52.7) | 20.0 (4500) | 7.07 (4.39) | 2192 | 5.6 | 0.371 (0.610) | 2.28 (13.9) | 86 (187) | 23 (73) | 105 (221) | 15 (59) | 70 | 1003 (29.62) |
| (ii) FIVE HOUR TEST AT 75% OF PULL AT MAXIMUM POWER | | | | | | | | | | | | | |
| M1 | 30.8 (41.3) | 15.0 (3370) | 7.39 (4.59) | 2259 | 4.1 | 0.343 (0.564) | 2.47 (15.1) | 81 (178) | 22 (72) | 100 (212) | 8 (46) | 87 | 1006 (29.71) |
| +(iii) FIVE HOUR TEST AT PULL CORRESPONDING TO 15% WHEELSLIP IN TEST (i) | | | | | | | | | | | | | |
| L1 | - | 45.0 (10120) | 2.94 (1.83) | - | - | - | - | 83 (181) | 21 (70) | 104 (219) | 8 (46) | 75 | 1006 (29.71) |
| (iv) MAXIMUM POWER (unballasted) | | | | | | | | | | | | | |
| L2 | *28.0 (37.5) | 27.6 (6200) | 3.65 (2.27) | 2263 | 15.0 | - | - | 82 (180) | 26 (79) | 98 (208) | 11 (52) | 77 | 1014 (29.94) |
| L3 | *37.6 (50.4) | 27.6 (6200) | 4.90 (3.04) | 2237 | 15.0 | - | - | 84 (183) | 26 (79) | 98 (208) | 11 (52) | 77 | 1014 (29.94) |
| M1 | 41.3 (55.4) | 21.8 (4900) | 6.82 (4.24) | 2200 | 9.5 | - | - | 85 (185) | 31 (88) | 100 (212) | 11 (52) | 77 | 1014 (29.94) |
| M2 | 42.5 (57.0) | 17.1 (3840) | 8.95 (5.56) | 2201 | 7.2 | - | - | 85 (185) | 31 (88) | 100 (212) | 11 (52) | 77 | 1014 (29.94) |
| M3 | 42.2 (56.6) | 12.5 (2810) | 12.15 (7.55) | 2196 | 5.4 | - | - | 85 (185) | 29 (84) | 99 (210) | 11 (52) | 77 | 1014 (29.94) |

Total oil consumption during ten hours duration of tests (ii) and (iii) 92.4 g/h (0.204 lb/h)

*Maximum power available at 15% wheelslip

+Test (iii) was carried out with additional ballast and the results for power, slip and fuel consumption have no practical significance

## 3. TURNING SPACE AND TURNING CIRCLE

Details of wheel equipment: As in specification, without ballast

Track of wheels: front - 1320 mm (52.0 in)
rear - 1575 mm (62.0 in)

| | With brakes | | Without brakes | |
|---|---|---|---|---|
| | Right hand | Left hand | Right hand | Left hand |
| Radius of turning space, m (in) | 3.27 (129) | 3.25 (128) | 3.66 (144) | 3.73 (147) |
| Radius of turning circle, m (in) | 3.16 (124) | 3.14 (124) | 3.55 (140) | 3.62 (143) |

## 4. LOCATION OF CENTRE OF GRAVITY

| | |
|---|---|
| Height above ground, mm (in) | 942 (37.1) |
| Distance forward from the vertical plane containing the axis of the rear wheels, mm (in) | 721 (28.4) |
| Distance from the median plane of the tractor, mm (in) | 0 |

## 5. BRAKING

Date of tests: 5th and 12th December 1979
Type of track: Concrete
Type of decelerometer: Moto Meter, recording type
Mass of ballasted tractor: 4977 kg (10972 lb)

Cold brakes

| | Tractor without ballast | | Tractor ballasted | |
|---|---|---|---|---|
| Travelling speed of tractor, km/h (mile/h) | 25.0 | (15.5) | 25.0 | (15.5) |
| Maximum deceleration, $m/s^2$ ($ft/s^2$) | 4.2 | (13.8) | 4.7 | (15.4) |
| Stopping distance, m (ft) | 7.0 | (23.0) | 6.4 | (21.0) |
| Force on brake pedal, N (lb) | 356 | (80) | 489 | (110) |
| Force exerted on the brake pedal to achieve a deceleration of 2.5 $m/s^2$ (8.2 $ft/s^2$), N (lb) | 187 | (42) | 245 | (55) |

Brake fade characteristics (hot tests)

| | Tractor without ballast | Tractor ballasted |
|---|---|---|
| Maximum deceleration hot/cold, % | 100 | 97 |
| Stopping distance cold/hot, % | 98 | 98 |
| Force on pedal cold/hot, % | 100 | 92 |

Parking brake

Efficacy of handbrake: Satisfactory facing up and down slope of 16%

Pull on handbrake: 356 N (80 lb)

6. MEASUREMENT OF AMBIENT NOISE EMITTED BY THE TRACTOR

Date of tests: 17th January 1980

Type of sound level meter: Bruel and Kjaer 2209

Type of track: Concrete

Results of Tests:

Gear: H3

Travelling speed before acceleration: 24.5 km/h (15.2 mile/h)

Sound level: 87 dBA

7. NOISE MEASUREMENT AT THE DRIVER'S EAR LEVEL

Date of tests: 17th January 1980

Type of sound level meter: Bruel and Kjaer 2209

Type of track: Concrete

| Gear | Travelling speed, km/h (mile/h) | | dBA |
|---|---|---|---|
| M1 | 7.2 | (4.5) | 88 |

## 8. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

| | | |
|---|---|---|
| Date of tests: | 17th December 1979 and 15th January 1980 | |
| Hydraulic fluid | | |
| Make and type: | Agricastrol M.P. S.A.E.20W/30 | |
| Viscosity: | 54 cSt at 50°C (122°F) | |
| Type of linkage lock for transport: | Hydraulic | |
| Opening pressure of the cylinder over pressure relief valve (manufacturer's figures): | Not applicable | |
| Pump characteristics | | |
| i) Opening pressure of relief valve: | 15.8 MPa | (2290 lb/in$^2$) |
| Sustained pressure of the open relief valve: | 17.4 MPa | (2520 lb/in$^2$) |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 29.7 l/min | (6.5 gal/min) |
| iii) Pump delivery rate at maximum hydraulic power: | 31.6 l/min | (7.0 gal/min) |
| Delivery pressure: | 15.8 MPa | (2290 lb/in$^2$) |
| Power: | 8.3 kW | (11.1 hp) |

Linkage geometry when connected to the standard frame, mm (in)

| | Maximum mechanical advantage | Minimum mechanical advantage |
|---|---|---|
| Projected length in side view | | |
| Lower links | 838 (33.0) | 838 (33.0) |
| Lift arms | 229 (9.0) | 229 (9.0) |
| Lift rods | 780 (30.7) | 641 (25.2) |
| Top link | 584 (23.0) | 598 (23.5) |
| Distance of lift rod connection point from pivot point of lower link | 467 (18.4) | 467 (18.4) |
| The following dimensions are given relative to the rear wheel centre line, situated 720 mm (28.3 in) above the ground level | | |
| Lower link pivot point | 210 (8.3) behind, 165 (6.5) below | 210 (8.3) behind, 165 (6.5) below |
| Top link pivot point | 470 (18.5) behind, 211 (8.3) above | 470 (18.5) behind, 141 (5.6) above |
| Lift arm pivot point | 330 (13.0) behind, 478 (18.8) above | 330 (13.0) behind, 478 (18.8) above |
| Maximum and minimum height of lower link hitch points | 18 (0.7) below, 606 (23.9) below | 220 (8.7) above, 340 (13.4) below |
| Height of lower link hitch points when locked in transport position | Any height within lift range | Any height within lift range |

## Power lift performance

| Lifting height in relation to a horizontal line through the lower link pivoting point | | mm (in) | -440 (17.3) | -400 (15.7) | -370 (14.6) | -220 (8.7) | -175 (6.9) | -80 (3.1) | 0 | +80 (3.1) | +125 (4.9) | +160 (6.3) | +240 (9.4) | +350 (13.8) | +440 (17.3) | +520 (20.5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lifting force with the pressure at maximum hydraulic power [15.8 MPa (2290 lb/in$^2$)] calculated from measurements made at maximum pressure [17.4 MPa (2520 lb/in$^2$)], kN (lb) | At the hitch points | max.mech advant. | *20.0 (4500) | 20.5 (4610) | 20.7 (4650) | 21.2 (4770) | 21.1 (4740) | 21.0 (4720) | 20.9 (4700) | 21.3 (4790) | 21.9 (4920) | | | | | |
| | | min.mech advant. | | | | | *19.8 (4450) | 21.2 (4770) | 21.7 (4880) | 22.0 (4950) | 21.9 (4920) | 21.8 (4900) | 21.8 (4900) | 23.2 (5220) | | |
| | On the frame | max.mech advant. | | | 26.3 (5910) | 20.8 (4680) | 20.2 (4540) | 19.0 (4270) | 18.2 (4090) | 17.6 (3960) | *17.4 (3910) | 17.7 (3980) | | | | |
| | | min.mech advant. | | | | 16.5 (3710) | 16.7 (3750) | 16.8 (3780) | 16.5 (3710) | 16.0 (3600) | 15.6 (3510) | 15.3 (3440) | 14.6 (3280) | 13.7 (3080) | 13.1 (2940) | *12.9 (2900) |

*Maximum force exerted throughout whole range

Force on the frame at which front of tractor is calculated to lift with maximum allowable front ballast is 20.9 kN (4700 lb)

## Power lift performance with assister ram

| Lifting height in relation to a horizontal line through the lower link pivoting point | | mm (in) | -440 (17.3) | -365 (14.4) | -220 (8.7) | -170 (6.7) | -80 (3.1) | 0 | +80 (3.1) | +120 (4.7) | +140 (5.5) | +200 (7.9) | +300 (11.8) | +350 (13.8) | +400 (15.7) | +500 (19.7) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lifting force with the pressure at maximum hydraulic power [15.8 MPa (2290 lb/in2)] calculated from measurements made at maximum pressure [17.4 MPa (2520 lb/in$^2$)], kN (lb) | At the hitch points | max.mech advant. | 29.7 (6680) | +29.1 (6540) | 29.2 (6560) | 29.4 (6610) | 29.4 (6610) | 29.6 (6650) | 30.3 (6810) | 31.0 (6970) | | | | | | |
| | | min.mech advant. | | | | +27.8 (6250) | 29.0 (6520) | 29.9 (6720) | 30.6 (6880) | 30.8 (6920) | 30.9 (6950) | 31.1 (6990) | 31.6 (7100) | 33.2 (7460) | | |
| | On the frame | max.mech advant. | | 37.9 (8520) | 29.9 (6720) | 28.9 (6500) | 27.3 (6140) | 26.1 (5870) | 25.1 (5640) | 25.0 (5620) | +25.0 (5620) | | | | | |
| | | min.mech advant. | | | 23.8 (5350) | 23.9 (5370) | 23.7 (5330) | 23.3 (5240) | 22.8 (5130) | 22.4 (5040) | 22.2 (4990) | 21.6 (4860) | 20.4 (4590) | 19.8 (4450) | 19.3 (4340) | +18.6 (4180) |

+Maximum force exerted throughout whole range

Force at which front of tractor is calculated to lift with maximum allowable front ballast 20.9 kN (4700 lb).

REPAIRS AND ADJUSTMENTS DURING TESTS: During the drawbar tests, a new set of injectors was fitted to rectify a slight loss of power and a fractured exhaust pipe was replaced.

REMARKS: None

Test carried out by: N.R. Baker, P.C. Seward, J.P. Evans

Officer in charge: D.W. Smith

Signed: Head of Tractor Department

for the Director

Date: 23/4/80