OECD Approval No. 846

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

Report on test of Ford 7610 Tractor



Manufactured by Ford Motor Company Ltd.,
Basildon,
Essex.

Test No. R82/70010/OECD

Report No. 683

Date June 1982

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's name and address:	Ford Motor Company Ltd., Basildon, Essex.
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer with the agreement of the testing station
Place of running-in:	Basildon
Duration of running-in:	125 hours

Tractor

Make:	Ford
Model:	7610
Type:	Four-wheel, rear wheel driven, unit construction
Serial No.:	B519524

Engine

Make:	Ford
Model:	7610
Type:	4-stroke, direct injection turbocharged diesel
Serial No.:	F633610
Cylinders:	
Number and disposition:	4, vertical, in-line
Bore:	111.8 mm (4.4 in)
Stroke:	111.8 mm (4.4 in)
Capacity:	4390 cm^3 (268 in^3)
Compression ratio:	15.7:1 (nominal)
Arrangement of valves:	Overhead
Liners:	None, Monobloc construction
Fuel system:	
Feed system:	Lucas C.A.V. mechanical feed pump
Make, type and model of filter(s):	Plastic strainer in tank and C.A.V. paper element filter with sediment bowl and water trap between tank and injection pump
Tank capacity:	80 l (17.6 UK gal)
Make, type and model of injection pump:	Lucas C.A.V., in-line
Injection pump Serial No.:	WY10694
Manufacturer's production setting of injection pump:	16.5 kg/h (36.4 lb/h) minimum at 2100 rev/min engine speed on full load and 57-63°C (135 to 145°F) temperature, using fuel of 0.85 specific gravity at 15°C (59°F)

Fuel system (Cont'd)	
Make, type and model of injectors:	C.A.V., multihole, 5222007
Injection pressure:	22.1-22.6 MPa (218-223 atm)
Injection pump delivery starts:	25° before T.D.C.
Governor:	
Make and type:	C.A.V., mechanical, incorporated in fuel injection pump
Governed range of engine speed:	700 rev/min to 2250 rev/min
Rated engine speed:	2100 rev/min
Air cleaner:	
Make and type:	Locker Air Maze, dry, paper element
Model:	3-stage
Oil capacity:	None
Position:	Under front hood, forward of radiator
Pre-cleaner:	
Make and type:	Ford, centrifugal
Position:	Above front hood
Turbo-charger:	
Make and type:	Garret Airesearch, Type T31
Lubrication system:	
Type of feed and pump:	Force feed from eccentric rotor pump
Type of filter(s):	Metal strainer in sump, full flow replaceable paper element filter
Total oil capacity including filter:	8.5 l (15.0 pt)
Recommended oil:	S.A.E. 20W, viscosity 45 cSt at 50°C (122°F)
M.I.L. standard:	L-2104-C
Oil change period:	150 hours
Filter change period:	150 hours
Cooling system:	
Coolant:	Water and antifreeze, 50% solution
Type of pump:	Centrifugal impeller
Fan diameter:	445 mm (17.5 in)
Number of fan blades:	7
Type of temperature control:	Thermostat
Coolant capacity:	17.0 l (30 pt)
System pressure:	50 kPa (7 lb/in^2)
Starting system:	
Make, type and model:	Lucas electric motor M50G 12V, positive engagement, solenoid operated
Starter motor power rating:	1.8 kW (2.4 hp)
Safety features:	Only operable when gear lever in neutral position
Cold starting aid:	C.A.V. Thermostart

Exhaust system

Make and construction:	Donaldson, double chamber
Dimensions of expansion chamber:	111 mm (4.4 in) x 213 mm (8.4 in) x 637 mm (25.1 in) long
Position:	Vertical above left-hand hood

Electrical system

Voltage	12
Earth polarity:	Negative
Make and type of generator:	Lucas, 18 ACR, alternator
Output:	45 A at 6000 rev/min
Make and type of battery:	Ford, lead-acid
Rating:	120-128 Ah at 20 hour rating

Transmission

Clutch:	
Make and type:	Borg and Beck, dry, single plate
Diameter of plate:	330 mm (13.0 in)
Method of operation:	Pedal
Gearbox:	
Make and type:	Ford, constant mesh
Number of speeds:	8 forward and 4 reverse
Arrangement:	4 forward speeds, with synchromesh, high/low and reverse range selector
Rear axle and final drive(s):	
Make and type:	Ford, crown wheel and pinion with differential and epicyclic reduction gear final drives
Type of differential lock and method of engagement:	Mechanical, pedal operated, self-disengaging
Front axle and final drive(s):	
Make and type:	Not driven

Transmission oils

	Gearbox and rear axle*
Recommended oil: S.A.E.	80 EP
Capacity:	56.8 l (100 pt)
Viscosity at 50°C (122°F)	54 cSt
M.I.L. standard	L-2105
Oil change period	1200 hours
Filter change period	300 hours

*Includes oil supply for hydraulic lift

Gear	Number of engine revolutions for one revolution of driving wheel	Nominal travelling speed for 2100 rev/min rated engine speed,* km/h	(mile/h)
Forward			
Low 1	217.91	2.89	(1.80)
2	149.81	4.20	(2.61)
3	102.42	6.15	(3.82)
4	70.41	8.94	(5.56)
High 1	61.68	10.20	(6.34)
2	42.40	14.84	(9.22)
3	28.99	21.71	(13.49)
4	19.93	31.58	(19.62)
Reverse			
1	168.71	3.73	(2.32)
2	115.98	5.43	(3.37)
3	79.29	7.94	(4.93)
4	54.51	11.55	(7.18)

*Calculated with a tyre radius index of 795 mm (31.3 in)

Power take-off

Type:	Two-speed with interchangeable shafts
Position:	At rear of tractor in vertical centre plane
Height above ground:	752 mm (29.6 in)
Distance behind rear axle:	468 mm (18.4 in)
Diameter:	34.9 mm (1.375 in)
Number of splines: 540 rev/min 1000 rev/min	6 to I.S.O. standard 21 to I.S.O. standard
Proportional engine speed pto:	Independent of main clutch
Method of engagement:	Lever and hydraulically operated multi-plate clutch
Speed at rated engine speed:	540 rev/min pto: 600 rev/min 1000 rev/min pto:1025 rev/min
Engine speed at standard pto speed:	540 rev/min pto:1890 rev/min 1000 rev/min pto:2049 rev/min
Direction of rotation (viewed facing driving end):	Clockwise

Belt pulley — None fitted

Power lift

Make and type of pump:	Sundstrand, live, gear
Nominal working pressure:	13.8 MPa (2000 lb/in^2)
Pump drive:	From pto shaft, independent of main and pto clutches
Oil supplied from:	Rear axle housing
Oil capacity:	56.8 l (100.0 pt)
Oil capacity available for external use:	18.2 l (32.0 pt) with tractor horizontal
Permissible additional fill for external use:	59.1 l (104.0 pt)
Number of rams:	One internal, one external
Type, number and position of external tapping:	One, from the auxiliary service control connection
Linkage category:	2, to I.S.O. standard
Controls:	Draught or position control with auxiliary service control, top link sensing

Drawbar

Type:	Swinging
Vertical height to centre of clevis:	max. 550 mm (21.7 in), min. 450 mm (17.7 in)
Changed by:	Inverting drawbar
Distance behind rear axle centre:	876 mm (34.5 in), 825 mm (32.5 in) and 673 mm (26.5 in)
Distance behind pto:	407 mm (16.0 in), 356 mm (14.0 in) and 204 mm (8.0 in)
Lateral adjustment:	508 mm (20.0 in), 483 mm (20.0 in) and 394 mm (15.5 in)
Pivot position relative to rear axle:	On centre line
Drawbar pin hole diameter:	27 mm (1.1 in)
Type:	Linkage
Vertical height to centre of hake bar:	991 mm (39.0 in), min 411 mm (16.2 in)
Changed by:	Position of hydraulic lift lever
Dimensions with lower links horizontal:	
Distance behind rear axle centre:	1016 mm (40.0 in)
Distance behind pto:	548 mm (21.6 in)
Lateral adjustment:	508 mm (20.0 in)
Pivot position relative to rear axle:	102 mm (4.0 in) rearwards
Drawbar pin hole diameter and number:	20 mm (0.8 in); 9

Hitch

Type and position:	Rear automatic pick-up hitch, adjustable height rear tow hook available, not fitted for test

Steering

Make and type:	Burman, integral power steering with single drop arm and drag link
Make and type of pump:	Sundstrand, gear
Oil supplied from:	Integral reservoir with cooler
Recommended oil:	S.A.E. 5W, viscosity 26 cSt at 50°C (122°F)
Oil change period:	1200 hours
Filter change period:	1200 hours

Brakes

Make and type:	Girling, oil-immersed multi-plate disc
Position:	On rear axle planetary shafts
Method of operation:	Independent or combined pedal, mechanical linkage
Type of parking brake:	Mechanical linkage coupled to both service brakes
Method of operation:	Hand-lever with ratchet

Wheels

Steering wheels:

Make and size:	Goodyear 7.50-18
Type:	Cross-ply, 8 ply rating
Maximum mass on each tyre and pressure:	945 kg (2083 lb) at 370 kPa (54 lb/in^2)
Track width:	1346 mm (53 in) by 102 mm (4.0 in) steps to 2060 mm (81 in)
Changed by:	Extending axle and reversing wheels

Driving wheels:

Make and size:	Goodyear 16.9-38
Type:	Radial-ply, 8 ply rating, rim size DW14
Maximum mass on each tyre and pressure:	2520 kg (5556 lb) at 170 kPa (25 lb/in^2)
Track width:	1524 mm (60 in) by 102 mm (4.0 in) steps to 2034 mm (80 in)
Changed by:	Reversing wheels and offset lug rims

Wheelbase

2223 mm (87.5 in)

Safety Cab

None

Lighting

Unrestricted beam angle of headlight in plan view 130°.

	Height above ground of centre, mm	(in)	Size, mm	(in)	Distance from outside edge of tractor at 1626 mm (64 in) wheel track, to centre, mm	(in)
Headlights	1072	(42.2)	102	(4.0) dia	867	(34.1)
Side lights	1660	(65.4)	70 x 70	(2.8) x (2.8)	426	(16.8)
Rear lights	1630	(64.2)	70 x 70	(2.8) x (2.8)	404	(15.9)
Reflectors	1565	(61.6)	180 x 40	(7.1) x (1.6)	369	(14.5)

Number of grease points

Whole tractor: 13

Overall dimensions

	Length, m	(in)	Width, max. m	(in)	Width, min. m	(in)	Maximum height to top of exhaust m	(in)
Without ballast	3.72	(146)	2.45	(96)	1.94	(76)	2.50	(98)
With ballast	4.04	(159)	2.45	(96)	1.94	(76)	2.50	(98)

Minimum ground clearance 434 mm (17.1 in) to underside of drawbar frame

Seat

Make and type: Grammer, upholstered pan and back rest

Suspension: Coil spring

Damping: Pneumatic, adjustable for driver's weight

Range of adjustment: longitudinal 150 mm (5.9 in)

vertical Nil

CONDITIONS DURING TEST

Details of wheel equipment: As in specification

Masses

Tractor (without driver but with tanks full)

	Front, kg (lb)	Rear, kg (lb)	Total, kg (lb)
Without ballast	991 (2185)	1873 (4129)	2864 (6314)
With ballast	1419 (3128)	2662 (5869)	4081 (8997)

Ballast

	Number of weights	Total mass, kg (lb)	Water, kg (lb)
Front wheels	Nil	Nil	Nil
Rear wheels	2	100 (220)	772 (1702)
Additional	6	345 (761)	Front frame and weights

Track setting during tests

Front - 1550 mm (61 in)

Rear - 1626 mm (64 in)

FUEL AND LUBRICANTS USED IN TESTS

Fuel

Diesel oil to Class D British Standard 2869:1970, specific gravity 0.8495 at 15°C (59°F), viscosity 2.64 cSt at 50°C (122°F), Cetane No. 53

Oils

Engine: Ford, M2C-121A, S.A.E. 20W viscosity 45 cSt at 50°C (122°F)

Gearbox, rear axle and hydraulics: Ford, M2C-86B, S.A.E. 80EP, viscosity 54 cSt at 50°C (122°F)

COMPULSORY TESTS

1. MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 30th March 1982, NIAE, Silsoe, Bedford, UK

Type of dynamometer: Water brake, Heenan and Froude

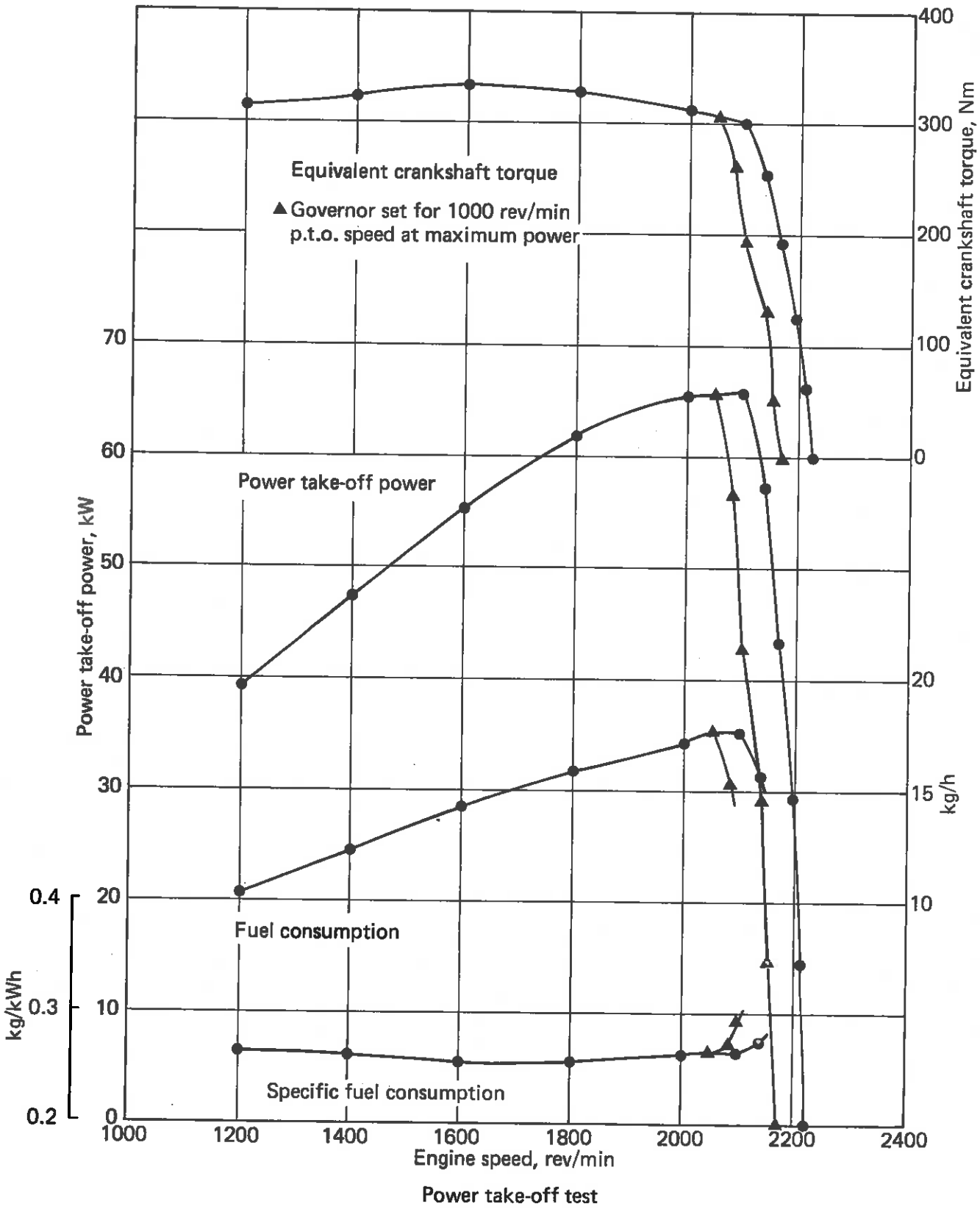
Power, kW (hp)	Speed, rev/min		Fuel consumption,			
	Engine	P.t.o.	l/h (UKgal/h)	kg/h (lb/h)	kg/kWh (lb/hph)	kWh/l (hph/UKgal)
Maximum power - 2 hour test						
66.0 (88.5)	2100	1025	20.77 (4.57)	17.64 (38.89)	0.267 (0.439)	3.18 (19.4)
The speed recommended by the manufacturer for drawbar work						
66.0 (88.5)	2100	1025	20.77 (4.57)	17.64 (38.89)	0.267 (0.439)	3.18 (19.4)
Part loads						
(1) 85% of the torque obtained at maximum power						
57.2 (76.7)	2140	1045	18.52 (4.07)	15.73 (34.68)	0.275 (0.452)	3.09 (18.8)
(2) Unloaded						
-	2223	1085	5.41 (1.19)	4.60 (10.14)	-	-
(3) 50% of the torque defined in (1)						
29.4 (39.4)	2198	1073	12.06 (2.65)	10.24 (22.58)	0.349 (0.573)	2.44 (14.8)
(4) Maximum power						
66.0 (88.5)	2100	1025	20.77 (4.57)	17.64 (38.89)	0.267 (0.439)	3.18 (19.4)
(5) 25% of the torque defined in (1)						
14.8 (19.8)	2215	1081	8.81 (1.94)	7.49 (16.51)	0.506 (0.832)	1.68 (10.2)
(6) 75% of the torque defined in (1)						
43.4 (58.2)	2165	1057	15.18 (3.34)	12.89 (28.42)	0.297 (0.488)	2.86 (17.4)

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 (1000 rev/min)						
(1) 85% of the torque obtained at maximum power						
56.8 (76.2)	2082	1016	18.09 (3.98)	15.37 (33.87)	0.271 (0.445)	3.14 (19.1)
(2) Unloaded						
-	2170	1059	5.24 (1.15)	4.45 (9.81)	-	-
(3) 50% of the torque defined in (1)						
29.2 (39.1)	2140	1045	11.89 (2.62)	10.10 (22.27)	0.346 (0.569)	2.45 (15.0)
(4) Maximum power						
65.7 (88.1)	2049	1000	20.73 (4.56)	17.61 (38.83)	0.268 (0.441)	3.17 (19.3)
(5) 25% of the torque defined in (1)						
14.7 (19.7)	2152	1050	8.61 (1.89)	7.31 (16.31)	0.498 (0.820)	1.70 (10.4)
(6) 75% of the torque defined in (1)						
43.0 (57.6)	2100	1025	14.91 (3.28)	12.67 (27.92)	0.295 (0.485)	2.88 (17.6)

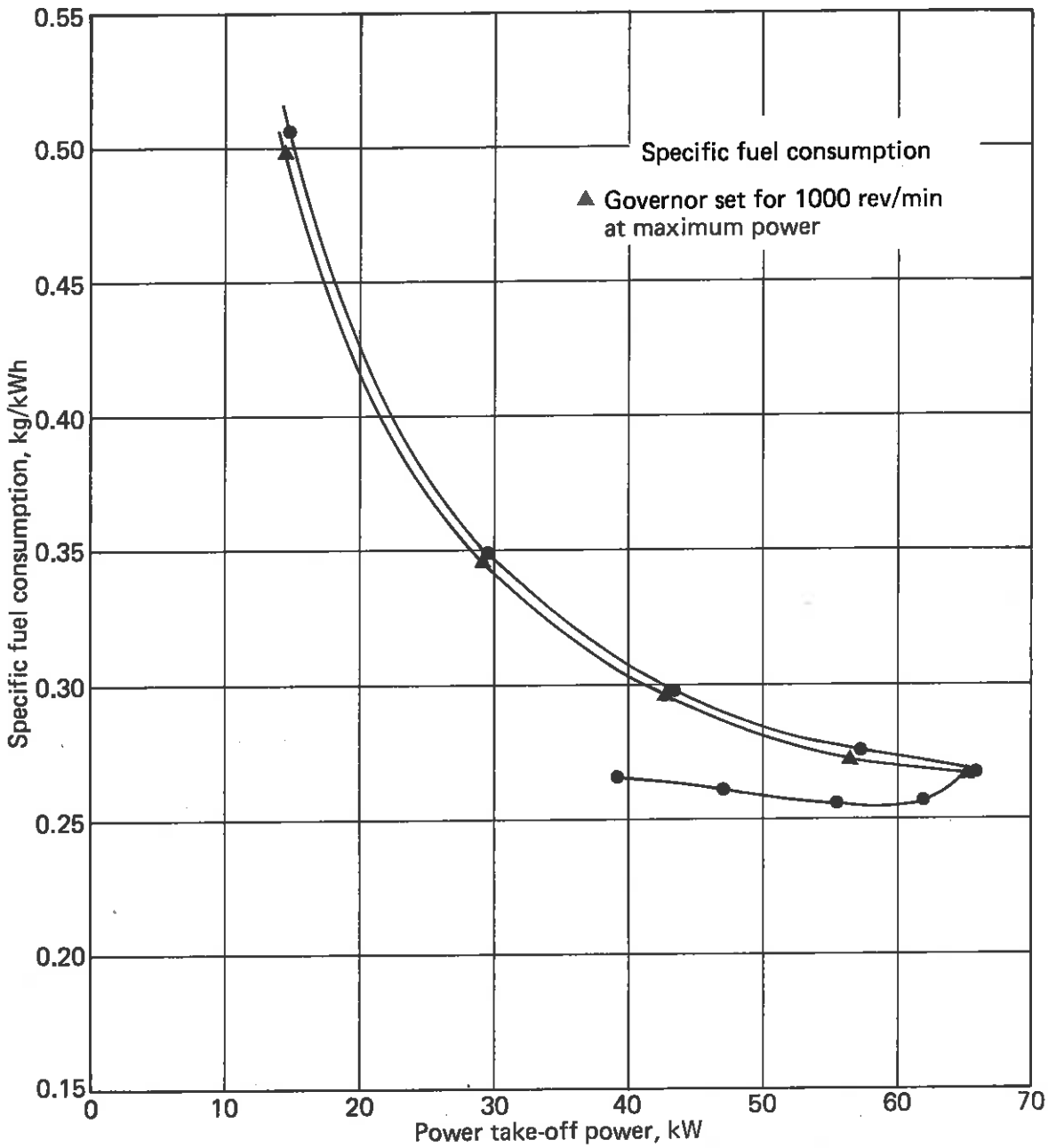
Standard specific fuel consumption, kg/kWh (lb/hph)

(a) 0.275 (0.452) (b) 0.349 (0.573) (c) 0.271 (0.445) (d) 0.346 (0.569)

No load, maximum engine speed		2223 rev/min
Equivalent crankshaft torque at maximum power		300.1 Nm (221.3 lb ft)
Maximum equivalent crankshaft torque		331.4 Nm (244.4 lb ft) at 1610 rev/min engine speed
Mean atmospheric conditions	temperature	22°C (72°F)
	pressure	1016 m bar (30.00 in Hg)
	relative humidity	53%
Maximum temperature	coolant	85°C (185°F)
	engine oil	100°C (212°F)
	fuel	55°C (131°F)
	air intake	30°C (86°F)



Power take-off test



Power take-off test

2 DRAWBAR PERFORMANCE

Date of tests: May 1982
Type of track: Concrete

Height of drawbar above ground: Unballasted: 455 mm (17.9 in)
Ballasted: 490 mm (19.3 in)

Gear	Speed, km/h (mile/h)	Power, kW (hp)	Drawbar pull, kN (lb)	Engine speed, rev/min	Wheel-slip, %	Specific fuel consumption, kg/kWh (lb/hph)	Specific fuel consumption, kWh/l (hph/UKgal)	Temperature, °C (°F) Fuel	Coolant	Engine oil	Atmospheric conditions: Temperature, °C (°F)	Relative humidity, %	Pressure, m bar (in Hg)
(i) MAXIMUM POWER (unballasted) Tyre inflation pressure: front 150 kPa (22 lb/in^2), rear 80 kPa (12 lb/in^2)													
L1	2.66 (1.65)	22.0 (29.5)	29.8 (6700)	2203	15.0	-	-	22 (72)	74 (165)	77 (170)	7 (45)	56	1003 (29.63)
L2	3.87 (2.40)	31.1 (41.7)	29.0 (6510)	2169	11.7	-	-	23 (74)	73 (164)	82 (181)	8 (47)	51	1003 (29.63)
L3	5.64 (3.50)	45.0 (60.3)	28.7 (6450)	2150	10.7	-	-	23 (74)	73 (164)	83 (183)	9 (48)	51	1003 (29.63)
L4	8.38 (5.21)	57.3 (76.8)	24.6 (5530)	2105	6.3	-	-	28 (83)	78 (173)	91 (196)	10 (51)	52	1003 (29.63)
H1	9.62 (5.98)	58.7 (78.7)	22.0 (4930)	2106	5.3	-	-	27 (80)	77 (171)	91 (196)	11 (52)	40	1008 (29.79)
H2	14.20 (8.82)	60.0 (80.4)	15.2 (3410)	2096	3.4	-	-	27 (80)	76 (170)	92 (198)	7 (46)	64	1018 (30.07)
(ii) MAXIMUM POWER (ballasted) Tyre inflation pressure: front 230 kPa (33 lb/in^2), rear 80 kPa (12 lb/in^2)													
L1	2.66 (1.65)	27.2 (36.4)	*36.8 (8270)	2189	12.0	0.424 (0.697)	2.00 (12.2)	32 (90)	74 (165)	86 (187)	16 (62)	41	1015 (30.00)
L2	3.82 (2.37)	39.0 (52.3)	*36.8 (8270)	2154	12.0	0.368 (0.605)	2.31 (14.1)	32 (89)	74 (166)	84 (184)	16 (62)	42	1016 (30.00)
L3	5.55 (3.45)	54.5 (73.1)	35.4 (7950)	2134	9.3	0.344 (0.566)	2.47 (15.1)	32 (89)	76 (168)	74 (166)	19 (67)	40	1015 (29.98)
L4	8.47 (5.26)	58.3 (78.2)	24.8 (5570)	2105	4.2	0.313 (0.515)	2.71 (16.5)	35 (95)	79 (174)	92 (197)	17 (64)	41	1015 (29.98)
H1	9.74 (6.05)	59.1 (79.2)	21.8 (4900)	2104	3.5	0.315 (0.518)	2.70 (16.5)	38 (101)	76 (170)	91 (197)	18 (64)	42	1015 (29.99)
H2	14.39 (8.94)	60.0 (80.5)	15.0 (3370)	2108	2.4	0.311 (0.512)	2.73 (16.6)	38 (101)	79 (175)	93 (200)	17 (63)	43	1015 (29.99)
(iii) FIVE HOUR TEST AT 75% OF PULL AT MAXIMUM POWER													
H1	10.05 (6.25)	45.8 (61.4)	16.4 (3690)	2149	2.5	0.298 (0.490)	2.85 (17.4)	42 (108)	76 (170)	92 (197)	15 (60)	51	1018 (30.08)
+(iv) FIVE HOUR TEST AT PULL CORRESPONDING TO 15% WHEELSLIP IN TEST (ii)													
L2	3.85 (2.39)	-	37.3 (8390)	2152	-	-	-	42 (108)	76 (169)	92 (198)	16 (61)	62	1018 (30.07)

Total oil consumption during ten hours duration of tests (iii) and (iv) 16.5 g/h (0.036 lb/h)

*Maximum pull obtainable with stabilised conditions

+Test (iv) 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 - 1550 mm (61 in)
rear - 1626 mm (64.in)

	With brakes		Without brakes	
	Left-hand	Right-hand	Left-hand	Right-hand
Radius of turning space, m (in)	3.40 (134)	3.41 (134)	3.71 (146)	3.72 (146)
Radius of turning circle, m (in)	3.29 (130)	3.30 (130)	3.60 (142)	3.61 (142)

4. LOCATION OF CENTRE OF GRAVITY

Height above ground, mm (in)	972 (38.3)
Distance forward from the vertical plane containing the axis of the rear wheels, mm (in)	750 (29.5)
Distance from the median plane of the tractor, mm (in)	0

5. BRAKING

Date of tests: 3rd-8th June 1982

Type of track: Concrete

Conditions for braking tests:

Masses

	Front, kg (lb)	Rear, kg (lb)	Total, kg (lb)
Ballasted	2262 (4987)	2736 (6032)	4998 (11019)
Unballasted	1009 (2224)	1873 (4129)	2882 (6353)

Tyres:

Front: 11.00-16, 8-ply rating. Maximum permissible mass on each tyre 1320 kg (2910 lb) at 248 kPa (36 lb/in^2)

Rear: 16.9-38, 8-ply rating. Maximum permissible mass on each tyre 2520 kg (5556 lb) at 166 kPa (24 lb/in^2)

Type 0 Service brakes (cold)

Travelling speed before application of brakes, 33.1 km/h (20.6 mile/h)

Ballasted	Force on brake pedal	N (lb)	50 (11)	100 (22)	150 (34)	200 (45)	250 (56)	300 (67)	320 (72)
	Mean deceleration	m/s^2 (ft/s^2)	0.9 (3.0)	1.4 (4.6)	1.9 (6.2)	2.4 (7.9)	2.9 (9.5)	3.4 (11.2)	3.6 (11.8)
Unballasted	Force on brake pedal	N (lb)	50 (11)	80 (18)	110 (25)	140 (32)	170 (38)	190 (43)	
	Mean deceleration	m/s^2 (ft/s^2)	1.4 (4.6)	2.0 (6.6)	2.6 (8.5)	3.2 (10.5)	3.8 (12.5)	4.2 (13.8)	

Type 1 Service brakes (hot)

Ballasted	Force on brake pedal	N (lb)	50 (11)	100 (22)	150 (34)	200 (45)	250 (56)	300 (67)	320 (72)
	Mean deceleration	m/s^2 (ft/s^2)	0.9 (3.0)	1.4 (4.6)	1.9 (6.2)	2.4 (7.9)	2.9 (9.5)	3.4 (11.2)	3.6 (11.8)

Brakes were heated by: Towing

Comments on deviation and vibration: None

Parking brake

		Force applied on slope of 18%		Force applied on slope of 12% with trailer of 2.88 tonnes (6350 lb)	
		Up	Down	Up	Down
Pull on handbrake	N (lb)	142 (32)	142 (32)	111 (25)	111 (25)

6. MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests: 7th May 1982
Type of sound level meter: Bruel and Kjaer 2209
Type of track: Concrete
Results of tests:
Gear: H4
Travelling speed before acceleration: 24.8 km/h (15.4 mile/h)
Sound level: 88 dBA

7. NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of tests: 7th May 1982
Type of sound level meter: Bruel and Kjaer 2209
Type of track: Concrete
Cab fitted: No

Results of tests

Gear	Drawbar pull at which the tractor develops maximum sound level, kN (lb)	Measured travelling speed, km/h (mile/h)	Sound level, dBA
All openings closed with cab fitted			
*L3	22.0 (4950)	6.0 (3.7)	94
*L3	Light load	6.5 (4.0)	93
L4	22.0 (4950)	8.6 (5.3)	96
H1	18.0 (4050)	10.0 (6.2)	96
H2	15.0 (3370)	14.3 (8.9)	96
H4	Light load	33.1 (20.6)	95

*The L3 gear corresponds to the nominal travelling speed nearest to 7.5 km/h (4.7 mile/h).

8. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 9th and 10th June 1982
Hydraulic fluid:
Make and type: Ford, M2C-86B, S.A.E. 80EP
Viscosity: 54 cSt at 50°C (122°F)

Type of linkage lock for transport: Hydraulic

Power lift

	Height of lower hitch point above ground in down position, mm (in)	Vertical movement, mm (in)	Maximum force exerted through full range, kN (lb)	Corresponding pressure of hydraulic fluid, MPa (lb/in^2)	Moment about rear axle, kNm (lb ft)	Maximum tilt angle of mast over range of lift, degrees
At the hitch points	411 (16.2)	580 (22.8)	33.7 (7580)	15.8 (2290)	34.2 (25225)	-
On the frame	411 (16.2)	715 (28.1)	27.5 (6180)	15.8 (2290)	44.7 (32969)	12

Hydraulic pump performance

Opening pressure of the relief valve:	14.0 MPa (2030 lb/in^2)
Sustained pressure with relief valve open:	18.0 MPa (2610 lb/in^2)
Opening pressure of the unloading valve:	Not applicable
Closing pressure of the unloading valve:	Not applicable
Pump delivery rate at minimum pressure, the governor control lever set for maximum power:	37.5 l/min (8.3 gal/min)
Pressure specified by the manufacturer for an external hydraulic motor:	13.8 MPa (2000 lb/in^2)
Hydraulic power at 13.8 MPa (2000 lb/in^2):	8.2 kW (11.0 hp)
Pump delivery rate at stated power:	36.0 l/min (7.9 gal/min)
Tapping point:	Auxiliary service connection
Temperature of hydraulic fluid:	65°C (149°F)

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

Projected length in side view					
Lower links	914	(36.0)			
Lift arms	229	(9.0)			
Lift rods	787	(31.0)			
Top link	680	(26.8)			
Distance of lift rod connection point from pivot point of lower link	514	(20.2)			
The following dimensions are given relative to the rear wheel centre line, situated 795 mm (31.3 in) above the ground level					
Lower link pivot point	102	(4.0)	behind,	229 (9.0)	below
Top link pivot point	337	(13.3)	behind,	203 (8.0)	above
Lift arm pivot point	102	(4.0)	forward,	340 (13.4)	above
Maximum and minimum height of lower link hitch points	196	(7.7)	above,	384 (15.1)	below
Height of lower link hitch points when locked in transport position	Any height within lift range				

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

Test carried out by: F. Thistlethwaite, J.P. Evans, P.A. Pope

Signed: D.W. Smith Head of Tractor Test Section

for the Director

Date: 14th June 1982.

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