OECD Approval No. 705

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

Report on test of David Brown 1690 Four-Wheel Drive Tractor



Manufactured by David Brown Tractors Ltd.,
Meltham,
Huddersfield.

Test No. R80/2/7657/O.E.C.D.

Report No. 673

Date July 1980

THE BRITISH SOCIETY FOR RESEARCH IN AGRICULTURAL ENGINEERING

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SPECIFICATION OF TRACTOR

Manufacturer:	David Brown Tractors Ltd., Meltham, Huddersfield.
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer with the agreement of the testing station.
Place of running-in:	David Brown Factory, Meltham.
Duration of running in:	50 hours

Tractor

Make:	David Brown
Model:	1690
Type:	Four-wheel drive, unit construction, front wheel steering
Serial No.:	11210142

Engine

Make:	David Brown
Model:	330001
Type:	4-stroke, direct injection diesel
Serial No.:	11450165
Cylinders:	6 cylinders, vertical, in-line, 100.1 mm (3.9 in) dia bore x 114.3 mm (4.5 in) stroke, capacity 5392 cm^3 (329 in^3), compression ratio 16:1 (nominal), overhead valves
Fuel system:	A.C. Delco mechanical fuel feed pump with hand primer, C.A.V. dual paper element filter with sediment bowls on pressure side of feed pump; fuel tank capacity 136.0 l (29.9 UK gal); C.A.V. Minimec in line, type P.5463 injection pump, Serial No. UW00928, manufacturer's production setting: 16.1 - 16.7 l/h (28.3 - 29.4 pt/h) with fuel temperature of 15-20°C (59 - 68°F) at 1600 rev/min engine speed, using fuel of 0.8476 specific gravity at 15.6°C (60°F); C.A.V. type BDLL140S6592 injector nozzles, injection pressure 17.7 MPa (175 atm), pump delivery starts 25° before T.D.C.

Governor:	C.A.V. centrifugal, incorporated in fuel injection pump, governed range of engine speed 700 to 2475 rev/min, rated engine speed 2300 rev/min
Air cleaner:	Two, Burgess, 3 stage including pre-cleaner, dry paper element filters, 1 per 3 cylinders situated under the bonnet, above the engine. One stack pipe with wide mesh screen situated above the bonnet on left-hand side
Lubrication system:	Forced feed from gear type pump with metal strainer in sump, Purolator re-placeable paper element full flow filter, total oil capacity 12.5 l (22.0 pt), recommended oil S.A.E. 20W/30, viscosity 54 cSt at 50°C (122°F), to MIL-L-2104B, oil change period 100 hours, filter change period 200 hours
Cooling system:	Water cooled, pressurised at 48 kPa (7 lb/in^2) impeller assisted, 432 mm (17 in) dia 6-blade belt driven fan, thermostat for temperature control, cooling water capacity 15.3 l (26.9 pt)
Starting system:	Electrical, Lucas M50 solenoid engaged starter motor, rated at 2.3 kW, operable only with gear selector lever in neutral position, Thermostart controlled by starter/isolator switch for cold starting
Exhaust:	Burgess, oval, baffle type silencer, 203 mm (8.0 in) x 102 mm (4.0 in) x 610 mm (24.0 in) long, overall length 1315 mm (51.8 in), vertical on left-hand side of bonnet

Electrical system

Voltage:	12, negative earth
Generator:	Lucas 15 ACR alternator, output 26.5 A at 6000 rev/min
Battery:	Chloride 254 lead-acid, 96 Ah at 20-hour rating

Transmission

Clutch:	Laycock, dual, dry, two 305 mm (12.0 in) dia plates, one pedal and hydraulically operated for gearbox drive and one hand-lever operated for p.t.o. drive

Gearbox: Own make, sliding gear and constant mesh, 12 forward and 4 reverse speeds comprising 3 forward and 1 reverse speed gearbox with four ranges possible by combination of two selector levers. Fixed ratio gear train from pinion shaft for front axle drive

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

Front axle and final drives: Carraro, crown wheel and pinion and differential, epicyclic reduction gear final drives in hubs, driven by propeller shaft from front of gearbox

Oil capacities: Gearbox 42.0 l (73.9 pt) recommended oil S.A.E. 20W/30, viscosity 54 cSt at 50°C (122°F), MIL-L-2104B, change period 1000 hours, filter change period 500 hours. Final drives 14.8 l (26.0 pt), recommended oil S.A.E. 15W/30, viscosity 50 cSt at 50°C (122°F), MIL-L-2104C, change period 1000 hours. Front differential housing and epicyclic hubs 6.8 l (12.0 pt), recommended oil S.A.E. 90EP, viscosity 115 cSt at 50°C (122°F), MIL-L-2105, change period 1000 hours.

Gear	Number of engine revolutions for one revolution of driving wheel	Nominal travelling speed for 2300 rev/min rated engine speed,* km/h	(mile/h)
Forward			
LS1	373.99	1.79	(1.11)
LS2	228.04	2.93	(1.82)
HS1	187.49	3.56	(2.21)
L1	147.95	4.51	(2.80)
LS3	132.11	5.05	(3.14)
HS2	114.32	5.84	(3.63)
L2	90.21	7.40	(4.60)
H1	74.17	9.00	(5.59)
HS3	66.23	10.08	(6.26)
L3	52.26	12.78	(7.94)
H2	45.23	14.76	(9.17)
H3	26.20	25.48	(15.84)
Reverse			
LS	224.39	2.98	(1.85)
HS	112.49	5.94	(3.69)
L	88.77	7.52	(4.67)
H	44.50	15.00	(9.32)

*Calculated with a tyre rolling radius of 770 mm (30.3 in)

Power take-off	At rear of tractor in vertical centre plane, height above ground 773 mm (30.4 in), distance behind rear axle centre 540 rev/min: 344 mm (13.5 in) 1000 rev/min: 317 mm (12.5 in), reversible shaft giving 6 or 21-splines 34.9 mm (1 $\frac{3}{8}$ in) dia to I.S.O. standard, independent of main clutch, engaged by hand-lever operating second plate of clutch, proportional engine speed, rotation clockwise viewed from driving end. 6-spline shaft: 540 rev/min (standard p.t.o. speed) at 2077 rev/min engine speed, 598 rev/min at 2300 rev/min rated engine speed 21-spline shaft: 1000 rev/min (standard p.t.o. speed) at 2048 rev/min engine speed, 1123 rev/min at 2300 rev/min rated engine speed
Power lift	Own make, live hydraulic, gear pump driven from front of engine crankshaft supplying oil from transmission housing to ram cylinder and external tappings; Category 2 Jeffes type implement linkage, top link sensing, draught and position control, selective response on drop
Drawbar	Swinging drawbar, vertical height to centre of clevis 352 mm (13.9 in) to 507 mm (20.0 in), changed by raising and lowering support frame and inverting drawbar, distance behind rear axle centre 535 mm (21.1 in) or 710 mm (28.0 in), distance behind p.t.o.: 540 rev/min shaft; 191 mm (7.5 in) or 366 mm (14.4 in), 1000 rev/in shaft: 217 mm (8.5 in) or 392 mm (15.4 in), lateral adjustment 255 mm (10.0 in) or 337 mm (13.3 in), pivot position 75 mm (3.0 in) forward of rear wheel centre, drawbar pin hole 26 mm (1.0 in) dia
Steering	Danfoss hydrostatic orbitrol unit incorporating manual control for emergency, oil supplied from Plessey, gear driven pump to own make transversely mounted ram, total oil capacity 1.46 l (2.5 pt), recommended oil Hydraulic mineral oil, viscosity 24.5 cSt at 50°C (122°F), oil and filter change period 500 hours

Brakes — Girling, oil-immersed, multi-disc, hydraulically actuated on spur pinion shafts, independent or combined pedal-operated; hand-lever with ratchet and cable operates both brakes for parking

Wheels

Front wheels: Two at front, Goodyear Traction Sure Grip, 13.6/12-24 cross-ply tyres, 6-ply rating, maximum permissible mass on each tyre 1340 kg (2954 lb) at 160 kPa (23 lb/in^2), track width 1499 mm (59 in) by 102 mm (4.0 in) steps to 1805 mm (71 in), changed by reversing wheels and offset lug rims

Rear wheels: Two at rear, Firestone F151 All Traction Field and Road, 18.4/15-34 cross ply tyres, 6-ply rating, maximum permissible mass on each tyre 2250 kg (4960 lb) at 110 kPa (16 lb/in^2), track width 1524 mm (60 in) by 102 mm (4.0 in) steps to 2136 mm (84 in), changed by reversing wheels and offset lug rims

Wheelbase: 2540 mm (100 in)

Seat — Grammer, upholstered pan, helical spring suspension with hydraulic damping, adjustable for driver's weight, range of adjustment 150 mm (5.9 in) horizontally, 60 mm (2.4 in) vertically

Safety cab (CSD 0215/1-a(C)) — Sekura, welded and bolted hollow section and sheet steel, anti-vibration mounts, door and mounting step on each side, roof hatch, heating, ventilating and demisting system

Lighting

Unrestricted beam angle of headlight in plan view 80°

	Height above ground of centre, mm	(in)	Size, mm	(in)	Distance from outside edge of tractor at 1524 mm (60 in) wheel track, to centre, mm	(in)
Headlights	970	(38.2)	155 95	(6.1) x (3.7)	831	(32.7)
Side lights	1695	(66.7)	70 20	(2.8) x (0.8)	209	(8.2)
Rear lights	1642	(64.6)	75 70	(3.0) x (2.8)	226	(8.9)
Reflectors	1642	(64.6)	65 40	(2.6) x (1.6)	163	(6.4)

Number of grease points

Whole tractor: 24

CONDITIONS DURING TEST

Masses

Tractor (without driver but with tanks full)

	Front, kg (lb)	Rear, kg (lb)	Total kg (lb)
Without ballast	1635 (3604)	2458 (5419)	4093 (9023)
With ballast	2058 (4537)	2635 (5809)	4693 (10346)

Ballast

	Number of weights	Total mass, kg (lb)	Water, kg (lb)
Front wheels	Nil	Nil	Nil
Rear wheels	6	244 (538)	Nil
Additional	8	356 (785)	Front frame and weights

Track setting during tests

Front - 1499 mm (59 in)

Rear - 1524 mm (60 in)

Overall dimensions

	Length, m (in)	Width, m (in)	Height, To top of exhaust pipe, m (in)	Height, To top of cab, m (in)
With ballast	4.54 (178.7)	2.09 (82.3)	2.65 (104.3)	2.69 (105.9)
Without ballast	4.20 (165.4)	2.01 (79.1)	2.65 (104.3)	2.69 (105.9)

Minimum ground clearance 409 mm (16.1 in) to underside of drawbar frame

FUEL AND LUBRICANTS USED IN TESTS

Fuel	Diesel oil to Class A2 British Standard 2869:1970, specific gravity 0.848 at 15°C (59°F), viscosity 2.43 cSt at 50°C (122°F), Cetane No. 56.0
Oil	
Engine:	Agricastrol M.P. S.A.E. 20W/30, viscosity 54 cSt at 50°C (122°F)
Transmission:	Shell Tractor Oil Universal S.A.E. 20W/30, viscosity 54 cSt at 50°C (122°F)
Final drives:	Shell Donax TT, S.A.E. 15W/30, viscosity 50 cSt at 50°C (122°F)
Front differential housing and hubs:	Shell Spinax 90EP, viscosity 115 cSt at 50°C (122°F)
Steering system:	Shell Tellus 37, viscosity 24.5 cSt at 50°C (122°F)

COMPULSORY TESTS

1. MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 28th January 1980, N.I.A.E., Silsoe, Bedford, U.K.

Type of dynamometer: Water brake, Heenan and Froude

Power,	Speed, rev/min		Fuel consumption			
kW (hp)	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						
68.9 (92.4)	2300	1123	22.76 (5.01)	19.30 (42.55)	0.280 (0.461)	3.03 (18.4)
The speed recommended by the manufacturer for drawbar work						
68.9 (92.4)	2300	1123	22.76 (5.01)	19.30 (42.55)	0.280 (0.461)	3.03 (18.4)
Part loads						
(1) 85% of the torque obtained at maximum power						
60.0 (80.5)	2360	1152	19.64 (4.32)	16.65 (36.71)	0.277 (0.456)	3.06 (18.6)
(2) Unloaded						
0	2437	1190	4.91 (1.08)	4.16 (9.17)	-	-
(3) 50% of the torque defined in (1)						
30.5 (40.9)	2390	1167	11.29 (2.48)	9.57 (21.10)	0.314 (0.516)	2.70 (16.5)
(4) Maximum power						
68.9 (92.4)	2300	1123	22.76 (5.01)	19.30 (42.55)	0.280 (0.461)	3.03 (18.4)
(5) 25% of the torque defined in (1)						
15.3 (20.5)	2408	1176	7.97 (1.75)	6.76 (14.90)	0.443 (0.728)	1.92 (11.7)
(6) 75% of the torque defined in (1)						
45.4 (60.9)	2378	1161	15.04 (3.31)	12.75 (28.11)	0.281 (0.462)	3.02 (18.4)

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						
56.7 (76.0)	2109	1030	17.47 (3.84)	14.82 (32.67)	0.261 (0.430)	3.24 (19.8)
(2) Unloaded						
0	2187	1068	3.97 (0.87)	3.36 (7.42)	-	-
(3) 50% of the torque defined in (1)						
28.7 (38.5)	2137	1043	10.07 (2.21)	8.54 (18.82)	0.297 (0.489)	2.85 (17.4)
(4) Maximum power						
64.7 (86.7)	2048	1000	20.30 (4.47)	17.21 (37.94)	0.266 (0.437)	3.19 (19.4)
(5) 25% of the torque defined in (1)						
14.4 (19.3)	2151	1050	7.07 (1.55)	5.99 (13.21)	0.417 (0.685)	2.04 (12.4)
(6) 75% of the torque defined in (1)						
42.7 (57.3)	2123	1037	13.44 (2.96)	11.40 (25.13)	0.267 (0.439)	3.18 (19.4)

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

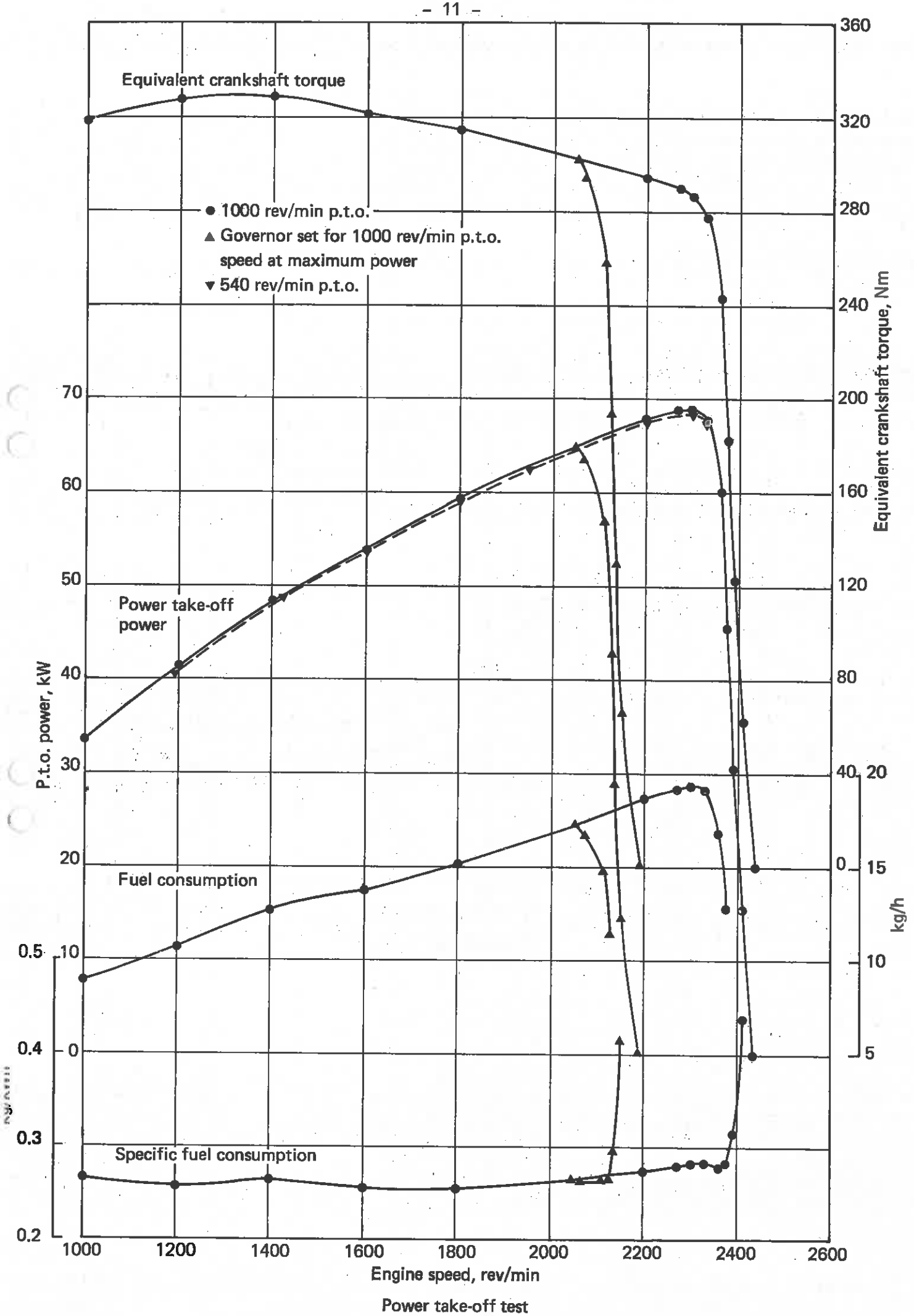
(a) 0.277 (0.456) (b) 0.314 (0.516) (c) 0.261 (0.430)

(d) 0.297 (0.489)

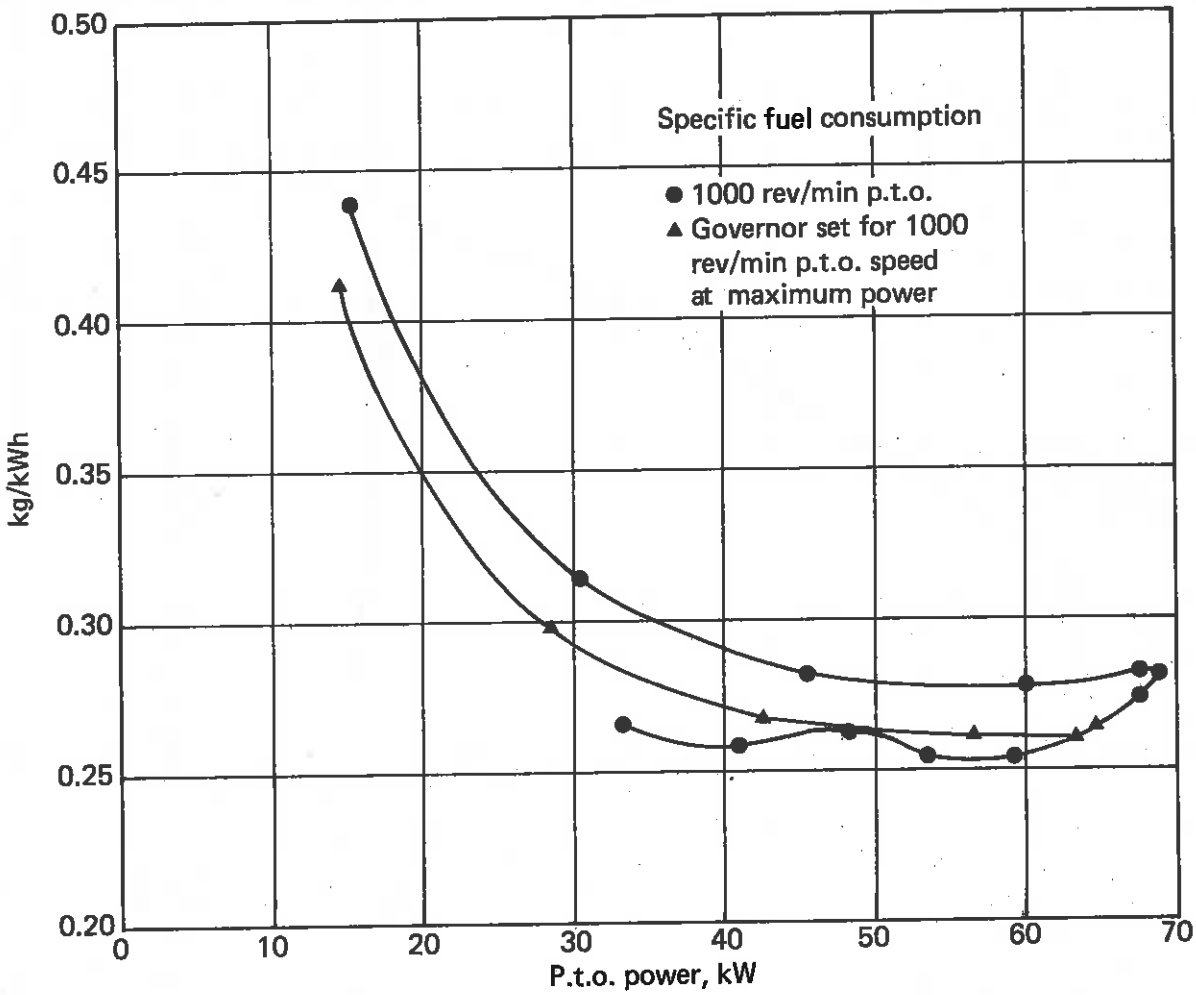
No load, maximum engine speed		2437 rev/min	
Equivalent crankshaft torque at maximum power		286.0 Nm	(210.9 lb ft)
Maximum equivalent crankshaft torque		328.5 Nm	(242.3 lb ft) at 1320 rev/min engine speed
Mean atmospheric conditions	temperature	17 °C	(63°F)
	pressure	1017 m bar	(30.03 in Hg)
	relative humidity	47%	
Maximum temperature	coolant	92 °C	(198°F)
	engine oil	128 °C	(262°F)
	fuel	26 °C	(79°F)
	air intake	27 °C	(81°F)

The following results were obtained with the 540 rev/min p.t.o.

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						
68.8 (92.2)	2300	598	22.74 (5.00)	19.29 (42.52)	0.281 (0.461)	3.02 (18.4)
Standard p.t.o. speed (540 rev/min)						
64.7 (86.8)	2077	540	20.68 (4.55)	17.53 (38.65)	0.271 (0.445)	3.13 (19.1)
The speed recommended by the manufacturer for drawbar work						
68.8 (92.2)	2300	598	22.74 (5.00)	19.29 (42.52)	0.281 (0.461)	3.02 (18.4)



Power take-off test



Power take-off test

2 DRAWBAR PERFORMANCE Date of tests: April 1980 Type of track: Concrete Height of drawbar above ground: Ballasted: 410 mm (16.1 in) Unballasted: 410 mm (16.1 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)	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)												
LS1	*19.2 (25.7)	44.6 (10030)	1.55 (0.96)	2379	15.0	0.516 (0.848)	1.64 (10.0)	86 (187)	30 (86)	102 (216)	22 (72)	47	1013 (29.91)
LS2	*31.5 (42.2)	44.6 (10030)	2.54 (1.58)	2365	15.0	0.399 (0.656)	2.12 (12.9)	86 (187)	33 (91)	110 (230)	21 (70)	45	1013 (29.91)
HS1	*38.0 (51.0)	44.6 (10030)	3.07 (1.91)	2351	15.0	0.361 (0.593)	2.35 (14.3)	87 (189)	36 (97)	114 (237)	21 (70)	45	1013 (29.91)
L1	*47.9 (64.2)	44.6 (10030)	3.87 (2.40)	2334	15.0	0.360 (0.592)	2.36 (14.4)	85 (185)	38 (100)	114 (237)	22 (72)	47	1013 (29.91)
LS3	52.2 (70.0)	43.3 (9730)	4.34 (2.70)	2307	13.8	0.361 (0.593)	2.35 (14.3)	86 (187)	36 (97)	121 (250)	20 (68)	51	1013 (29.91)
HS2	54.0 (72.4)	37.5 (8430)	5.18 (3.22)	2300	10.2	0.350 (0.575)	2.42 (14.8)	88 (190)	34 (93)	115 (239)	20 (68)	51	1013 (29.91)
L2	56.2 (75.4)	30.0 (6740)	6.74 (4.19)	2300	7.4	0.337 (0.554)	2.52 (15.4)	87 (189)	33 (91)	119 (246)	20 (68)	51	1013 (29.91)
H1	56.0 (75.1)	24.0 (5400)	8.40 (5.22)	2300	5.5	0.336 (0.552)	2.52 (15.4)	87 (189)	35 (95)	121 (250)	20 (68)	51	1013 (29.91)
(ii)	FIVE HOUR TEST AT 75% OF PULL AT MAXIMUM POWER												
H1	43.7 (58.6)	18.0 (4050)	8.74 (5.43)	2343	3.6	0.319 (0.524)	2.66 (16.2)	87 (189)	39 (102)	112 (234)	20 (68)	51	1018 (30.06)
(iii)	FIVE HOUR TEST AT PULL CORRESPONDING TO 15% WHEELSLIP IN TEST (i)												
L1	-	44.6 (10030)	4.03 (2.50)	2331	-	-	-	87 (189)	33 (91)	114 (237)	15 (59)	70	1019 (30.09)
(iv)	MAXIMUM POWER (unballasted)												
L1	*42.6 (57.1)	39.3 (8830)	3.90 (2.42)	2353	15.0	-	-	85 (185)	29 (84)	108 (226)	12 (54)	68	1028 (30.36)
LS3	*47.4 (63.6)	39.3 (8830)	4.34 (2.70)	2339	15.0	-	-	87 (189)	21 (70)	117 (243)	13 (55)	69	1028 (30.36)
HS2	53.1 (71.2)	38.0 (8540)	5.03 (3.13)	2300	13.7	-	-	87 (189)	30 (86)	120 (248)	12 (54)	68	1028 (30.36)
L2	56.9 (76.3)	30.6 (6880)	6.69 (4.16)	2302	9.0	-	-	87 (189)	27 (81)	116 (241)	12 (54)	68	1028 (30.36)
H1	56.5 (75.8)	24.5 (5510)	8.30 (5.16)	2304	6.7	-	-	87 (189)	21 (70)	97 (207)	11 (52)	66	1028 (30.36)

Total oil consumption during ten hours duration of tests (ii) and (iii) 42.0 g/h (0.093 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 - 1499 mm (59 in)

rear - 1524 mm (60 in)

	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
Radius of turning space, m (in)	4.43 (174)	4.40 (173)	6.08 (239)	5.98 (235)
Radius of turning circle, m (in)	4.25 (167)	4.22 (166)	5.90 (232)	5.80 (228)

4. LOCATION OF CENTRE OF GRAVITY

Height above ground, mm (in)	878 (34.6)
Distance forward from the vertical plane containing the axis of the rear wheels, mm (in)	1002 (39.4)
Distance from the median plane of the tractor, mm (in)	0

5. BRAKING

Date of tests: 28th April and 2nd May 1980

Type of track: Concrete

Type of decelerometer: Moto Meter, recording type

Mass of ballasted tractor: 4693 kg (10346 lb)

Front wheel drive disengaged

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)	4.3 (14.1)	4.1 (13.5)
Stopping distance, m (ft)	6.2 (20.3)	5.9 (19.4)
Force on brake pedal, N (lb)	254 (57)	289 (65)
Force exerted on the brake pedal to achieve a deceleration of 2.5 m/s^2 (8.2 ft/s^2), N (lb)	169 (38)	182 (41)

Brake fade characteristics (hot tests)

	Tractor without ballast	Tractor ballasted
Maximum deceleration hot/cold, %	100	100
Stopping distance cold/hot, %	107	100
Force on pedal cold/hot, %	100	100

Parking brake

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

Pull on handbrake: 338 N (76 lb)

6. MEASUREMENT OF AMBIENT NOISE EMITTED BY THE TRACTOR

Date of tests: 11th April 1980

Type of sound level meter: Bruel and Kjaer 2209

Type of track: Concrete

Results of tests:

Gear: H3

Travelling speed before acceleration: 19.9 km/h (12.4 mile/h)

Sound level: 87 dBA

7. NOISE MEASUREMENT AT THE DRIVER'S EAR LEVEL

Date of tests: 3rd March 1980

Type of sound level meter: Bruel and Kjaer 2209

Type of track: Concrete

Front wheel drive engaged

Gear	Travelling speed, km/h (mile/h)	dBA
L2	7.1 (4.4)	88

8. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests:	30th May - 9th June 1980	
Hydraulic fluid		
Make and type:	Shell Tractor Oil Universal	
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):	17.2 MPa	(2500 lb/in^2)
Pump characteristics		
i) Opening pressure of relief valve:	15.5 MPa	(2250 lb/in^2)
Sustained pressure of the open relief valve:	17.9 MPa	(2600 lb/in^2)
ii) Pump delivery rate at minimum pressure and rated engine speed:	39.5 l/min	(8.7 gal/min)
iii) Pump delivery rate at maximum hydraulic power:	39.7 l/min	(8.7 gal/min)
Delivery pressure:	15.5 MPa	(2250 lb/in^2)
Power:	10.3 kW	(13.8 hp)

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

Projected length in side view		
Lower links	978	(38.5)
Lift arms	241	(9.5)
Lift rods	580	(22.8)
Top link	670	(26.4)
Distance of lift rod connection point from pivot point of lower link	489	(19.3)
The following dimensions are given relative to the rear wheel centre line, situated 770 mm (30.3 in) above the ground level		
Lower link pivot point	On centre line,	178 (7.0) below
Top link pivot point	308 (12.1) behind,	298 (11.7) above
Lift arm pivot point	22 (0.9) forward,	257 (10.1) above
Maximum and minimum height of lower link hitch points	226 (8.9) above,	412 (16.2) below
Height of lower link hitch points when locked in transport position	Any height within lift range	

Power lift performance

Lifting height in relation to a horizontal line through the lower link pivoting point		mm (in)	-215 (8.5)	-180 (7.1)	-100 (3.9)	0	+100 (3.9)	+200 (7.9)	+300 (11.8)	+380 (15.0)	+420 (16.5)
Lifting force with the pressure at maximum hydraulic power (15.5 MPa [2250 lb/in^2]) calculated from measurements made at maximum pressure (17.9 MPa [2600 lb/in^2]), kN (lb)	At the hitch points		+29.3 (6590)	30.2 (6790)	31.9 (7170)	33.1 (7440)	33.6 (7550)	33.8 (7600)	34.6 (7780)	35.8 (8050)	
	On the frame			36.0 (8090)	35.5 (7980)	34.3 (7710)	32.6 (7330)	31.0 (6970)	29.6 (6650)	28.6 (6430)	+28.0 (6290)

+Maximum force exerted throughout whole range

Force at which front of tractor is calculated to lift with maximum allowable front ballast is in excess of measured values.

REPAIRS AND ADJUSTMENTS DURING TESTS: None

REMARKS: None

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

Officer in charge: D.W. Smith

Signed: Head of Tractor Department

for the Director

Date: 24/7/80