Australian tractor tests: no. 30

Department of Agriculture, Western Australia
IMPORTANT DISCLAIMER

This document has been obtained from DAFWA’s research library website (researchlibrary.agric.wa.gov.au) which hosts DAFWA’s archival research publications. Although reasonable care was taken to make the information in the document accurate at the time it was first published, DAFWA does not make any representations or warranties about its accuracy, reliability, currency, completeness or suitability for any particular purpose. It may be out of date, inaccurate or misleading or conflict with current laws, polices or practices. DAFWA has not reviewed or revised the information before making the document available from its research library website. Before using the information, you should carefully evaluate its accuracy, currency, completeness and relevance for your purposes. We recommend you also search for more recent information on DAFWA’s research library website, DAFWA’s main website (https://www.agric.wa.gov.au) and other appropriate websites and sources.

Information in, or referred to in, documents on DAFWA’s research library website is not tailored to the circumstances of individual farms, people or businesses, and does not constitute legal, business, scientific, agricultural or farm management advice. We recommend before making any significant decisions, you obtain advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in, or referred to in, this document, or any error, inaccuracy or omission in the information.
THIS Report is taken from the full Technical Report No. 30 of this test; test results are shown here in briefer form; fuller explanations are added. Values quoted may be rounded out to two instead of three significant figures; to this extent the values may differ slightly but not significantly from those shown in the Technical Report. Graphs of belt test performance, shown in the Technical Report, are not shown here. The Technical Report is not available in large numbers, but it may be seen at, and copies of this farmers' report may be had from the offices of the State Departments of Agriculture, the Bureau of Sugar Experiment Stations (Queensland), and the Commonwealth Department of Primary Industry.

1.—THE TESTS

(1) After twelve hours of running-in, two types of tests were carried out, in order to measure the performance of the engine, as measured by the power in the belt driven by the belt pulley, and the performance of the tractor as a whole, as measured by drawbar pull, tractor speed, wheel slip, and drawbar horse-power (d.b.h.p.), with the tractor running on a bitumen test track.

The main results of these tests are given in Sections 2, 3, and 4. Other measurements and observations were made of various features of the tractor; these are given in Section 5.

(2) Fuel Settings.—The engine of this tractor has only one fuel setting, sealed, at which all the tests were carried out.

The Australian Tractor Testing Committee is a joint body established by agreement between the Commonwealth, the States, and the University of Melbourne; under this agreement, the tests are carried out by the University of Melbourne. The address of the Tractor Testing Committee is: C/o Department of Primary Industry, 301 Flinders Lane, Melbourne.
(3) Governor Control.—The engine was under the control of the governor set to give full throttle, and so maximum power at rated engine speed.

(4) Fuel.—Distillate, Diesel Index 67, Specific Gravity 0.82; weight per Imperial gallon 8.17 lb.

(5) Specification.—Engine No. AD264 5265. For a brief specification of this tractor see Section 6 at the end of this report.

2. SUMMARY OF POWER OUTPUT

<table>
<thead>
<tr>
<th>Table A</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At the Belt</td>
<td>At the Drawbar</td>
<td></td>
</tr>
<tr>
<td><strong>Rated engine speed, r.p.m.</strong></td>
<td>1,450</td>
<td>1,450</td>
</tr>
<tr>
<td><strong>Corrected maximum power (a)</strong></td>
<td>48.8</td>
<td>44.6</td>
</tr>
<tr>
<td><strong>Rated power (b)</strong></td>
<td>41.1 (b1)</td>
<td>33.3 (b2)</td>
</tr>
</tbody>
</table>

(a) Corrected maximum h.p. is calculated by a suitable formula from observed maximum h.p. corrected to 60° F. and 29-92' barometric pressure. No correction is applied to diesel engines because there is no suitable formula; the values shown above are therefore the observed maximum powers.

(b) Engines are not expected to run indefinitely at full or maximum power output. But they can be expected to run continuously for some hours at rated output, which is less than maximum, defined as follows:

(b1) Rated b.h.p. is defined as 85 per cent. of corrected maximum b.h.p.;

(b2) Rated d.b.h.p. is defined as 75 per cent. of corrected maximum d.b.h.p.

3.—BELT TESTS

The belt tests show the power (belt horse-power, b.h.p.) that the tractor may be expected to deliver when driving a machine by the belt.

<table>
<thead>
<tr>
<th>Table B—Belt Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rated engine speed, 1,450 r.p.m.</td>
</tr>
<tr>
<td>2. Fast idling speed about 1,580 r.p.m</td>
</tr>
<tr>
<td>3. Observed maximum b.h.p. at rated speed (a)</td>
</tr>
<tr>
<td>4. Corrected maximum b.h.p. rated speed (a)</td>
</tr>
<tr>
<td>5. Calculated rated load (b1)</td>
</tr>
<tr>
<td>6. Test at approximately rated load (b1)</td>
</tr>
<tr>
<td>7. Average loading under governor (e)</td>
</tr>
<tr>
<td>8. Equivalent engine torque at full throttle</td>
</tr>
<tr>
<td>9. Repeat of (3) above after 55 hours</td>
</tr>
</tbody>
</table>

(61) Bated b.h.p. is defined as 85 per cent. of corrected maximum b.h.p.;

(62) Bated d.b.h.p. is defined as 75 per cent. of corrected maximum d.b.h.p.

4.—DRAWBAR TESTS

(1) The following Tables C, D, and E, show the drawbar performance of the tractor, on the bitumen test track, wearing rear tyres 14 x 30, carrying maximum weight (2,480 lb. front, 6,060 lb. rear; total 8,540 lb.), working in the gears named in the tables. Height of drawbar 15 inches.

Drawbar tests, using standard and minimum weights of tractor, were carried out, but are not reported here.

<table>
<thead>
<tr>
<th>Table C—Maximum Power, Rated (3rd) Gear</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rated engine speed, 1,450 r.p.m.</td>
</tr>
<tr>
<td>2. Observed maximum d.b.h.p. at rated engine speed</td>
</tr>
<tr>
<td>3. Corrected maximum d.b.h.p. at rated engine speed (a)</td>
</tr>
<tr>
<td>4. Calculated rated load (b2)</td>
</tr>
</tbody>
</table>

(f) D.B.H.P. is the product of pull (lb.) and speed (m.p.h.) divided by 375.

(g) Wheel slip can be measured by noting that, in travelling a given distance, the back wheels make more turns when working under load than when running with no load on the drawbar. The difference in these revolution counts divided by the former count gives the slip as a ratio, which can be written as a percentage (quoted in these tables to the nearest whole number).

<table>
<thead>
<tr>
<th>Table D—Pull at Maximum d.b.h.p</th>
</tr>
</thead>
<tbody>
<tr>
<td>All gears, rated engine speed. See note (b)</td>
</tr>
<tr>
<td>Gear</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

(a) These are not the maximum pulls available in the gears (i.e., not the maximum sustained pulls), but the pull's at maximum d.b. power, i.e., at full-throttle at rated engine speed.
Table E—Fuel Consumption, Various Loads, Rated (3rd) Gear

<table>
<thead>
<tr>
<th>Pull lb.</th>
<th>Speed m.p.h.</th>
<th>DBHP</th>
<th>Per cent. of</th>
<th>Slip %</th>
<th>Gall.</th>
<th>lb./</th>
<th>Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maximum d.b.h.p.</td>
<td></td>
<td></td>
<td>d.b.h.p.</td>
<td></td>
</tr>
<tr>
<td>1,600</td>
<td>4-78</td>
<td>20</td>
<td>46</td>
<td>3</td>
<td>1-5</td>
<td>0-61</td>
<td></td>
</tr>
<tr>
<td>2,300</td>
<td>4-66</td>
<td>27</td>
<td>61</td>
<td>4</td>
<td>1-9</td>
<td>0-56</td>
<td></td>
</tr>
<tr>
<td>2,750†</td>
<td>4-61</td>
<td>34†</td>
<td>76†</td>
<td>5</td>
<td>2-1</td>
<td>0-50</td>
<td></td>
</tr>
<tr>
<td>2,200</td>
<td>4-54</td>
<td>39</td>
<td>87</td>
<td>6</td>
<td>2-2</td>
<td>0-47</td>
<td></td>
</tr>
</tbody>
</table>

† Approximately the rated drawbar load.

(2) Interpretation of Drawbar Tests.—
(i) Drawbar tests are carried out on a hard prepared surface. Most field conditions present higher resistance to the tractor’s motion, so that, in the field, the maximum drawbar pulls available in any gear will usually be less than those shown in the tables.

(ii) Wheel slip may also be greater in the field; to that extent tractor speeds in miles per hour in the field will be less than those shown in the tables.

(iii) Because of (i) and (ii) above, the drawbar horsepower available in any gear in the field will usually be less than those shown in the tables.

5.—OTHER OBSERVATIONS
(1) Duration of Test.—55 hours, including running-in.
(2) Repairs and Adjustments.—After twelve hours running-in, a ball race in the belt pulley attachment failed. A new belt pulley attachment was fitted after the gearbox had been drained and flushed out to remove metal particles from the failed bearing.

(3) Engine—
Fuel settings—one, fuel pump sealed.
Heat controls—radiator, thermostat on water by-pass.
Radiator water used—half-gallon.
Lubricating oil—type used, S.A.E. 20.
Weight to engine, 19.7 lb.
Weight from engine after tests, 14.4 lb.

(4) Tractor Weights (lb.).

<table>
<thead>
<tr>
<th>Weight Condition</th>
<th>Front</th>
<th>Rear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum, unballasted</td>
<td>2,280</td>
<td>4,200</td>
<td>6,480</td>
</tr>
<tr>
<td>Added weights</td>
<td>80</td>
<td>280</td>
<td>360</td>
</tr>
<tr>
<td>As usually sold</td>
<td>2,360</td>
<td>4,480</td>
<td>6,840</td>
</tr>
<tr>
<td>Water Ballast</td>
<td>1,020</td>
<td>1,020</td>
<td></td>
</tr>
<tr>
<td>*Standard weight</td>
<td>2,360</td>
<td>5,500</td>
<td>7,860</td>
</tr>
<tr>
<td>Added weights</td>
<td>560</td>
<td>560</td>
<td></td>
</tr>
<tr>
<td>Water ballast</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>†Maximum weight, heaviest recommended</td>
<td>2,480</td>
<td>6,060</td>
<td>8,540</td>
</tr>
</tbody>
</table>

* This weight, including driver and fuel, was used in finding centre of gravity.
† Weight of tractor in drawbar tests quoted in this report.

(6) Steering.—With track widths, front 54 in., rear 61 in. Wheel base 75 in.
Turning circles: Without brakes, 31 ft. 4 in. L.H., 31 ft. 4 in. R.H.; with brakes, 22 ft. L.H., 22 ft. R.H.
Comment: Easy to steer under load, sensitive to steering wheel; hydraulic.

(7) Centre of Gravity, with tractor in standard weight—1 in. above, 22½ in. forward of rear axle.

(8) Driver’s Accommodation.—Access to seat, from back of tractor. Foot-room and support, adequate. Comfort, seat flexibly sprung, adjustable fore and aft. Accessibility to controls, clutch and brake pedals 24 in. apart, centre to centre, pedal treads approximately 6 in. below loaded seat. Parking brake latch—it is easy for this to be inadvertently released.

(9) Instruments.—All clearly visible, markings adequate. Indications were consistent throughout tests.

(10) Inspection of Engine and Transmission after Test.—After testing, the tractor was partly dismantled and inspected and found to be in a satisfactory condition.

(11) Instruction Books.—Instructions for starting, running, and maintenance were satisfactory.

G. H. VASEY, Officer in Charge Tractor Testing.
W. F. BAIIillE, Tractor Testing Officer.

6.—BRIEF SPECIFICATIONS
International Super AWD—7
(Based on Information Supplied by Manufacturers)

(1) Engine—No. AD264 5265. (L.H.C., Australia.)
4-stroke; 4 cylinders, vertical; crankshaft along tractor.
Bore, 4 in.; stroke, 5½ in.; compression ratio, 16.7 : 1.
Rated speeds: Belt and drawbar work, 1,450 r.p.m.
Fuel type: Distillate.

Air Cleaner: Screen and oil bath.
Governor: C.A.V. centrifugal.
Electrical system: 12-volt battery and generator.
Starting: Electric, Bosch glowplugs.
Cooling: Pressurised water, fan, pump and thermostat, radiator louvres.
Exhaust: Vertical, I.H.C. spark arrester.
Lubrication: Oil pump and by-pass filter.

(2) Chassis—
4-wheel; pneumatic tyres.
Wheel base 75 in.
Track width: Front 54 in.; rear 61 in.
Tyre sizes: Front 7.50 x 16; rear 14 x 30.
Steering: Worm and gear, hydraulic.
Weight: Maximum, 8,540 lb. (see "Other Observations," section 5).

(3) Belt Pulley—
Optional; right side, clockwise rotation.
Diameter 11 in.; face width 7½ in.
Speed (at rated engine speed), 898 r.p.m.
Belt speed (at rated engine speed), 2,590 ft./min., not in accordance with overseas standards (namely, 3,100 ± 100 f.p.m.). Using 13 in. diameter pulley should give belt speed approximately 3,060 f.p.m.

(4) Power Take-off—
Optional; guarded; location, centre rear; anti-clockwise.
Speed: 537 r.p.m., in accordance with overseas standards (namely, 536 ± 10 r.p.m.).

Dimensions: 6 spline, 1½ in. diameter.

(5) Drawbar—Swinging—
Heights, as tested, 15 in., adjustable 12 in. to 20 in.

(6) Transmission—Conventional gears.
Clutch: Single dry plate; 12 in. diameter; pedal control.
Gear ratios and roads speeds (assuming no wheel slip) on 14 x 30 tyres, at rated engine speed, as advertised:

<table>
<thead>
<tr>
<th>Gear</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio</td>
<td>130·6</td>
<td>64·8</td>
<td>49·9</td>
<td>41·2</td>
<td>14·8</td>
</tr>
<tr>
<td>Speed, m.p.h.</td>
<td>1·7</td>
<td>3·6</td>
<td>4·6</td>
<td>5·6</td>
<td>15·6</td>
</tr>
</tbody>
</table>

(7) Hydraulic—Optional, not fitted.

(8) Three-point Linkage—Optional, not fitted.

ERADICATING ZAMIA PALMS

Mr. J. Thompson, Mt. Helena writes: "The notes on zamia palm poisoning of cattle in the February issue prompted me to pass on this hint to new farmers who may not be familiar with methods of destroying the palms.

"During late spring and early summer, work over the paddock in strips or sections and treat the palms with kerosene. I use a 2 oz. round fine-cut tobacco tin as a measure. Pull out the centre leaf and pour about half a tinfoil of kerosene into the heart of the plant, then lay the detached leaf across the palm as an indication that it has been treated.

"Cattle will usually steer clear of the kerosene-treated palms and the plants soon die. Where the leaves are firmly attached and do not pull out easily, apply the kerosene to the centre of the palm and then repeat the treatment at a later date when the leaves loosen."

(The kerosene treatment is the standard control method advocated by the Department. The use of a “spear” or metal spike thrust into the heart of the palm to speed up penetration of the kerosene was recommended at one time, but in later years, good results were obtained simply by pouring the kerosene into the crown of the plant. Pulling out a leaf would probably be still more effective—Ed.).
NO MERCY

In the war against

SAN JOSE SCALE
RED SCALE
LUCERNE FLEA
RED LEGGED
EARTH MITE
CURCULIO BEETLE

your most effective weapon is

Gusathion control equals or surpasses that of all other fruit insecticides. Gusathion stays on the job... has prolonged residual action... is highly effective against all stages of insect development.

(R) Registered Trademark of Farbenfabriken Bayer A.G., W. Germany.

DISTRIBUTED BY HENRY H. YORK & COMPANY PTY. LIMITED
SYDNEY • MELBOURNE • BRISBANE • ADELAIDE • PERTH

PLENTIFUL SUPPLIES WILL BE AVAILABLE FOR NEXT SEASON

Please mention the "Journal of Agriculture of W.A." when writing to advertisers
Announcing THIMET

THIMET-TREATED CLOVER SEEDS GIVE "BUILT-IN" PROTECTION AGAINST RED-LEGGED EARTH MITE AND LUCERNE FLEA FOR UP TO SIX WEEKS

★ THIMET-treated seed produces clover plants that are immune to attack by insects . . . thus eliminating the necessity for seasonal sprays.

★ No more worries about bad timing or poor application of insecticides during the critical early weeks after germination.

★ Include a section of THIMET-treated seed in this year's sowing and compare the results.

For further information consult—

TERRA TRADING CO.

115 Great Eastern Highway, Victoria Park.

Trade mark Cyanamid-International New York.

LIFTING JACKS FOR EVERY PURPOSE

by

TREWHELLA Bros. Pty. Ltd.

TRENTHAM, VICTORIA

6 Tons Capacity Rack and Pinion Jack.

35 Tons Capacity Ball Bearing Screw Jack (Short Lift), also Other Types and Sizes.

30 Tons Capacity Ball Bearing Screw Jack, 15 inch Rise.

Available from

McLean Bros. & Rigg

McPhersons Ltd.

Harris Scarfe & Sandovers Ltd.

The Bairds Coy. Ltd.

Co-operative Wholesale Services Ltd.

Please mention the "Journal of Agriculture of W.A.," when writing to advertisers.