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To Directors, Conservators
and Deputy Surveyors.

Mechanical Development Report No. 39
Rear Wheel Girdles for Wheeled Tractors

The wheel girdles described in this report provide an effective means of increasing the traction of wheeled tractors when they are temporarily called upon to work under bad ground conditions. They are the best of several devices which have been tested. The weakness in the tensioning rods which the trial revealed has now been corrected by a change in design.

Attention is drawn to the lower operating costs of a wheeled tractor over a tracked tractor and, taking the Fordson as an example, the costs are:-

As a wheeled tractor ... 4/9½d. per hour

As a tracked tractor ... 12/0d. per hour

While, as pointed out in the report, a wheeled tractor with girdles does not by any means equal a fully tracked machine, the use of the girdles can be on certain occasions an economic means of improving drawbar performance.

This report has been examined by the Work Study Committee which has recommended the girdles for use in the special conditions they are designed to meet. Conservators are authorised to order supplies through the H.Q. Purchasing Section.

H.B.P.
Deputy Director General

25.8.55

P.A.

Headquarters Mechanical Development Committee

Report No. 39

Rear Wheel Girdles for Wheeled Tractors

Origin

The limiting factor in the use of wheeled tractors on operations calling for a heavy drawbar pull is usually wheel spin in bottom gear. The use of half track or full tracked tractors involves appreciably heavier operating costs so the wheel girdles produced by Roadless Traction Ltd. of Hounslow to improve wheel grip were considered worth trial.

Description

The girdle consists of a series of strakes linked together with the two ends joined round the rear wheel by adjustable tensioning rods. A photograph of a Fordson tractor fitted with these girdles is attached to this report. The price of a pair of girdles is £60.

Observations

1. Under ordinary field operating conditions the time taken to fit the two girdles is 1 hour by two men.
2. The time required to remove the girdles is 20 minutes by two men. No difficulty was found in either fitting or removing.
3. The amount of damage to the ground in the forest and on rides was slight. The girdles can be used on hard ground for short distances without ill effects to themselves or the tractor but they are not suitable for travelling on tarred roads.
4. No effect was noted on the steering when the girdles were in use.
5. The wheels have to be fitted in the wide track position in order to allow clearance between the girdles and the mudguards.
6. When using the tractor with a two wheeled trailer for extracting produce over deep mud from the forest it was found that a payload of 4 Ton without wheel girdles could be increased to 4 Ton 10 cwt. when the girdles were fitted under identical ground conditions.
7. The maximum sustained drawbar pulls recorded by the National Institute of Agricultural Engineering in their trial of these girdles (NIAE Test No. R53059) were:-

	With girdles	Without girdles
Wet grass on heavy clay	6000 lbs.	2500 lbs.
Stubble on medium heavy clay, wet	4500 lbs.	2300 lbs.
Cultivated medium heavy loam, wet	2000 lbs.	700 lbs.

The lowest gear was used in each case and the limiting factor was wheelspin.

8. The only mechanical defects noted on the girdles during the trial were two cases of fracture of the tensioning rods. A tyre valve torn out was suspected of being due to tyre creep set up by the considerable pull being transmitted through the tyre but there is reason to suspect that this failure may have been due to outside causes.



Rear wheel girdles

(by Roadless Traction Ltd., Hounslow)

This photograph shows a Fordson Major tractor fitted with the wheel girdles and hauling timber on a sledge mounted on the hydraulic linkage.