

① Brig. Battle 9/4
 ② M. Battle 10/4
Director

Pl. see my
 query below

Brig. Battle 9/4 $9\frac{4}{53}$

	* lbs.	¢.
T.D 9.	9,014	11,400
D4.	7,852 "	9,550
	7,160 "	8850
TD6		6950
D2.	5,690.	10,100
Fowler VF.	-	

These are figures published
 for the army & are very
 conservative.

¢ F.A.O. Directory (1953).
 which lists the makers
 own published figures

O
 K
 R

W.B.

NB. Fordson diesel D9 is given as
 6600 in F.A.O.

On the face of it,
 we should be able
 thus to go a long
 way towards
 dispensing with
 any fully tracked
 machines smaller
 than T.D 9 or
 equivalent

① Brig. Battle 9/4 $9\frac{4}{53}$
 ③ M. Battle 10/4

circulation to
D.C. members

1. Director 9.4.53
2. Mr. J. B. [unclear] 10/4/53
3. Mr. J. [unclear] [unclear]

re S 4, which models
of Cab and Internals
give the same (i.e. [unclear])
drawbar pull?

16/5

Headquarters Machinery Development Committee

Report No. 20 on

The Fordson Major with half tracks and 10 x 28 front wheels

Origin

The need to keep tractor operating costs to a minimum has directed attention to the new model Fordson Major which was announced late in 1951. This tractor having a six speed gearbox and a diesel engine at a basic price of £536.15. 0 appeared to be attractive for many forestry operations. Wheeled tractors offer lower operating costs than fully tracked tractors of similar power but their application to forest conditions is limited by their inability to deal with bad ground conditions. An investigation was therefore made to find out to what extent the cross country performance of the Fordson could be improved by modification.

Description

The first step was to fit the already known Roadless half track conversion. Experience with half tracks on the earlier Fordson Majors showed that with this equipment on soft or uneven ground, the performance was greatly improved, but the standard front wheels become the limiting factor. Some data on the fitting of large front wheels (without half tracks) was already available from a number of old type Fordson Majors specially fitted with 11 x 36 front wheels for the Anti Locust Research Centre for use on soft ground in Central Africa.

A number of experiments were carried out under British forestry conditions and it was soon apparent that large front wheels improved the performance of half tracked tractors to a marked degree (Photograph 1). The larger the diameter of the wheel the better was the obstacle crossing performance, but in order to retain the standard steering lock and keep the overall width within 6 ft. 6 ins. for loading onto standard lorries, a front wheel size of 10 x 28 (overall diameter 48 inches) was found to be the best compromise. To maintain the standard vehicle trim a cranked front axle was required. This was done by inserting a distance piece between the end sections and the centre section of the Standard Rowcrop axle as shown at Photograph 3.

New hubs with larger bearings were required to take the 10 x 28 wheels and a re-arrangement of the steering linkage was necessary to accommodate the new positions of the stub axles. This conversion was carried out for the Forestry Commission by Roadless Traction Ltd., of Hounslow, the makers of the half track equipment. The price of the Fordson Major in this form is:-

Basic cost of Fordson Major diesel	...	£ 536.	15.	0
Cost of Roadless half track conversion	...	285.	0.	0
Modification of front axle and steering (including 10 x 28 wheels and tyres)	...	86.	7.	0
Wheel Weights	...	30.	-	-
		<hr/>		
Total		938.	2.	0
		<hr/>		

The cost quoted for modification of the front axle and steering refers to costs on prototype machines. On a production basis it is reasonable to suppose that this cost could be reduced.

Observations

1. Trials of this forestry model have shown that the scope of the Fordson can be greatly increased by the combination of Roadless half tracks and large diameter front wheels. Rough ground including minor drainage ditches can be negotiated and timber can be hauled on suitable trailers over ground formerly inaccessible to Fordsons in wheeled or even half tracked form. Ploughing trials have shown that the easier ploughing for forest planting can be done by this machine but it is at present too early to say how far it can go in replacing the full track tractor for ploughing the more difficult areas
2. An important factor in calculating tractor operating costs is the amount of time that these expensive machines are idle owing to breakdowns and waiting for spare parts. In this connection the service and spare parts facilities available for the Fordson throughout the country are a great asset.
3. It was anticipated that the large wheels with large section tyres would make the steering heavy. In practice this has been found not to be the case.

4. It is interesting to note that tests carried out at the National Institute of Agricultural Engineering show that the new Fordson gives the following maximum drawbar figures:-

In wheeled form - 4,700 lbs

In half track form - 8,000 lbs

These figures refer to the half track with standard front wheels and there is no reason to suggest that the 10 x 28 wheels would give any different result under good ground conditions.

5. In order to retain stability with a heavy mounted plough in the raised position, it has been found necessary to fit wheel weights of 250 lbs to each front wheel.

Photographs

The following photographs are attached to this report:-

1. The first experiment based on one of the earlier model Fordson Majors here seen crossing a drain in a forest rack. Front Wheels are 11 x 36.
2. Front view of the present Standard Fordson Major with Roadless half track.
3. The special "Forestry Fordson" described in this Report
4. The "Forestry Fordson" with experimental mounted plough.

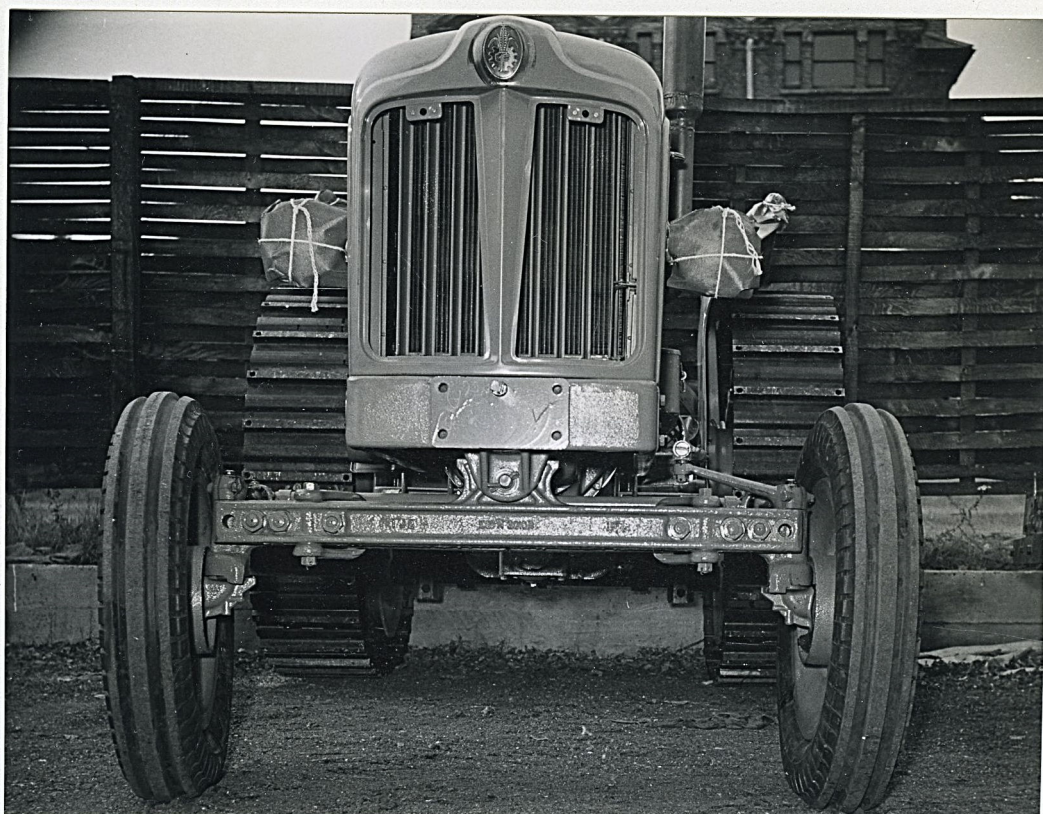
Conclusions

The combination of Roadless half track equipment and 10 x 28 front wheels increases the scope of the Fordson Major for forestry operations. It has been shown that both for extraction and ploughing this machine is able to do a proportion of the work that previously called for the comparatively expensive fully tracked tractors.

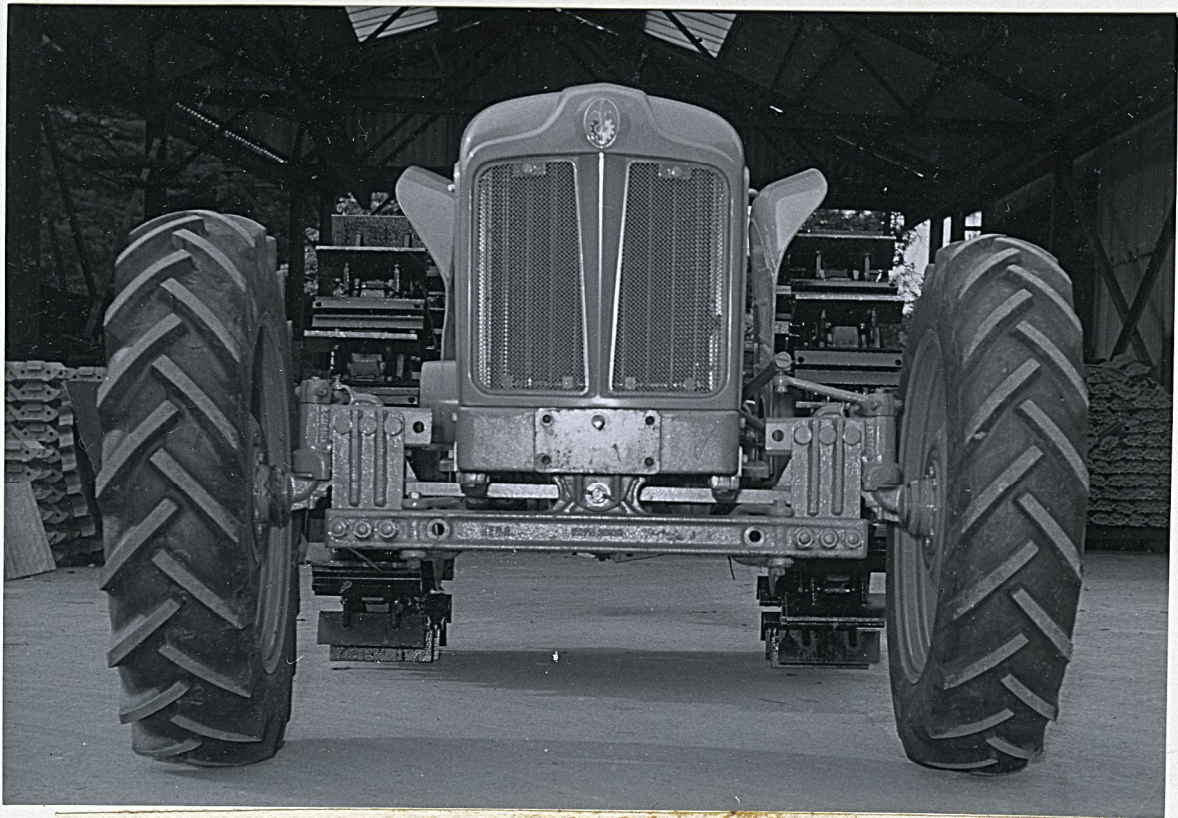
R. G. SHAW
Machinery Research Officer.
MARCH, 1953.



1. The first experiment based on one of the earlier model Fordson Majors here seen crossing a drain in a forest track. Front wheels are 11 X 36.



2. Front view of the present Standard Fordson Major with Roadless half track. Shown for comparison with photograph No. 3.



5. The special "Forestry Fordson" described in this report.



4. The "Forestry Fordson" with experimental mounted plough.