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Headquarters Mechanical Development Committee

Report No. 17

Fire Pumps - The Hathaway Mark ii

Origin

Hathaway Mark i pumps have been in use in state forests in England and Wales since 1949. Early in 1952 the makers (L. Hathaway Ltd. - Oswestry - Shropshire) encountered trouble in the supply of ball bearings for the separate pump unit. An alteration in the design was, therefore, introduced by which the pump unit was mounted direct onto the engine crankcase instead of being a separate unit, thus eliminating these bearings.

During this redesign the opportunity was taken to substitute a larger engine running at a higher speed in order to increase the maximum performance of the pump. The Mark i unit has already been covered by Report No. 14.

Description

A photograph (attached to this report) of the Mark i and Mark ii units together shows how much the overall length has been reduced in the case of the latter. The Villiers Mark 12 engine now replaces the Mark 10.

The specifications of the two assemblies are as follows:-

	Mark i	Mark ii
Engine capacity	98 C.C. 4 stroke	120 C.C. 4 stroke
Overall length	2 ft. - 6 in.	2 ft. - 0 in.
" Height	1 ft. - 6 in.	1 ft. - 6 in.
" Width	1 ft. - 3 in.	1 ft. - 3 in.
Weight (fuel & oil but no hose)	77½ lbs.	67 lbs.
Price	£60 - 4 - 0	£50 - 15 - 0

The pump unit in each case is identical and is of the centrifugal type running at 2,000 R.P.M. in the Mark i and 2,800 R.P.M. in the Mark ii.

Observations

1. Performance Tests carried out on behalf of the Forestry Commission by the Fire Research Station D.S.I.R. gave the following figures.

	Mark i	Mark ii
Maximum Pump outlet Pressure	54 lbs. sq. in.	67 lbs. sq. in.
Equivalent Head	124 ft.	155 ft.
Delivery at 90 ft. head	9 G.P.M.	23 G.P.M.

A graph showing delivery against head of both pumps is given as an appendix to this report.

at delivery pressures ranging between 0 and 64 lbs. sq. in. There were 6 periods each of 2 hours continuous running.

For the last spell of 2 hours (at 0 lbs. sq. in.) dirt consisting of sand leaves and stones was deliberately fed into the supply tank. Under these conditions there was no trouble with the pump but the standard filter on the suction hose frequently became blocked and had to be cleared by hand. It was effectively protecting the pump.

Although these 2 hour periods are described as continuous running there were, in fact, two very brief stoppages (apart from the filter mentioned above) one due to a petrol pipe union working loose and one due to a blocked petrol feed pipe neither of which are attributable to the design of the pump.

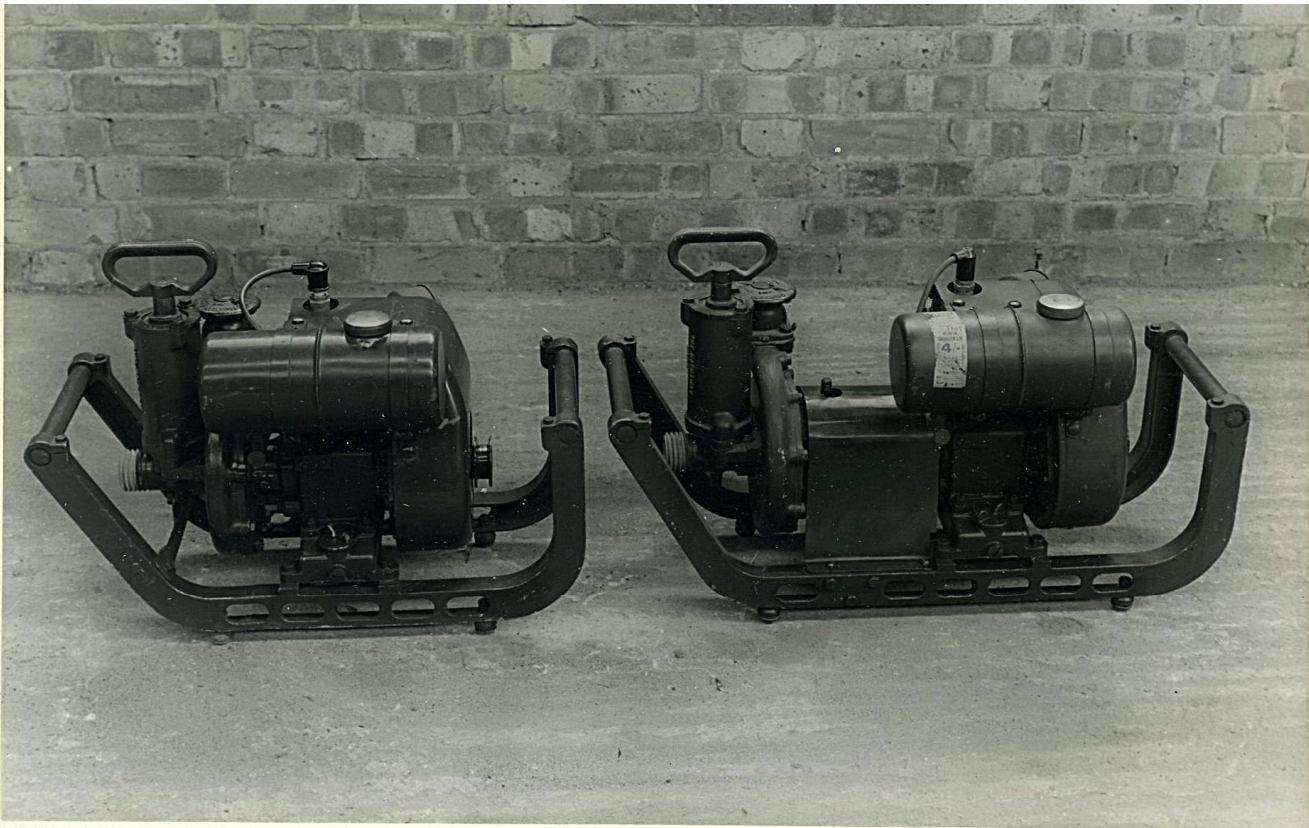
Conclusions

The Mark ii Hathaway pump is an improvement on the Mark i in that it is cheaper, lighter and gives a higher performance with no loss in the standard of reliability.

R. G. SHAW

Machinery Research Officer.

November, 1952



LEFT

The Hathaway Mark ii Pump

RIGHT

The Hathaway Mark i Pump

