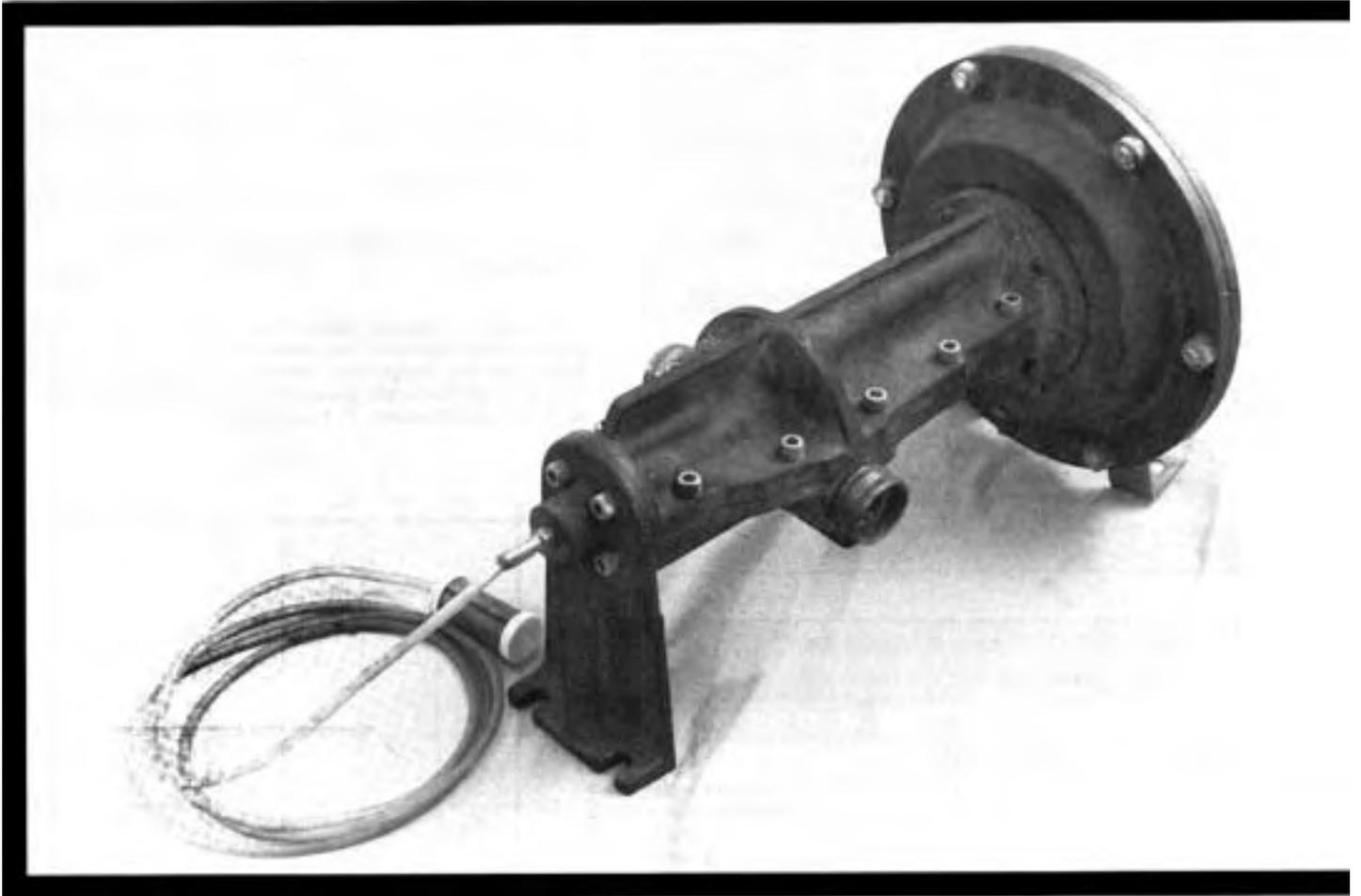


EVALUATION REPORT

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HALE ALL PURPOSE LIVESTOCK WATER MEDICATOR

A Co-operative Program Between



HALE ALL PURPOSE LIVESTOCK WATER MEDICATOR

MANUFACTURER:

Hale Fire Pump Company
26 Evelyn Avenue
Vineland, New Jersey 08360 U.S.A.

DISTRIBUTOR:

No Canadian distributor.

RETAIL PRICE:

\$287.00 (March 1984, f.o.b. Portage la Prairie, Manitoba)

SUMMARY AND CONCLUSIONS

Performance: Performance of the Hale All Purpose Medicator was fair. It was designed to deliver 1.00 oz/gal (U.S.) (7.8 mL/L)¹. Observed medication ratios varied from 0.46 to 0.84 oz/gal (U.S.) (3.6 to 6.6 mL/L) at constant waterflow rates between 0.25 and 1.30 gal (U.S.)/min (1.0 and 5.0 L/min). At fluctuating flow rates between 0.40 and 1.04 gal (U.S.)/min (1.5 and 4.0 L/min), observed medication ratios varied from 0.69 to 0.79 oz/gal (U.S.) (5.4 to 6.2 mL/L). The medication ratio was constant to 0.79 oz/gal (U.S.) (6.2 mL/L) over a wide range of supply line pressures.

Installation and Operation: Ease of installation and operation was considered good.

Safety and Durability: No safety problems were evident. No durability problems occurred during the test.

Operator Manual: An operator manual was not supplied.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Providing a means of monitoring the flow of medication.
2. Supplying a suitable operator manual, containing information on installation, operation and maintenance.

Senior Engineer -- G.M. Omichinski

Project Engineer -- C.W. Chapman

THE MANUFACTURER STATES THAT:

The manufacturer did not reply to the recommendations.

GENERAL DESCRIPTION

The Hale All Purpose Medicator is an automatic livestock water medicator designed for installation in a water supply line to provide 1.0 oz/gal (U.S.) (7.8 mL/L) of medication to livestock drinking water. It uses a water driven positive displacement diaphragm pump to proportion the medication, and a separate medication container. Detailed specifications are given in APPENDIX I.

SCOPE OF TEST²

The performance of the Hale All Purpose Medicator was determined at various pressures and over a wide range of constant and fluctuating flows³, while using a standard medication solution. In addition, ease of installation and operation, power requirements, and suitability of the operator manual were evaluated.

RESULTS AND DISCUSSION

QUALITY OF PERFORMANCE

Accuracy: Observed medication ratios at constant and fluctuating flow rates are shown in FIGURE 1. Observed medication ratios were lower than the design ratio of 1.0 oz/gal (U.S.) (7.8 mL/L) at constant and fluctuating flow rates.

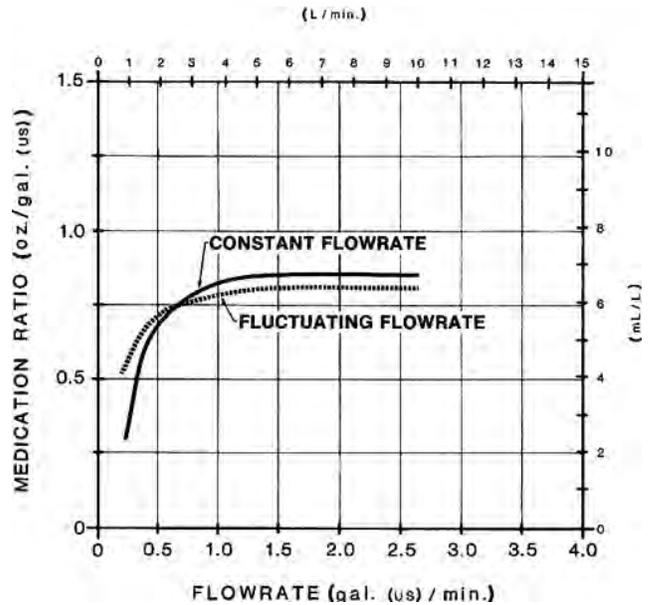


FIGURE 1. Medication ratios vs. flow rates.

Observed medication ratios at various supply line pressures are shown in FIGURE 2. The medication ratios were constant but lower than the design ratio, over a wide range of pressures. A maximum pressure rating was not published. The Hale operated at a minimum pressure of 3 psi (20 kPa).

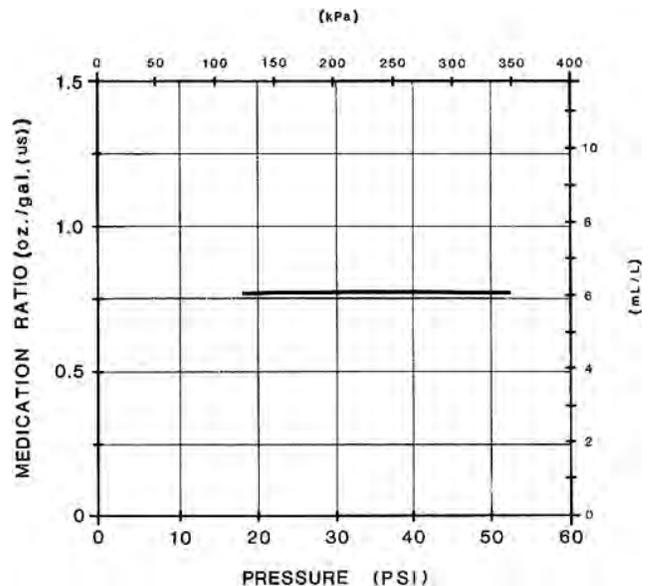


FIGURE 2. Medication ratios vs. pressure.

Maximum Flow: The maximum obtainable water flow at 30 psi (205 kPa) through the Hale, when connected to a 33 ft (10 m) length of 0.5 in (12 mm) diameter hose, was 10.4 gal (U.S.)/min (40.0 L/min). At this flow rate, the observed medication ratio was 0.83 oz/gal (U.S.) (6.5 mL/L).

EASE OF INSTALLATION

The Hale was equipped with two standard female hose fittings for installation to the water supply line and 4 ft (1.3 m) length of plastic tubing, complete with strainer, for supplying the medication. A medication container was not supplied.

EASE OF OPERATION

Priming of the Hale was easy. Direct monitoring of the medication flow was not possible. It is recommended that the manufacturer consider providing a means of monitoring the flow of the medication. The medication ratio was not adjustable, however, the ratio could be varied by diluting the medication.

¹A conversion table is provided in APPENDIX IV.

²Prairie Agricultural Machinery Institute Detailed Test Procedure for Livestock Water Medicators.

³APPENDIX II

Maintenance: No maintenance information was supplied. A drain plug in the medicator was used to drain the unit when not in service.

POWER REQUIREMENTS

The Hale was water powered and no other power source was required.

OPERATOR SAFETY

No safety problems were evident.

OPERATOR MANUAL

A suitable operator manual was not supplied. It is recommended that the manufacturer supply an operator manual containing information on installation, operation and maintenance.

DURABILITY RESULTS

The intent of the test was evaluation of functional performance. An extended durability test was not conducted. No mechanical problems occurred during testing.

APPENDIX I SPECIFICATIONS:		
MAKE:	Hale	
MODEL:	All Purpose	
SERIAL NO.:	None	
OVERALL DIMENSIONS:		
-- height	13.2 in (330 mm)	
-- width	7.8 in (195 mm)	
-- length	8.4 in (210 mm)	
-- total weight	19.1 lbs (8.68 kg)	
WATER LINE CONNECTION:	INLET	OUTLET
-- size	1.0 in (25 mm)	1.0 in (25 mm)
-- type	female hose	female hose
MEDICATION HOSE:		
-- length	12.80 in (320 mm)	
-- diameter	0.25 in (6 mm)	

APPENDIX II

Fluctuating flows occur when a nipple or water bowl system is used. In the evaluation of livestock medicators fluctuating flows were obtained by continuously cycling three water bowl valves on and off. Reported values for fluctuating flows are the average flows, or the total volume of water delivered divided by the duration (time) of the test.

**APPENDIX III
MACHINE RATINGS**

The following rating scale is used in Machinery Institute Evaluation Reports:

Excellent	Very Good
Good	Fair
Poor	Unsatisfactory



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