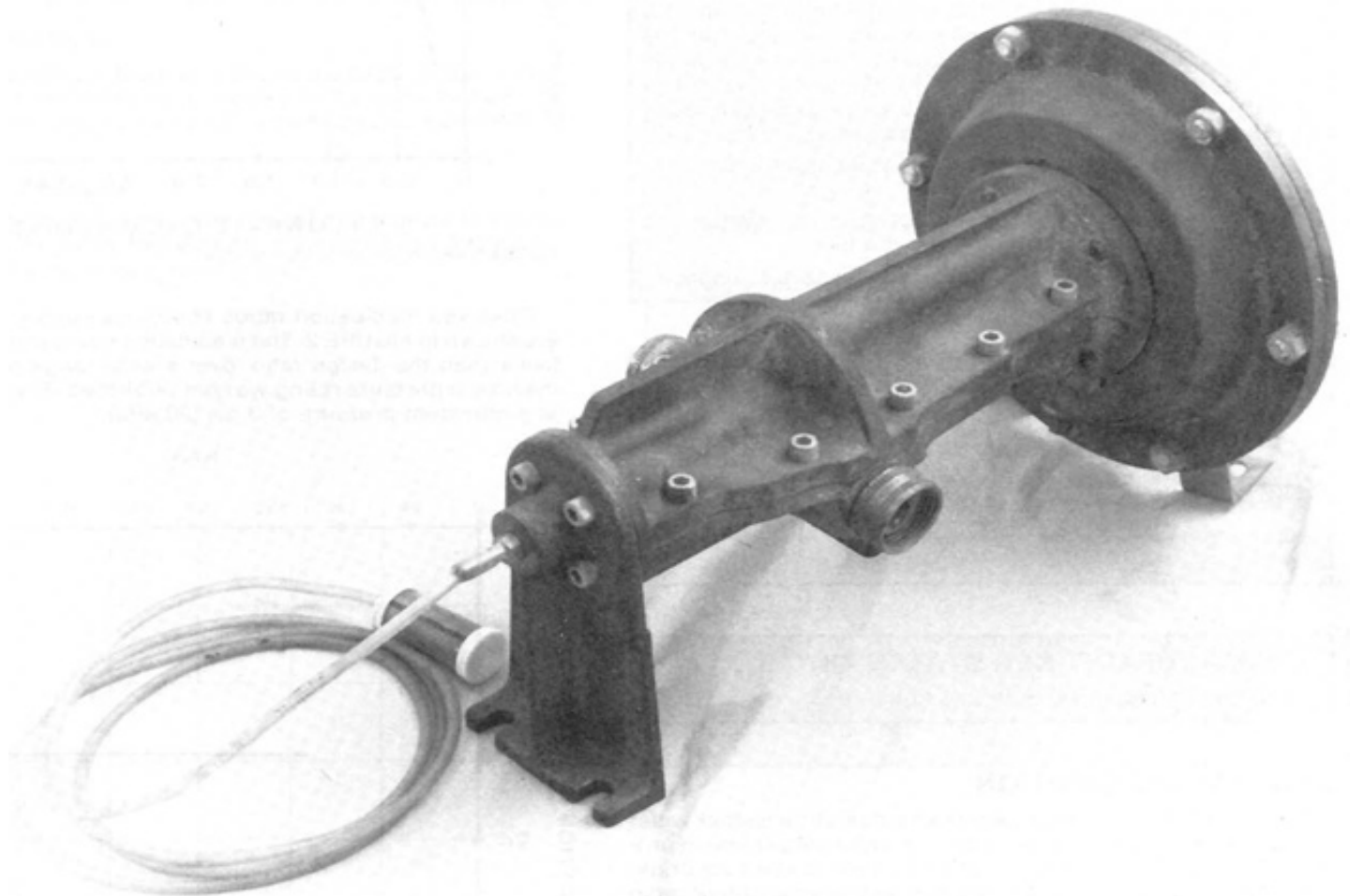


# EVALUATION REPORT 354



## 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).<sup>1</sup> Observed medication ratios varied from 0.46 to 0.84 oz/gal (U.S.) (3.6 to 6.6 mL/L) at constant water flow 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 TEST<sup>2</sup>

The performance of the Hale All Purpose Medicator was determined at various pressures and over a wide range of constant and fluctuating flows<sup>3</sup>, 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.

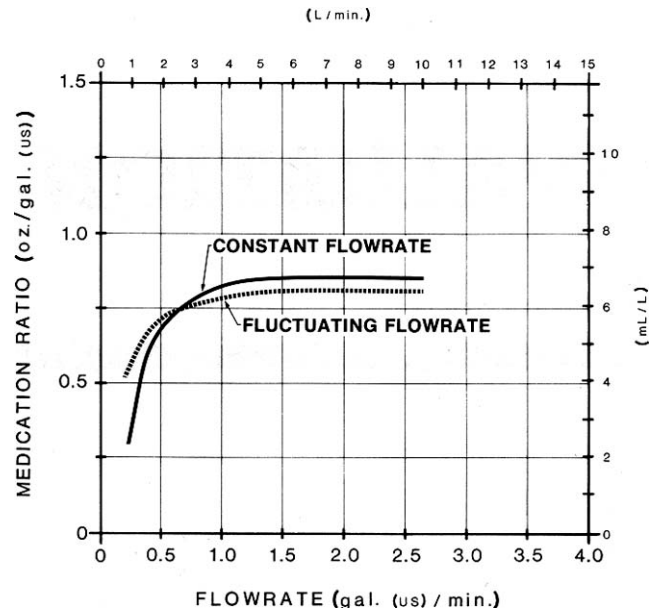


FIGURE 1. Medication ratios vs. flow rates

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).

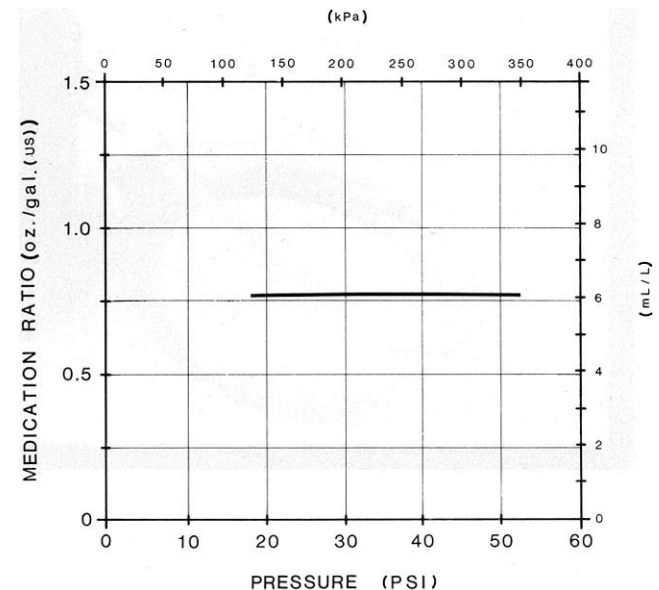


FIGURE 2. Medication ratios vs. pressure

**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.

<sup>1</sup> A conversion table is provided in APPENDIX IV.

<sup>2</sup> Prairie Agricultural Machinery Institute Detailed Test Procedure for Livestock Water Mediators.

<sup>3</sup> APPENDIX II

## 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.

**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:

	<u>INLET</u>	<u>OUTLET</u>
-- 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	Fair
Very Good	Poor
Good	Unsatisfactory



**ALBERTA  
FARM  
MACHINERY  
RESEARCH  
CENTRE**

3000 College Drive South  
Lethbridge, Alberta, Canada T1K 1L6  
Telephone: (403) 329-1212  
FAX: (403) 329-5562  
<http://www.agric.gov.ab.ca/navigation/engineering/afmrc/index.html>

### Prairie Agricultural Machinery Institute

Head Office: P.O. Box 1900, Humboldt, Saskatchewan, Canada S0K 2A0  
Telephone: (306) 682-2555

Test Stations:  
P.O. Box 1060  
Portage la Prairie, Manitoba, Canada R1N 3C5  
Telephone: (204) 239-5445  
Fax: (204) 239-7124

P.O. Box 1150  
Humboldt, Saskatchewan, Canada S0K 2A0  
Telephone: (306) 682-5033  
Fax: (306) 682-5080