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# EVALUATION REPORT 355


## H.E. ANDERSON AV4-AMLIVESTOCK WATER MEDICATOR

A Co-operative Program Between
ALBERTA FARM MACHINERY RESEARCH CENTRE
PAMI
PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

## H.E. ANDERSON AV4-AM

**MANUFACTURER**

H.E. Anderson Co.,
P.O. Box 1006
Muskogee, Oklahoma
74401 U.S.A.

**RETAIL PRICE:**

$965.00 (March 1984, f.o.b. Muskogee Oklahoma)

## SUMMARY AND CONCLUSIONS:


**Performance:** The performance of the Anderson was fair. It was set to deliver 1.00 oz/gal (U.S.) (7.8 mL/L)[1]. Observed medication ratios varied from 0 .00 to 0.74 oz/gal (U.S.) (0.0 to 5.8 mL/L) at constant flow rates between 0.25 and 1.30 gal (U.S.)/min (1.0 to 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), medication ratios varied from 0.58 to 0.83 oz/gal (U.S.) (4.5 to 6.5 mL/L).

Variations of supply line pressures resulted in medication ratios between 0.69 to 0.78 oz/gal (U.S.) (5.4 to 6.1 mL/L).

**Safety and Durability:** No safety or durability problems occurred during the test.

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

**Operator Manual:** The operator manual was clearly written and contained comprehensive installation and maintenance instructions.


## RECOMMENDATIONS

No recommendations were required.

*Senior Engineer -- G.M. Omichinksi*

*Project Engineer -- C. W. Chapman*

## THE MANUFACTURER STATES THAT

The manufacturer did not comment.

## GENERAL DESCRIPTION

The Anderson is an automatic livestock water medicator designed for installation in a water supply line to provide a variable ratio of medication to livestock drinking water. It uses a water driven diaphragm pump to proportion the medication and has a 13 (U.S.) gal (50 L) mixing tank for the medicated water, and a separate container for the medication. Medication ratio is varied by a dial on the medicator. Detailed specifications are given in APPENDIX I.

## SCOPE OF TEST[2]

The performance of the Anderson was determined at various pressures and over a wide range of constant and fluctuating flows[3], with the medicator set to deliver 1.0 oz/gal (U.S.) (7.8 mL/L), while using a standard medication solution. In addition, ease of installation and operation, power requirements, safety 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 selected ratio for all constant and fluctuating flow rates. Similar variations occurred at other medication ratio settings.

Observed medication ratios for various pressures are shown in FIGURE 2 with the medicator set to deliver 1.0 oz/gal (U.S.) (7.8 mL/L). Observed medication ratios for the Anderson were lower than the selected ratio. The manufacturer's maximum pressure rating was 125 psi (850 kPa). The Anderson operated at a minimum pressure of 3 psi (20 kPa).

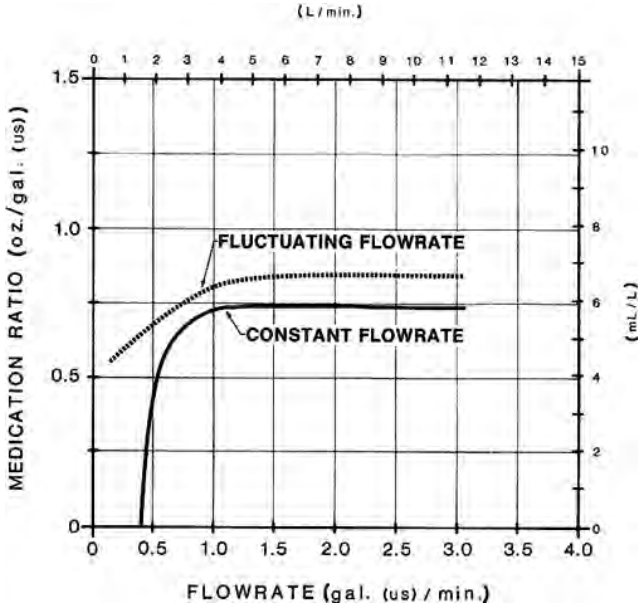


**FIGURE 1.** Medication ratios vs. flow rates.

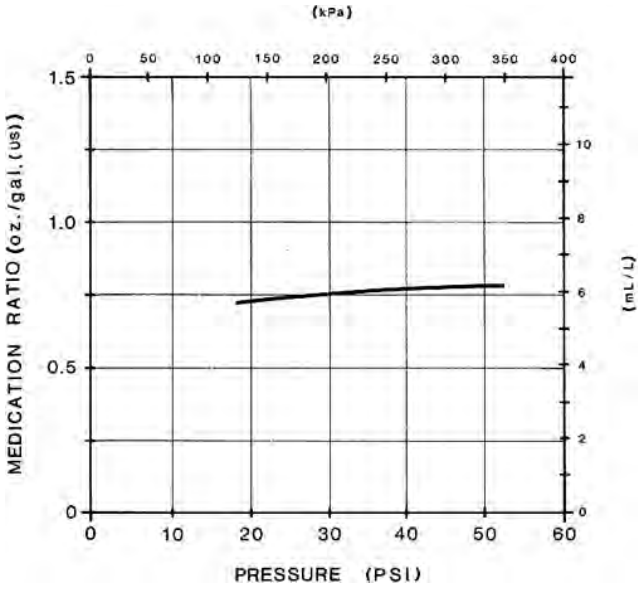


**FIGURE 2.** Medication ratios vs. pressure.

**Maximum Flow:** The maximum obtainable water flow at 30 psi (205 kPa) through the Anderson was 6.1 gal (U.S.)/min (23.3 L/min), when connected to a 33 ft (10 m) length of 0.5 in (12 mm) diameter hose. At this flow rate, the observed medication ratio was 0.83 oz/gal (U.S.) (6.5 mL/L).

### EASE OF INSTALLATION

The Anderson was equipped with a 0.75 in (19 mm) NPT male inlet and 0.75 in (19 mm) NPT female outlet for installation to the water supply line and 5 ft (1.5 m) length of plastic tubing, complete with strainer, for supplying the medication. A medication container was not supplied. The manufacturer recommended that if the water supply contained suspended solids that a filter be installed in the water supply line. The medicator should be protected from freezing.

### EASE OF OPERATION

The Anderson was difficult to prime. Medication flow was easy to monitor. The medication ratio could be adjusted from 0.25 to 1.3 oz/gal (U.S.) (2.0 to 10.2 mL/L) by means of a dial on the medicator or by diluting the medication.

**Maintenance:** The manufacturer recommended the medicator be inspected and cleaned every six months.

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[1] *A conversion table is provided in APPENDIX IV.*

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

[3] *APPENDIX II.*

**POWER REQUIREMENTS**

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

**OPERATOR SAFETY**

The Anderson was safe to operate if the manufacturer's recommendations were followed. No safety problems were evident.

**OPERATOR MANUAL**

The operator manual was well written and illustrated. It contained useful information on installation, operation and maintenance. No medication mixing instructions were included in the manual. A complete parts list was included.

**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:** | H.E. Anderson | |
| **MODEL:** | HV4-AM | |
| **SERIAL NO.:** | CL062B | |
| **OVERALL DIMENSIONS:** | | |
| -- height | 30.5 in | |
| -- width | 16.2 in | |
| -- length | 28.4 in | |
| -- total weight | 50.1 lbs | |
| **OVERALL DIMENSIONS:** | | |
| -- height | 30.5 in (760 mm) | |
| -- width | 16.2 in (405 mm) | |
| -- length | 28.4 in (710 mm) | |
| -- total weight | 50.1 lbs (22.78 kg) | |
| **WATER LINE CONNECTION:** | **Inlet** | **Outlet** |
| -- size | 0.75 in (19 mm) | 0.75 in (19 mm) |
| -- type | male N.P.T, | male N.P.T. |
| **MEDICATION HOSE:** | | |
| -- length | 5 ft (1.54 m) | |
| -- diameter | 0.5 in (12 mm) | |
| -- mixing tank | 13.0 gal (U.S.) (50.0 L) | |

**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 |

**APPENDIX IV**
**CONVERSION TABLE**

| | |
|---|---|
| Inches (in) x 25.400 | = Millimetres (mm) |
| Pounds Force/Square Inch (psi) x 6.890 | = Kilopascal (kPa) |
| Gallons (U.S.) x 3.785 | = Litres (L) |
| Gallons (U.S)/minute x 3.785 | = Litres/minute (L/min) |
| Ounces/gallons (U.S.) x 7.810 | = Millilitre/litre (mL/L) |

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