**Troubleshooting Guide:**

| Problem | Cause | Solution |
|---|---|---|
| 1. No discharge | a. No water<br>b. Excessive water pressure<br>c. Eductor clogged | a. Open water supply<br>b. Install regulator if pressure exceeds 85 PSI<br>c. Clean* or replace |
| 2. No concentrate draw | a. Clogged check valve<br>b. Metering tip clogged<br>c. Eductor clogged<br>d. Clogged water inlet<br>e. Clogged foot strainer<br>f. Low water pressure and/or volume<br>g. Concentrate container empty<br>h. Check valve not screwed into eductor firmly | a. Clean or replace<br>b. Rinse in hot water or replace: DO NOT REAM CLEAN!<br>c. Clean or replace<br>d. Clean screen<br>e. Clean or replace<br>f. Minimum 25 PSI and 4 GPM flow required to operate unit<br>g. Replace with full container<br>h. Tighten, but DO NOT OVER TIGHTEN! |
| 3. Excess concentrate draw | a. Metering tip not in place (Or wrong metering tip) | a. Press correct tip firmly into barb |
| 4. Water flow won't shut off | a. Ball valve defective | a. Replace |
| 5. Leaks at plastic tube | a. Compression nut loose | a. Tighten nut 1/2 turn |
| 6. Low or no water flow | a. Inlet screen clogged<br>b. Supply source inadequate<br>c. Scaled eductor or fittings | a. Clean or replace<br>b. 4 GPM flow necessary to unit. Move unit or replumb incoming line.<br>c. Clean* or replace |
| 7. Backflow into concentrate | a. Eductor check valve inoperable | a. Clean or replace check valve |

* In hard water areas, scale (mineral deposits) may form at the discharge of the eductor. This scale may be removed by soaking the eductor in a descaling (deliming) solution or by running the descalant through the system. When removing an eductor for soaking, firmly grasp the eductor and unthread the adapters located above and below the eductor. Replace in the same manner.

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# HydroChem 919

## Multifunction Proportioning and Dispensing System

Wall mounted, high volume washing, foaming and/or sanitizing proportioner with two product eductors.

### THANK YOU FOR YOUR INTEREST IN OUR PRODUCTS

Hydro Systems manufactures quality proportioning and dispensing equipment. Please use this equipment carefully and observe all warnings and cautions.

********** **NOTE** **********

| | |
|---|---|
| **WEAR** | protective clothing and eyewear when dispensing chemicals or other materials. |
| **ALWAYS** | observe safety and handling instructions of the chemical manufacturers. |
| **ALWAYS** | direct discharge away from you or other persons or into approved containers. |
| **ALWAYS** | dispense cleaners and chemicals in accordance with manufacturer's instructions. Exercise **CAUTION** when maintaining your equipment. |
| **CLEAN** | equipment after each use in accordance with instruction sheet. |
| **WEAR** | protective clothing and eyewear when working in the vicinity of all chemicals, filling or emptying equipment or changing metering tips. |
| **ALWAYS** | re-assemble equipment according to instruction procedures. Be sure all components are firmly screwed or latched into position. |
| **ATTACH** | only to tap water outlets (25 PSI Minimum, 85 PSI Maximum and Maximum water temperature 120° F). |

**Package includes:**

-- complete unit mounted on stainless steel front plate
-- (2) 7-foot vinyl product suction tubes with foot strainers
-- (1) metering tip kit
-- (4) screws and (4) wall anchors for wall mounting (use 9/32" drill)
-- parts list and product structure diagram

**Installation and Operation:**

Units must be installed in accordance with local regulations!

For Units installed in Australia:

**THIS APPARATUS MUST BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLUMBING CODE OF AUTRALIA (PCA) AS/NZS 3500.1, INCLUDING ALL BACKFLOW PREVENTION REQUIREMENTS OUTLINED**

1. Attach unit to wall using hardware provided.
2. Select metering tip (see section on metering tip selection) and press firmly into hose barb provided at the side of the eductor. Install product suction tube on hose barb. The strainer end of the suction tube can be dropped directly into the concentrate container.
3. Connect water inlet hose with 3/4" male (GH or BSP thread depending on version) to female swivel at top left side of unit. Tighten to avoid leaking.
4. Connect discharge hose to male 3/4" discharge provided at bottom of unit. Hose of 1/2" ID is recommended if the hose length will be 50 feet or less. Use 3/4" ID hose if the total length of the hose will exceed 50 feet.
5. Turn on water supply to unit. Minimum 25 PSI water pressure is required to operate the unit.
6. Turn on product valve to begin proportioning and dispensing. Shut off the valve and turn on rinse (bottom) lever for full volume rinse. Note: You may only use either one product or the rinse feature - only one valve may be in use at a time.

**Metering Tip Selection:**
The final concentration of the dispensed solution is related to the size of the metering tip orifice, the viscosity of the liquid being siphoned, water pressure, water flow rate, and other factors in the application. A chart is provided on the next page which can be used as a guideline for selecting a metering tip when proportioning water-thin concentrates. Test the actually achieved dilution using the Measurement of Concentration procedure discussed on the next page. If product viscosity is greater than that of water, choose a tip with a larger orifice than that which would deliver the desired water-to-product ratio for a water-thin product. Test the actually achieved ratio using the Measurement of Concentration procedure on the next page. Continue to choose and test tips until the desired dilution is achieved. One clear, undrilled tip is supplied to permit drilling orifice sizes not listed if necessary.

**APPROXIMATE DILUTIONS AT 40 PSI FOR WATER-THIN PRODUCTS (1.0 CP)**

| Tip Color | Orifice Size / Std. Drill Number) | Ratio |
|---|---|---|
| No Tip | .187 (3/16) | 10:1 |
| Gray | .128 (30) | 10:1 |
| Black | .098 (40) | 10:1 |
| Beige | .070 (50) | 12:1 |
| Red | .052 (55) | 16:1 |
| White | .043 (57) | 24:1 |
| Blue | .040 (60) | 28:1 |
| Tan | .035 (65) | 32:1 |
| Green | .028 (70) | 48:1 |
| Orange | .025 (72) | 64:1 |
| Brown | .023 (74) | 80:1 |
| Yellow | .020 (76) | 96:1 |
| Aqua | .018 (77) | 128:1 |
| Purple | .014 (79) | 256:1 |
| Pink | .010 (87) | 384:1 |
| Lt. Purple | .009 (89) | 512:1 |

**CONVERSION CHART: Ratio Equivalents to Standard Measures**

| Oz./Gal. | Ratio | % |
|---|---|---|
| 128 | 1:1 | 50.0 |
| 64 | 2:1 | 33.3 |
| 32 | 4:1 | 20.0 |
| 21 | 6:1 | 14.3 |
| 16 | 8:1 | 11.1 |
| 14 | 9:1 | 10.0 |
| 8 | 16:1 | 5.9 |
| 6 | 24:1 | 4.0 |
| 4 | 32:1 | 3.0 |
| 3 | 48:1 | 2.0 |
| 2 | 64:1 | 1.5 |
| 1 | 128:1 | 0.8 |
| 1/2 | 256:1 | 0.4 |
| 1/4 | 512:1 | 0.2 |

**Measurement of Concentration:**
You can determine the dispensed water-to-product ratio for any metering tip size and product viscosity. All that is required is to operate the primed dispenser for a minute or so and note two things: the amount of dispensed water/product mixture, and the amount of concentrate used in preparation of the solution dispensed. The water-to-product ratio is then calculated as follows:

$$\text{Dilution (X)} = \frac{\text{Amount of Mixed Solution -- Amount of Concentrate Drawn}}{\text{Amount of Concentrate Drawn}}$$

Dilution ratio, then, equals X parts water to one part concentrate (X:1). If the test does not yield the desired ratio, choose a different tip and repeat the test. Alternative methods to this test are 1) pH (using litmus paper), and 2) titration. Contact your concentrate supplier for further information on these alternative methods and the materials required to perform them.

**PARTS LIST (Refer to diagram)**

| Key # | Part Number | Description |
|---|---|---|
| 1 | 238100 | Strainer washer |
| 2 | 2767-K | Connector swivel, US GH |
| | 10099384 | Connector swivel, BSP |
| 3 | 10091700 | Brass top manifold |
| 4 | 10075925 | Pipe plug |
| 5 | 10084020 | Ball valve (includes a) |
| a | 10088100 | Yellow handle sleeve |
| 6 | 10067810 | Pipe nipple |
| 7 | 440800 | 3.5 GPM eductor |
| 8 | 10069270 | Check valve - Viton* |
| 9 | 506502 | Swivel nut |
| 10 | 276800 | Swivel stem, short |
| 11 | 10091710 | Brass bottom manifold |
| 12 | 10005803 | Nut |
| 13 | 10091720 | Cover |
| 14 | 605400 | Hose hanger |
| 15 | 10084701 | Hex nipple |
| 16 | 326001 | Hose barb, 3/8"NPT x 1/2" barb |
| 17 | 608300 | Hose clamp |
| 18 | 90087108 | Hose, 1/2"ID x 2.88" |
| 19 | 10027209 | Metering tip kit |
| 20 | 500814 | Suction tube |
| 21 | 509900 | Ceramic weight |
| 22 | 609600 | Foot strainer |

*EPDM check valve available: order 10069271

**HydroChem Parts Diagram:**

