Troubleshooting Guide:

Problem	Cause	Solution
1. No discharge	a. No water b. Excessive water pressure c. Eductor clogged	a. Open water supply b. Install regulator if pressure exceeds 85 PSI c. Clean* or replace
2. No concentrate draw	a. Clogged check valve b. Metering tip clogged c. Eductor clogged d. Clogged water inlet e. Clogged foot strainer f. Low water pressure and/or volume g. Concentrate container empty h. Check valve not screwed into eductor firmly	a. Clean or replace b. Rinse in hot water or replace: DO NOT REAM CLEAN! c. Clean or replace d. Clean screen e. Clean or replace f. Minimum 25 PSI and 4 GPM flow required to operate unit g. Replace with full container 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 b. Supply source inadequate c. Scaled eductor or fittings	a. Clean or replace b. 4 GPM flow necessary to unit. Move unit or replumb incoming line. 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.

A DOVER RESOURCES COMPANY

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REV. A 1/04

HydroChem Model 918

Multifunction Proportioning and Dispensing System

Wall mounted, high volume washing or foaming proportioner with one product eductor.

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 (85 PSI maximum).

Package includes:

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

Instructions for Operation:

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 garden thread 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 (right) lever for full volume rinse. Note: You may only use either the 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 several factors in the application, such as viscosity of the product, length and diameter of the discharge hose, water pressure, water flow rate, water temperature, hose end attachments used, etc. 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. A clear, undrilled tip is supplied to permit drilling an orifice size 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)	284:1
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	Swivel connector assembly
3	133000	Branch tee
4	10030500	3.8" Nipple
5	10041701	Clamp
6	10075925	Pipe plug
7	10084080	Ball valve
8	10082951	Tubing
9	10082900	Compression fitting
a	10082905	Body
b	10082906	Nut
c	10082901	Tubing sleeve
10	10005803	Nut
11	10084051	Cover
12	605400	Hose hanger
13	328900	Hose connector adapter
14	90032500	Tee
15	10084701	Hex nipple
16	90032510	Discharge elbow
17	276800	Stem, short
18	506502	Swivel nut
	270700	Washer
19	10069270	Check valve, Viton*
20	440800	3.5 GPM eductor
21	10067810	Nipple
22	10027209	Metering tip (kit)
23	500870	Suction tube, 1/4" x 7'
24	509900	Weight
25	609600	Strainer

NOT SHOWN:

	10072711	Mounting hardware kit

* EPDM check valve available: order 10069271

HydroChem Parts Diagram