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 and copper junctions	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.

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HydroChem Model 912

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 (85 PSI maximum).

Package includes:

-- complete unit mounted on stainless steel back plate with formed ABS plastic cover
-- (2) 7-foot vinyl product suction tubes with foot strainers
-- (2) metering tip kits
-- (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 tips (see section on metering tip selection) and press tips firmly into hose barbs provided at the side of the eductors. Install product suction tubes on hose barbs. The strainer end of the suction tubes can be dropped directly into the concentrate containers.
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.
5. Turn on water supply to unit. Minimum 25 PSI water pressure and 4 GPM flow are required to operate the 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.
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: By removing the four cover-attaching screws (two top and two bottom), the cover can be removed by sliding it to the RIGHT (handles in the horizontal, or OFF position). Reassembly is the reverse of this process: Align the handles with holes in the cover and slide the cover on from right to left. Replace the screws.

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. Two clear, undrilled tips are 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:

Dilution (X) = Amount of Mixed Solution -- Amount of Concentrate Drawn
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 adn the materials required to perform them.

PARTS LIST (Refer to diagram)

Key #	Part Number	Description
1	238100	Strainer washer
2	317801	Swivel connector
3	371300	Reducer bushing
4	604400	2 -1/2" bushing
5	133000	Branch tee
6	470101	Nipple
7	90032500	Tee
8	223500	Clamp
9	10075925	Pipe plug
10	133100	Ball valve (complete)
	133101	Ball valve handle
	133102	Ball valve nut
	133105	Handle sleeve
11	328900	Hose connector adapter
12	276700	Swivel connector
	270700	Hose washer
13	440800	3.5 GPM eductor, GH out
14	10069280	Check valve, Viton*
15	10027209	Metering tip (kit)
16	500870	Suction tube, 1/4" x 7'
17	509900	Weight
18	609600	Foot strainer
19	90032510	Discharge elbow
20	133200	Cross
21	605400	Hose hanger
22	10082902	3/8" Tubing, nylon
23	10082905	Body, male 3/8"
	10082901	Brass insert, 3/8" tube
	10082906	Nut 3/8"
24	133500	Stainless steel base
25a	506502	Swivel nut
b	276800	Swivel stem
	270700	Hose washer (not visible)
NOT SHOWN:		
	133600	Cover, ABS plastic

* EPDM check valve available: Order 10069281

HydroChem Parts Diagram