

## INSTALLATION

### Mounting the unit

- (1) Choose a convenient location close to water supply and not more than 5' off floor.
- (2) Hold proportioner against wall and mark keyholes — use a level for marking holes.
- (3) Drill holes and use mounting screws supplied or masonry screws (not supplied).
- (4) Hang the unit and tighten screws. Always refer to hardware manufacturer's specifications for weight capacity and usage.

### Attaching the drip tray (optional)

- (1) Mount tray 12" to 15" below spouts in the same manner as proportioner.
- (2) Attach a length of 1/4" tubing to drip tray for draining liquids.
- (3) Divert drain tube to sink, drain, or five gallon holding jug.

### Connecting the water supply

This proportioner operates best with a flowing water pressure of 40 - 50 PSI. Fluctuating pressure can affect dilution ratios — use a water source that is not feeding other equipment whenever possible. Water temperature should be between 40°F and 140°F.

- (1) Attach male connector on high pressure supply hose to inlet side of proportioner using garden hose washer. →
- (2) Attach female connector on high pressure hose to water source.
- (3) Turn on water and check for possible leaks.

## OPERATION

### Connecting the chemical supply

- (1) Locate chemical container(s) below the proportioner.
- (2) Insert the foot-valve end of the 1/4" I.D. vinyl tube into each container (use ceramic weight if necessary to sink tube to bottom).
- (3) Connect the inlet tube over the colored metering tip (See "Choosing Dilution Rate" on the next page to help select the correct metering tip) — secure inlet tube with a plastic zip tie.

### Installing bucket-fill or bottle fill tube (optional)

- (1) Connect the bucket or bottle fill tube with the flow restrictor (plastic insert) end closest to the venturi body.
- (2) Secure tube to venturi body with tie wraps provided.

### Dispensing chemical-water mix

- (1) Select the desired product with the selector knob.
- (2) Press the button on the front cover—release button when container is full.
- (3) If desired, the button can be "locked" in the ON position for filling large containers such as mop buckets or floor scrubbers. Simply turn the button slightly clockwise when pressed in. To release, turn button counter-clockwise.

## SAFETY AND SERVICING TIPS

- Avoid direct contact with chemicals — handle containers with caution. To avoid spillage, be careful not to tip containers.
- Insert chemical suction line into container so that footvalve and ceramic weight sink to the bottom.
- If valve fails to draw chemical, check the metering tip and footvalve for blockage — soak in warm water to clear.



**CAUTION: Wear protective clothing and eyewear when dispensing chemicals or other materials. Observe safety handling instructions (MSDS) of chemical mfrs.**



**CAUTION: When installing any equipment, ensure that all national and local safety and plumbing codes are met.**

## SPECIFICATION

Flow rates	1 GPM (3.8 LPM) bottle fill 4 GPM (15.2 LPM) bucket fill 1 GPM (3.8 LPM) bucket fill
Back flow preventer	Flex-gap or Aire-gap
Temperature	Max: 140° F (60° C)
Ideal operating pressure	40-50 PSI (2.8 - 3.5 bar)
Minimum Pressure Maximum Pressure	20 PSI (1.4 bar) 100 PSI (6.9 bar)

## MATERIAL SPECIFICATION

Cover	ABS
Flex-gap	Polypropylene
O-ring	EPDM & Viton
Water Valve	Acetal
Water Inlet	Brass

### IMPORTANT NOTE:

If proportioner is connected to a janitor's sink with an atmospheric vacuum breaker, a special connection kit is required by A.S.S.E. specification 1055. Failure to use this kit, or equivalent connection means, will invalidate the A.S.S.E. and I.A.P.M.O. (UPC) certification. Specify P/N 7600187 when ordering the kit.

## CHOOSING THE FLOW RATE

### FLEX-GAP VENTURI

For the Flex-Gap systems, the flow rate is controlled by a venturi insert located inside bottom of the Flex-gap housing.  
WHITE Venturi insert (2200106) = 1 GPM / BLACK Venturi insert (2200105) = 4 GPM

To change the venturi insert.

- (1) Remove the cover by gently snapping it away from the unit.
- (2) Disconnect tubing from Flex-Gap housing
- (3) Twist the Flex-Gap housing counter-clockwise to remove it from the water valve body
- (4) Push out existing venturi tube by inserting a pen up through the bottom of the Flex-Gap housing (note the order of the parts as they are removed from the flex-gap/venturi housing).
- (5) Insert the new venturi insert (for the desired flow rate) into the Flex-Gap housing, ensuring that it seats firmly. Place the flex-gap parts in the order removed from the previous step.
- (6) Twist the Flex-Gap housing clockwise to reattach it to the water valve.

### AIRE-GAP VENTURI

For Aire-Gap venturi systems, the flow rate is controlled by a nozzle, deflector plate, and venturi insert. These internal parts are color coded to identify their GPM rating: Aire-Gap Nozzle: LIGHT GREY = 1 GPM / LIGHT BLUE = 4 GPM  
Splash Deflector & Venuri tube: WHITE = 1 GPM / BLACK = 4 GPM

To change the aire-gap venturi.

- (1) Remove the cover by gently snapping it away from the unit. Disconnect tubing from Aire-Gap housing.
- (2) Twist and disconnect Aire-Gap housing counter-clockwise to remove water valve body
- (3) Remove existing nozzle, deflector plate, and venturi tube by disassembling the Aire-Gap assembly
- (4) Reassemble the Aire-Gap using new nozzle, splash deflector, and venturi tube (for the desired flow rate). To avoid leakage, install the rubber washer with the ribs facing upwards.
- (5) Put Aire-Gap assembly back in place in the order that they were removed
- (6) Twist and reconnect Aire-Gap assembly back onto the water valve body

## CHOOSING DILUTION RATES

### METERING TIP SELECTION

The dilution chart for Flex-Gap and Aire-Gap venturi are the same for both 1 GPM and 4 GPM flow rates. For each valve in the system, install appropriate metering tip from the chart below. Be sure the metering tip is threaded in hand-tight only.

### CALIBRATING ACTUAL PRODUCT RATIOS

To easily calculate the ounces per gallon for a specific product:

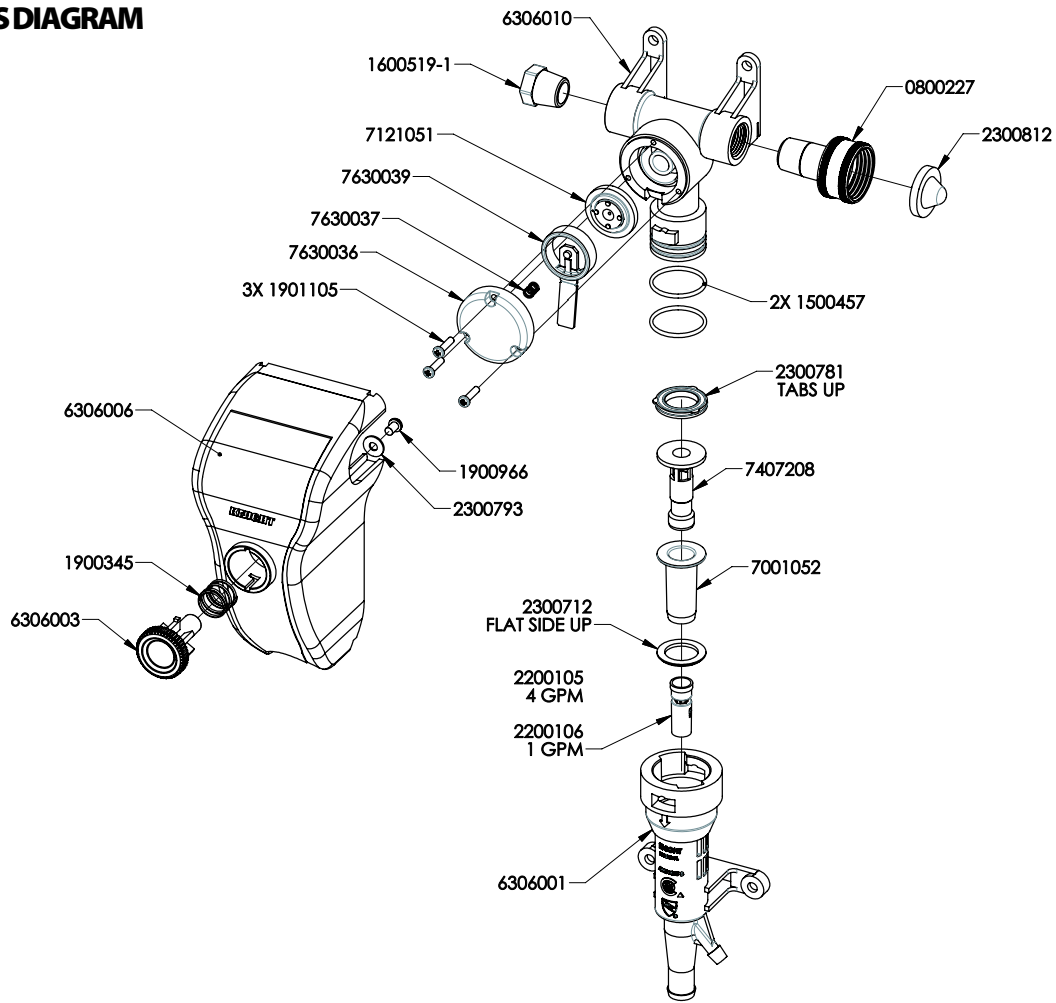
- (1) Fill a graduated cylinder or spray bottle (that has ounce markings) with product.
- (2) Install metering tip closest to desired ounces per gallon — see dilution charts.
- (3) Drop chemical pick-up tube into the container holding the product.
- (4) Activate valve until chemical line is primed up to the metering tip.
- (5) Note how many ounces (of product) are in the container.
- (6) Activate valve again, and fill a one gallon container with water/product mix.
- (7) Note how many ounces (of product) were used.
- (8) You now have determined actual ounces per gallon for this product. Repeat this procedure as desired for other valves and products.

METERING TIP CHART (Flex-Gap & Aire-Gap Venturi)

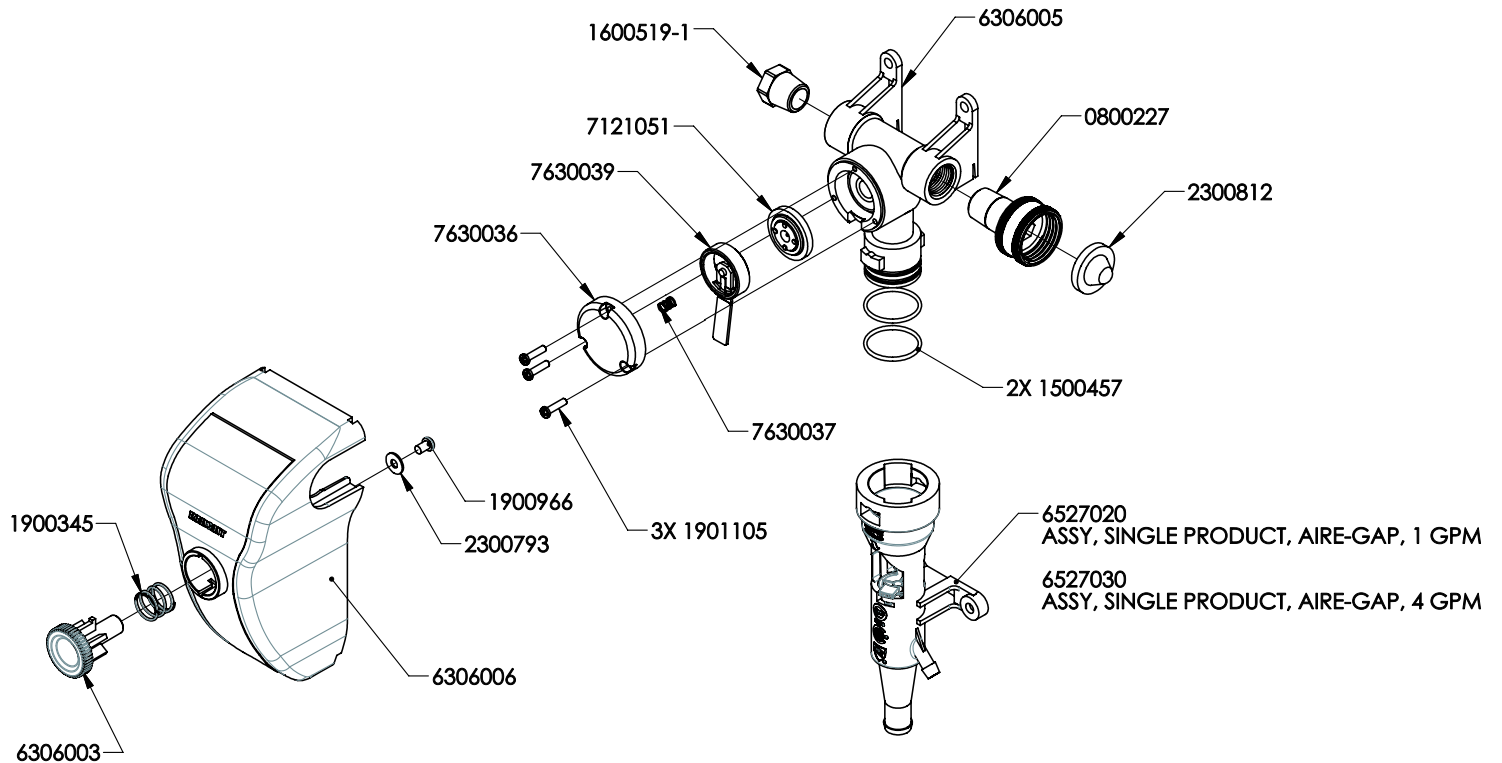
TIP COLOR	1 GPM		4 GPM	
	OZ/GAL	RATIO	OZ/GAL	RATIO
NO INSERT	28	3.6:1	25	4.3:1
WHITE	22	4.8:1	20	5.4:1
YELLOW	18	6.1:1	18	6.1:1
PINK	16	7.0:1	16	7.0:1
GREEN	15	7.8:1	12	12:1
BLACK	14	8.5:1	10	15:1
BROWN	12	10:1	7	20:1
GRAY	8	15:1	5	31:1
BLUE	6	20:1	4	42:1
RED	3	42:1	3	63:1
PEACH	2.5	50:1	2	72:1
LT BLUE	2.0	63:1	1.5	101:1
PURPLE	1.75	74:1	1	127:1
LT GREEN	1.5	84:1	0.75	170:1
ORANGE	1	127:1	0.50	255:1
LT BROWN	0.5	255:1	0.25	511:1

This chart is based upon the chemical viscosity of water (CPS = 1.0) and should only be used as a guide. Actual ratios and flow rates may vary due to product viscosity, flow pressure, and tubing distance.

## FLEX - GAP PARTS DIAGRAM



## AIRE - GAP PARTS DIAGRAM



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## **FLEX-GAP ANNUAL CLEANING AND TEST PROCEDURES FOR UNITS INSTALLED IN CANADA**

Each year, your chemical dispenser must be cleaned and its backflow prevention performance verified. As this device is an end-of-line device (versus an in-line device) and evidence of effective backflow prevention is determined visually, a two-minute pressure test is not necessary.

If the Flex-Gap device cannot readily be seen during the test procedure, the housing of the chemical dispensing unit must be removed during testing. Apply the appropriate test procedure below as applicable for your chemical dispensing unit.

### **4 GPM VENTURIS**

1. Fill discharge hose with water by opening the valve.
2. When water begins to exit the discharge hose turn off the water and raise the end of the hose above the Flex-Gap.
3. Observe that water is exiting the Flex-Gap.
4. If the water is exiting the Flex-Gap it has passed the test.
5. If the water is not exiting from the Flex-Gap, replace the Flex-Gap sleeve as per the instruction manual and re-test.
6. If the water is not exiting from the Flex-Gap after replacing the sleeve and re-testing, replace the complete Flex-Gap assembly and re-test.
7. If the water is not exiting from the Flex-Gap after replacing the Flex-Gap assembly, disconnect the water supply and replace the complete unit.

### **1 GPM VENTURIS**

1. Remove the Fill Tube Spout and replace with a 4-foot length of 1/2" ID hose.
2. Fill the discharge hose with water by opening the valve.
3. When water begins to exit the discharge hose, turn off the water and raise the end of the hose above the Flex-Gap.
4. Observe that water is exiting the Flex-Gap.
5. If the water is exiting the Flex-Gap, it has passed the test.
6. If the water is not exiting from the Flex-Gap, replace the Flex-Gap sleeve and re-test.
7. If the water is not exiting from the Flex-Gap after replacing the sleeve and re-testing, replace the complete Flex-Gap assembly and re-test.
8. If the water is not exiting from the Flex-Gap after replacing the Flex-Gap assembly, disconnect the water supply and replace the complete unit.

## **DISCLAIMER**

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult label, MSDS, or Knight LLC. Knight products are not for use in potentially explosive environments. Any use of our equipment in such an environment is at the risk of the user, Knight does not accept any liability in such circumstances.

## **WARRANTY**

All Knight controls and pump systems are warranted against defects in material and workmanship for a period of ONE year. All electronic control boards have a TWO year warranty. Warranty applies only to the replacement or repair of such parts when returned to factory with a Knight Return Authorization (KRA) number, freight prepaid, and found to be defective upon factory authorized inspection. Bearings and pump seals or rubber and synthetic rubber parts such as "O" rings, diaphragms, squeeze tubing, and gaskets are considered expendable and are not covered under warranty. Warranty does not cover liability resulting from performance of this equipment nor the labor to replace this equipment. Product abuse or misuse voids warranty.

## **FOOTNOTE**

The information and specifications included in this publication were in effect at the time of approval for printing. Knight LLC reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.