



VisaGage II

VISUAL FLOW MONITOR SYSTEM

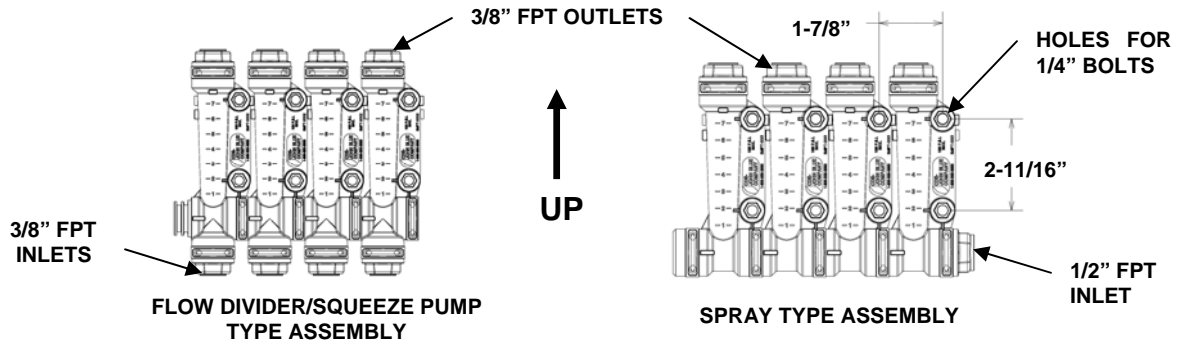
Installation and Operation Manual

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Monitor Installation:

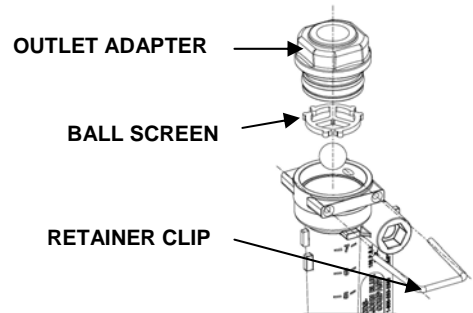
1. Connect monitor columns together as shown below. The monitors need to be mounted vertically with the outlet at the top (see figure), using the bolt holes provided. A mounting bracket may be made out of 3/4" to 1" strip steel or angle (see hole spacing below), and it is recommended to make the bracket able to tilt for ball removal and maintenance. Care must be taken that the inlet hose does not put a load on the inlet fitting - support hose if required.



2. Select the proper ball using the table below, and place inside by removing the retainer clip, outlet fitting, and ball screen to gain access to the ball.

* If desired, a standard 19/32" orifice plate (not supplied) may be placed inside the outlet adapter and retained with a #112 o-ring (#SMPT-0034)

#112 VITON O-RING
19/32" DIAMETER X .029" THK STAINLESS ORIFICE PLATE
* SEAT FULLY IN COUNTERBORE *



3. Install barb or push-connect fittings into the adapters using plastic fitting thread sealant – DO NOT OVERTIGHTEN.

Ball Selection Table:

- Notes:
- a.) Use only glass or stainless steel ball with acid fertilizer
 - b.) The maximum flow allowed through each column is 3.4 GPM (water) – use this to determine column groupings.
 - c.) For solutions other than water, apply the appropriate conversion factor to the flow table values

FLOW RATE TABLE FOR WATER (IN GPM) (WATER = 8.34 LBS/GAL)					
LEVEL	GREEN PLASTIC BALL	BLACK PLASTIC BALL	BLUE PLASTIC BALL	BLUE GLASS BALL	STAINLESS STEEL BALL
7	0.30	0.51	0.60	1.20	3.35
6	0.20	0.37	0.50	0.86	2.75
5	0.15	0.27	0.30	0.55	1.90
4	0.11	0.21	0.24	0.40	1.40
3	0.08	0.14	0.18	0.35	0.92
2	0.04	0.10	0.13	0.25	0.50
1	0.02	0.06	0.09	0.17	0.36

SOLUTION WEIGHT (LBS/GAL)	CONVERSION FACTOR
9.0	0.96
10.0	0.91
11.0	0.87
12.0	0.83
14.0	0.77
16.0	0.72

Operating Instructions:

1. Maximum allowed system pressure is 100 psi, and the maximum allowed liquid temperature is 140°F.
2. The adapters and body of the standard flow monitors are made of Polypropylene and PVC. You must verify that the fluids you plan to use are compatible with these materials. Note that for the fumigant flow monitor models, PSU (Polysulfone) is used instead of PVC.
3. During use, the balls in each column should be approximately even. If they are not, check the lines for blockage or restriction.
4. For the spray type assembly, a minimum system pressure of 10 psi is recommended for equal distribution.
5. If the balls are at the very top of the monitor during operation, it is recommended to change the ball to lower its operating level in order to avoid flow restriction from the ball itself.
6. Various types of liquid fertilizer will give different flow values than what is shown in the flow rate table. You may use the conversion table to adjust the flow values according to your fertilizer's lbs/gallon measurement, but it may be best to experiment with different balls to determine which one works best in your application.

Table Example:

- For fertilizer weighting 11 lbs/gal, the conversion factor is 0.87
- If you want to run 0.47 GPM through each monitor, you need to divide 0.47 by 0.87 (= 0.54)
- Then you choose from the Flow Rate Table the best fit to the new number – which is the blue glass ball. The ball should hover at approximately level #5.

Storage and Cleaning:

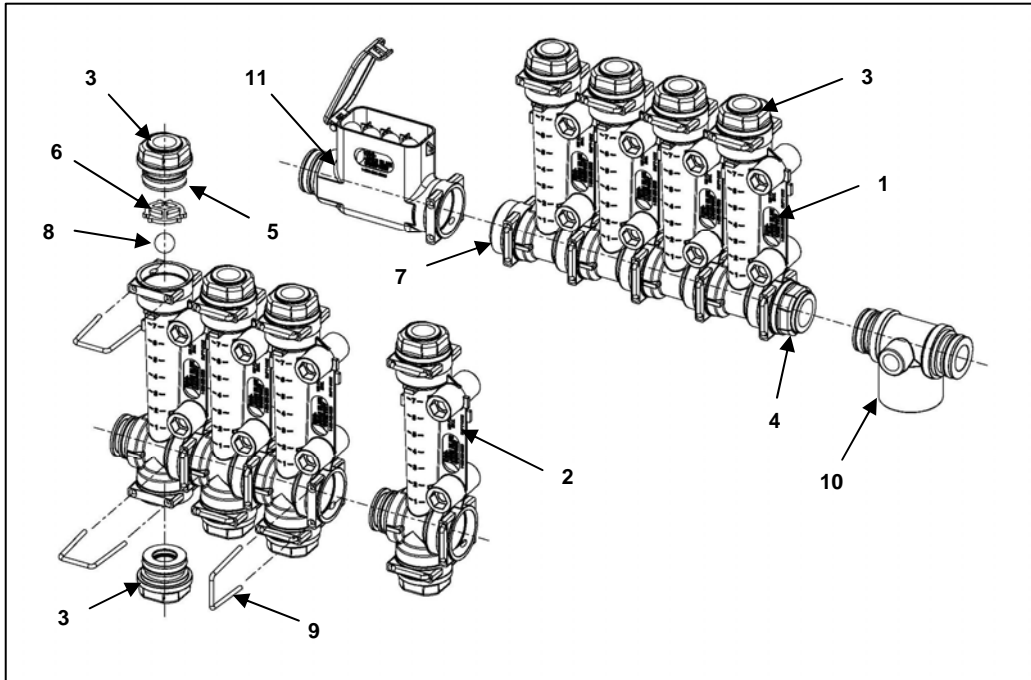
1. After use, flush the monitor columns for a few minutes with a solution that will neutralize the liquid last used (*refer to that manufacturer's instructions*). The columns may be disassembled to ease cleaning.
2. To protect monitor columns from freezing, drain completely after flushing.
3. Although the flow monitor's materials have an additive to increase UV resistance, to prolong their life it is suggested to protect the flow monitors from sunlight during storage.

Accessory Fitting Listing:

- Listed below are optional fittings that may be purchased with your flow monitors:

Fitting Description (3/8" MPT fittings can be purchased in sets of four)	Part #
3/8" MPT to 1/4" Polypropylene Barb, Straight	SMPT-0023
3/8" MPT to 3/8" Polypropylene Barb, Straight	SMPT-0024
3/8" MPT to 1/2" Polypropylene Barb, Straight	L-4452
3/8" MPT to 1/4" Polypropylene Barb, Elbow	SMPT-0028
3/8" MPT to 3/8" Polypropylene Barb, Elbow	SMPT-0029
3/8" MPT to 1/2" Polypropylene Barb, Elbow	SMPT-0030
1/2" MPT to 3/8" Polypropylene Barb, Straight	SMPT-0025
1/2" MPT to 1/2" Polypropylene Barb, Straight	SMPT-0026
1/2" MPT to 3/4" Polypropylene Barb, Straight	SMPT-0027
1/2" MPT to 3/8" Polypropylene Barb, Elbow	SMPT-0031
1/2" MPT to 1/2" Polypropylene Barb, Elbow	SMPT-0032
1/2" MPT to 3/4" Polypropylene Barb, Elbow	SMPT-0033
3/8" MPT to 1/4" Polypropylene Push-Connect, Straight	115962-01
3/8" MPT to 3/8" Polypropylene Push-Connect, Straight	115963-01
3/8" MPT to 1/2" Polypropylene Push-Connect, Straight	115964-01
3/8" MPT to 1/4" Polypropylene Push-Connect, Elbow	115972-01
3/8" MPT to 3/8" Polypropylene Push-Connect, Elbow	115973-01
1/2" MPT to 3/8" Polypropylene Push-Connect, Straight	115965-01
1/2" MPT to 1/2" Polypropylene Push-Connect, Straight	115966-01

Parts Breakdown:



Item	Description	Part #
1	SPRAY TYPE COLUMN – PVC	SMPT-0001
1F	FUMIGANT SPRAY TYPE COLUMN - PSU	SMPT-0043F
2	FLOW DIVIDER TYPE COLUMN - PVC	SMPT-0002
2F	FUMIGANT FLOW DIVIDER TYPE COLUMN - PSU	SMPT-0044F
3	3/8" FEM. NPT ADAPTER – POLYPROPYLENE	SMPT-0003
4	1/2" FEM. NPT ADAPTER – INLET – POLYPROPYLENE	SMPT-0004
5	#212 VITON O-RING	SMPT-0007
6	UPPER BALL SCREEN – POLYPROPYLENE	SMPT-0005
7	END CAP – POLYPROPYLENE	SMPT-0008
8	BALL – GREEN PLASTIC – POLYPROPYLENE	SMPT-0016
	BALL – BLACK PLASTIC – POLYPROPYLENE	SMPT-0017
	BALL – BLUE PLASTIC – DELRIN	SMPT-0018
	BALL – BLUE GLASS	SMPT-0019
	BALL – 1/2" DIAMETER - 316 STAINLESS STEEL	SMPT-0020
	SET OF REPLACEMENT BALLS (-0016 thru -0020, 4 each)	SMPT-0013
9	RETAINER CLIP	SMPT-0006
10	MANIFOLD TEE (with o-rings) - <i>OPTIONAL</i>	SMPT-0014
11	BALL STORAGE UNIT - <i>OPTIONAL</i>	SMPT-0009
--	#112 VITON O-RING (to retain orifice plate)	SMPT-0034
--	BALL – 7/16" DIAMETER - 316 STAINLESS STEEL – <i>OPTIONAL</i> <u>LEVEL (water):</u> 1 = 0.90 GPM 3 = 1.60 GPM 5 = 2.55 GPM 7 = 3.75 GPM 2 = 1.25 GPM 4 = 2.05 GPM 6 = 3.30 GPM	SMPT-0021
--	SINGLE COLUMN ASSEM – Spray Type (-FUM = <i>Optional Fumigant Version</i>)	SMSS1 (-FUM)
--	FOUR COLUMN ASSEM – Spray Type (-FUM = <i>Optional Fumigant Version</i>)	SMSS4 (-FUM)
--	SINGLE COLUMN ASSEM – Flow Divider Type (-FUM = <i>Optional Fumigant Version</i>)	SMFD1 (-FUM)
--	FOUR COLUMN ASSEM – Flow Divider Type (-FUM = <i>Optional Fumigant Version</i>)	SMFD4 (-FUM)

LIMITED WARRANTY

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Each new machine or component manufactured by CDS-John Blue Company through original buyer is warranted by CDS-John Blue Company to buyer and to any party or parties to whom buyer may resell, lease or lend the equipment to be free from defects in material and workmanship under normal use and service. This obligation of CDS-John Blue Company under this warranty is limited to the repair or replacement of defective parts or correction of improper workmanship of any parts of such equipment which shall within one year from the date of CDS-John Blue's original delivery thereof, be returned to CDS-John Blue's factory, transportation charges prepaid and which CDS-John Blue Company shall determine to its satisfaction upon examination thereof to have been thus defective. When it is impractical to return the defective parts of such equipment to CDS-John Blue's factory, then CDS-John Blue shall have no liability for the labor cost involved in repairing or replacing any such parts and shall be liable solely for supplying the material necessary to replace or repair the defective parts, provided that prior thereto CDS-John Blue Company shall have determined to its satisfaction that any such parts are thus defective.

This warranty shall not apply to any equipment which shall have been repaired or altered outside CDS-John Blue's factory in any way so as to affect its durability, nor which has been subjected to misuse, abuse, negligence or accident, or operated in any manner other than in accordance with operating instructions provided by CDS-John Blue Company. This warranty does not extend to repairs made necessary by the use of inferior or unsuitable parts or accessories, or parts or accessories not recommended by CDS-John Blue Company.

CDS-John Blue Company makes no warranties in respect to parts, accessories or components not manufactured by CDS-John Blue Company, same ordinarily being warranted separately by their respective manufacturers.

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