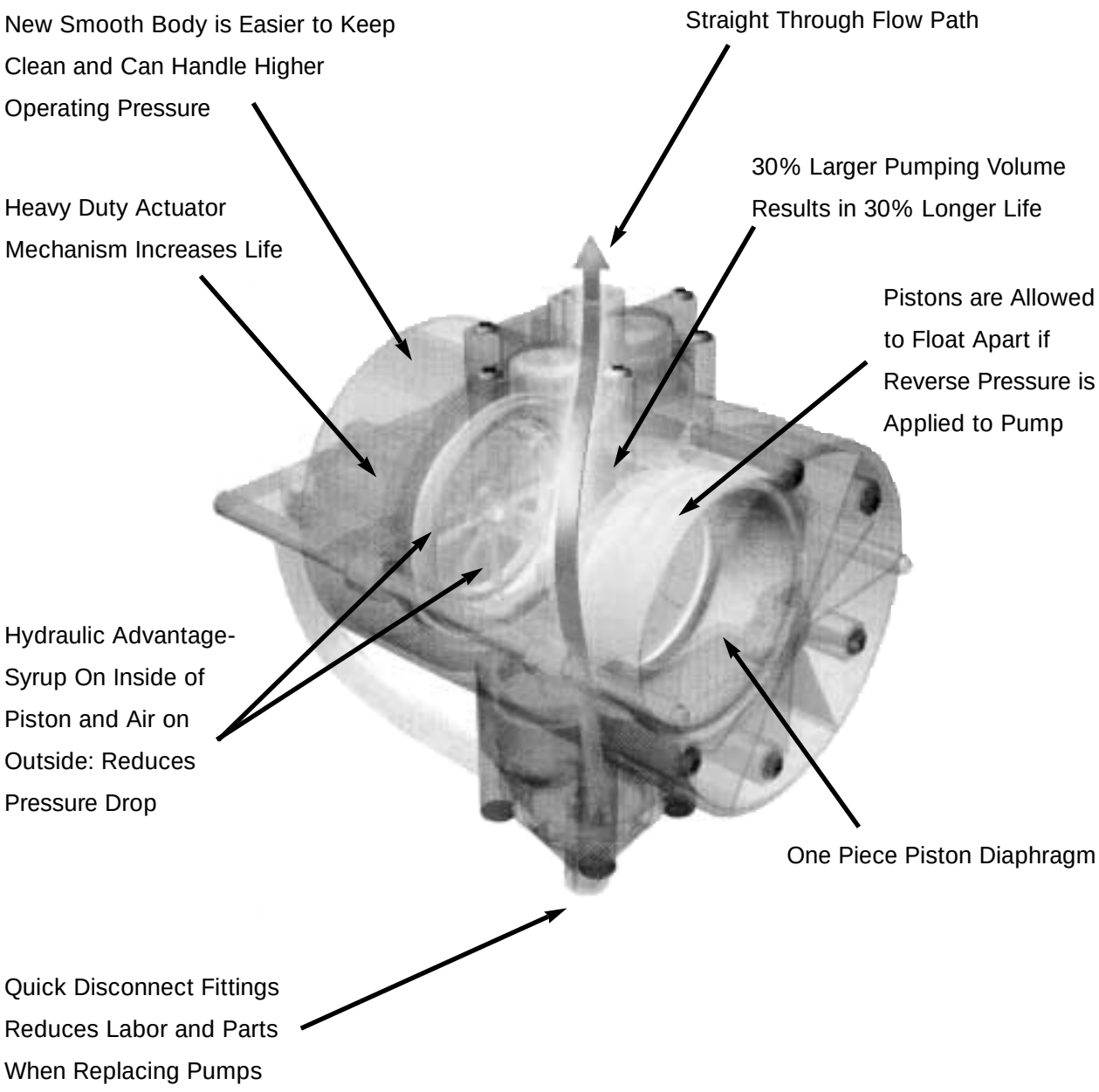
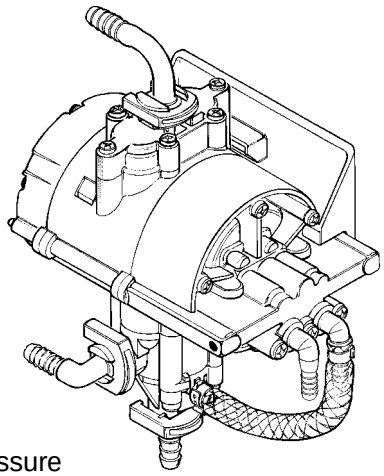
Heavy Duty Advantage Pump



Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

Beverage Gas Pump 166-296-XX



SHURflo's Beverage Gas Pump supplies syrup under pressure to a post-mix dispenser, which mixes the syrup with water to an exact ratio (brix).

The pump is used in conjunction with non-pressurised Bag-In-Box (B-I-B) containers and a bag connector (Q.D.) fitting. The pump can be operated on regulated CO_2 nitrogen or compressed filtered air. The compressed gas drives the pump and is not in contact with the syrup. Separate syrup and gas chambers prevent contamination, foaming and purging of the outlet tubing when the B-I-B has emptied.

The pump retains pressure in the outlet line, operating only when syrup is needed. When the dispenser valve is opened, the pump reacts to the pressure drop by operating to maintain pressure in the line. When the dispenser is closed, the incoming gas and output syrup pressures equalise and the pump stops. Actual dynamic line pressure is dependent upon system losses as outlined in the section "Pumping Capability".

The automatic "sold-out" feature within the pump ensures consistent syrup delivery right up to the moment the B-I-B is empty. Vacuum produced by the pump evacuates the syrup within the bag. Once the pre-set vacuum point is achieved and held, incoming gas pressure to the pump is shutoff causing the outlet syrup pressure to drop to zero. When a new B-I-B is installed, the vacuum drops, the pump automatically restarts and pressurises the system. The SHURflo Beverage Gas Pump ensures quality from the first drink to the last.

Application Information

Beverage Gas Pumps are intended for soda syrups and low viscosity concentrates that do not contain solids.

The use of SHURflo Juice Pump (-09) is recommended for concentrates containing soft solids, classed as round, up to 0.025 in [0.6mm] or that are of higher viscosity than soda syrups.

When concentrates contain pulp classed as long/stringy, seed particles or are exceptionally viscous the Particulate Juice Pump (-10) should be used as it can handle soft solids up to 1/4" [6mm] cube.

Installation Guidelines

- As indicated on the pump, the outlet port is to be mounted up.
- Pumps are to be mounted at the same level or higher than the B-I-B. The best choice is to have the pump above the B-I-B.
- ***MAXIMUM INLET*** tubing length is 10 ft. [3M], with ***NO MORE*** than a 5 ft. [1.5M] vertical lift. Use only 3/8" I.D. [10mm] heavy wall (1/8" [3mm]) clear, NSF listed vacuum tubing from the B-I-B to the pump.
- Inlet tubing should not have excessive length. Tubing that is allowed to drape down can trap air in the B-I-B creating a potential for pump "sold-out" problems.

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

- If plumbing multiple B-I-B's to a pump, B-I-B's should be "Teed" side by side horizontal, rather than on top of the other (vertically).
- ***OUTLET*** tubing from the pump to the dispenser should be high pressure rated and NSF listed.
- Always cut CO_2 and outlet tubing at least 2 ft. [6M] longer to provide a "service loop" so the B-I-B rack can be moved for cleaning or service.
- Use new (clean), 1/4" I.D. [6mm], flexible, high pressure, braided tubing from the CO_2 regulator to the pump.

NEVER connect a transfer tank "system" in series with a B-I-B system. Syrup contaminants in old components may work their way through the air supply causing premature failure of the gas pump. The gas used to drive the pump ***MUST*** be clean and contain no contaminants (syrup, oil, rust, water, etc). Air compressors may be used with proper particle filters and moisture separators Air storage tanks should be drained regularly. Pumps subjected to contaminated air are not covered by warranty.

High concentrations of CO_2 can be fatal, as it will displace the air from non-ventilated areas. Pumps operated by CO_2 must be in ventilated areas. If placed in a confined area (basement, closet, cooler, box, etc.), exhaust fans capable of changing the room air on a continuous basis should be used.

All tubing connections must be secured with stainless steel, stepless Oetiker® clamps.

Cable-tie all tubing securely to prevent kinks or sags that inhibit performance or cause damage to the pump fittings.

Start-up Procedure

1. Confirm that all tubing connections are properly clamped,fittings are tight, and tubing is not kinked. Install bag connector the B-I-B.
2. Adjust gas regulator to about 20 psi. [1.4 bar] allowing the pump to stroke slowly.
3. Operate the valve until all air trapped within the tubing has been purged.
4. Once the air has been purged, adjust the CO_2 regulator to the pressure necessary to maintain the desired brix. The most efficient gas usage occurs at 40 psi. [2.8 bar]. ***MAXIMUM*** static gas pressure to the pump is 85psi. [5.8 bar], minimum 20 psi. [1.4 bar].

Flowrates that result in a stroke-rate of more than two strokes per second will decrease pump life.

To prevent air from entering the system always leave the bag connector attached to the empty B-I-B until a new B-I-B can be installed. Air entered into the system, via air in the bags or vacuum leaks, may cause brix fluctuation, foaming spitting, non-operation of the vacuum sold-out or pump "run-on" with the valve closed. Symptoms of this kind can lead to a misdiagnosis of the pump.

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

Pump Sanitising/Winterizing

Sanitization of the SHURflo Beverage Gas Pump is required. ***The frequency of Sanitization is dependant on the concentrate type and its manufacturer's requirements.*** Factors which also affect the frequency of this procedure are temperature, concentrate volatility, facility conditions, installation and equipment.

Pumps that are subjected to freezing (below 32ºF [0ºC] must be purged of fluid to prevent damage.

Refer to the equipment manufacturer's instructions for sanitising and winterzing procedure for carbonators, dispensers and tubing.

Pumps that have been winterized and/or out of service for a period of time should be sanitised prior to being placed back in service.

Never apply pressure to the pump's liquid inlet. Pressurised tanks may damage internal components if used to sanitise or purge fluid from the pump (operating or not).

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

Troubleshooting

Does not operate/Gas applied/Dispenser Valve open

- ✓ B-I-B empty or inlet tubing pinched off activating vacuum “sold-out”
- ✓ Gas regulator over-pressurized
- ✓ Outlet tube kinked or restricted
- ✓ Operated without fluid for excessive period (Dry run)
- ✓ Transfer tube and gas lines contaminated (syrup, rust, oil, etc.) [ensure clean gas supply, change out all contaminated pumps]
- ✓ Internal damage of control cover

Operates but will not prime/Dispenser Valve open

[consult Start-up Procedure for proper priming]

- ✓ Pump valves have no moisture/dry [add water to the inlet port with pump stroking slowly]
- ✓ Vacuum leaks at Q.D., barb fitting clamps, or inlet fitting o-ring
- ✓ Debris in valve seats or warped/swollen valves.

Does not achieve sold-out with empty B-I-B

- ✓ Vacuum leaks at Q.D., barb fitting clamps, or inlet fitting o-ring
- ✓ Excessive amount of air in B-I-B from improper packaging
- ✓ Air trapped in outlet tubing and/or fluid chambers

Air in Inlet and/or Outlet tubing

- ✓ Vacuum leaks at Q.D. o-ring or barb fitting clamps
- ✓ Vacuum leaks at inlet fitting; o-ring pinched or missing
- ✓ Large amounts of air noticed only in the outlet tubing when pump operates [diaphragm/ piston assemblies required]

Strokes with dispenser valve closed

- ✓ Air trapped in outlet tubing and/or fluid chambers [open outlet and purge air, check for vacuum leaks, or air in B-I-B]
- ✓ Debris in outlet valves or warped/swollen valves

Fluid from exhaust or visible within gas inlet tubing

- ✓ Carbonator check valve
- ✓ Ensure clean gas supply
- ✓ Diaphragm/piston assemblies ruptured [change out all contaminated pumps]

Gas blowing from exhaust continuously

- ✓ Control cover subjected to contaminated gas supply or damaged [ensure clean gas supply, change out all contaminated pumps]

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

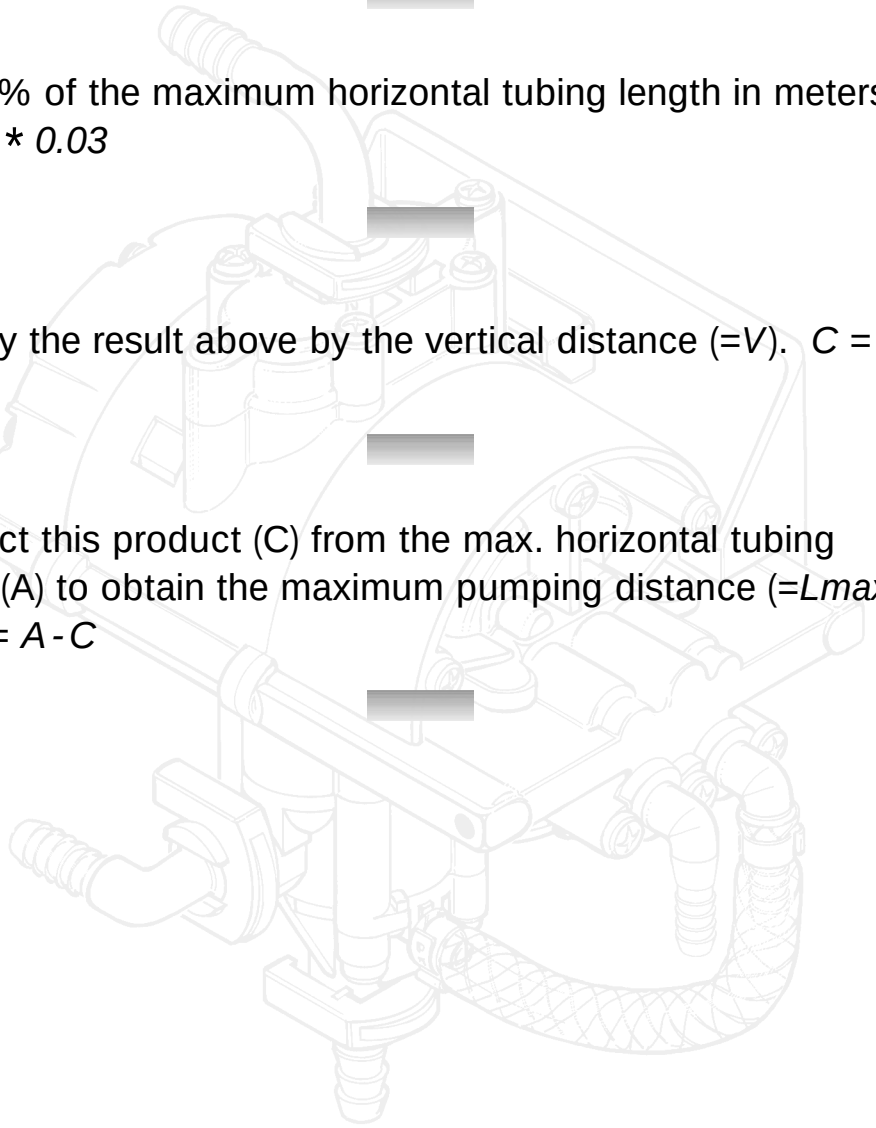
Calculating Maximum Pumping Distance

1 Obtain the maximum horizontal tubing length from tables (=*A*).

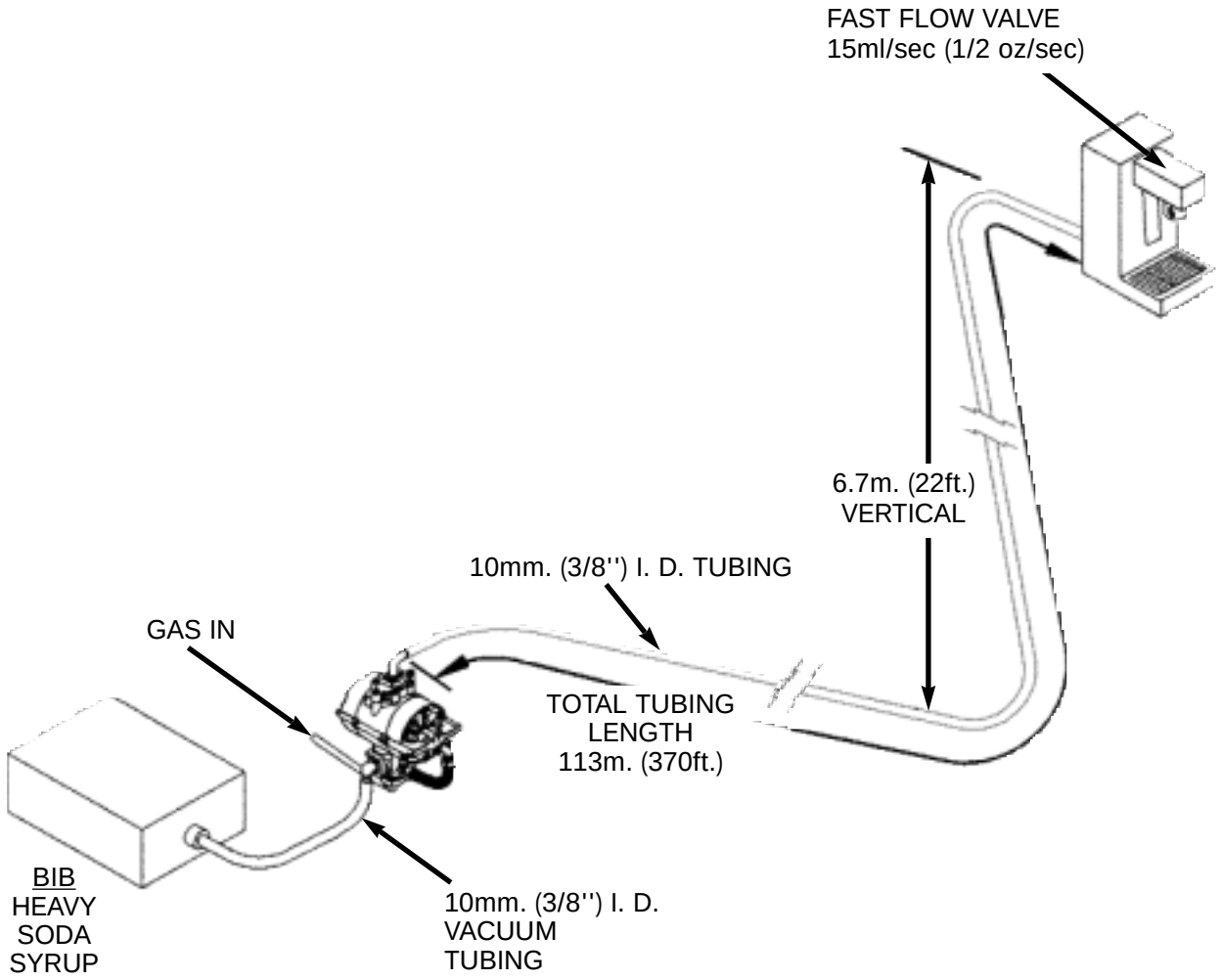
2 Take 3% of the maximum horizontal tubing length in meters (=*B*).
*B = A * 0.03*

3 Multiply the result above by the vertical distance (=*V*). *C = B * V*

4 Subtract this product (C) from the max. horizontal tubing length (A) to obtain the maximum pumping distance (=*Lmax*).
Lmax = A - C



Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK



1. A = 152m (from tables)
2. B = *152 * 0.03 = 4.56m*
3. V = 6.7m; *C = 4.56 * 6.7m = 30.5m; C = 30.5m*
4. *Lmax = 152 - 30.5m = 121.5m*

The maximum tubing length is 121.5m, while the example only requires 113m.

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK

Maximum Horizontal Tubing Length vs. Viscosity Table

	Flow Rate		6mm I.D. (1/4")		10mm I.D. (3/8")		13mm I.D. (1/2")	
	Oz./sec	ml./sec	Feet	**Meter**	Feet	**Meter**	Feet	**Meter**
Diet Soda Syrup (5 cps ± 3)	0.5	15	500+	**152+**	500+	**152+**	500+	**152+**
	0.75	22.5	500	**152**	500+	**152+**	500+	**152+**
	1.0	30	453	**138**	500+	**152+**	500+	**152+**
	1.5	45	212	**65**	500+	**152+**	500+	**152+**
	2.0	60	102	**31**	500	**152**	500+	**152+**
	2.5	75	64	**19**	398	**121**	500	**152**
	3.0	90	32	**9**	297	**90**	500	**152**
	3.5	105	–	**–**	212	**65**	500	**152**
Standard Soda Syrup (20 cps ± 3)	0.5	15	500	**152**	500+	**152+**	500+	**152+**
	0.75	22.5	133	**40**	500	**152**	500+	**152+**
	1.0	30	79	**24**	388	**118**	500	**152**
	1.5	45	32	**9**	193	**59**	500	**152**
	2.0	60	10	**3**	127	**39**	366	**112**
Heavy Soda Syrup (35 cps ± 3)	0.5	15	129	**39**	500	**152**	500+	**152+**
	0.75	22.5	75	**23**	345	**105**	500+	**152+**
	1.0	30	53	**16**	239	**73**	500	**152**
	1.5	45	26	**8**	127	**39**	425	**129**

Distances shown are intended as a guideline only.

Unit 5 Sterling Park Gatwick Road Crawley West Sussex RH10 2QT UK