

## The “Complete Balanced System” Approach

Our approach to the design and manufacture of chemical application equipment is to create balanced systems that are easy to install and offer years of trouble-free performance. Discharge hoses (lengths and diameters), wands, nozzles and other components are carefully selected to ensure optimum system performance when paired with a balanced, or “matching”, injector or foamer body. Modifications or failure to follow installation and operating instructions can adversely affect the overall performance and/or dilution ratios.

### 10 User Errors that Cause Unbalanced Systems and Poor Performance

- **Hose diameter too small** — A smaller diameter hose puts too much back pressure on the venturi and it will not draw chemistry.
  - **Hose length too short** — Compressed air-assisted foamers will *not* work with a shorter hose than supplied. The air and chemical solution mix to form rich foam as the solution travels through the full length of the discharge hose.
    - Sprayers/sanitizers and airless foamers will work with a hose shorter than the one supplied.
  - **Hose length too long** — Foamers and sprayers/sanitizers can work with longer hoses than supplied, but **only** with sufficient water pressure. Otherwise the extra solution in the longer hose puts too much back pressure on the venturi and it will not draw chemistry.
  - **Un-Balanced Discharge Assembly** — A smaller nozzle puts too much back pressure on the venturi and it will not draw chemistry. The foamer or sprayer/sanitizer will not work with a smaller nozzle.
    - Using an aftermarket trigger gun or alternate discharge assembly on the end of a foam hose will cause the foam quality to decrease.
  - **Undersized water supply lines** — The equipment will not perform as intended if the water supply lines are not large enough to allow an adequate volume of water to reach the unit.
    - ◆ 1/2" water supply line is adequate for units designed to flow less than 4 GPM.
    - ◆ 3/4" supply line is needed for a flow between 4 GPM and 10 GPM.
    - ◆ 1" supply line is required for a flow over 10 GPM.
  - **Inadequate water pressure** — Ensure that the water supply meets the minimum water pressure requirements for the selected unit.
    - Most city water units show a minimum water pressure requirement of 35 PSI. This refers to the “dynamic” water pressure when the unit is operating. It is not the “static” pressure of the water line with the unit turned off. Water pressure/flow test kits are available. Units can be fitted with in-line gauges to monitor water and air pressure.
- Open the inlet ball valve completely. Do not partially open the valve to control output volume and/or pressure.
- **Thick chemicals** — A thick chemical may require a larger diameter chemical check valve and chemical pick-up tube to allow the chemical



- Hose Diameter Too Small
- Hose Too Short
- Hose Too Long
- Wrong Nozzle / Discharge Gun
- Undersized Water Supply Line
- Inadequate Water Pressure
- Thick chemicals
- Debris from New Piping
- Water Too Hot
- Damaged Pickup Tube

- to be drawn into the unit. Viscous chemical pickup tube kits are available. Metering tip charts are provided with water thin chemicals as a reference. Thicker chemicals will require a larger metering tip than indicated in the chart.
- **Debris from new piping** — New piping (air or water) typically contains debris from installation/construction that will likely enter and obstruct the liquid or air flow and result in equipment malfunction. Flush out new piping before installing a unit and install a filter.
- **Water too hot** — When very hot water passes through a venturi body, the pressure reduction causes hot water to “flash” boil and release water vapor into the system. This steam prevents the venturi from properly drawing chemical and the output will sputter. An audible hissing or popping can be heard coming from the unit when this occurs.
  - Stainless steel injector and foamer bodies are able to handle higher water temperatures than polypropylene bodies, but water will still “flash” if the temperature is too high.
- **Pick-up tube damaged** — If air is allowed to enter the chemical pick-up tube, the chemical suction will decrease. This can be caused by the pick-up tube sliding down and not completely attaching to the unit intake or by a hole in the pick-up tube. Even a very small, pin-sized hole will affect the suction.

*NOTE: These are general troubleshooting tips. Please refer to the Installation and Operation Instructions for product specific installation guidelines, chemical dilution assistance, and troubleshooting.*

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