Downstream Injector Guide

LA Wash Supply - Gonzales, LA

What downstream injection does

A downstream injector (chemical injector) sits AFTER your pump and pulls soap or bleach mix into the water stream using the venturi effect. Because chemical never passes through the pump, it is the safest way to apply sodium hypochlorite, surfactants, and detergents with a pressure washer. It only draws while a LOW-pressure (soap) nozzle is on the wand - switching to a high-pressure tip stops the draw and returns you to rinse.

When to use which injector

- Fixed (non-adjustable) injector: best all-around choice for house washing and soft wash style work. Simple, cheap, and consistent. Match the orifice size to your machine's GPM.
- Adjustable injector: lets you dial the draw up or down on the fly. Handy when you switch between light detergents and strong bleach mixes on the same machine.
- High-draw / acid-rated injectors: use stainless or chemical-rated bodies for bleach and acids, and flush with clean water after every job to protect the check valve and spring.

Match the injector to your machine (GPM)

Machine output	Recommended injector size	Typical draw ratio*
2 - 3 GPM	1.5 - 1.8 mm orifice	about 5:1 to 8:1
3 - 4 GPM	1.8 - 2.1 mm orifice	about 8:1 to 10:1
4 - 5.5 GPM	2.1 - 2.3 mm orifice	about 8:1 to 12:1
5.5 - 8 GPM	2.3 - 3.0 mm orifice	about 10:1 to 15:1
8 - 10 GPM	3.0 - 3.5 mm orifice	about 12:1 to 18:1
10 - 12 GPM	3.5 mm orifice	about 15:1 to 20:1

* Draw ratio = water : chemical. A 10:1 ratio means roughly 10 parts water to 1 part chemical at the nozzle. Ratios are approximate - always verify with a bucket draw test (below).

Hose size and length

- Up to about 8 GPM: 3/8 inch pressure hose is the standard and keeps the injector drawing strong. 8 GPM and up: step up to 1/2 inch hose to reduce back-pressure.
- Keep total hose length reasonable: 100 - 200 ft works well. Every extra 50 - 100 ft of hose (and every extra fitting) weakens the draw, especially on smaller machines.
- Use full-flow fittings where possible; restrictive quick-connects can kill the venturi.

Achievable mix ratios (approximate)

Final mix at the surface depends on your injector size, machine GPM, hose length, and the strength of the chemical in your bucket. Use this chart as a starting point:

Machine GPM	Injector	Draw ratio	With 12.5% SH straight	With 12.5% SH cut 50/50
3 GPM	1.8 mm	~8:1	~1.4% SH at surface	~0.7% SH at surface
4 GPM	2.1 mm	~10:1	~1.1% SH at surface	~0.6% SH at surface
5.5 GPM	2.3 mm	~12:1	~1.0% SH at surface	~0.5% SH at surface
8 GPM	3.0 mm	~15:1	~0.8% SH at surface	~0.4% SH at surface
10 GPM	3.5 mm	~18:1	~0.7% SH at surface	~0.35% SH at surface

Rule of thumb: most house washing wants 0.5% - 1% sodium hypochlorite on the surface; roofs and heavy organics want more. If you need a stronger hit than your injector allows, pre-mix your bucket stronger or step down one injector size - do not restrict the hose.

How to verify your real ratio (bucket draw test)

1. Fill a bucket with a measured amount of water (for example 1 gallon).
2. Drop the injector pickup hose in the bucket, put the soap nozzle on the wand, and spray into a second container for exactly one minute.
3. Measure what is left in the bucket AND what you sprayed. Sprayed volume divided by drawn volume is your true ratio. Adjust bucket strength from there.

Care and troubleshooting

- No draw? Confirm the low-pressure (soap) nozzle is on - high-pressure tips stop the venturi.
- Weak draw? Check for a clogged orifice, worn check valve, kinked pickup hose, or too much discharge hose. Clean the filter on the pickup line regularly.
- Flush the injector with clean water at the end of every bleach job.
- Replace the check valve and O-rings yearly on heavy-use rigs - we stock the rebuild parts.

Need help picking? Bring your machine's GPM and PSI and we will set you up.