Orchard Sprayer Maintenance

Tips For Your Sprayer to Work Better and Longer

Orchard Sprayer Maintenance

Tips for Maintenance and Repairs

Training and PPE Requirements

Always wear the personal protective equipment (PPE) specified on the pesticide label for use during spraying when checking or cleaning an orchard sprayer.

Be aware that according to California state law, a hired person who maintains, repairs or uses pesticide application equipment is considered a pesticide "handler" and must be trained accordingly.

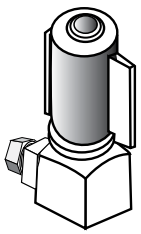
Training must include learning the application location, timing and labels for all the pesticide products being used in the orchard. The label will describe which PPE is required to be worn for each pesticide product applied. California has additional PPE regulations.

Regular Sprayer Maintenance

After Each Application

Clean the sprayer in the field – inside and out – following directions on the label.

- Do not clean tank near:
  - Standing water;
  - Flowing water;
  - Unprotected groundwater wells/well heads.
- Wash off the sprayer at the application site where the soil can be disked/cultivated.
- Remove any leaves or plant debris from fan shroud and connections.
- Rinse tank and plumbing (pump, hoses, nozzles, etc.) and apply rinse water to treated orchard.
  - Three small rinses remove more pesticide from the system than one large rinse.



Spray Tip

Cleaning Nozzles

Use cleaning tools softer than nozzle material.

- Compressed air is ideal.

Swirl Plates

- Check at same time as nozzles for wear.
- Plates generally wear at same rate as nozzles if the same material (brass, stainless steel, etc.).
- Best to have swirl plates all the same material; easier to track if all consistent.

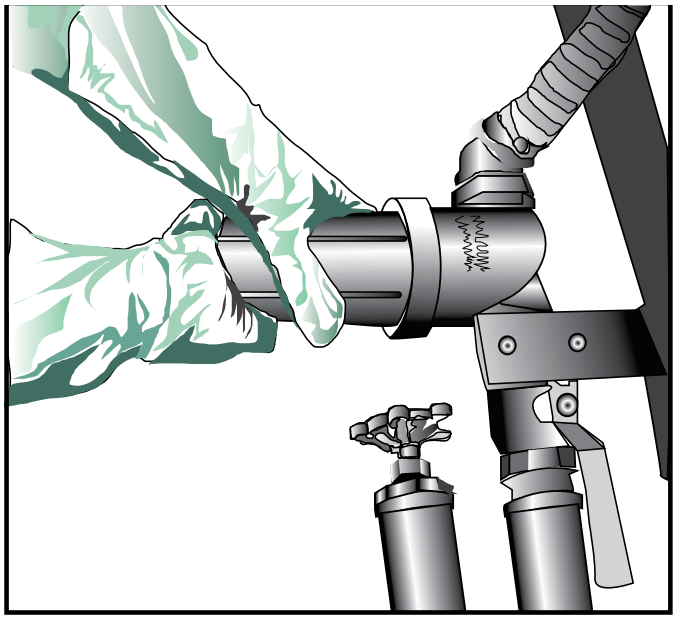
Nozzle Screens

(use is optional but can prevent nozzle clogging)

- Clean after each spray job.
- Check for holes or tears in the screen.

In-line Screen Filters, Nozzle Screens and Nozzles

- Remove and check/clean periodically depending on sprayer use.



Tip For a Cleaner Sprayer Exterior

Pre-coat the sprayer with wax or polish: makes clean-up much easier.

Always finish the job with a clean machine!

Periodic Sprayer Maintenance

Most sprayers in use today have parts and equipment that need only periodic inspections and maintenance. For longest useful life and effective spraying, perform these practices according to the manufacturer's recommendations, or at least once a year.

Nozzle Output

Check Nozzle Output

- Replace worn nozzles when 5-10% increase in flow rate from manufacturer's recommended flow rate (found in manufacturer's catalog).

Measuring Total Sprayer Output

- Fill tank completely then operate on flat ground for 3 minutes at normal engine/PTO speed and system pressure.
- Open all nozzles typically used in a spray application.
- Refill with measured amount of water; divide total by 3 = gallons per minute.
- Total output should equal sum of all nozzles' gallons per minute at same pressure as set by manufacturer's catalog.
  - If 5-10% more than recommended amount, replace all nozzles.

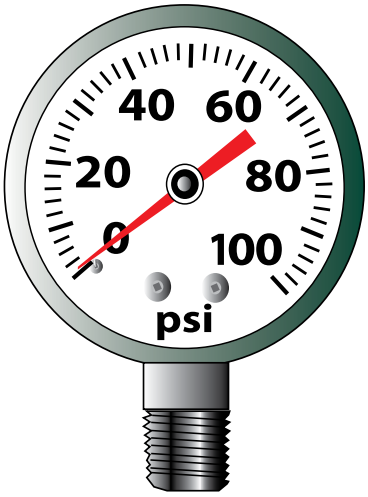
Measuring Nozzle Output

Measure each nozzle individually by capturing output.

- With unit parked, operate sprayer for 3 minutes at normal engine speed (fan gear set to neutral if possible).
- Divide total by 3 = gallons per minute. Check with manufacturer's catalog.
- Replace worn nozzles individually.

General wear rates of standard nozzles

- Longest life: Ceramic (more expensive).
- Medium life: Stainless steel .
- Shortest life: Brass.
- Consider cost versus use.

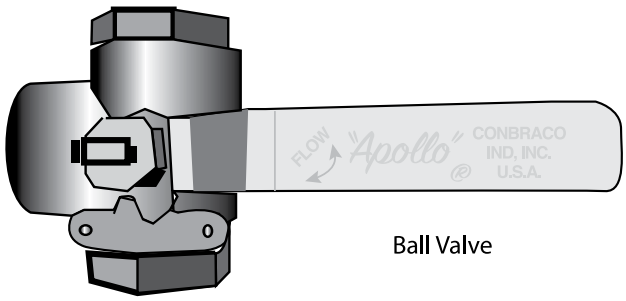


Pressure Gauges

- Most reliable are liquid/glycine filled gauges.
- Compare readings from sprayer pressure gauge against bench tested gauge.
- Couple hand gauge to line feeding sprayer pressure gauge; compare pressures (coupler can be added by installing "T" juncture in line).

Check For Leaks in the System While Operating With Clean Water

- All screens and fittings.
- Check valves.
  - Open and close boom and watch for leakage or "slobber" from nozzles.
  - If leaking, disassemble and clean. Replace diaphragm if needed (or replace if sealed).



Ball Valve

Pump Maintenance

- Regular system rinsing/cleaning removes corrosive residues that can shorten the life of your pump.
- Periodically check oil levels through site gauge (if applicable).
- Check oil in diaphragm pump for water, indicating ruptured diaphragm.
- If gradual or sudden pressure drop, pump may need rebuilding or replacing.
- Evidence of failing pump: pressure drops as tank level drops.
- Repairs typically need attention by trained mechanic.

Mechanical Agitator Shaft

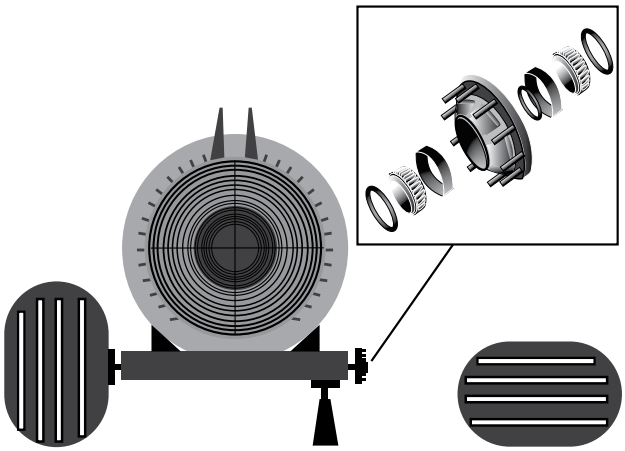
- Grease following manufacturer's instructions

To repack shaft bearing

- Remove nut on outside.
- Repack with cotton "rope" packing.

Tires, Axles and Wheel Bearings

- Check tire pressure.
- Check periodically for play in bearings.
- Annually or every other year remove hubs and repack bearings.



Further information

Andrew Landers: Practical Vineyard Spraying. www.EffectiveSpraying.com

Dr. Jason S.T. Deveau: Airblast 101: http://sprayers101.ca/

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Maintenance Checklist

Cleaning and Rinsing Spray Tank Between Spray Jobs

Cleaning Sprayer Tanks

- Follow label recommendations for cleaning material, amounts and practices.
- Always rinse tank after applications: never leave pesticides in tank for extended periods.

Sprayer Clean Up Location

- Don't wash sprayer in same location every time (residues can accumulate in the soil).
- Ideally wash-off sprayer in treated field.
- Make sure there is adequate distance between clean-up location, waterbodies or drains leading to water bodies.

Disposal of Tank Rinse water

- Apply rinse water to treated field.

Storing Sprayer for Winter

- Park sprayer under cover.
- Remove all nozzles.
- Drain entire system, especially the pump.
- If the pump cannot be drained, consider filling with non-toxic anti-freeze (propylene glycol, etc.), especially in areas where winter temperatures fall below 32 degrees.

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