

Turfgrass Sprayer Preparation



The Machine Shop

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Spring is here, ushering in the spraying season. Growers of quality turfgrass will need to ensure that their sprayers are in tip-top condition. The need for an accurate sprayer is obvious. The cost of pesticides continues to rise, inaccuracy results in over-application, a waste of money and danger to the environment. Off-target drift results in damage to neighboring property and less product being applied to the target.

A morning or afternoon spent overhauling the sprayer will be time well spent. The sooner one starts on preseason maintenance the better, it also allows the local machinery dealer to get spare parts before the season starts. The cost of a new set of nozzles, pressure gauge or check valve diaphragms is soon recovered after a few hours of correct spraying.

A safer sprayer, well maintained, will work better, minimize waste and be more efficient.

CAUTION

- **Take great care when adjusting a sprayer while the engine is running.**
- **Engage the hand brake when leaving the seat.**
- **Ensure protective clothing is worn to avoid contamination.**

The Power Unit

The power unit must always be powerful enough to operate the sprayer efficiently under all working conditions. The air cleaner should be cleaned, the engine oil and filter changed if necessary. Tire pressures should also be checked.



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The Operation of the Sprayer

Partly fill the tank with clean water and move the sprayer to uncropped waste ground. Remove the nozzles. The wearing of a coverall, gloves and a face visor when working with the sprayer is recommended as the sprayer may be contaminated. Engage the drive and gently turn the shaft, increasing speed slowly to operating revs. Test the on/off and pressure relief valves, and check the agitation system. Flush through the spray lines, then switch off the tractor. Refit the nozzles and check the liquid system again for leaks.

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Turfgrass Sprayer Preparation Checklist

Hoses

check:

- For splits, chafing and cracks, particularly where booms fold
- Connections to ensure they are watertight

Filters

check:

- For missing filter elements and seals
- For leakage
- For blocked or damaged filters
- Correct filter for nozzle size

Tank

check:

- For fractures and any other damage
- The tank sits securely in its mount
- The agitation is working
- The tank is clean

Controls

check:

- The control circuitry (electrical, hydraulic or air) for correct operation
- Valves for both internal and external leaks

Pump

check:

- Oil levels and leaks
- The air pressure in the pulsation chamber (if fitted) is at the recommended level
- The pump rotates freely

Pressure Gauge

check:

- The pressure gauge needle doesn't fluctuate when the nozzles are delivering the correct amount of chemical per unit time while spraying.
- The pressure gauge needle returns to zero when the sprayer is switched off

Boom

check:

- Boom movement and stability
- The boom folding mechanism
- The height adjustment mechanism
- The break backs for correct operation

Boom Piping

check:

- The condition of all pipework
- The nozzle bodies for damage or loose fit
- For any damaged units, and replace them
- For leaks under pressure

Check Valves

check:

- Damaged diaphragms and seats
- All valves stop liquid flow from the nozzles when sprayer switched off

Nozzles

check:

- All nozzles on the boom are the same
- All nozzles are in good condition, with no evidence of streaks or irregularities in the spray pattern
- All nozzles are clean and free from obstruction (note: clean with a soft brush or airline—don't damage nozzles by using wires or pins)
- All nozzles deliver to within + or - 5% of the manufacturer's chart value

Calibration

Where your sprayer has automatic controllers to monitor the speed of the sprayer and the flow, pressure and area sprayed,

check:

- They are in good condition and properly maintained
- They are frequently calibrated for accuracy
- For leaks, blockages, variations in pressure or any minor damage during spraying

A recommended calibration technique is summarized as:

- Read the label
- Measure the forward travel speed of the sprayer with the booms out and over the field to be sprayed. Mark a distance of 100 feet, record time taken to drive over the course.

$$\text{speed (mph)} = \frac{\text{distance (ft)} \times 60}{\text{time (seconds)} \times 88}$$

- Calculate the nozzle output/minute required:

$$\text{gals/minute} = \frac{\text{gals/acre} \times \text{MPH} \times \text{nozzle spacing}}{5940}$$
- Select the appropriate nozzle set
- Set the appropriate pressure
- Measure the nozzle output against time

Routine maintenance

The following checks should be carried out routinely:

- All hoses are tightly connected and free from sharp bends; cracked or damaged hoses must be replaced
- All controls move freely and are fully adjustable
- Pressure gauge reads zero
- Pump can be turned over by hand
- Air pressure in pump accumulator (if fitted) is correctly adjusted
- Drain plugs and clean filters are in position
- Tires are sound and correctly inflated; wheel nuts are tight