

Centrifugal pumps explained

We continue to take the mystery out of the business of spraying.

Centrifugal pumps create flow and pressure by centrifugal force produced by an impeller. Liquid enters through the centre of the impeller and as the impeller spins, centrifugal force throws the liquid into a spiral passage leading to the outlet. The only moving parts in centrifugal pumps are the shafts and impellers.

Some Centrifugal pumps are manufactured using materials that wear quickly or corrode due to commonly applied abrasive materials used in the Amenity industry. These pumps also require priming and are subject to back pressures from nozzles and control units

Agitation

Tank agitation is important to ensure a uniform mix of chemicals. Without agitation the chemical mix may separate and the spray will not be applied in the correct concentration. All sprayers



benefit from a tank agitator to maintain uniform mix. The most common type of agitation is hydraulic jet agitation, however, machines operating mechanical agitation are also available.

Hydraulic jet agitation, commonly called jet agitation, uses a portion of the pump flow to create a mixing action in the tank. A pump must be selected that is large enough to provide the extra volume the jet agitator requires. The flow can be through a standard nozzle or a specially designed ventura nozzle that creates a vacuum which increases the discharge from the nozzle.

The ventura type nozzle increases the mixing action by two and a half times and is very

effective when pump flow is otherwise marginal.

Mechanical agitation is less common and produced by paddles or propellers located in the bottom of the spray tank. The agitator is powered from an electrical motor that drives the mixers. Any of these agitators, when properly designed and operated, will adequately agitate most pesticides or suspended chemicals.

Sprayer monitors and controls:

System monitors are available that sense the operating conditions of the sprayer, such as travel speed, pressure and/or flow. These statistics feed into a micro-computer along with such information as swath width and litres

of spray mix being used. The console displays the pressure and travel speed.

The accurate monitoring of the spray operation will result in improved pest control and more precise pesticide placement.

Pressure gauges:

The pressure gauge should be designed to measure liquid pressure with a range about one-and-a-half or two times the maximum anticipated pressure. Liquid-filled gauges are preferred over dry gauges because the former reduce vibrations.

Boom control valves:

Boom control valves are essential when the spray operation does not require the use of the complete boom i.e. when spraying fairway perimeters, reduced width turf areas or when finishing a putting green. The valves, either manual or electrical, control the flow to either the left, centre or right boom section, or any combination of these. These boom controls, whether manual or electrical should be balanced pressure units.

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