ENVIROMIST
INDUSTRIES PTY. LTD.

Spraydome 5000

Operating Manual

APPLICATION RATES

FOR THE ENVIROMIST
CDA SPRAY SYSTEM

Spraydome 5000

Values in table show total litres per sprayed hectare

KPH	56* Litres/ hour	63* Litres/ hour	70* Litres/ hour	77* Litres/ hour	84* Litres/ hour
10	10.7	12.0	13.3	14.7	16.0
9	11.9	13.3	14.8	16.3	17.8
8	13.3	15.0	16.7	18.3	20.0
7	15.2	17.1	19.0	21.0	22.9
6	17.8	20.0	22.2	24.4	26.7
5	21.3	24.0	26.7	29.3	32.0
4	26.7	30.0	33.3	36.7	40.0

*Litres/hour value is the sum of the flow readings on each of the 7

FORMULA:

$$\frac{10 \times \text{LPH}}{\text{KPH} \times \text{Width (Metres)}} = \text{Litres per sprayed Hectare}$$

Question:
How do I calculate the number of hectares covered per tank load?
Answer:

$$\frac{\textbf{TANK SIZE}}{\textbf{Litres per sprayed hectare}} = \textbf{Total hectares sprayed}$$

Total hectares sprayed for the Spraydome 5000 with 500 litre tank will be 500 litres ÷16.7 (from chart above 70 litres per hour @8 KPH)
= 29.94 hectares sprayed (treated hectares)

ADJUSTMENTS TO APPLICATION RATES

Recommendations

1. **The Spraydome 5000 will operate most efficiently and most effectively when the readings on the flow metres are between 8 and 12 litres per hour. Operating outside of these recommendations can cause temporary or permanent damage to turf areas.**
2. **Variation in ground speed** may be used to change application rates provided **recommended top speeds are not exceeded.**
3. **Variation of the chemical concentration is the easiest way to change the amount of chemical being applied once the ground speed and flow rate have been established.**

Chemical Mix

The higher the concentration of chemical mix the higher the application rate.
The lower the concentration the lower the application rate.

Ground Speed

Travelling faster than the calculated speed will reduce the application rate.
Travelling slower will increase the application rate.

Flow rate

The flow is controlled in two ways.

a. By the nozzles at the C.D.A. head, the blue nozzle is the standard and is recommended that it not be changed.
b. The flow from the pump is set using the control valve located to the left of the 12 volt pump. This should be turned so that the readings on the flow meter are within the recommendations of 8 and 12 litres per hour.

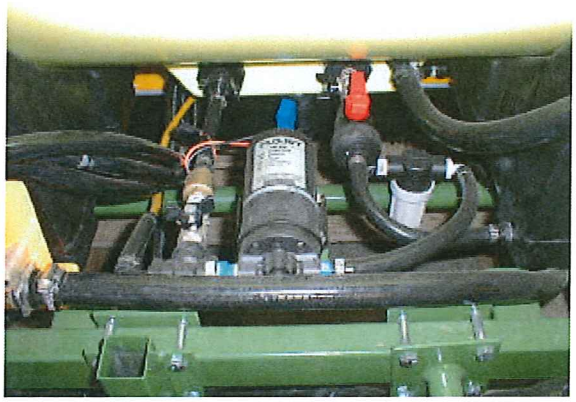


Figure 1: Control valve is where CDA flow rates can be adjusted

Spraydome 5000
Checking Procedures

Pre-Operation Checklist

1. Before attempting to use this machine, READ all Operators Manuals thoroughly.
2. Read and follow instructions on the chemical manufacturer's labels.
3. Always wear applicable protective clothing.
4. Check that all maintenance procedures have been followed.
5. Check all plumbing and fittings to ensure that there is no damage or leaks.
6. Check that tank, strainers, lines and nozzles are clean.
7. Check that the sprayer is operating correctly – follow pre-operation checking procedure.

Pre-Operation Checking Procedure

Before filling the sprayer with chemical mixture, it is recommended that you follow these procedures to check that everything is working correctly.

1. Place a small amount of clean water in the supply tank ensuring that the strainer is in place when filling.
   Failure to use the strainer will increase the likelihood of blockages from contaminated water.

WARNING: USE CLEAN WATER ONLY!! Do not use chemical mixture when checking the sprayer.

2. Engage the PTO driven pump, ensuring that the control units for the nozzle system are off, to begin agitation of tank.
3. Turn on the 7 individual head switches.
4. Turn on the CDA switch and the Pump switch, to begin spraying.
5. Check that the CDA's under the shroud are working correctly. The disc of the CDA should be spinning and spreading a fine mist to the edge of the shroud. If not, see CHECKING PROCEDURES FOR PUMP AND CLEARING BLOCKAGES
6. The sprayer is now ready for operation.

Spraydome 5000
Operating Procedures

CDA System

1. Establish the rate of chemical to be applied using the chemical manufacturer's recommendations.
2. Calculate the correct amount of chemical to add using the procedures in the **APPLICATION RATES** pages.
3. Check the sprayer control switch(s) is **OFF.**
4. Mix water and chemical thoroughly and then add mixture to the tank.
5. Ensure that the control units for the nozzle system are turned **OFF**.
6. Engage PTO driven pump to provide agitation when filling tank. The PTO driven pump can remain engaged during spraying to provide agitation.
7. Before every spray ensure that the small grey filter for the CDA

Figure 2: CDA filter shown next to red handled 3-way ball valve

a. Turn 12V Flojet pump **OFF**.
b. Shut off chemical flow by turning the ½ inch ball valve near tank sump.
c. Ensure the red handled 3 way ball valve is directed to spray position (pointed towards tank).
d. Unscrew grey filter cap.
e. Remove filter gauze and clean.
f. Replace filter gauze and filter cap.
g. Turn on chemical flow by turning the ½ inch ball valve in readiness to spray.

8. To operate the sprayer, turn the Inline Switch **ON**, move the 7 individual CDA switches to **ON**, finally move CDA and pump switches to **ON**, then travel at the speed determined for your application rate.

It is recommended that the vehicle speed when using the Spraydome 5000 should not exceed 10kph.

9. **The ball in each of the flow meters on the control unit not only indicates to the operator that the sprayer is working but gives a reasonably accurate in dication of the flow rate to each of the operating heads.** If one or more of the balls drop **while oper ating** it is likely that there is a flow restriction point somewhere along the spray line **and the chemical is not being applied as required. If this happens while spraying** stop the unit and rectify

the problem before attempting to spray again.
See **Trouble Shooting Guide** for further information

NOTE: The flowmeter is calibrated using water only and is accurate. As the concentration of chemical increases the flow rate may vary slightly from what is indicated. A manual calibration using a wide mouthed bucket should be done for accurate rates.

NOTE: When the pump is first switched on the indicator will fluctuate wildly, this is caused by air and water passing intermittently through the meter and jet. Once the air is out of the line the indicator will settle down.

The balls in the flowmeters should be set at a reading of between 8 and 12 litres per hour depending on the application rate that you are trying to achieve. The flow rate is set by turning the control valve, on the left hand side of the 12V Flojet pump, until the correct positioning of the flowmeter ball is achieved.

WARNING: Operating outside of these recommended flow rates can cause temporary or permanent damage to turf areas.

The lights on the control unit are used to control the speed that the motor is operating at. When the CDA heads are started you will notice that the light starts out bright and dulls once its operating speed is reached. The lights can be an indication if there is a problem with one of the heads. If you find a light is brighter than the others then there is either a problem with the motor or there is something preventing the disc from spinning.

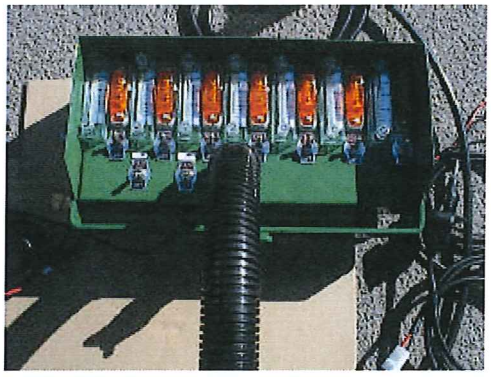


Figure 3: CDA control unit showing flowmeters, switches and lights.

Spraydome 5000

CDA System Maintenance

End of day maintenance

1. After spraying the **CDA spray lines need to be flushed** to ensure they are cleared of chemical. The following outlines the steps in this procedure:
   a. Turn the 12V Flojet pump **OFF**.
   b. Shut off the chemical flow by turning ½ inch ball valve near tank sump.
   c. Turn red handled 3-way ball valve so the arrow on the handle points away from the machine. This directs the pump to draw from the fresh water tank and not the chemical tank.
   d. Shut off the control valve located to the left of the pump to allow maximum flow through the CDA heads. This is important to ensure fresh water is not bypassed into the main chemical tank.
   e. Turn pump on.
   f. Let the fresh water tank completely empty before ceasing flushing.
2. After the lines have been flushed **allow CDA heads to spin dry for 1-2 minutes**. This reduces the chance of water or chemical being drawn in to the CDA head motors when they cool.
3. If cleaning underneath the shroud with either a hose or pressure cleaner take care not to directly spray the CDA spray heads. If water is sitting in the CDA atomiser discs ensure that you once again spin the discs dry.

End of season maintenance

1. Prior to storage drain the tank by turning dump valve

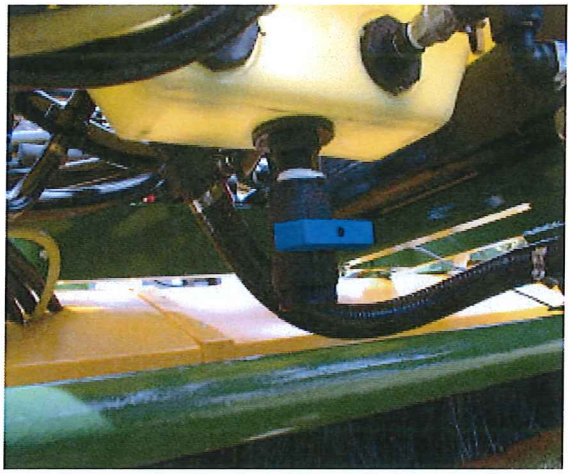


Figure 4: Underside of the tank showing tank dump

2. Allow the CDA heads to spin dry by turning the pump switch **OFF** on the CDA control unit turning the CDA switch **ON**.
3. Ensure that all spray lines are completely drained and that any exposed or unconnected ends are covered to prevent contamination by grit and insects while in storage.

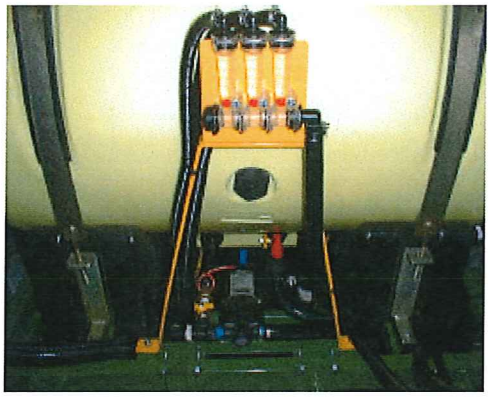
NOTE: Storage for prolonged periods in direct sunlight or areas of extreme heat should be avoided.

WARNING: When spraying heavily sloped areas it is recommended that travel be up then down the slope and not along the slope.

Nozzle System

To use the nozzle system the procedure below will need to be followed:

1. Ensure that the CDA and the pump switches on the Enviromist control unit are **OFF** and the master spray switch is **OFF**.
2. Before spraying check all connections and fittings in regards to the high volume nozzle system
3. Engage the PTO pump and select the tractor RPM that the pump will be operating. This should be providing full agitation depending on tractor revs and can be used to assist with mixing when filling the tank.
4. Turn the TeeJet computer on by pressing the **P**ro key.
5. Prior to spraying read the Operators Manual provided with the TeeJet 854 controller. Follow all sequence steps to ensure correct operation and understanding of the controller functions.
6. The TeeJet computer then needs to be calibrated. Follow the TeeJet calibration instructions in the Operators Manual and carry out calibration of both the speed and flow sensors.
7. The sprayer needs to be calibrated to ensure an even spray pattern is achieved across the boom. The calibration pages provided will assist you to do this manually. Ensure that all spray tips are checked periodically to maintain optimum performance of the sprayer.
8. When the nozzles are switched on the operator will notice that the balls in the Redball flow indicators at the front of the machine will move up towards the top of the sight glass. There are 3 banks of flow indicators with each one showing the flow for 2 nozzles. If there is a blockage in one of the nozzles the ball will drop to indicate a reduction in flow out of the nozzles. The operator should immediately stop and rectify the problem nozzle. The operator should regularly monitor the flow indicators when spraying.

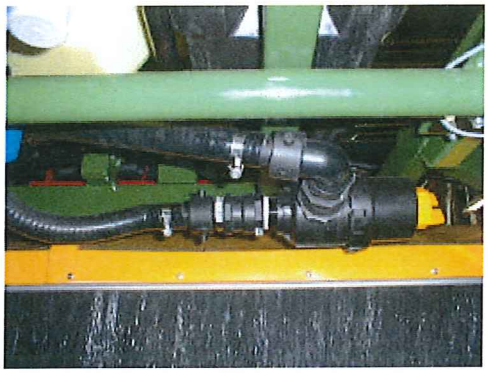


The bank of Redball flow indicators in front of the main chemical tank.

Nozzle system maintenance

To ensure a long working life for the nozzle system the following procedures should be adhered to:

1. Prior to spraying each day ensure that the large black filter for the nozzle system is clean.



Large black filter for nozzle system shown underneath the tank.

2. After each spray the operator should fill or part fill the chemical tank with clean water and run it through the nozzle system. This will assist in flushing any chemical build up from the body of the nozzles, from the engine driven chemical pump and from the Redball flow indicators. A tank cleaning product could also be used to flush through the system.
3. All of the nozzles in the Spraydome 5000 should be checked regularly for deformities or wear and replaced when their flow exceeds the flow of a new tip by 10%.
4. Wash entire unit underneath the shroud thoroughly after each days use – taking care not to spray the CDA heads directly.
5. PTO Pump must be maintained as per operating manual supplied.
6. System pressure on the Spraydome 5000 is preset at 5 bar. This is set using the pressure relief valve

Use of Hose Reel Kit including Spot Sprayer (Optional item).

1. To operate the spot sprayer associated with the hand reel the PTO pump needs to be engaged with all flow being directed back into the tank as agitation (ie no boom sections are to be open).
2. The hand wand then can be used with the 10 metres of hose that is provided. Pressing the trigger will begin spray through the nozzle and releasing the trigger will stop the spray.
3. Pressure to the spot sprayer can be altered by using the '+'/ '-' switch on the nozzle system switch box.

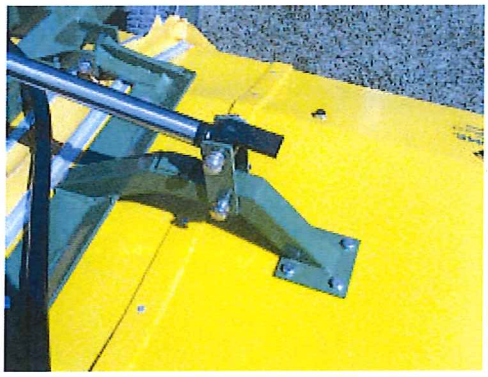
Use of hydraulic ram kit.

To operate the hydraulic rams the 4 hoses need to couple to 4 hydraulic ports

on the tractor. This will allow each wing to be raised and lowered independent of each other.

When extending the ram to allow the wing to lower to the spraying position ensure that it fully extends. This will ensure that the wing will be able to float 30 degrees above and 30 degrees below the horizontal plane when spraying.

The knuckle of the ram has a tag attached to it to prevent the wings from moving once in the transportation position



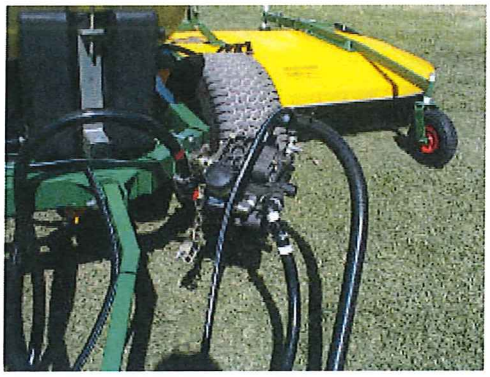
Hydraulic ram shown fully extended with the tag to prevent wing movement when in the transportation position.

Use of foam marker

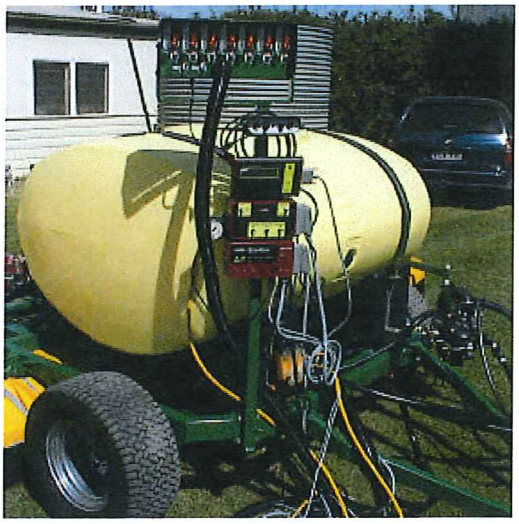
1. The controls for the foam marker are located underneath the controls for the CDA system.
2. The operator will need to select to drop foam from either the left hand side or the right hand side. Detailed operations and maintenance of the foam marker are included with the machine.

Control unit & pump storage points.

1. The Spraydome 5000 has storage points for the control units and the PTO pump. These should be utilised when the machine is disconnected from the tractor.



Pump storage position shown at the front of the machine.



Control unit storage position shown on the opposite front corner of the machine to the pump storage point.

Operating Procedure: Calibration of Sprayers (Area calibration)

Procedure

The step by step procedure for calibrating a Spraydome nozzle system

Step 1 Nozzle check

Partly fill the sprayer with water and while running the sprayer at normal operating pressure, measure the output of each nozzle over a given time usually one minute. It may be necessary to fit a tube or hose over each nozzle to enable the proper collection of liquid.

Discard any nozzle varying from the manufacturer's recommended output (at a similar operating pressure) by ± 10 per cent.

Determine the total output from all nozzles in litres per minute (L/min).

OR new nozzles can be fitted and the tank method of calibration applied.

Step 2 Spraying Speed (km/hr)

Place two permanent marker pegs 100 metres apart on a soil surface similar to where the sprayer will be operating and record the time in seconds to travel the distance (It is normal to travel the distance at least twice and average the results). Ensure that you have reached the normal spraying speed and that the sprayer's PTO is operating at the chosen RPM before passing the first marker.

Use the following formula to calculate the speed:

Spraying Speed (km/hr)

= distance travelled in metres x 3.6 ¸ time taken to travel that distance (sec)

APPLICATION RATES

FOR THE
ENVIROMIST CDA
SPRAY SYSTEM

Spraydome 5000

Values in table show total gallons per sprayed acre

MPH	14* Gall/ hour	16* Gall/ hour	18* Gall/ hour	20* Gall/ hour	22* Gall/ hour
6.0	1.1	1.3	1.5	1.6	1.7
5.5	1.2	1.4	1.6	1.8	1.9
5.0	1.3	1.5	1.7	1.9	2.1
4.5	1.5	1.7	1.9	2.2	2.3
4.0	1.7	1.9	2.2	2.4	2.6
3.5	1.9	2.2	2.5	2.8	3.0
3.0	2.2	2.6	2.9	3.2	3.5

*Galls/hour value is the sum of the flow readings on each of the 7 flowmetres.
E.g. 16 Gall/hour is determined by a reading of 2.3 on each of the 7 flowmeters (16÷7 = 2.3 approximately)
1.7 – Highlighted amounts show suggested target application rates.

FORMULA:

$$\frac{99 \times \text{GPH}}{\text{MPH} \times \text{Width (Inches)}} = \text{Gallons per sprayed acre}$$

Question:
How do I calculate the number of Acres covered per tank load?

Answer:

Tank size / Gallons per sprayed Acres = Total acres sprayed

Total acres sprayed for the Spraydome 5000 with 130 gallon tank will be
130 gallons ÷ 1.7 (from above chart 18 gall/hour @ 5 MPH)
= 76.5 Acres Sprayed (Treated Acres)