



## ***Instruction Manual***

MANK02A REV-C 10/02/17

### **TrayLink Sprayers**

(K02A) 200L

(K03A) 300L



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No liability can be accepted for any inaccuracies or omissions in this publication, although due care has been taken to make it as complete and accurate as possible.

The information, illustrations and technical data were considered to be correct at the time of preparation.

In accordance with our policy of continuous development Silvan Australia Pty. Ltd. reserves the right to make changes at any time without notice.

#### YOUR SPRAYER DETAILS

Record the details of your Sprayer here for future reference when discussing service with your Silvan dealer, ordering service parts or making a warranty claim.

DATE OF DELIVERY \_\_\_\_\_

SELLING DEALER \_\_\_\_\_

ADDRESS \_\_\_\_\_

TELEPHONE NO \_\_\_\_\_

INSTALLED BY \_\_\_\_\_

MODEL NUMBER \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

## Warranty

*the Silvan*

# Warranty

**This warranty is the only warranty applicable to Silvan new products ('Products') and, to the maximum extent permitted by law, is expressly in lieu of any other conditions or warranties expressed or implied in relation to the Products.**

**Subject only to legislative obligations to the contrary, Silvan shall not be liable for incidental or consequential damage resulting from ownership or use of a Product.**

**Silvan does not authorize any person to create for it any other obligation or liability in connection with these products.**

Silvan warrants its authorised Dealer, who in turn warrants the original purchaser (owner) of each new Silvan product that it will repair or replace the product, or, pay the cost of repair or replacement, as determined by Silvan without charge for labour or any defective or malfunctioning parts in accordance with the warranty limitations and adjustment schedule below.

The warranty period begins on the date the product is delivered to the first retail purchaser for a period of 12 months

### *This Warranty Covers*

Only conditions resulting directly from defects in workmanship or material under normal use and service.

### *Warranty Exclusions*

The Warranty does not cover:

- Conditions resulting from misuse, use of incompatible chemicals, exceeding machine specifications including overloading, impact damage, negligence, accidental damage or failure to perform recommended maintenance services.
- Any product which has been repaired by other than an authorised Silvan service outlet in a way which, in the sole and absolute judgement of Silvan, adversely affect its performance or reliability.
- The replacement of maintenance items such as diaphragms, batteries, V belts and ground engaging components, etc.
- Loss of time, inconvenience, loss of use of the product liability to third parties or any other consequential damages.
- Incidental costs associated with a warranty repair including any travel costs, out of hour's labour charges, cleaning costs, transportation costs, freight costs or any communication costs.

The repair of a defective product qualifying under this warranty will be performed by any authorised Silvan service outlet within a reasonable time following the delivery of the product, at the cost of the owner, to the service outlet's place of business. The product will be repaired or replaced, using new parts supplied by Silvan. Silvan, in its absolute discretion, may choose to pay the cost of replacement or repair of the product.

The owner is responsible for the performance of regular maintenance services as specified in the Owner/Operator Manual applicable to the product. Failure to carry out regular maintenance may invalidate warranty

## Safety Instructions



Before attempting to operate or install the sprayer carefully read and take note of the following safety warnings.

Failure to comply with these warnings may result in serious injury or death.

**Warning !** This sprayer is designed and manufactured solely for the purpose of applying agricultural chemicals to plants. Under no circumstances may it be used for any other purposes.

**Warning !** Prior to installing or using the sprayer all operators must read and fully understand the contents of this instruction manual, all safety decals fitted to the sprayer and any other manual for associated equipment.

**Warning !** Never allow an inadequately trained person to install or operate the sprayer or implement.

**Warning !** Do not exceed the the vehicle manufacturer's specified safe load and carrying capacity.

**Warning !** Exercise extreme care when operating in hilly or uneven terrain to ensure proper stability, and braking ability. Refer also to the vehicle manufacturer's operating and safety instructions.

**Warning !** Refer to the chemical manufacturer's label for correct use and safe handling instructions of chemicals before filling or using the sprayer. Always wear the recommended safety clothing and equipment when handling chemicals and operating the sprayer. Ensure that all operators and associated personnel are familiar with the legal regulations and codes of practice that apply to the safe use, storage and disposal of spray chemicals

**Warning !** Before carrying out maintenance work, wash the sprayer thoroughly to remove all toxic chemicals that may contaminate the sprayer. Wear appropriate safety clothing and equipment when carrying out maintenance.

**Warning !** Never point the spray gun or boom-less spraying apparatus at any person or any part of the human body.

**Warning !** Never operate the sprayer in an explosive environment as arcing from the electric pump may cause an explosion. NEVER attempt to spray flammable liquids.

**Warning!** Do not operate spraylance whilst vehicle is in motion.

The wording of the Safety decal is shown. All operators must be made aware of the decal and follow its instructions.

The decal must be fitted to the machine at all times in the location shown. If the decal is missing or unreadable it should be replaced.



# Specifications

## GENERAL

The Silvan TrayLink sprayer is a combined Boom-Less & Spot Sprayer powered by a large capacity 12V pump and mounted on a TPL style frame suitable for a small tractor while also allowing for it to be deployed to a variety of vehicles and platforms. The TrayLink is designed for applying agricultural chemicals such as pesticides, insecticides, herbicides or fertilizer in terrain unfavorable with booms through the boomless nozzles.

## PUMP

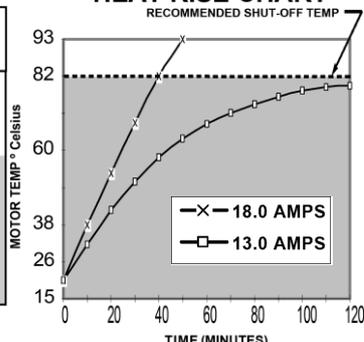
12-Volt DC electric, self priming positive displacement diaphragm pump with electric pressure sensing switch.

Flow: 15.5L (at 30psi or 2 bar)  
 Valves: Viton  
 Diaphragm: Santoprene  
 Duty Rating: Continuous up to 40psi (at 21°C ambient)  
 Max Current: 18 amps  
 Max Pressure: 60psi (set by pressure switch)

### TYPICAL PERFORMANCE

(psi)	Flow (L/min)	Current (Amps)
70	11.35	18.00
60	12.11	16.30
50	13.44	14.60
40	14.38	13.00
30	15.5	11.00
20	17.03	9.00
10	18.55	7.00
OPEN	20.06	5.50

### HEAT RISE CHART



The heat rise chart indicates (in the greyed area) the conditions where this pump can operate under a continuous duty cycle when ambient temperatures are 21° Celsius or less. **Note** when current draw is greater than 13amp at 21° the duty cycle is rated as intermediate

## LID

(K02A) 240mm Screw down lid with breather  
 (K03A) 255mm Screw down lid with breather

## BOOMLESS NOZZLES

Fitted with two Hypro Boom X Tender nozzles (FC-XT020) mounted to a swivel nozzle holder allowing easy adjustment of the angle of the nozzle to control spray pattern and swath width. Each one nozzle covers a swath of 5.18m when 1.2m above the ground when spraying at 40psi (two nozzles can cover a 9m swath). The Nozzle mounting can be positioned on the rear or side of the frame to allow for use of sprayer from a tray or mounted by TPL connections.

### FC-XT020 Nozzles

PSI	FC-XT020 Nozzles		Application rate L/Ha				
	1 Nozzle L/min	2 Nozzles L/min	Speed Km/Hr				
	6	8	12	16	24		
30	6.43	12.86	107.4	92.6	62	46.6	31.1
40	7.57	15.14	126.3	108.4	72.6	54.1	26.8
50	8.33	16.66	138.4	119.6	80.3	59.7	40.5
60	9.08	18.16	151.3	130.9	87.2	65.4	44.2

## TANK

200L and 300L capacity rotationally moulded translucent polyethylene tank, U.V. stabilized and impact resistant with calibrated fill mark moulded into the tank. Contains sump with drainage and special tank wall section that clips into frame for firm hold of tank.

## FRAME

(K02A) Compact design of steel construction holds the 200L tank with a lower weight and centre of gravity to improve handling. Durable black powder coat finish with two mounting points for Boom-less nozzles, hose holder and CAT I linkage points.

(K03A) Galvanised steel construction for long life, holder for hose and spray lance and CAT I linkage points.

## HANDGUN AND LANCE:

6m hose with Spotjet Spray gun with 600mm Stainless steel lance with adjustable nozzle.

## FILTRATION:

1. Basket strainer under lid
2. Suction filter with Removable element

## DIMENSIONS

(excludes Boomless Nozzles fitted to frame)

	K02A	K03A
Length	1040 mm	1070 mm
Width	760 mm	830 mm
Height	745 mm	1060 mm
Weight (dry)	44 kg	72 kg
Nominal capacity	200 litres	300 litres

The Boomless spraying adaptor adds an additional 140mm to the Length or width when mounted to the side or back of the frame respectively.

## CONTROLS

The TRAYLINK provides three ways to control output.

1. Two manual section valves one too the boomless nozzles and the other to the spot spraying lance.
2. A proportional regulating valve with graduated dial and pressure gauge allows adjustment of application and tank agitation rates (Contains EPDM seals).
3. The power loom contains a small control box with remote on/off switch and 20 amp fuse to allow pump to stop boom-less spraying from a driver's seat or cab.

## Specifications (cont.)

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### IMPORTANT INFORMATION ABOUT 12 VOLT SPRAYERS

Silvan TrayLink Sprayers feature a 12V positive displacement diaphragm pump with a pressure sensing switch.

Restriction to the flow from the pump results in the increase in system pressure, which if great enough will cause the pressure switch to cut the power to the motor. When using the 12 volt spray unit in spot spraying applications the pressure switch can act to function as an automatic on demand switch, stopping the pump when the spray lance trigger is released. When the spray lance trigger is depressed fluid is released and the pressure will drop allowing the pressure switch to resume power to the pumps motor. When a pressure regulator has been installed the pumps electric pressure sensing switch will not act as an On-Demand switch because of pump flow bypassing back into the tank will can stop pressure from building high enough to automatically switch the pump completely off.

The use of the TrayLink for the application of chemical requires initial set up before operation to ensure the users personal safety, an even spray pattern and long life of the pump. Depending on your specific spraying requirements you may need to change or adjust the nozzle(s) to suit your desired droplet size or spray pressure.

When the flow rate through the spray lance or boom is very low, the pump may re-pressurize the outlet faster than the fluid is being released causing rapid pulsation/cycling (pump switching ON/OFF within 1 seconds).

**If the pump is subjected to rapid pulsation/cycling during normal operation, or for infrequent periods may reduce the life of the pump.** Applications which exhibit rapid pulsation/cycling should have restrictions in the nozzle minimized by fitting a larger (less restrictive nozzle) Pulsation can cause premature failure of the pressure switch or pump; these failures are not as a result of the workmanship of the component. An alternative to changing the nozzle to stop pulsation is to utilize a pressure regulator to manage flow and pressure.

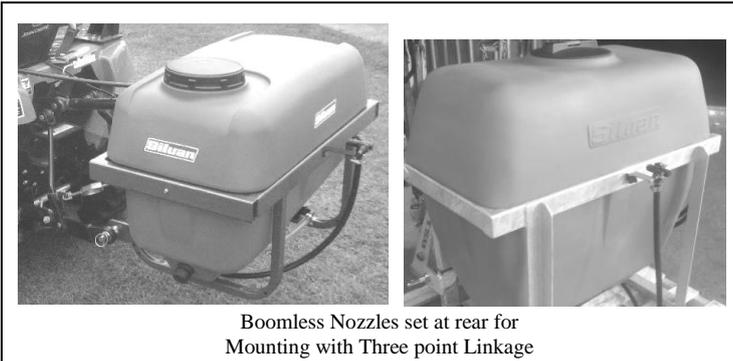
It is therefore highly recommended that the user performs the appropriate set-up to facilitate in trouble free usage.

# Installation

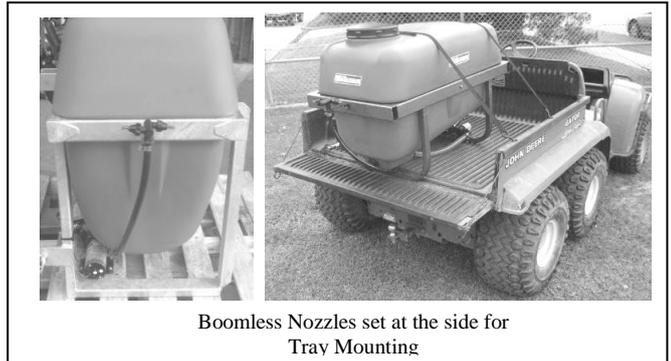
## FITTING INSTRUCTIONS

The TrayLink can be mounted to a small tractor via CAT I three point linkage points; alternatively the small tank and frame is suitable for mounting on to the deck or tray of a vehicle with appropriate tie down straps. Refer to manufacturer's instructions for appropriate load limits and fitting positions.

Note: When the TrayLink is delivered with the boom-less nozzle holder disconnected from the frame to protect it from transport damage. Before the TrayLink is mounted to a vehicle it is best that you attach the nozzle holder bracket to the frame (as shown below). The nozzle holder bracket can be fastened by hand with a Tri-Screw to 2 positions for boom-less spraying for TPL or Tray mount.



Boomless Nozzles set at rear for Mounting with Three point Linkage



Boomless Nozzles set at the side for Tray Mounting

When fitting the Boomless nozzles to the frame note the orientation of the bracket and hose. The nozzles will require aligning with in each nozzle cap to prevent mis-spray against the frame and tank as well as adjusting the swivelling nozzle holder which angle will effect the swath with and spray pattern.

Note : 1 litre of water = 1 kg.

Never fill spray tank to a capacity beyond the specified overall weight limits set by your vehicle manufacturer. When fitted these should be firmly secured to approved attachment points.

**Warning !** Do not exceed the vehicle manufacturer's specified safe load and carrying capacity.

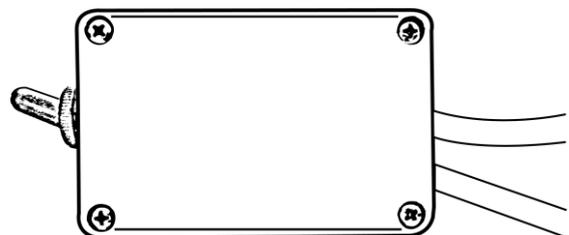


## CONNECTING TO 12 VOLT DC SUPPLY

The Sprayer requires a 12 volt DC power source. A power loom 5.5 metres long is provided with the sprayer to allow the sprayer to be connected to the 12 volt DC source. One loom contains alligator clips for attaching to a battery or suitable 12V DC power supply, the red clip is positive and the black is negative. The second loom features a water resistant electrical connector that clips to a corresponding connector on the pump. If you extend the wire use wire of the same gauge or larger.

The power loom contains an inline control box with on/off switch to allow the sprayer to be switched off from the 12 volt DC source to prevent accidental drain of power and to shut down the pump when the tank is empty preventing overheating and damage to the pump. An additional benefit of switching off the pump remotely allows for the boomless nozzles to be switched off in a situation or set up where the operator cannot safely reach the manual section valve.

A 20 amp fuse is fitted to the control box to prevent any potential damage to the electrical system of the vehicle. Consult your vehicle instruction manual for correct electrical connection.



## Operation

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It is always recommended that you first test all spray equipment thoroughly with clean water. The Traylink is supplied with both a Spray gun for spot spraying and boom-less spray nozzles with holder.

### SETUP AND TESTING FOR SPOT SPRAYING

For this set up ensure that the manual section valve to the boom-less nozzles is closed and the section valve to the spray gun is open. The supplied SpotJet Spray Gun contains a large orifice blue adjustable nozzle, which when twisting the tip can allow for a greater flow of liquid. It is recommended that adjustable nozzle is used first and can be changed later if you require.

1. Be sure to wear safety equipment as recommended by the chemical manufacturer before adding chemical to the sprayer
2. Check the filter is clean and undamaged (see Maintenance section).
3. Fill the tank with clean water.
4. Ensure the 6 meter spray hose and spray lance is connected. Fit the blue adjustable nozzle or any large orifice nozzle you may wish to use).
5. Check all pipes, hoses, hose clamps and connections for leaks or damage.
6. Check the hose connections for leaks if any are found stop the pump and rectify the problem before continuing.
7. Twist the tip of the nozzle to the coarsest droplet size so that restriction to flow is minimized.
8. Turn the regulator control knob anticlockwise (this opens the variable orifice and allows for maximum bypass of fluid).
9. Switch the pump ON.
10. The pump is self priming and should start spraying within 30 seconds. Depress the spray lance trigger to flush air from the lines. **Note:** The initial pressure to the spray lance will be low
11. Slowly turn the control knob clockwise (this reduces the bypass orifice size) and increasing pressure to the nozzles until you reach your selected spray pressure or until the pump begins to pulsate/cycle on and off.
12. Slowly twist the tip of the nozzle from a coarse droplet size to a fine droplet to your preference or until the pump begins to pulsate/cycle on and off. **Note:** Some fine tune adjusting may be required between the nozzle and regulator to acquire a suitable pressure and droplet size for your application.
13. If the pump begins to cycling on/off you may require a different nozzle that is rated to allow for higher flow rates at your selected droplet size
14. Once the nozzle is set and the pump operates free of pulsation/cycling, the spot sprayer is ready to be utilized for spot spraying of chemical.

### SETUP AND TESTING FOR BOOM LESS SPRAYING

For this set up ensure that the manual section valves to the boom-less nozzles to the spray gut are closed.

1. Be sure to wear safety equipment as recommended by the chemical manufacturer before adding chemical to the sprayer
2. Check the filter is clean and undamaged (see Maintenance section).
3. Fill the tank with clean water.
4. Check all pipes, hoses, hose clamps and connections for leaks or damage.
5. Check the hose connections for leaks if any are found stop the pump and rectify the problem before continuing.
6. Turn the regulator control knob anticlockwise (this opens the variable orifice and allows for maximum bypass of fluid).
7. Switch the pump ON.
8. The pump is self priming and fluid will quickly start bypassing back into the tank for agitation
9. Open the section valve to the boom-less spray nozzles. Spraying will quickly commence.
10. Slowly turn the control knob clockwise (this reduces the bypass orifice size) and increasing pressure to the nozzles until you reach your selected spray pressure or until the pump begins to pulsate/cycle on and off.
11. If required you can also adjust the angle of the boom-less nozzles to add additional control over swath width. (**Note:** positioning the nozzles at extreme angles may over or under extend the sprayed area resulting in uneven spray patterns.

**Warning: Spray units must not be operated while the pump is pulsating/cycling because it can cause premature component failure.**

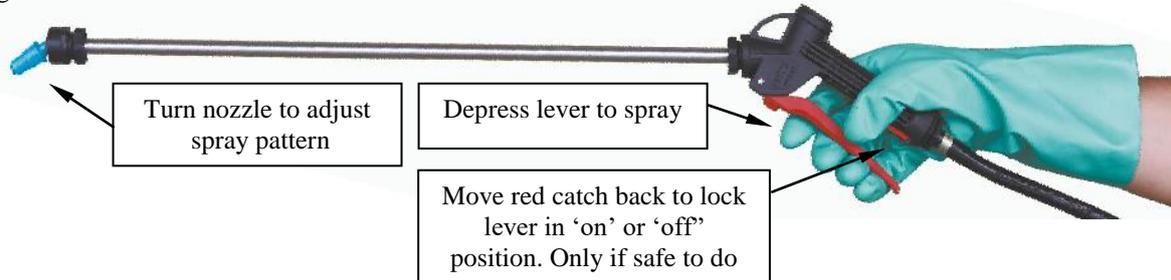
Chemical solution may now be added to the tank.

Follow the mixing instructions and safety precautions provided by the chemical manufacturer. Before adding concentrated chemicals, partially fill the tank with water then add the chemical and complete filling with water.

Wear all the safety equipment recommended by the chemical manufacturer before adding chemical to the sprayer and whilst conducting spraying operations.

## Operation (cont.)

The Spray Gun has an additional safety feature; the lever catch can be used to lock the lever closed to prevent accidental spraying. The catch can also be used to lock the lever open for continuous spraying. This should only be done when safe to operate in this manner and where there is no likelihood of inadvertently spraying any person or property that may suffer damage.



After spraying is completed, drain unused chemicals from the tank. Rinse the tank with clean water then operate the sprayer with clean water in the tank to clean out the pump, hose and spray lance. Do not leave chemicals in the tank as they may crystallize or form solids in the pump, spray lines and block the filter.

If heavy frosts are experienced, run the sprayer until the pump and spray lines are dry. This will prevent water freezing in the pump or spray lines and damaging the sprayer.

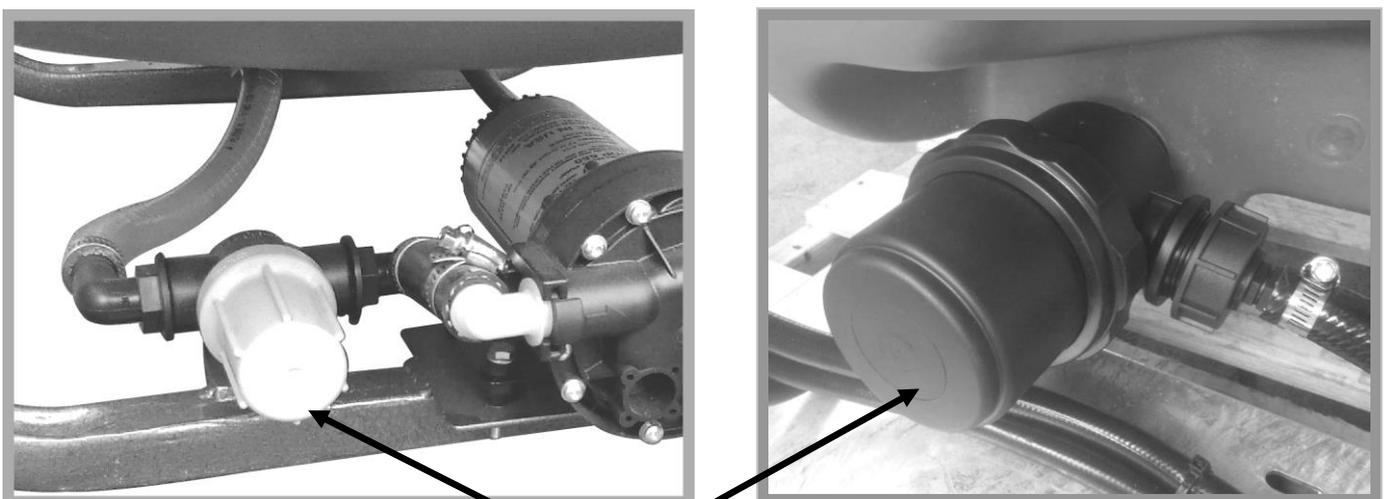
**Warning !** Dispose of unused chemical and water used for rinsing in a manner that will not endanger people, animals or the environment in accordance with local regulations and the handling and disposal information available from the Chemical manufacturer.

## Maintenance

### CLEANING THE FILTER

To avoid chemical contamination wear appropriate protective equipment including gloves whenever maintenance is carried out; turn off the pump and depress the trigger on the spray lance to dissipate any pressure.

The TrayLink features two filter/strainers that require cleaning. Beneath the lid of the tank is a basket strainer for stopping coarse debris from entering the tank and mounted next to the pump is an inline filter. Remove the filters to clean them, unscrew the lid to lift out the basket strainer and unscrew the filter housing and remove the element, clean both with clean water and a bristle-brush, do not use a wire brush or sharp object as this may damage the mesh.



In Line Filter.  
Remove white filter cap to access element

# Calibration

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## GENERAL INFORMATION

### WHEN TO SPRAY

Results will be best when wind speed is low, temperature low and relative humidity high. An ideal time is at sun up when these conditions are most likely to apply.

### APPLICATION RATE

The application rate depends on the following.

- Speed of travel - increasing speed reduces application rate and vice versa.
- Operating pressure - increasing pressure increases the application rate and reducing pressure decreases the rate.
- Nozzle size - increasing the nozzle size increases the application rate.

$$\text{Application Rate (L/Ha)} = \frac{600 \times \text{Nozzle Output (l/min)}}{\text{Speed (km/hr)} \times \text{Nozzle Spacing (m)}}$$

### GROUND SPEED

The speedometer on many vehicles may not be sufficiently accurate at the slow speeds used when spraying. If in doubt it should be checked by the following method.

Fill the sprayer with water to simulate the normal spraying weight of the vehicle. Ensure that the tyres are correctly inflated.

Measure and mark a distance of 100 metres. Approach the starting mark at the required spraying speed and accurately measure the time in seconds to reach the finishing mark. The ground speed can then be calculated as follows.

$$\text{Speed (km/hr)} = \frac{360}{\text{Time in seconds for 100m}}$$

### BOOM TEST (NOZZLE OUTPUT)

1. Partly fill the sprayer tank with water and mark the level or refer to the sight gauge.
2. Run the sprayer for several minutes with all booms sections operating and measure the time carefully.
3. Refill the sprayer tank to the mark using a measuring jug and record the amount added.
4. The average output for one nozzle in litres per minute can be calculated as follows.

$$\text{Nozzle Output (l/min)} = \frac{\text{Litres Used}}{\text{No. Nozzles} \times \text{No. Minutes}}$$

The output calculated should agree with the flow rate shown in the Spray Nozzle Selection Chart, for the particular nozzles fitted.

5. If the nozzle output is lower than shown in the table the pressure may be increased and the test repeated or, if more than shown, the pressure may be reduced. (If optional pressure regulator is fitted)

## Trouble Shooting

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<b>TROUBLE SHOOTING GUIDE</b>	
<b>Symptom</b>	<b>Remedy</b>
Pump does not operate	<ul style="list-style-type: none"><li>• Ensure battery wires are connected to battery properly.</li><li>• Check the inline Fuse and Fuse Holder in the power loom.</li><li>• Ensure the Lower loom clip connector is correctly attached to connector on the pump</li></ul>
Pump Wiring Overheating	<ul style="list-style-type: none"><li>• This can happen when pump is operated at high pressures for long periods of time.</li><li>• If power loom has been extended, larger gauge wire may be required.</li></ul>
Pump does not self prime	<ul style="list-style-type: none"><li>• Check filter, nozzles and spray lines for blockage.</li><li>• Check for air leak on suction side</li><li>• Diaphragm may have a hole</li><li>• Pump valves may be stuck or blocked, clean pump rinse clean water backwards through pump.</li></ul>
Pump is overheating	<ul style="list-style-type: none"><li>• Ambient temperature or pump pressure is too high, spray at lower pressure or when environment is cooler (See specifications for relationship between pump pressure, amperage and ambient temperature).</li></ul>
Spray Pattern is uneven	<ul style="list-style-type: none"><li>• Adjust angle and pressure to Boom-less nozzle.</li><li>• Check for blockage in nozzle.</li><li>• If nozzles are worn or damaged/ replace them.</li></ul>

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