



Operator's Manual

MANAB08 REV F 12/11/19

Air Assist Sprayer
2000L Supaflo
2000L Stiletto



Contents

	Page
Contents	1
Sprayer Details	1
Warranty	2
Specifications	3
Safety Information	4
Installation	7
Operation	11
Calibration	15
Optional Equipment	21
Lubrication and Maintenance	22
Troubleshooting	24
Pre Delivery, Installation and Warranty Form	25

YOUR SPRAYER DETAILS

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

SERIAL NUMBER _____

MODEL _____

DATE OF DELIVERY _____

SELLING DEALER _____

ADDRESS _____

TELEPHONE NO. _____

INSTALLED BY _____

New Product Warranty

Silvan Australia Pty. Ltd. builds equipment to a high level of specification using components from quality suppliers. The following information is provided to assist you with any repairs required within the warranty period. All warranty repairs on Silvan products are carried out by Silvan dealers. If any warranty repairs are required on Silvan products, it is recommended that the product be returned to the place of purchase. It is good practice to keep a record of equipment maintenance both during and after the warranty period. The warranty policy below explains the extent and limitations of your Warranty coverage on Silvan Products.

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, at 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.

Specifications

General

The 2000L Supaflo and Stiletto air assist sprayers are designed for application of agricultural chemicals in orchards and vineyards. They use a high pressure pump and nozzles to atomise the chemical solution, together with a high volume axial flow air fan to distribute the spray.

Tank

Polytuff impact resistant polyethylene.

2000 litre capacity.

Floating ball calibrated sight line.

455 mm diameter flip top lid and basket strainer.

Drain valve with 38 mm diameter outlet.

30 litre receptacle for chemicals (Supaflo only).

15 litre clean water tank (Stiletto), 40 litre clean water tank (Supaflo).

Agitation

Continuous by-pass fluid agitation plus venturi agitator in the front of the tank.

Drive

540rpm shielded PTO shaft direct coupled to pump with internal shaft through to fan gearbox.

Pump

Positive displacement oil backed diaphragm pump of varying capacity depending on sprayer specification. Nitrile diaphragms and corrosion resistant aluminium body with brass heads and manifolds.

Pump output and maximum operating pressure at 540 PTO rpm as shown below.

Pump No.	Output (l/min)	Max. Pressure (Bar)
IDS 1701	161	50
IDS 2001	182	50

Fan and Drive

Variable pitch 10 blade axial flow type of 900 mm diameter with cast aluminium hub and curved nylon reinforced plastic blades.

Adjustable polyethylene cowling with protective mesh screen.

Air straightening vanes.

Two speed, oil bath gearbox with neutral position direct coupled to fan through centrifugal clutch.

Speed (Hi Gear) - at 540 PTO rpm 2,160 rpm

Air speed - at full pitch 50 m/sec

Capacity - at full pitch 85,500 m³/hr

Controls

Cab-mounted control box with master on/off switch, left/right section controls and pressure regulating switch. Manual pressure regulator on valve bank. 100mm dia. 60 Bar pressure gauge on valve bank. 40 Bar regulator, dump valve and section valves.

Nozzles

16 twin non-drip jet nozzles for easy changing of application rate. Flip over action to turn on or off.

Brass body with removable ceramic jets and stainless steel swirl plates.

Chemical Filling System (Supaflo only)

Venturi induction system.

30 litre chemical receptacle.

Water jets for flushing residue into tank.

Filtration

Four stage with removable elements.

1) Tank lid strainer 30 mesh.

2) Suction line filter 50 mesh (Blue).

3) Pressure filter Integral on valve bank.

4) Nozzle strainers Stainless steel.

Frame and Hitch

Heavy duty galvanised steel construction.

Adjustable drawbar with jockey wheel.

Axle and Wheels

Glideflex suspension axle

Track width to outside of tyres - 1540 mm.

Galvanised steel rims.

31x10.5x15 tubeless tyres.

Operating pressure 250 kpa (35 psi).

Optional Equipment

Double sided Full Row Vineyard conveyor

Double sided Adjustable Vineyard deflector.

One side conveyor

Fixed axle with sliding adjustment (50mm drop axle on Supaflo, 100mm drop axle on Stiletto).

Flotation tyres

Automatic rate controller

Dimensions and Weights

With standard drawbar retracted and wheels in narrowest track.

Model	Length	Width	Height
(all dimensions in mm)			

Supaflo 3750 1540 1530

Stiletto 3800 1540 1500

Mass (kg)

Model	Dry	Full
Supaflo	640	2680
Stiletto	640	2655

To calculate part filled mass, add to empty mass 1 kg per litre of fluid, e.g. 500 kg for 500 litre.

Tractor Power Requirement

Minimum 60 PTO HP at 540 rpm

Maximum Towing Speed

Depends on tractor power and terrain but should not exceed 30 kph under any circumstances

Safety Information



Before operating the sprayer read the following safety instructions.

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

Whilst your Silvan sprayer has been designed and manufactured to incorporate all necessary safety features it is essential that any person who operates or works on the machine is aware of the safety precautions that should be exercised.

- ▲ This sprayer is designed and manufactured solely for the purpose of applying agricultural chemicals to crops. Under no circumstances should it be used for any other purpose.
- ▲ Before using the sprayer carefully read and ensure you understand the contents of this manual and any other manual supplied with the sprayer.
- ▲ Before operating the sprayer read all the safety warnings which are carried on various parts of the machine. Refer to the next two pages for a location diagram and the wording of these warnings.
- ▲ Never allow an inadequately trained person to attach or operate the sprayer.
- ▲ Do not operate the sprayer whilst wearing loose clothing, unrestrained long hair, jewellery or anything which could become entangled in rotating components or limit your vision.
- ▲ Only operate the sprayer on a tractor fitted with a roll-over protective structure (ROPS), or a cab incorporating a ROPS, complying with AS1636 or equivalent.
- ▲ Wear ear protection when operating the sprayer on a tractor that is not fitted with a sound proofed cabin.
- ▲ Ensure the towing capacity and power of the tractor is suitable for the loaded weight and power requirement of the sprayer. Refer to the tractor operator's manual for safe working loads and relevant tractor safety instructions.
- ▲ Exercise extreme care when operating in hilly or uneven terrain to ensure proper stability. Adjust the sprayer wheel track for maximum stability on side slopes. Refer also to the tractor operating and safety instructions.
- ▲ Do not allow any person to ride on the sprayer or tractor whilst it is in motion.
- ▲ Do not operate the sprayer at speeds greater than 540 PTO rpm.
- ▲ Do not operate the sprayer without all the tractor and sprayer safety shields in place. Carefully check that PTO and driveline shields are correctly installed.
- ▲ Stop the tractor, disengage the PTO, apply the parking brake and switch off the tractor engine before performing any service work on the sprayer.
- ▲ Disconnect the PTO shaft at the tractor and ensure the sprayer is properly supported and restrained before performing any maintenance work. Do not support the sprayer by the jockey wheel when the tank is full or partly full of liquid.
- ▲ Do not adjust the drawbar or wheel track without the sprayer being properly supported. Do not support by the jockey wheel.
- ▲ **Before use of any chemicals** refer to the chemical manufacturer's label and safety instructions for safe handling procedures and correct method of use. Always use the recommended personal protective clothing and equipment. Dispose of empty chemical containers in accordance with the instructions supplied by the chemical manufacturer.
- ▲ Always wear gloves when removing and cleaning filters and nozzles.
- ▲ 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.
- ▲ **Do not enter the sprayer tank under any circumstances.** If service to the tank is required contact Silvan for correct maintenance procedures.

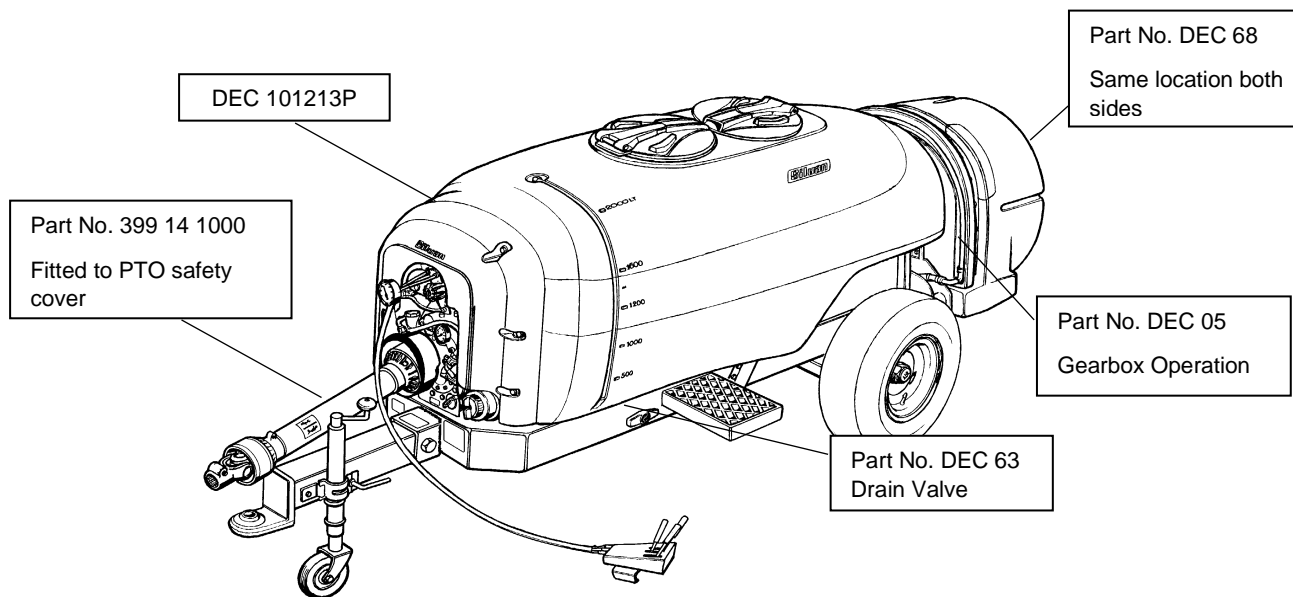
Safety Information



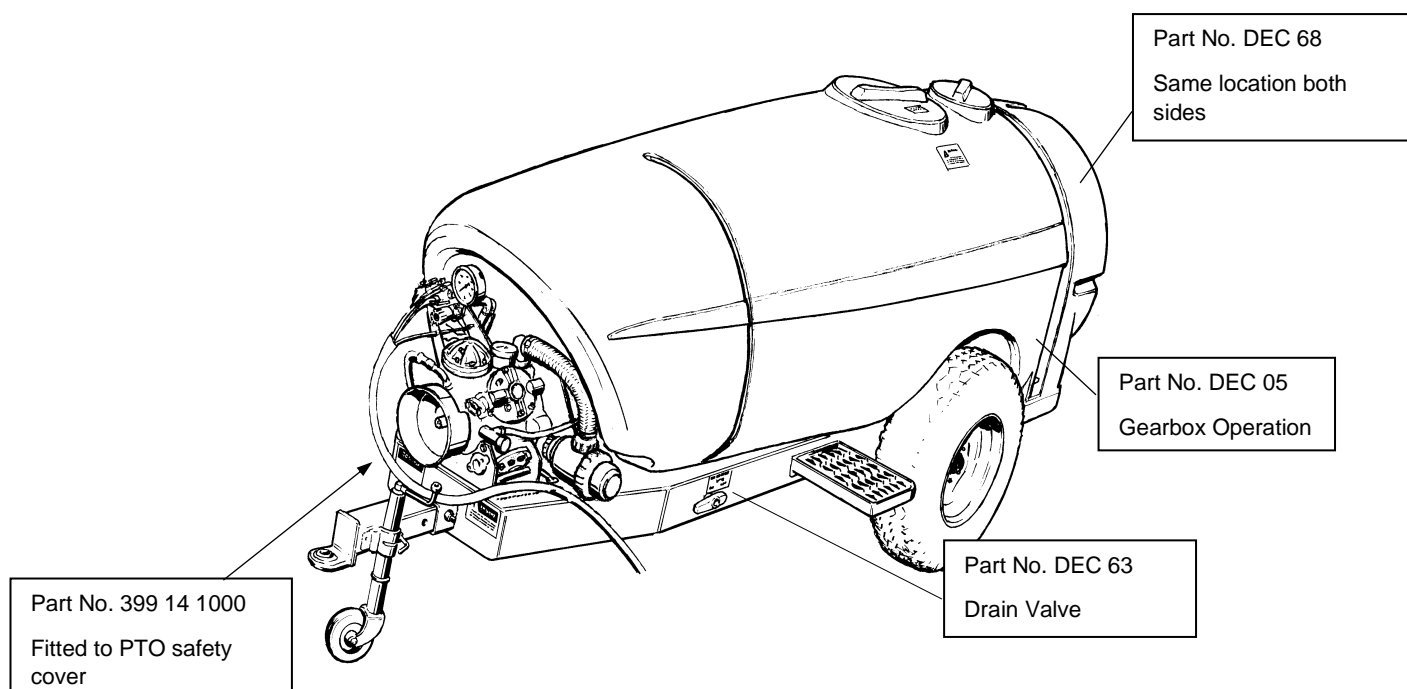
The locations of the safety decals fitted to air assist sprayers are shown in the diagrams below. The wording of the decals is shown on the following page.

It is important that all operators read and follow the information on all safety decals before operating the sprayer. Failure to comply with these warnings could result in serious injury or death.

Safety decals should be kept clean and legible at all times. If any decals are missing or unreadable they should be replaced by ordering new decals from your Silvan dealer using the part numbers shown.



**SUPAFLO 2000 AIRBLAST SPRAYER
DECAL LOCATIONS**



**STILETTO 2000 AIRBLAST SPRAYER
DECAL LOCATIONS**

Safety Information

Wording of Safety Warnings



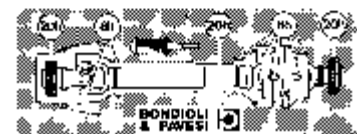
The wording of the safety decals shown on the previous pages is given below.
Before operating the sprayer read all safety warning decals.
Failure to comply with these warnings could result in serious injury or death



Part Number DEC101213P



Part Number DEC 68



Part Number 399 14 1000

Installation

Attaching to the Tractor

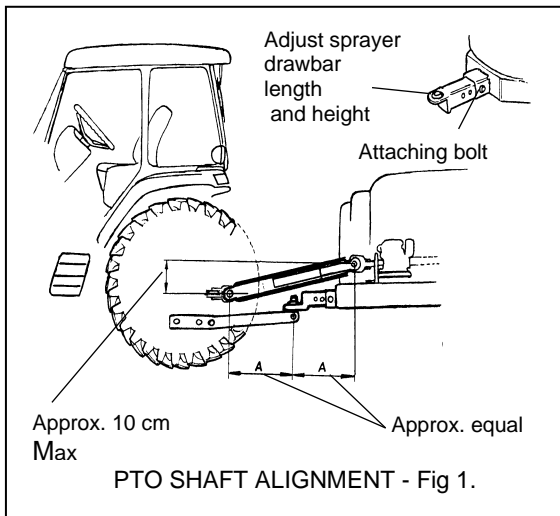
Attach the sprayer hitch to the tractor drawbar using the tractor hitch pin. Adjust the height of the tractor drawbar and/or sprayer hitch to level the sprayer. The hitch on the sprayer drawbar can be installed in either the high or low position.

To alter the sprayer hitch height, remove the drawbar attaching bolt and slide the drawbar out. Rotate the drawbar through 180° and reinstall it in the alternate position. Ensure that the drawbar attaching bolt is securely retightened.

Clean and grease the splines on the tractor and sprayer PTO stub shafts and install the PTO shaft making sure that the spring loaded locking pins engage in the grooves of both stub shafts. Ensure that the tractor's PTO shaft guard is attached to the tractor.

PTO Shaft Length

Note: Upon delivery of a new sprayer it is the selling dealer's responsibility to install and set the PTO shaft to the correct length. The following information is provided for reference.

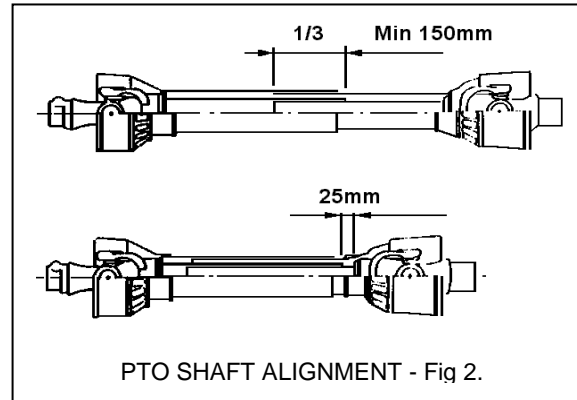


The hitch point between the tractor and sprayer should be approximately midway between the two joints of the PTO shaft and the height difference between the joints should not be greater than about 10 cm, refer Fig 1. This will ensure the joint angles are approximately equal during turns and do not exceed the allowable limit.

The telescoping tubes must overlap by at least 1/3 their length, but not less than 150mm, in all possible operating positions and there must be at least 25mm telescopic movement remaining at the minimum operating length, refer Fig 2.

The length of the sprayer drawbar can be adjusted by removing its attaching bolt and sliding the drawbar in or out to one of the three positions where the bolt holes align. Reinstall the drawbar bolt and tighten securely.

The length of the tractor drawbar may also need to be adjusted.



If the PTO shaft must be shortened cut equal amounts from both male and female shafts and safety covers. Carefully remove all burrs then clean and relubricate before reassembling.

Cabin Mounted Controls

Connect the electrical cables provided directly to the battery.

Positive = **Red** Negative = Black

If the cable needs to be extended it is important to use wire of the same diameter. These cables supply power to the electric valves.

If an automatic rate controllers is used refer to appropriate installation manuals.

Run the controller wiring loom back to the sprayer through a convenient outlet in the tractor cabin, ensuring that it does not rub on any sharp edge. Connect the tractor loom to the sprayer loom at the quick release coupling and ensure that all wiring is clear of the PTO shaft and tractor wheels.

Installation

Adjusting Wheel Track (optional fixed axle)

The wheel track may require adjusting to match the track of the tractor or to increase the stability of the sprayer.



Do not attempt to adjust the track with the tank filled or partly filled with liquid or without the sprayer being properly supported. Do not use the jockey wheel.

Use the maximum track on sloping terrain if possible.

Lift the sprayer with a jack and support it with stands under the drawbar and each side of the frame behind the wheels.

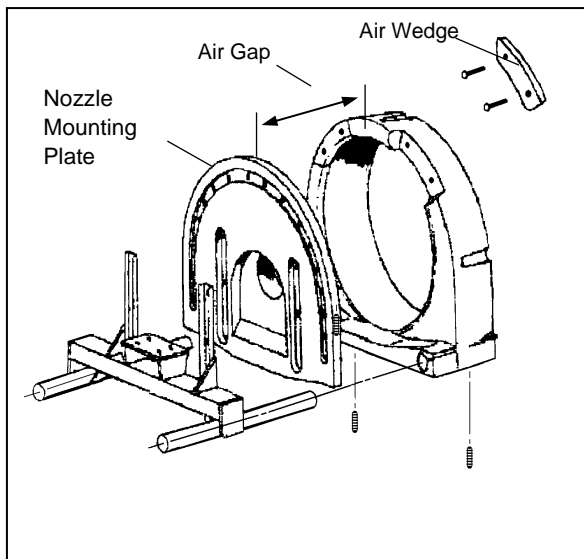
On the standard axle loosen the four axle U-bolts and the four set screws in the axle adjustment sleeve. Slide the axle shaft on each side to the required track and retighten the U-bolts and set screws securely.

With standard tyres fitted the track may be set between 1500 and 1580 mm, over the outside of the tyres. Use an equal offset each side and do not exceed the maximum track setting as this will prevent proper engagement of the axle sections. The track on the standard Glideflex axle is unable to be adjusted.

Adjusting the Fan

The Supaflo fan has four separate adjustments which can be used to regulate the air flow to suit particular applications.

1. Air Gap The volume and velocity of the airflow can be regulated by adjusting the gap between the fan cowl and the mounting plate for the spray nozzles. Moving the cowl in reduces the gap and increases the air velocity, which is best suited to vines and similar close plantings. Moving the cowl out reduces the air velocity but increases the volume, which is more suited to larger canopy tree crops such as citrus fruits.

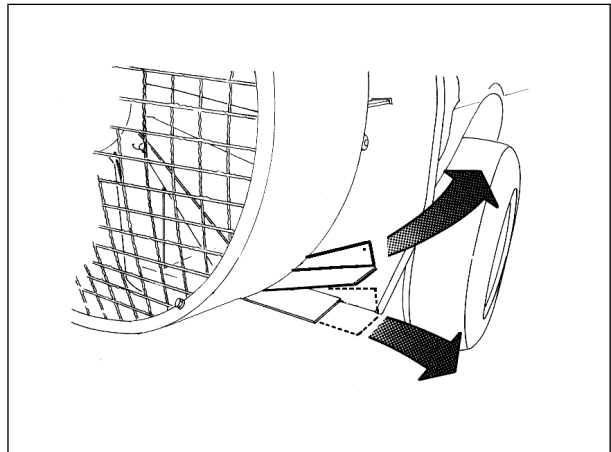


The cowl slides on two bars at its base and the air gap is regulated by the threaded rod at the top. To adjust the gap, use a 5mm Allen key to loosen the two grub screws on the underside of the cowl that lock onto the slide bars. Loosen the nuts on the top threaded rod and move the cowl to the desired position. The minimum gap is 100mm and the maximum is 140mm. After adjusting, retighten the nuts and grub screws.

2. Air Wedges The air wedges are located on the forward face of the fan cowl at the 10 o'clock and 2 o'clock positions. Removing the wedges increases the air flow to the upper area of the tree canopy in crops such as apples and citrus fruits. To remove the wedges, first remove the two 6mm attaching bolts on each wedge.

3. Airflow Adjusters An airflow adjuster is located at the base of the fan on either side to influence the direction of airflow. When angled upwards the adjusters direct the airflow upwards to suit free growing trees and taller crops. In the horizontal position the adjusters direct the air more laterally for spraying vines and small to medium height crops.

The adjusters are positioned by removing the outer attaching bolt, pivoting them to the required location and reinstalling the outer bolt.



4. Blade Pitch The pitch angle of the fan blades can be adjusted to match the power output of the tractor if required.

The larger the pitch angle the greater the volume of air that will be displaced and the higher the tractor power that will be required.

Normally when there is sufficient tractor power the fan should be operated at full pitch and if a lower volume of air is required the fan gearbox should be set in the low speed position.

Installation

If the pitch angle is increased more air will be displaced but higher power will be consumed, and conversely, if the pitch is reduced less air will be displaced and less power will be consumed.

If tractor power is limited, then the pitch of the fan blades should be reduced so that the power absorbed by the fan in the high speed position will leave sufficient power for the tractor to tow the sprayer with full tanks at the required operating speed over the prevailing ground conditions.

To adjust the pitch, remove the mesh guard and fan hub cover.

The cylindrical stub at the inner end of each fan blade is located in a recess in the hub and is clamped in place by a capping block attached by two hexagonal head screws.

The blade angle can be altered by loosening the balance screw either side of the hub and the clamp screw that goes through the hub. The blade can then be rotated. The pitch setting is regulated by teeth moulded into the base of the blade and a locking tab attached to the hub clamp screw.

Each tooth on the blade is equivalent to 5 degrees of pitch angle. A reference line on the blade is marked as 35 degrees of pitch and the blade can be set between 20 and 45 degrees. The standard pitch setting as delivered is 30 degrees.



Maximum operating pitch is 35 degrees. Any higher than this may result in excessive clutch or gearbox wear.

Adjust one blade at a time and ensure that each is set to the same pitch angle.

Check that the blade is positioned so that the tooth on the locking tab engages the blade teeth at the desired pitch setting.



The tightening of the hub clamps is very important. The bolts that hold the balance washers must NOT have any excessive torque applied when tightening them. They should be just done up to the point that the bolt head or washer if fitted is just sitting against the hub clamp and no tighter. Please follow carefully the instructions below.

Then securely tighten the **hub clamp screw** to approx 20 N/M of torque (15 ft/lb).

The balance washer bolts can then be tightened by just bringing the head of the bolt, or the washer if fitted into contact with the hub clamp.

Do not tighten these any further

Do not remove the washers from the screws attaching the clamping blocks as these are used as weights to balance the fan. If the blades or washers are removed or replaced the fan should be rebalanced by your Silvan dealer.

Refit the hub cap and safety mesh after adjusting the blade pitch.

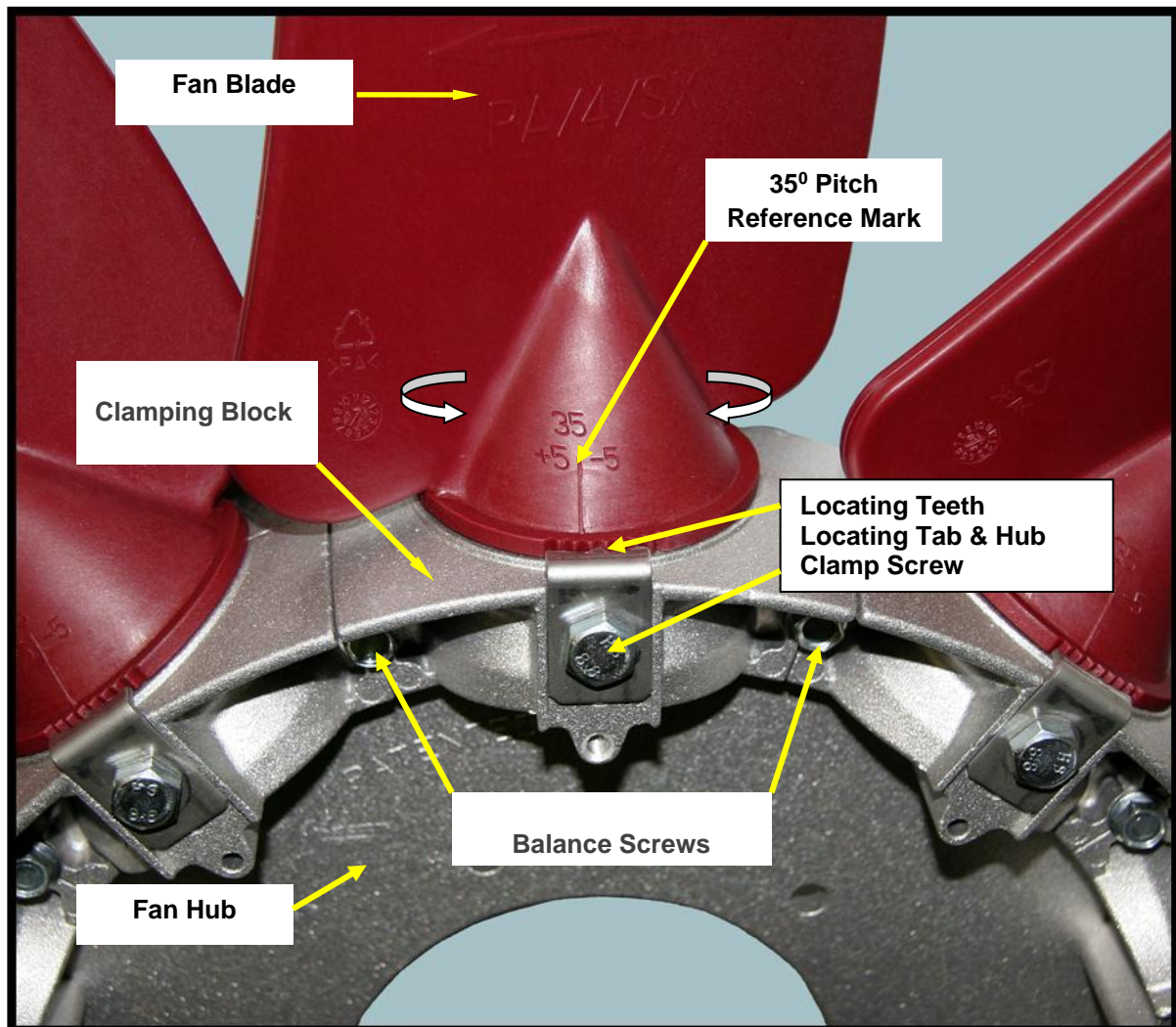
See following page for fan blade adjustment diagram.

Straightening Vanes

Non-adjustable stationary vanes are installed at the rear of the fan cowling to improve the alignment and uniformity of the airstream from the fan.

The vanes impart a clockwise rotation to the incoming air to counteract the directional bias in the airstream which results from the anti-clockwise rotation of the fan. With the vanes installed the airstream will be more symmetrically distributed about the centreline of the sprayer and will provide more uniform crop coverage under critical conditions.

Installation



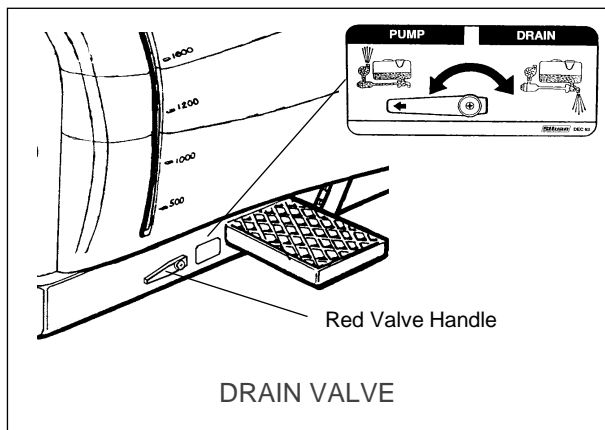
Operation

Starting the Sprayer

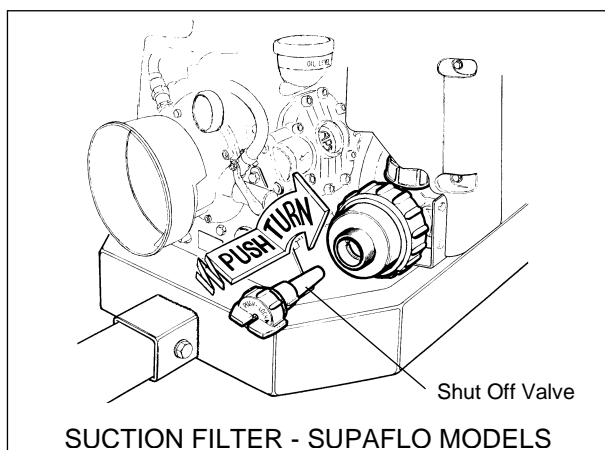
Before starting the sprayer for the first time grease all lubrication points including the PTO shafts. Check that the oil level in the diaphragm pump is level with the mark in the viewer and if necessary top up with SAE 20W-50 multigrade engine oil. Ensure that the gearbox oil level is correct. Refer Maintenance section for details.

First conduct a trial using clean water only (no chemicals) to become familiar with the controls and to check that all systems are functioning correctly without leakage.

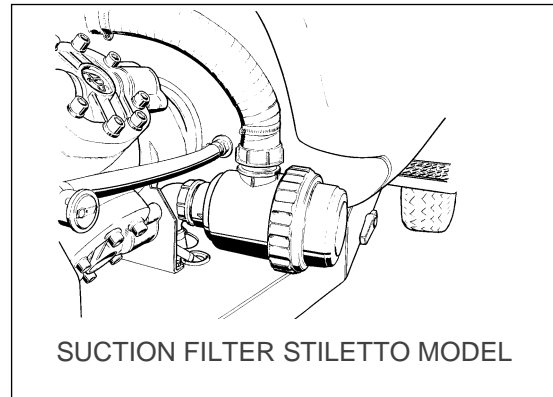
Before filling the tank check that the drain valve located in front of LH step is in the “pump” position, ie. red handle facing forward. Then fill the tank through the opening after checking that the basket strainer is in place and clean. Close and rotate the lid to secure it after filling.



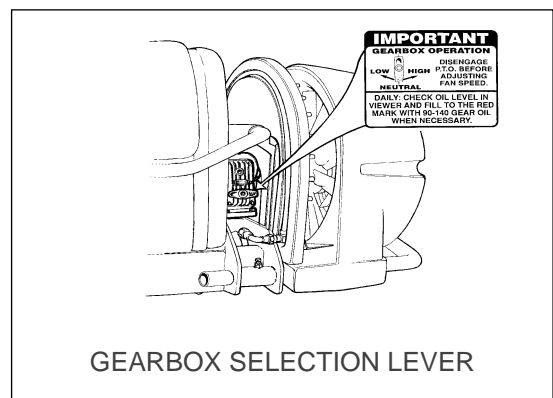
On Supaflo models ensure the shut off valve in the suction filter is open. It is open when the yellow cap is turned counter clockwise and closed when it is pushed in and turned clockwise. It automatically closes when the cap is screwed off which allows the filter cover to be unscrewed and



the element to be removed for cleaning while there is fluid in the tank.



Check that the fan gearbox is engaged and the required speed is selected. Never engage the fan drive with the tractor engine running or the PTO engaged. Moving the gearbox lever to the high position produces maximum airflow. The low position produces less airflow and can be used to protect the crop canopy from damage. The neutral position enables the pump to be operated without the fan for hand spraying or similar operations.



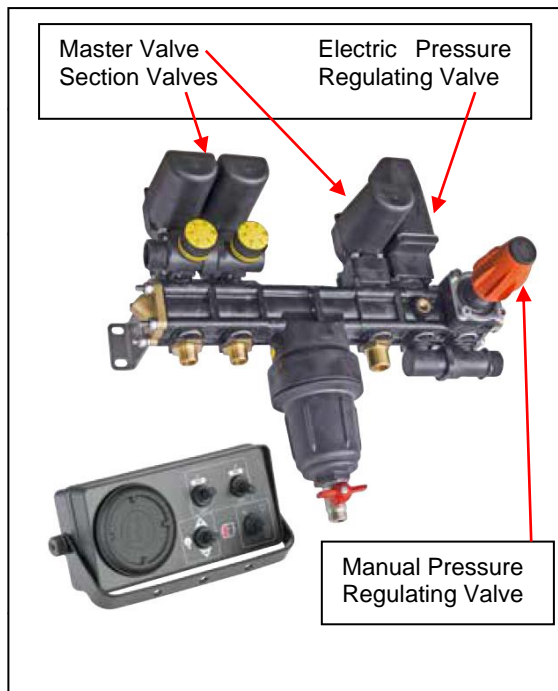
The fan incorporates a centrifugal clutch which protects the gearbox and driveline if the PTO is engaged rapidly. The sprayer should always be operated at 540 PTO rpm to ensure correct operation of the centrifugal clutch and to prevent its premature wear.

Flip the required number of spray nozzles to the open position. Refer to the Calibration section for information on nozzles and jet selection.

Before engaging the PTO, and with electric valve controls, switch the Master valve to the “Off” position. This places the pump into bypass mode and closes the outlet valves to the spray nozzles on either side of the sprayer.

Operation

Electric Motor Valves



The electric valves consist of a master valve to switch from bypass to pressure, section valves for left and right spraybars which incorporate regulating bypass compensators and an electric pressure adjusting valve to fine tune the spraying pressure. The compensating ports fitted to the section valves, when adjusted correctly, will keep the system pressure at the same level when individual sections are turned on and off.

Pressure Adjustment

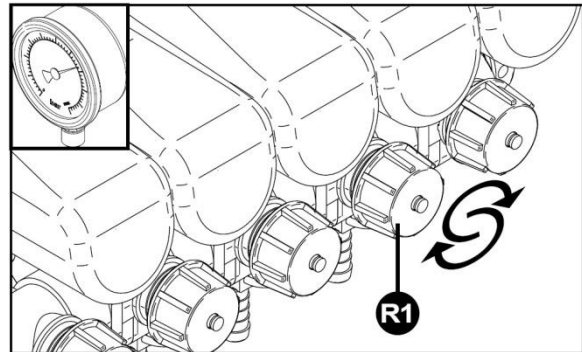
With the section switches turned Off and the Master switch turned On maximum pressure can be set by the Manual Pressure Regulating Valve. A clockwise rotation increases pressure and an anticlockwise rotation reduces pressure. If the desired spraying pressure cannot be obtained with the Manual Pressure Regulating Valve then by holding up the toggle switch on the control box will close the Electric Pressure Regulating Valve and increase the system pressure and vice versa.

To adjust the compensation ports:

Start the sprayer and set the spray pressure with the master On and all sections On. Then turn off the first section and adjust the compensation knob R1 until the pressure is exactly the same as it was with all sections on. Turn the section back on and off to check the pressure remains constant.

Turn all sections on again and repeat for the remaining sections.

The sprayer is then adjusted correctly.



Adding Chemicals



Before adding chemicals read and follow the chemical manufacturer's instructions and wear the recommended protective clothing.

Chemicals can be added to the tank through the top opening or, on Supaflo models, more safely and conveniently by use of the chemical inductor.

Take care to avoid the spillage of chemicals or mixed solution. Wear gloves, eye protection and the recommended protective clothing whilst filling with chemicals. Wash your hands after filling if they have come into contact with concentrate or mixed solution.

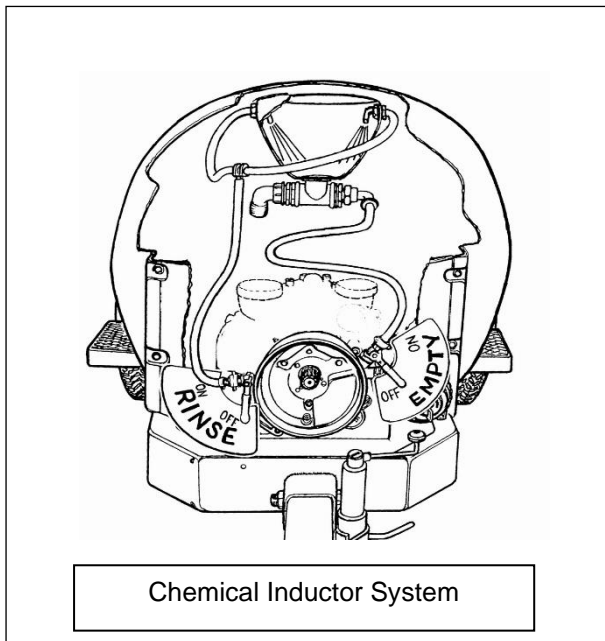
Store unused chemicals and dispose of empty chemical containers as recommended by the chemical manufacturer or relevant authority.

Adding Chemicals with the Inductor System Supaflo Models Only

The inductor system enables either powdered or liquid chemicals to be safely and conveniently added to the sprayer in concentrated form and mixed within the tank. The chemical receptacle is located under the front lid of the tank and has a maximum capacity of 30 litres.

The inductor valves are located at the front of the sprayer on either side of the pump as shown below. The "Empty" valve directs pressurised liquid to the venturi beneath the receptacle, which creates suction to empty the chemicals into the tank. The "Rinse" valve directs water into the top of the receptacle to wash any chemical residue into the tank after filling.

Operation



From the chemical manufacturer's instructions determine the quantity of chemical that needs to be added to the tank to achieve the correct strength of solution.

Fill the sprayer with about 500 litres of water through the rear tank opening and engage the PTO with the tractor running slowly until the pump is primed.

Open the inductor "Empty" valve to commence the venturi action. Then open the front lid of the tank, pour the chemicals into the receptacle and allow the suction to empty them into the tank. It is preferable, but not essential, to close the lid whilst the chemicals are emptying into the tank.

When the receptacle is empty, open the "Rinse" valve to wash any residue into the tank. Close both inductor valves and the tank lid and continue to run the sprayer to complete filling the tank with water through the rear opening. During this time the by-pass flow and the venturi agitator will thoroughly mix the solution.

Note: This is the only operation permitted with the sprayer running while the operator is off the tractor.

Adding Chemicals to the Stiletto Sprayer

Fill the sprayer with about 500 litres of water through the larger tank opening and engage the PTO with the tractor running slowly until the pump is primed.

From the chemical manufacturer's instructions determine the quantity of chemical that needs to be added to the tank to achieve the correct strength of solution. Add the required chemical through the filter basket in the larger lid opening of the tank.

Complete filling the tank with water through the larger lid opening. During this time the by-pass flow and the venturi agitator will thoroughly mix the solution.

Note: This is the only operation permitted with the sprayer running while the operator is off the tractor.

Emptying the Sprayer

At the end of each day partly fill the tank with water and run this through the pump, spray lines and nozzles to purge them of chemicals. Use a cleaning agent such as Silvan All Clear tank cleaner.

Rinse the tank through the lid and empty with the drain valve to remove powdered material. Never leave chemicals in the tank that could settle to the bottom and break into lumps that may block the suction filter.

Dispose of unused chemical mix, rinse water and containers as recommended by the chemical manufacturer or government authority.

Road Travel

When towing the sprayer on a public road always ensure that it is equipped with all the necessary lights and signs to comply with local regulations.

Travel at slow speed and only with the main tank empty. The weight of the sprayer with a full tank could overload the braking capability of the tractor and result in an accident.

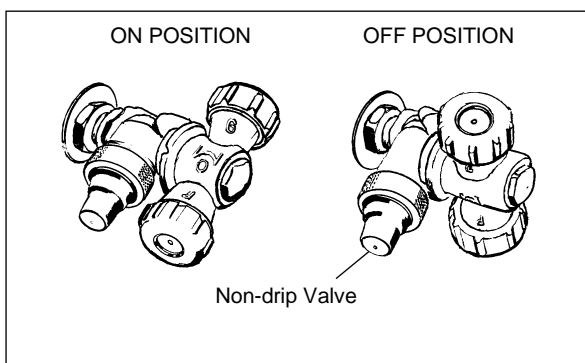
Operation

Spray Nozzles

The spray nozzles have an outlet at each end but only the jet that is flipped to the outward facing position is "on". This facilitates easy changing between jets of different sizes, for example, when requiring different application rates to suit concentrated and diluted spraying.

Individual nozzles can be turned off when not needed by flipping the nozzle 90 degrees so that neither of its jets is facing outwards. Nozzle direction can be adjusted by loosening the attaching nut and angling the nozzle.

The nozzles include a non-drip valve, which closes when the pressure drops below 1 Bar.



Standard Jets

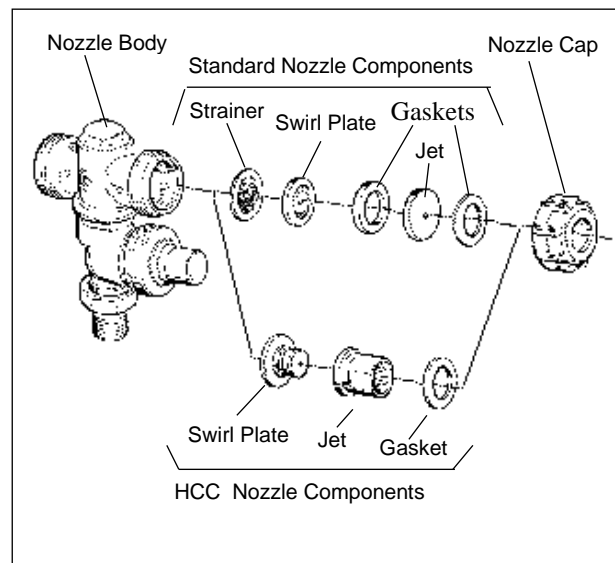
Standard nozzles feature ceramic jets, stainless steel swirl plates and stainless steel mesh strainers, separated by neoprene gaskets, as shown in the component diagram opposite.

Nozzle output at a particular pressure can be varied by fitting different jet and swirl plate combinations, refer to the Single Nozzle Output Chart on page 17.

Ceramic jets are sized according to the diameter of the central hole in millimetres.

The purpose of the swirl plate is to create a conical spray pattern. They either have a closed centre, identified as CC, or a central hole which is sized in millimetres. Closed centre swirl plates are fitted for low outputs. At higher outputs, swirl plates with a central hole are needed to fill the centre of the conical spray pattern and when fitted they should be one size smaller than the ceramic jet.

Ceramic jets and swirl plates normally have a long wear life and require little maintenance other than regular checking and cleaning of strainers. The spray pattern should be observed periodically against a dark background to detect signs of wear that will be indicated by a streaky or broken pattern. If worn jets are detected then the full set of jets, swirl plates and gaskets should be replaced.



HCC Hollow Cone Ceramic Jets

HCC hollow cone ceramic jets produce superior misting and are fitted to one side of each nozzle in the optional Double Sided Full Row Vineyard Conveyor, refer Optional Equipment section.

The HCC components fit the standard nozzle body and use the standard nozzle cap as shown in the above diagram. The stainless steel mesh strainers are not used with HCC jets as the base of the jet needs to sit down into the brass nozzle body.

Nozzle output can be varied by fitting different size ceramic jets. Refer to the HCC Jet Chart on page 17.

They can be used in various combinations with the standard jets, which are fitted to the opposite end of each flipover nozzle body.

Calibration

Nozzle Selection and Calibration Checking

Chemical application rates and hence nozzle selections will vary greatly depending on the crop type, and the stage of crop development. Information on application rates should be available from your chemical supplier.

Nozzle selection can be made by following the four simple steps shown below. The final step, checking calibration after nozzle selection, is essential for spraying efficiency by ensuring a known amount of spray is applied per hectare.

STEP 1 *Operating Factors*

First establish the following factors.

- a) **Application rate (l/ha)** in litres per hectare.
- b) **Travel speed (km/hr)** The speed indicated by your tractor can be checked by timing the sprayer over a measured distance. The timing should be done in seconds over 100 metres with the PTO engaged and water in the tank to simulate real spraying conditions. In hilly terrain the sprayer should be timed driving up and down the hill and the two times averaged. The speed can be calculated according to the following formula.

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

- c) **Row width (m)** The distance between rows measured in metres. For single side spraying use half the row width.
- d) **Spray pressure (Bar)** A pressure of between 10 and 30 Bar is usually selected. Lower spray pressures will produce larger droplets which are generally less effective than the smaller droplets produced at higher pressures.

STEP 2 *Total Output Required*

Calculate the total spray output required in litres per minute (l/min) using the following formula, or alternatively use the Spraying Output Chart on the following page.

$$\text{Total Output (l/min)} = \frac{\text{Application rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Row width (m)}}{600}$$

Check that the calculated output does not exceed the rated capacity of the pump. If it does, reduce the travel speed or the application rate.

STEP 3 *Nozzle Selection*

For chemical applications the jet and swirl plate combination for each individual nozzle can be selected by calculating the requirements for one side of the sprayer, as follows, then copying the pattern on the other side.

Decide on the number of nozzles to be used on one side and the percentage of spray required from each nozzle (the total should be 100%).

Calculate the individual nozzle flow rates by halving the total output from Step 2, to obtain the output for one side, then multiply this by the percentage output required from each nozzle. Use the Single Nozzle Output Chart on page 17 to select the jet and swirl plate combination which is the closest match to the required nozzle output at the chosen pressure.

$$\text{Output per side (l/min)} = \frac{\text{Total output (l/min)}}{2}$$

$$\text{Nozzle output (l/min)} =$$

$$\text{Nozzle percentage (\%)} \times \frac{\text{Output per side (l/min)}}{100}$$

Add up the flow rates of the individual jets to check that the total output per side matches the calculated value. Small variations can be corrected by increasing pressure to increase output or reducing pressure to reduce output.

STEP 4 *Calibration Checking*

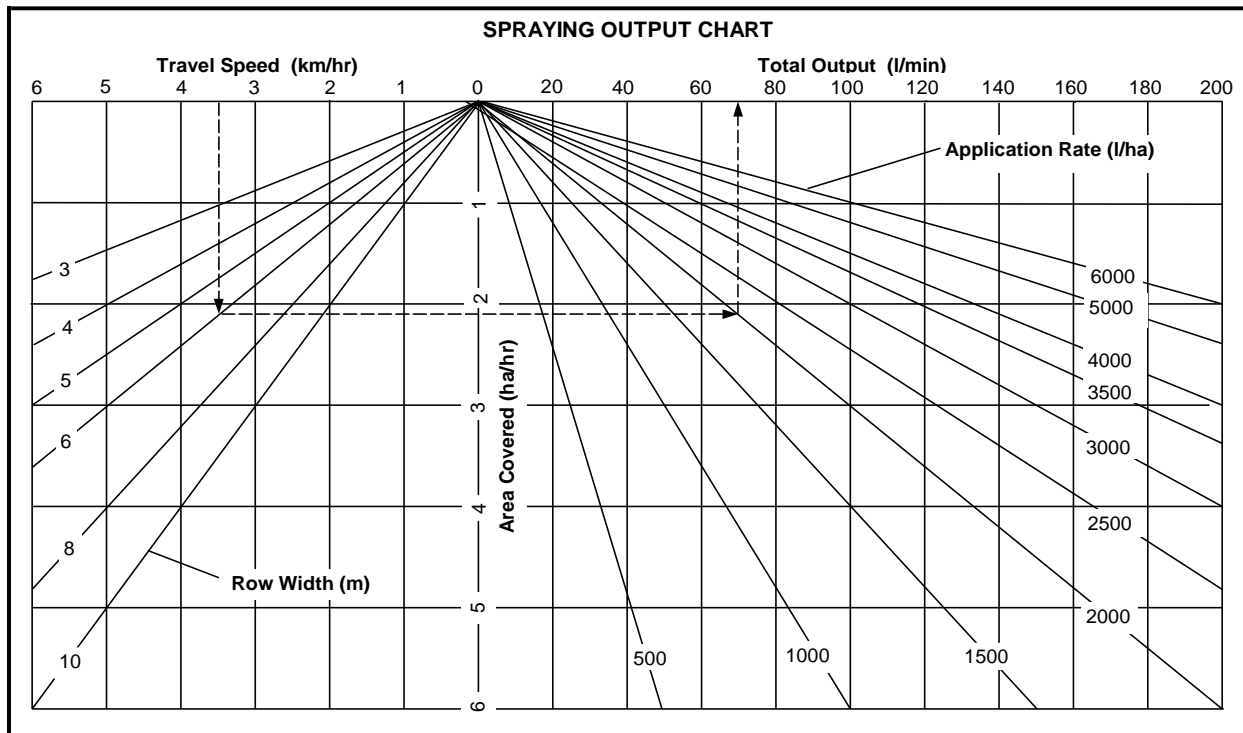
After installing the selected jets, test the sprayer with water to confirm the application rate. Fill the tank to the brim or a specific mark then run the sprayer for a measured time at operating pressure and with the nozzles spraying. A run time of two minutes should be sufficient. Measure the volume of water, in litres, required to refill the sprayer to the brim or the specific mark chosen then divide this volume by the time of the run.

$$\text{Output (l/min)} = \frac{\text{Volume to refill (litres)}}{\text{Time (min)}}$$

Calibration

Verify that the measured output matches the value calculated at Step 2. For small variations increase the spraying pressure to increase the output or reduce the pressure to reduce output.

Spraying Output Chart



To use the chart draw a vertical line down from the Travel Speed axis, at the speed you will be using for spraying, until it intersects the diagonal line for the Row Width of your crop. From this point draw a horizontal line to intersect the diagonal line for the Application Rate that you have chosen, then draw a vertical line up to the Total Output axis to show the total litres/min you will need to use.

The dotted arrows on the chart show an example using a Travel Speed of 3.5 km/hr with a Row Width of 6m and an Application Rate of 2,000 l/ha. The point at which the final vertical line intersects the Total Output axis shows that the required total output rate is 70 l/min.

Calibration

Using the Single Nozzle Output Chart

The chart below is used to select the Jet and Swirl Plate combination to use in each individual nozzle when a particular distribution pattern is required.

SINGLE NOZZLE OUTPUT CHART								
JET SIZE	SWIRL PLATE	OUTPUT - IN LITRES PER MINUTE						
		10 Bar	15 Bar	20 Bar	25 Bar	30 Bar	40 Bar	50 Bar
0.8	CC	0.9	1.0	1.2	1.3	1.4	1.6	1.9
1.0	CC	1.3	1.5	1.7	1.9	2.1	2.4	2.7
1.2	CC	1.7	2.0	2.3	2.6	2.8	3.2	3.5
1.5	CC	2.3	2.7	3.1	3.3	3.6	4.0	4.3
1.8	CC	2.7	3.2	3.6	4.1	4.5	5.0	5.5
2.0	CC	3.4	3.8	4.3	4.7	5.1	5.7	6.3
2.2	CC	3.8	4.1	4.6	5.1	5.6	6.6	7.4
2.5	CC	3.9	4.7	5.4	6.0	6.6	7.7	8.5
1.0	1.0	1.6	1.9	2.2	2.4	2.6	3.0	3.4
1.2	1.0	2.5	3.0	3.4	3.8	4.1	4.7	5.4
1.5	1.2	3.6	4.2	4.8	5.3	5.8	6.9	7.7
1.8	1.5	5.0	5.9	6.7	7.4	8.0	9.5	10.6
2.0	1.8	6.2	7.8	8.7	9.6	10.4	11.8	13.2
2.2	2.0	7.4	8.7	9.9	11.2	12.5	14.3	16.4
2.5	2.2	8.8	10.5	12.1	13.5	14.7	16.2	17.5

HCC Hollow Cone Nozzle Chart

COD.	q (l/min)																	
	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar	17 bar	18 bar	19 bar	20 bar
HCC005	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35	0.36	0.38	0.40	0.41	0.42	0.44	0.45	0.47	0.48	0.49
HCC0075	0.30	0.35	0.39	0.42	0.46	0.49	0.52	0.55	0.57	0.60	0.62	0.65	0.67	0.69	0.71	0.73	0.75	0.77
HCC01	0.40	0.46	0.52	0.57	0.61	0.65	0.69	0.73	0.77	0.80	0.83	0.86	0.89	0.92	0.95	0.98	1.01	1.03
HCC015	0.60	0.69	0.77	0.85	0.92	0.98	1.04	1.10	1.15	1.20	1.25	1.30	1.34	1.39	1.43	1.47	1.51	1.55
HCC02	0.80	0.92	1.03	1.13	1.22	1.31	1.39	1.46	1.53	1.60	1.67	1.73	1.79	1.85	1.90	1.96	2.01	2.07
HCC025	1.00	1.15	1.29	1.41	1.53	1.63	1.73	1.83	1.91	2.00	2.08	2.16	2.24	2.31	2.38	2.45	2.52	2.58
HCC03	1.20	1.39	1.55	1.70	1.83	1.96	2.08	2.19	2.30	2.40	2.50	2.59	2.68	2.77	2.86	2.94	3.02	3.10
HCC035	1.40	1.62	1.81	1.98	2.14	2.29	2.42	2.56	2.68	2.80	2.91	3.02	3.13	3.23	3.33	3.43	3.52	3.61
HCC04	1.60	1.85	2.07	2.26	2.44	2.61	2.77	2.92	3.06	3.20	3.33	3.46	3.58	3.70	3.81	3.92	4.03	4.13
HCC05	2.00	2.31	2.58	2.83	3.06	3.27	3.46	3.65	3.83	4.00	4.16	4.32	4.47	4.62	4.76	4.90	5.03	5.16

Calibration

Nozzle Sets for Typical Spraying Applications

The nozzle sets in the following four examples are suitable for typical applications when spraying grapes, orchard fruits at either low or high spraying volume, or citrus fruits.

1. Grapes

Application rate	600 l/ha
Travel speed	5 km/hr
Row width	3.0 m
Spraying pressure	15 Bar

$$\begin{aligned} \text{Total Application Rate (l/min)} &= \frac{\text{Application rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Row width (m)}}{600} \\ &= \frac{600 \times 5 \times 3}{600} = 15 \text{ l/min} \end{aligned}$$

NOZZLE SET FOR TYPICAL GRAPE SPRAYING APPLICATION (600 l/ha)								
Nozzle Position from top down	1	2	3	4	5	6	7	8
Jet/Swirl Plate Size	Closed	Closed	1.0/CC	1.0/CC	1.0/CC	1.0/CC	1.0/CC	Closed

To provide a substantially horizontal spray pattern to suit vines the jets in positions 1, 2 and 8 are closed by flipping the nozzles through 90 degrees so that neither of the jets is facing outwards, refer diagram on page 14.

The fitment of the same sized 1.0 jet and Closed Centre swirl plate (CC) in each of the nozzle positions from 3 to 7 will produce a uniform density within the spray pattern. An alternative nozzle arrangement would be to use HCC02 (Orange) in positions 3-7 at 11 bar pressure.

2. Orchard Fruits - Low Volume Spraying

Application rate	1000 l/ha
Travel speed	5 km/hr
Row width	6.1 m
Spraying pressure	20 Bar

$$\begin{aligned} \text{Total Application Rate (l/min)} &= \frac{\text{Application rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Row width (m)}}{600} \\ &= \frac{1000 \times 5 \times 6.1}{600} = 51 \text{ l/min} \end{aligned}$$

NOZZLE SET FOR TYPICAL LOW VOLUME SPRAYING APPLICATION (1000 l/ha)								
Nozzle Position from top down	1	2	3	4	5	6	7	8
Jet/Swirl Plate Size	0.8/CC	1.0/1.0	1.5/1.2	1.5/1.2	1.5/1.2	1.2/1.0	1.0/1.0	1.0/1.0

This arrangement will produce a spray pattern with approximately 70% of the output discharging from the four centre jets Nos. 3, 4, 5 and 6. Refer to the Standard Jet Set Chart on page 17 for details of the output from each nozzle combination of disc and swirl plate at various pressures. An alternative nozzle setup using HCC Hollow cone would be as below with pressure at 16 bar.

NOZZLE SET FOR TYPICAL LOW VOLUME SPRAYING APPLICATION (1000 l/ha)								
Nozzle Position from top down	1	2	3	4	5	6	7	8
HCC Hollow Cone	HCC015	HCC025	HCC05	HCC05	HCC05	HCC035	HCC025	HCC025

Calibration

3. Orchard Fruits - High Volume Spraying

Application rate	2000 l/ha
Travel speed	5 km/hr
Row width	6.1 m
Spraying pressure	27 Bar

$$\text{Total Application Rate (l/min)} = \frac{\text{Application rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Row width (m)}}{600}$$

$$\frac{2000 \times 5 \times 6.1}{600} = 102 \text{ l/min}$$

NOZZLE SET FOR TYPICAL HIGH VOLUME SPRAYING APPLICATION (2000 l/ha)								
Nozzle Position from top down	1	2	3	4	5	6	7	8
Jet/Swirl Plate Size	1.5/1.2	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.5/1.2	1.5/1.2	1.2/1.0

This arrangement will produce a spray pattern which is biased towards the upper section to provide good coverage of the overhead canopy. Approximately 60% of the output is discharged from the four jets in positions Nos. 2, 3, 4 and 5. Refer to the Standard Jet Set Chart on page 17 for full details of the output from each nozzle combination of disc and swirl plate at various pressures.

4. Citrus Fruits

Application rate	6000 l/ha
Travel speed	2 km/hr
Row width	8.2 m
Spraying pressure	27 Bar

$$\text{Total Application Rate (l/min)} = \frac{\text{Application rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Row width (m)}}{600}$$

$$\frac{6000 \times 2 \times 8.2}{600} = 164 \text{ l/min}$$

NOZZLE SET FOR TYPICAL CITRUS SPRAYING APPLICATION (6000 l/ha)								
Nozzle Position from top down	1	2	3	4	5	6	7	8
Jet/Swirl Plate Size	2.0/1.8	2.0/1.8	2.2/2.0	2.2/2.0	2.2/2.0	2.0/1.8	2.0/1.8	1.8/1.5

This arrangement will produce a spray pattern with a fairly uniform proportion of the discharge from each nozzle but with some small bias towards the upper section of the pattern. Refer to the Standard Jet Set Chart on page 17 for full details of the output from each nozzle combination of disc and swirl plate at various pressures.

Calibration

Calibration Worksheets

The four worksheets below can be used to record the results of calibration tests on your sprayer.

Date of Test: _____

Application Rate: _____ litres/ha

Speed of Travel: _____ km/hr

Row Spacing: _____ metres

Output (l/min) = $\frac{\text{Application Rate} \times \text{Speed} \times \text{Row Width}}{600}$

= $\frac{\text{ } \times \text{ } \times \text{ }}{600}$

= _____ litres/min

Standard Jet Set (from Chart): _____

or

Individually selected jet/swirl plate combination:

1	2	3	4	5	6	7	8
/	/	/	/	/	/	/	/

Pressure Setting: _____ Bar

Measured Output: _____ litres/min
(from test run)

Date of Test: _____

Application Rate: _____ litres/ha

Speed of Travel: _____ km/hr

Row Spacing: _____ metres

Output (l/min) = $\frac{\text{Application Rate} \times \text{Speed} \times \text{Row Width}}{600}$

= $\frac{\text{ } \times \text{ } \times \text{ }}{600}$

= _____ litres/min

Standard Jet Set (from Chart): _____

or

Individually selected jet/swirl plate combination:

1	2	3	4	5	6	7	8
/	/	/	/	/	/	/	/

Pressure Setting: _____ Bar

Measured Output: _____ litres/min
(from test run)

Date of Test: _____

Application Rate: _____ litres/ha

Speed of Travel: _____ km/hr

Row Spacing: _____ metres

Output (l/min) = $\frac{\text{Application Rate} \times \text{Speed} \times \text{Row Width}}{600}$

= $\frac{\text{ } \times \text{ } \times \text{ }}{600}$

= _____ litres/min

Standard Jet Set (from Chart): _____

or

Individually selected jet/swirl plate combination:

1	2	3	4	5	6	7	8
/	/	/	/	/	/	/	/

Pressure Setting: _____ Bar

Measured Output: _____ litres/min
(from test run)

Date of Test: _____

Application Rate: _____ litres/ha

Speed of Travel: _____ km/hr

Row Spacing: _____ metres

Output (l/min) = $\frac{\text{Application Rate} \times \text{Speed} \times \text{Row Width}}{600}$

= $\frac{\text{ } \times \text{ } \times \text{ }}{600}$

= _____ litres/min

Standard Jet Set (from Chart): _____

or

Individually selected jet/swirl plate combination:

1	2	3	4	5	6	7	8
/	/	/	/	/	/	/	/

Pressure Setting: _____ Bar

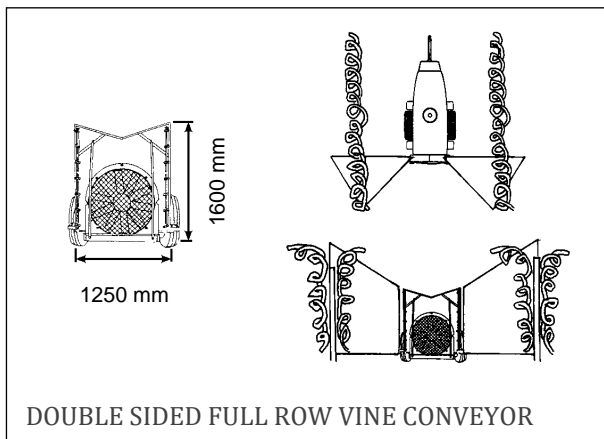
Measured Output: _____ litres/min
(from test run)

Optional Equipment

Two Sided Full Poly Vineyard Conveyor

This attachment directs air in a concentrated and controllable stream to both sides of the row for vines, trellised apples or any dense bushy plants such as berries and passionfruit.

The polyethylene double sided full row conveyor incorporates stainless steel spraybars fitted with 12 flip-over nozzles per side enabling the spray pattern to be regulated for efficient coverage. One side of each flip over nozzle is fitted with a HCC Hollow Cone ceramic jet and the other side is fitted with a standard jet.



Flotation Tyres

Optional flotation tyres are 400/60 x 15.5" fitted to fixed axle in lieu of the standard wheels and tyres.



Single Side Conveyor

The single side conveyor controls the air output of the fan to direct all the air from the left side of the sprayer for efficient coverage of tall tree crops. It is normally ordered as a factory fitted option. The right hand spray bar is relocated into the upper section of the conveyor outlet, as shown in the diagram, and the unit incorporates an adjustable vane which can be used to regulate the height of discharge.



Lubrication and Maintenance

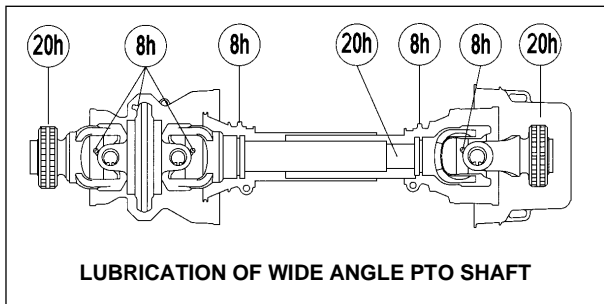
Start Up Inspection

During the first few days of operation, before starting each day check that all hardware is tight and tighten all hose clamps. Inspect the unit for leaks while operating.

PTO Shaft to Tractor

Grease the PTO shaft, including all three universal joints, with multi-purpose grease at the time intervals shown below. This is the amount of lubrication recommended for normal operation. More frequent inspection and lubrication may be needed under very dusty conditions.

Every 20 hours slide the PTO shaft apart, clean the telescopic tubes with kerosene and apply multi-purpose grease to the sliding surfaces, then reassemble. This is most important in dusty conditions.



Internal PTO Shaft

Grease the universal joints on the internal PTO shaft, which is connected between the rear of the pump and the fan drive at the rear of the sprayer, with multi-purpose grease every 500 hours, or during the annual inspection.

The telescoping sections of this internal shaft do not require regular greasing as the shaft length is constant and the sections do not slide in operation. Check that the shaft is free to slide during the annual general inspection.

Pump

Check the oil level in the viewer daily and if necessary top up with SAE 20W-40 multigrade engine oil. The oil must reach the mark on the side of the oil level viewer.

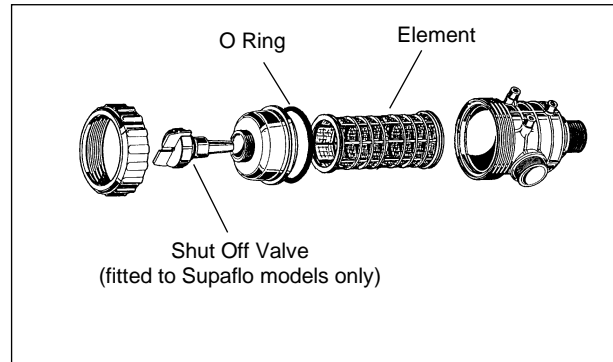
Gearbox

Check the oil level every 50 hours and if required top up with SAE 85W-140 gear oil. The level should be halfway up the viewer on the side of the gearbox.

Filters

Clean all filters regularly. The best method is to wash them with a soft bristle brush. Check for any tears or holes and replace if damaged. Check and if necessary clean the tank lid basket strainer before each fill.

Always remove and clean the element of the suction filter before each tank refill and at the end of the day. Ensure the O-ring is in good condition when refitting. On Supaflo models close the shut off valve before removing the element by pushing the yellow tap in and turning it counterclockwise, then unscrew the filter cover to remove the element, refer to the Supaflo suction filter diagram in Operation section.



Flush the pressure line filter daily by opening the red tap at the end of the filter housing and running the pump for a few minutes to purge any foreign material from the element, refer to the diagram of the appropriate valve arrangement in the Operation section.

Tank, Pump and Spray Lines

At the end of each day run clean water through the pump, spray lines and nozzles to purge them of chemicals. Rinse out the tank to remove any powdered material.

In the case of frost or freezing conditions run the pump dry to prevent water freezing in it or the spray lines and damaging components.

Lubrication and Maintenance

Never leave chemicals in the tank that may settle to the bottom, harden and break into lumps as this may block the suction filter.

Dispose of unused chemical, chemical mix, rinse water and chemical containers as recommended by the chemical manufacturer or the relevant government authority.

Caution Do not use a high pressure washer to clean around fan bearings, pump seals or electrical valves if fitted.

Tyres

Inspect the tyres regularly and inflate to 250 kpa (36 psi) if necessary.

Diaphragm Pump

Drain the oil from the pump annually, or at the end of each spraying season. Refill with SAE 20W-40 multi-grade engine oil.

Remove the pump heads, carefully inspect the diaphragms and replace if necessary. Also check the inlet and outlet valves, seats and springs for wear, damage or chemical corrosion and replace as necessary.

Check the air pressure in the surge chamber at the side of the pump. The air pressure behind the surge chamber's diaphragm smoothes out the pulsations in fluid flow and should be set in accordance with the spraying pressure being used, as shown in the chart below.

Spraying (Bar) pressure (psi)	2 - 5 29 - 73	5 - 10 73 - 145	10 - 20 145 - 290	20 - 50 290 - 725
Surge air (Bar) pressure (psi)	2 29	2 - 5 29 - 73	5 - 7 73 - 102	7 102

Adjust the pressure at the valve fitting on the chamber using a compressed air hose fitted with a tyre valve connection and a reliable pressure gauge.

Refer to the pump instruction manual for further details on the above maintenance operations.

Wheel Hubs

Remove the wheel hubs annually and check that the bearings and seals are in good condition. Repack the bearings with multi-purpose grease as required.

Adjust the wheel bearings by tightening the axle nut, then backing it off by approximately 1/6 turn before installing the cotter pin. Check that the hubs are free to rotate without any end play.

Annual Inspection (or 350 hours)

At the end of each season or every 350 hours inspect the sprayer for any signs of damage, corrosion or leakage.

Replace any parts that are affected by chemical contamination.

Check that all bolts are securely tightened, including the tank mounting bolts, axle U-bolts and wheel nuts. Check that all hose connections are tight.

Trouble Shooting

Pump does not prime

- No liquid in tank or not covering suction inlet.
- Suction filter blocked.
- Suction filter stop valve closed.
- Suction filter bowl loose or missing O-ring.
- Suction line loose allowing pump to suck air.
- Master valve not switched to "Off" position.
- Pump valve springs broken or valves worn.
- Three way drain tap not properly closed.

Pump does not reach correct pressure

- Pump not operating at full 540 rpm.
- Suction filter blocked.
- Suction filter shut off valve partly closed (Supaflo models).
- Pressure regulator not correctly adjusted
- Pressure regulator valve and seats worn.
- Pressure gauge faulty
- Pump diaphragms ruptured (pump oil grey).
- Worn nozzles or capacity of nozzles greater than capacity of the pump.
- Chemical filler Rinse or Empty valves left open (Supaflo models).
- Pressure filter flushing valve left open.

Fan noisy and/or vibrating

- Gearbox bearings worn.
- Fan damaged or out of balance.
- Tractor PTO incorrectly installed.
- Hitch point and PTO geometry not correct.

Driveshaft noisy

- PTO shaft not secured properly to shafts.
- Universal joint crosses worn.
- Hitch point and PTO geometry not correct.

Air volume reduced

- Fan mesh blocked with leaves or debris.
- Not operating at full speed of 540 rpm.
- Fan gearbox not in gear.
- Fan clutch worn or slipping.

Poor tank agitation

- Chemical left in tank whilst not operating.
- Chemical incorrectly mixed before filling.
- Venturi agitator blocked or turned off.

Pump and hoses vibrating.

- Pump surge chamber pressure incorrectly adjusted or surge diaphragm ruptured.
- Air entering the suction line through loose or damaged fittings.
- Pump valves or valve springs worn or damaged.
- Worn nozzles or capacity of nozzles greater than capacity of the pump.
- Air trapped in filter or suction lines.

Notes



PRE DELIVERY, INSTALLATION and WARRANTY REGISTRATION FORM GENERAL

IMPORTANT: This is to be completed and returned to Silvan within 10 working days of installation.
Failure to do so may result in a limited warranty period.

PRODUCT DETAILS	OPTIONAL EQUIPMENT
Model Description:	<input type="checkbox"/> Hose Reel <input type="checkbox"/>
Silvan Serial No.:	<input type="checkbox"/> Controller <input type="checkbox"/>
Pump Model & Serial No.:	<input type="checkbox"/> <input type="checkbox"/>
Original Equipment	
Manufacture's Serial No's:	

PRE-DELIVERY CHECKS As Applicable	Tick when passed	OPERATION and INSTALLATION CHECKS	Tick when passed
All equipment correctly supplied in good order. Owner's Kit supplied.		OPERATION	
PUMP		Fill tank with water above all fittings and check the drain plug, filter, suction and by-pass hoses for leaks.	
Check diaphragm pump oil level and gearbox if fitted to motorised unit.		Check folding operation of boom.	
Check surge chamber pressure suits operation pressure if fitted.		Check optional equipment fitted for correct operation.	
Check pump feet are secure.		Attach to vehicle, ensure control valve is in by-pass and all taps off.	
Check pressure switch operates if fitted (12 Volt Models).		Start motor and adjust pump to maximum operation pressure and check for leaks of control, hoses and nozzles.	
FILTRATION		All optional equipment fitted and operating correctly.	
Check lid strainer and suction filter element.		INSTALLATION	
Check suction filter O-ring for correct position.		Has pre-delivery check been carried out?	
HOSING		Has the PTO shaft been installed and length checked?	
Check hoses for kinks or damage.		Are all safety covers and safety decals in place?	
Check clearance from wear points.		Has the customer received and read the Operator's Manual?	
Check hose clamps and fittings are tight.		Has the customer been fully instructed by the dealer of the safe operation in actual working and transport conditions?	
ELECTRIC CONTROLS		Has the customer been fully instructed in calibration?	
Connect to 12 volt supply and check operation.		Is the customer satisfied with the sprayer's performance?	
TANK		Is the customer fully instructed in the sprayer's service and maintenance requirements?	
Check for sealing of all outlets.		Does the customer fully understand the Silvan New Product Warranty Policy?	
Clean contaminants from tank.			
Check lid for correct sealing.			
Check mounting points are correct and tight.			
BOOM OPERATION			
Ensure boom folds correctly.			
Ensure boom height control operates correctly.			
ENGINE			
Check lubrication level and top up if necessary.			
Operate engine and ensure it starts and runs correctly.			
MISCELLANEOUS			
Lubricate all grease points as per Operator's Manual.			
Check all safety guards are secure and safety decals are in place.			
Check all operational equipment supplied for completeness and fitment.			

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Freecall: 1300 SILVAN Facsimile: 1800 SILVAN

Email: support@silvanaust.com Web: www.silvan.com.au

SILVAN NEW ZEALAND AUSTRALIA PTY. LTD.

22 SUNSHINE AVE., HAMILTON 2001, NEW ZEALAND

TELEPHONE: (07) 849 6030 Facsimile: (07) 849 6070

WHITE COPY - SEND TO SILVAN, BLUE COPY - RETAINED BY DEALER,
YELLOW COPY - RETAINED BY OWNER

**IT IS THE RESPONSIBILITY OF THE DEALER TO FILL
OUT AND RETURN THIS FORM TO
SILVAN AUSTRALIA PTY LTD**

IMPORTANT

By signing this Pre-delivery, Installation and Warranty Registration Form:
(a) The Customer acknowledges that he/she is trained and fully responsible for the safe operation of the sprayer.
(b) The Customer undertakes further, to train any person who might be required to operate the sprayer in all safety aspects as per the Operator's Manual.

Customer Name:

Address:

PIC

Date of Installation:

Customer Signature:

In signing, the dealer meets his obligations of installation, service and warranty start-up as a servicing dealer and supplier of plant.

Dealer Name:

Address:

PIC

Phone:

Dealer Signature:



SILVAN AUSTRALIA PTY. LTD.

ABN 48 099 851 144

68 Atlantic Drive
Keysborough, 3173
Australia

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Facsimilie: 1800 745 826

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