



## ***Operator's Manual***

MANTURB - 8 - Rev B 1/04/06

### ***Tri-Wrap Turbomiser Sprayer*** **3500 Litre**



**SAFETY WARNING:**

**PLEASE READ THIS MANUAL THOROUGHLY BEFORE ATTACHING THE SPRAYER TO A TRACTOR OR OPERATING IT.**

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 Tri-Wrap Turbomiser 3500 sprayer here for future reference when discussing service with your Silvan dealer, ordering service parts or making a warranty claim.

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

PUMP MODEL \_\_\_\_\_

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

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

ADDRESS \_\_\_\_\_

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

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

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## **Introduction**

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Silvan Australia Pty. Ltd. is an Australian owned company specialising in the supply of crop protection equipment to primary producers. A leader in the design of agricultural sprayers, the company was established in 1962 and has grown to become the largest manufacturer and supplier of crop protection equipment in Australia.

At Silvan we are extremely proud of our reputation for quality products backed by quality service. Your investment in a Silvan sprayer is an investment in quality.

This manual covers the 3500 litre Tri-Wrap Turbomiser Sprayer with belt or hydraulic driven pump. This low volume, air shear vine sprayer has been designed and manufactured to provide a high standard of performance and safety and incorporates many innovative features.

To ensure continued efficient performance and safe operation of your sprayer, you need to read this manual thoroughly and fully familiarise yourself with all aspects of the sprayer's operation, maintenance and safety procedures.

Now that you are a proud Silvan owner, all our services and dealer support are available to you should you need them. We assure you of our best attention at all times.

## **About Your Warranty**

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Silvan Australia Pty. Ltd. welcomes any warranty repair and apologises for any inconvenience. See the page opposite for the express warranty coverage offered. The following information will assist your understanding of warranty procedures.

Any authorised Silvan dealer service outlet can perform warranty repairs for you, however, we recommend that such repairs be carried out by the Dealer from whom you bought the product.

Most warranty repairs are handled routinely, but sometimes requests cannot be accepted under warranty. Normal wear and tear is not covered by warranty nor does warranty apply if a product failure can be attributed to abuse or neglect.

Whilst Silvan will abide by its warranty policy under all genuine circumstances, we must emphasise that such can only apply when our equipment has been used in applications for which it was designed and manufactured and that a reasonable degree of care and common sense has been exercised by the operator.

To avoid misunderstandings, which might occur between the customer and the service outlet, items subject to normal wear and tear such as drive belts, solenoid diaphragms, pump diaphragms, mechanical seals, spray nozzles and similar items are not covered under warranty.

### **Warranty Repair Site**

The warranty provides for repairs to be carried out at the servicing dealer's normal place of business. An owner may elect to have repairs carried out at his own residence but, whilst Silvan will accept the actual repair cost of the failed component(s), the travelling costs will not be covered under warranty - see following.

### **Items Not Covered By Warranty**

The warranty does not allow for the cost of the following items. These are the responsibility of the owner.

- 1) Labour to travel to and from a broken-down product or for any distance charges.
- 2) Labour premiums that might apply for any repairs that are made outside the dealer's normal business hours.
- 3) Transportation costs of the machine to and from the service outlet.
- 4) Freight costs to get parts to and from the service outlet.
- 5) All communication costs made by the owner in connection with the warranty repair.

## ***New Product Warranty***

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### **WARRANTY POLICY**

Silvan Australia Pty. Ltd. warrants to its authorised dealer, who in turn warrants to the original purchaser (owner) of each new Silvan product, that it will repair or replace, without charge for labour or parts, any defective or malfunctioning parts in accordance with the warranty limitations and adjustments schedule below.

**PRODUCT – ALL  
PRIVATE DOMESTIC USE – 12 MONTHS  
PRIVATE and COMMERCIAL AGRICULTURAL USE – 12 MONTHS  
AGRICULTURAL CONTRACTORS – 6 MONTHS  
GOVERNMENT and MUNICIPAL DEPARTMENTS – 6 MONTHS  
ALL OTHER NON-AGRICULTURAL APPLICATIONS – 3 MONTHS  
HIRE COMPANIES – 3 MONTHS**

The warranty period will begin on the date the product is delivered to the first retail purchaser.

#### **THIS WARRANTY COVERS:**

- Claims resulting from defects in workmanship or material under normal use and service.

#### **THIS WARRANTY DOES NOT COVER:**

- Conditions resulting from misuse, negligence, alteration, accidental damage or failure to perform normal maintenance services;
- Any product which has been repaired by other than an authorised Silvan Australia Pty. Ltd. service outlet so as, in any way in the sole and absolute judgement of Silvan Australia Pty. Ltd., to affect adversely its performance and reliability;
- The replacement of wear and tear items such as diaphragms, V belts and ground engaging components;
- Loss of time, inconvenience, loss of use of the product or any other consequential damages.

The repair of defective products qualifying under this warranty will be performed by an authorised Silvan Australia Pty. Ltd. 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 sold by Silvan Australia Pty. Ltd.

The owner is responsible for the performance of regular maintenance services as specified in the Operator's Manual applicable to the product.

- **THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO SILVAN AUSTRALIA PTY. LTD. NEW PRODUCTS AND, TO THE MAXIMUM EXTENT PERMITTED BY LAW, IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**
- **SILVAN AUSTRALIA PTY. LTD. DOES NOT AUTHORISE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH THESE PRODUCTS.**
- **SUBJECT ONLY TO LEGISLATIVE OBLIGATIONS TO THE CONTRARY, SILVAN AUSTRALIA PTY. LTD. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM A PRODUCT PERFORMING IN BREACH OF THIS WRITTEN WARRANTY.**

## 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 Tri-Wrap Turbomiser 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, the Farmscan 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 page the location and 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 PTO power output and towing capacity of the tractor match the power requirement and loaded mass 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. Refer also to the tractor manufacturer's operating and safety instructions.
- ▲ Do not operate the sprayer without all the tractor and sprayer safety shields in place. Carefully check that the PTO and driveline shields are correctly installed.
- ▲ Never allow anyone to ride on the sprayer or tractor.
- ▲ Do not operate the sprayer at more than 540 PTO rpm.
- ▲ Apply the parking brake, switch off the tractor engine and remove the key before performing any service work on the sprayer. Ensure the sprayer and boom arms are 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 stand near or perform adjustments on the boom arms, air tubes or nozzles without first stopping the tractor engine and removing the key to ensure the arms cannot move due to inadvertent operation of the hydraulic controls.
- ▲ Relieve all hydraulic pressure before disconnecting hoses. Oil escaping under pressure can penetrate the skin, causing serious injury. Seek medical advice immediately if injured by escaping oil.
- ▲ **Before use of any chemicals** refer to the chemical manufacturer's label and safety instructions for safe handling procedures, correct method of use and required protective clothing and equipment. **Always use the recommended personal protective clothing and equipment.**
- ▲ **Always wear gloves when carrying out any adjustments to the sprayer or boom.**
- ▲ 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 sprayer 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 and wording of the safety warning decals are shown below. It is important that all operators read and follow the information given on all safety decals. Failure to comply with these warnings could result in serious injury or death

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

|  |                           |  |
|--|---------------------------|--|
| <p>Part Number DEC 10<br/>On far side of frame</p>             | <p>Part Number DEC 13</p> | <p>Part Number DEC 12<br/>On rear of fan</p>                                       |
|  |                           |  |
|  |                           |  |
| <p>P/No. 399 14 1000<br/>Fitted to PTO Shaft<br/>Not shown</p> | <p>Part Number DEC 10</p> | <p>Part Number DEC 52<br/>On front and rear of outer air tubes and rear of fan</p> |
|  | <p>Part Number DEC 48</p> |  |



## Features and Specifications

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### Tank

Polytuff impact resistant polyethylene.  
Capacity 3500 litres.  
455 mm screw down lid with basket strainer.  
Calibrated, floating ball liquid level sight gauge.  
50 mm bottom drain with ball valve.

### Bottom Fill

50 mm cam-lever hose coupling.

### Chemical Fill

Venturi chemical probe.

### Agitation

Continuous by-pass agitation plus twin belt driven propeller agitators.

### Clean Water Tank

40 litre Polytuff tank

### Pump

Hypro stainless steel centrifugal pump with Viton/ceramic seal.

Belt drive standard, hydraulic drive optional.

Model No.

Belt Drive 9203S-R

Hydraulic 9303S-HM4C-SP or 9303S-HM5C-SP  
(model depends upon tractor hydraulics)

Max flow (l/min) 350 all models

Max pressure (Bar) 7 all models

### Fan

Belt driven turbine type fan.

Diameter (mm) 550

Speed (rpm) 3900

Air Speed (m/sec) 170

Air Volume (m<sup>3</sup>/hr) 14,750 (8,681 cfm)

### Drives

PTO 540rpm wide angle constant velocity with safety shields.

Fan Multi-vee belt with over-run clutch.

Pump Vee section belt (standard)

Hydraulic motor (optional)

Agitators Flexible self tensioning belts

### Controls

Farmscan Primo 400 spray control system.

Programmable cab mounted controller.

Single function digital display.

Power switch, Master and 4 section switches.

12 volt control valves.

100mm dia. pressure gauge on front of sprayer.

### Filtration

Three stage with removable elements.

Standard mesh shown. Alternatives available.

1) Tank lid strainer 18 mesh.

2) Suction line filter 32 mesh (white)

3) High pressure filters 50 mesh (blue)

### Spray Boom

Fully adjustable triple row spray boom

Poly moulded air tubes shaped to surround vine canopy. Centre and outer air tubes adjustable for canopy width and height.

7 fully adjustable low volume 'air shear' nozzles on each air tube, 42 nozzles in total.

Interchangeable metering disc on each nozzle.

On/off tap and non-drip module on each nozzle.

Break-back function on outer arms

Stainless steel spray lines with flushing taps.

Independent hydraulic folding left and right arms.

Galvanised steel structure.

### Chassis, Wheels and Suspension

Heavy duty galvanised steel chassis.

Adjustable drawbar with reversible hitch.

Jack with jockey wheel.

Tandem Simplicity axle.

Track width to outside of tyres 1810mm

Tyre size & pressure 31x10.5R15 250kpa (35psi)

### Dimensions and Weights

With standard equipment.

Mass with tanks empty. To calculate gross weight add 1 kg per litre of water fill.

| Length             | Width | Height | Mass |
|--------------------|-------|--------|------|
| (dimensions in mm) |       |        | (kg) |
| 5800               | 2700  | 3200   | 1100 |

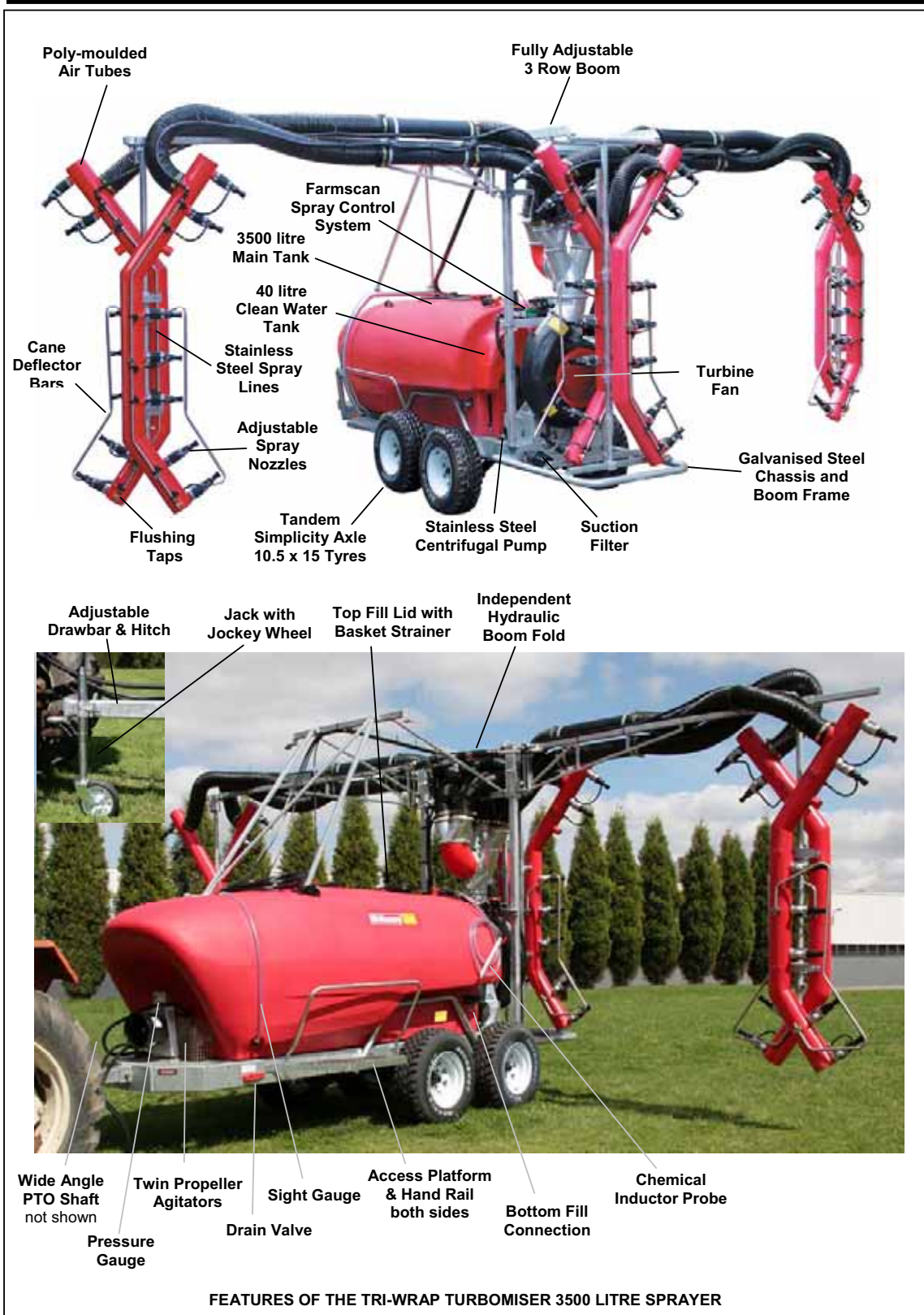
### Tractor Requirement

Minimum recommended engine power rating.

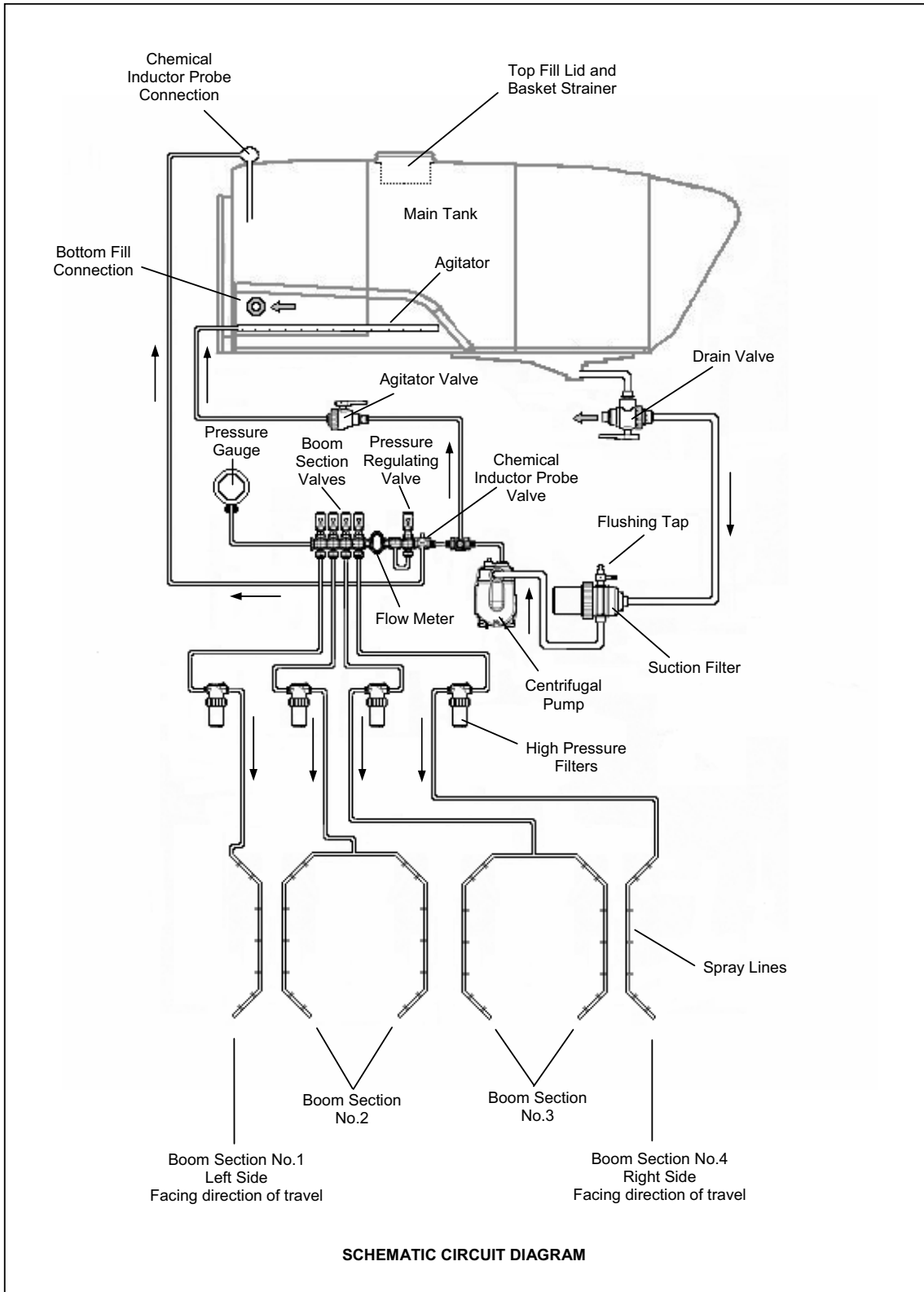
67 kW (90 HP)



## Features and Specifications



**Description of Fluid Flow**



## **Description of Fluid Flow**

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The schematic diagram opposite shows the fluid flow of the Tri-Wrap Turbomiser 3500 litre sprayer.

The main tank can be filled either through the top or the bottom but the recommended method is through the bottom fill connection, which is more convenient and prevents chemicals from frothing. The bottom fill incorporates a cam-lock hose coupling.

If the top lid is used for filling, a basket strainer is provided to prevent entry of foreign material.

The level of liquid in the main tank is shown by a floating ball sight-line and calibration marks on the LH side of the sprayer.

For rapid emptying, a large diameter outlet under the LH side of the sprayer discharges through a manual drain valve. During filling and spraying this valve is turned to the "Pump" position. Turning the valve to its midpoint (handle vertical) closes the valve to allow removal of the suction filter element without losing fluid from the tank. To flush the system an external water supply can be connected to the flushing tap fitted to the suction filter. The flushing tap is also used to expel air from the suction line when the tank has been emptied or the suction filter has been removed for cleaning.

Liquid chemicals are added to the main tank with a detachable inductor probe and hose, connected by a cam-lock coupling to a venturi in the tank. Opening the inductor valve directs pressurised fluid from the pump to the venturi, which applies suction to the probe. Solid chemical can be dissolved in water to allow use of the probe or it can be added through a top opening in the tank.

The chemical mixture is drawn from the underside of the tank through the suction line to the inlet side of the pump. A filter in the suction line ensures that no foreign material enters the pump. The filter incorporates a replaceable element. Depending upon the sprayer model, the pump is either driven by a belt from the fan shaft or by a direct-coupled hydraulic motor from the tractor hydraulics.

Fluid is discharged from the pump to the 12 volt electrically operated valve block at the rear of the sprayer, which incorporates a pressure regulating valve, a flow sensor and four section valves.

The application rate is set at the Farmscan tractor control unit, which opens or closes the pressure regulator to the required setting.

A magnetic sensor on a wheel of the sprayer detects the speed of travel and sends a signal to the control unit, which adjusts the pressure valve to maintain a constant application rate as ground speed varies.

The flow sensor detects the volume of liquid flowing from the pressure valve to the boom and sends a signal to the control unit to adjust the valve to maintain a constant application rate.

The amount of pressurised fluid required to achieve the application rate passes through the flow sensor to the section valves and spray lines of the boom. The pressure gauge mounted at the front of the sprayer indicates the spraying pressure. A high pressure filter is fitted between each section valve and its spray lines.

If travel speed falls below the automatic shut off speed, which is set at the tractor control unit, the pressure regulator closes and stops the boom from spraying.

Pressurised fluid is also directed to an agitator in the rear of the main tank, which keeps the chemical solution mixed. A manual valve is fitted in the line to the agitator and it should be kept permanently open for normal operation. Two propeller agitators in the front of the tank are belt driven from the PTO shaft to provide further mixing of the solution.

### **Boom Circuit**

The section switches of the cabin control unit are used to open or close the four section valves that direct fluid to the spray lines on the boom air tubes. The circuit diagram shows the section of the boom that is controlled by each valve. Once the boom pattern is set, spraying is stopped and started with the master switch.

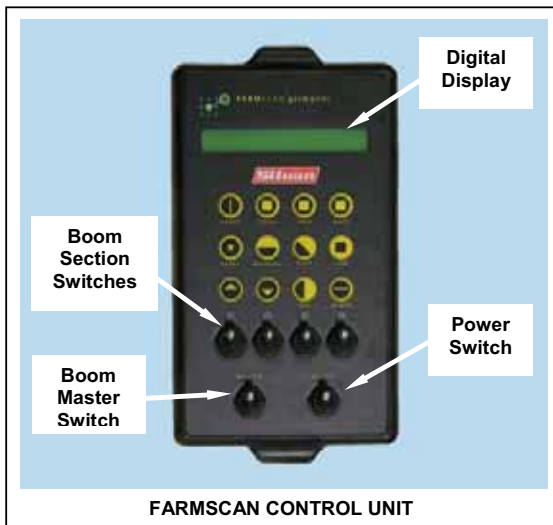
Each spray line is connected to seven nozzles on an air tube. An on/off tap on each nozzle enables the spray pattern to be varied. The taps incorporate a non-drip module that is activated once pressure falls below approximately 1.5 Bar, shown at the pressure gauge on the front of the sprayer. A tap at the lower end of each spray line is used to flush the system.

The turbine fan is driven at constant speed by the PTO shaft and directs air to each of the six air tubes. Air flows through each nozzle and atomises the chemical solution, which enters the nozzle at the venturi section of the air trumpet. Individual nozzles can have the airflow blanked off to further vary the spray pattern.

### **Clean Water Tank**

The clean water tank is not connected to the spraying circuit. It is filled through the top opening and provides clean water for washing purposes through a tap on either side of the sprayer. Under no circumstances should it be used for drinking.

## Connecting to the Tractor



FARMSCAN CONTROL UNIT

### Installing the Farmscan Cabin Control Unit

Before attaching the sprayer to the tractor, install the Farmscan Primo 400 cabin control unit.

Using the bracket, securing knobs and hardware provided with the sprayer, install the control unit in a suitably protected position within the cabin where it will be easily seen and within convenient reach. Refer to the Farmscan manual for important points to note when selecting the position

Ensure that the power switch of the controller is off whilst making these connections. Connect the electrical power supply cables of the loom directly to the 12 volt tractor battery. The connection method and the positive and negative cable colours are shown in the Farmscan manual.

Plug the rectangular end of the loom into the socket on the rear of the controller and tighten the securing screws.

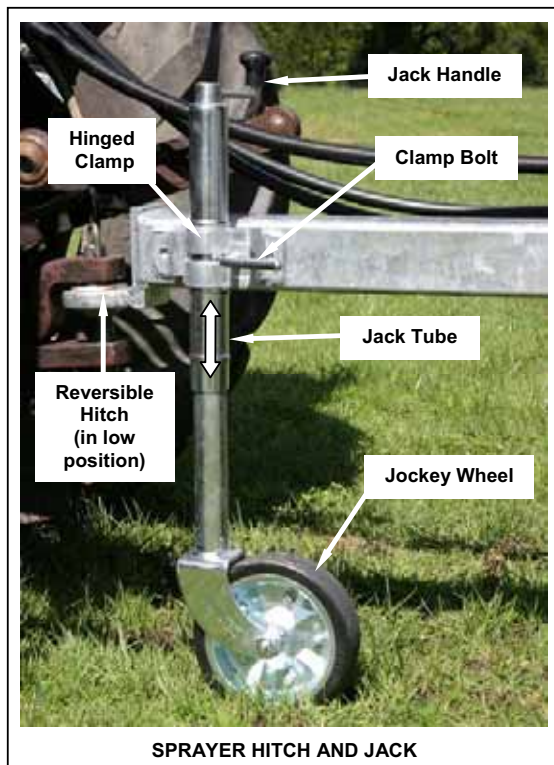
Run the quick coupling end of the loom through a convenient opening in the tractor cabin, taking note of the points given in the Farmscan manual.

Use the cable ties provided to secure the loom. If it is necessary to drill a hole for the loom, install a rubber grommet so the cable is not chafed.

Do not switch the power on to the controller until the content of the Farmscan manual has been read and is fully understood.

### Hitching to the Tractor

Attach the sprayer hitch to the tractor drawbar using the hitch pin supplied with the tractor. Make the connection on a level surface with the sprayer tanks empty. Use the sprayer jack to adjust the height of the hitch to match the tractor drawbar then back the tractor into position. Install the hitch pin and secure it with its locking pin.



SPRAYER HITCH AND JACK

Wind the jack handle to transfer the weight of the sprayer onto the tractor. Wind the jack up fully, loosen the clamp bolt, raise the jack tube to full height and re-tighten the clamp bolt. If this does not provide sufficient ground clearance for on-farm operations the jack can be removed by undoing the clamp bolt and swinging the hinged clamp open. Close the hinge and refit the clamp bolt. Always remove jack when travelling on the road.

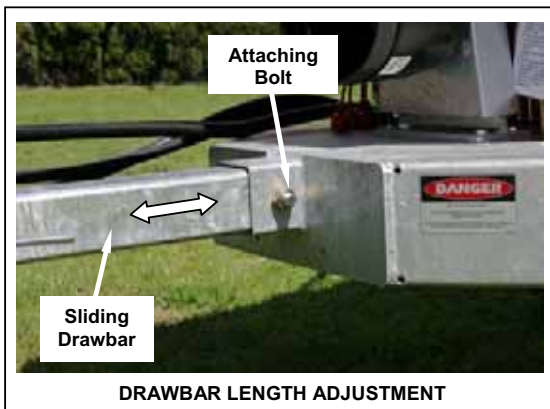
To unhitch the sprayer from the tractor, reverse the above procedure.

When connected, the sprayer frame should be level and the hitch point should be as near as practical to midway between the PTO shaft universal joints with the height difference between the joints not more than about 10cm. This will ensure the joint angles are similar during turns and within the allowable limit. To achieve this it may be necessary to adjust the height and length of the tractor drawbar. It may also be necessary to adjust the sprayer drawbar as described below.

### Adjusting the Drawbar

To adjust the sprayer drawbar, support the front of the sprayer frame on a suitable stand that will safely take the weight of the sprayer. The sprayer tanks must be empty.

## Connecting to the Tractor



Lower the sprayer onto the support stand and remove the bolt attaching the drawbar to the sprayer frame. To adjust the hitch height slide the drawbar out and rotate it 180° to either the high or low position. Reinstall the drawbar and slide it so the attaching bolt can be passed through the hole nearest to the required length. There are three alternative holes in the drawbar. Securely tighten the attaching bolt. Raise the sprayer with the jack to remove the support stand and connect to the tractor as previously described.

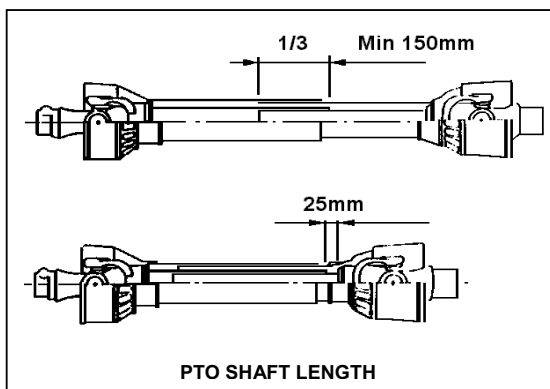
### Connecting the PTO Shaft

Clean and grease the splines on the tractor and sprayer PTO stub shafts and install the PTO shaft with the wide angle joint to the tractor, making sure the spring loaded locking pins engage in the grooves of both stub shafts.

Ensure that the tractor PTO guard is attached to the tractor.

*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 telescoping tubes must overlap by at least 1/3 their length, but not less than 150mm, in all operating positions and there must be at least



25mm telescopic movement remaining at the minimum operating length, refer diagram.

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

### Connecting Hydraulic Hoses



Relieve all hydraulic pressure before connecting or disconnecting hoses. Oil escaping under pressure can penetrate skin, causing serious injury. Seek immediate medical treatment if injured by escaping oil.

When attaching or removing hydraulic hoses make sure the quick release connections are clean to avoid contaminating the system. Ensure the hoses are well supported and clear of the tractor wheels.

### Spray Boom Hoses

Two sets of remote hydraulic connections are required to operate the boom folding system, one pair for each side.

The pressure hoses can be identified by the regulating valve adjacent to the quick release connector. They should always be connected to a pressure outlet. If connected in the opposite manner no damage will be done but the tractor control will move the boom in the reverse direction. For safety reasons it is therefore important to always connect the hoses to the correct sockets.

### Hydraulic Pump Drive Hoses and Motor

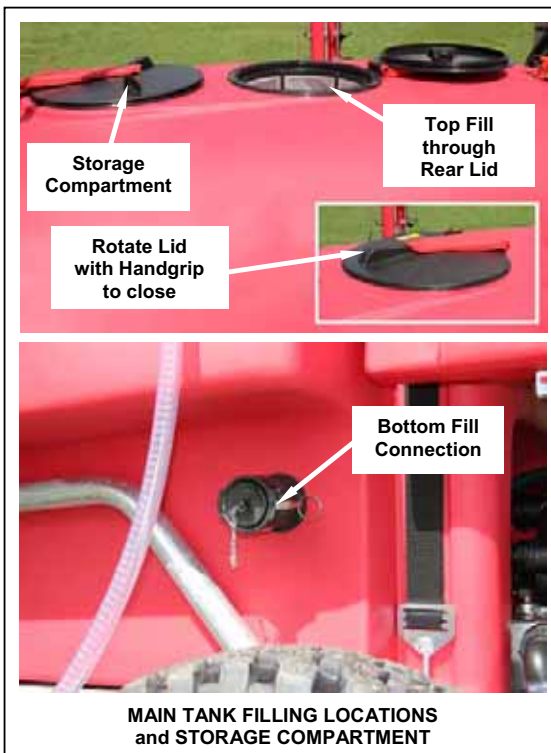
A third set of remote hydraulic connections is required for models with hydraulic pump drive. Before delivery the dealer will ensure that the pump motor is matched to the hydraulic system of the tractor. If the sprayer is connected to a different tractor check with the dealer to determine whether the motor needs adjustment. Refer to the Hypro Pump Manual for information on motor set up.

A pair of 1/2" dia. hoses supply the pump motor. The pressure hose should be identified so it can be connected to the tractor pressure outlet. Fitting the hoses in reverse will run the motor backwards and the pump will not prime. If the tractor has a priority outlet connect the pump to it. The pump will run when the lever is in the detent position.

### Farmscan Controller Electrical Loom

Remove the end caps from each loom section and plug the ends together, noting the position of the indexing lug, then tighten the screw coupling. When disconnecting ensure the caps are refitted to avoid damage or contamination of the connecting pins. Ensure the loom is well supported and clear of the tractor wheels when turning.

## Operation



### Filling the Main Tank using Bottom Connection

The main tank can be filled through either the top or bottom but the recommended method is through the bottom fill connection, which is more convenient and prevents chemicals frothing. It is also safer as the tank can be filled from ground level.

Before filling, first check that the red handle of the drain valve is turned to the "Pump" position. The drain valve is located at the LH front of the sprayer.

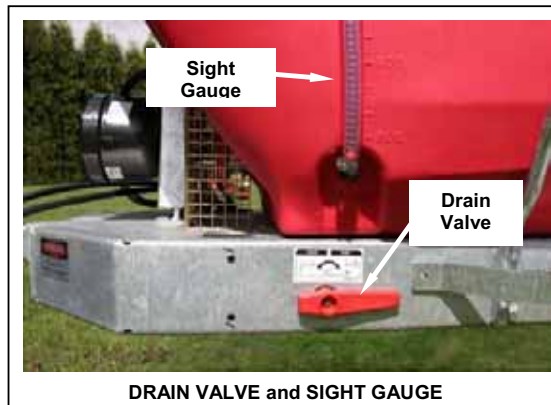
Undo the catches and remove the cap from the bottom fill connection, which is located on the LH rear side of the main tank. Connect a filling hose with a 50mm cam lock coupling to the bottom fill connection and turn on the water supply.

The red ball in the sight gauge indicates the level of liquid in the tank. The volume can be read from the litre scale markings moulded into the tank. The gauge is visible from the tractor so the content can be observed whilst spraying.

When filling is complete, shut off the supply, disconnect the hose and close the connection by replacing the cap and closing the catches.

### Filling the Main Tank using the Top Lid

If filling the tank through the top use the steel mesh platform on the side of the sprayer frame to gain access to the filler lid. For safety reasons do not climb on the tank or stand on the tyres.



The rear lid, which is fitted with a basket strainer, is used to fill the tank. To open the lid, rotate it with the handgrip to release the screw seal then swing it open on the hinge. Before filling check that the basket strainer is clean. The basket can be removed for cleaning if necessary.

After filling, close the filler lid and lock it by turning the handgrip.

### Front Lid Storage Compartment

The front lid of the main tank covers a receptacle that can be used for storing small items, such as gloves.

### Filling the Clean Water Tank

The clean water tank provides a convenient water supply for washing purposes.

Under no circumstances should it be used for drinking.

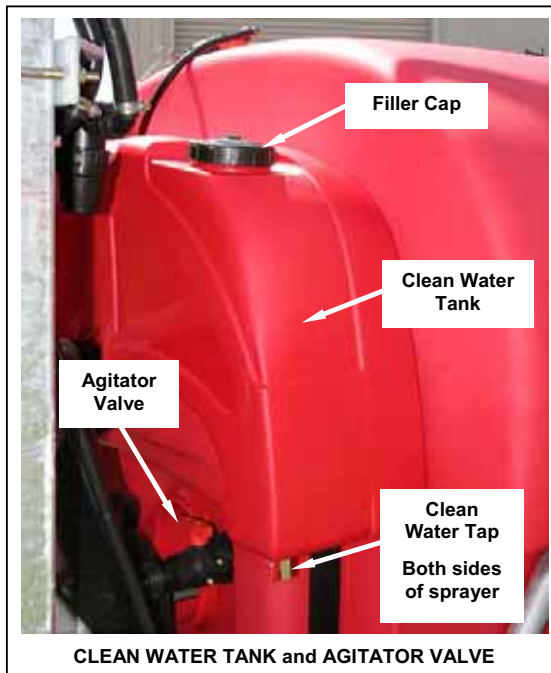
The tank should be filled with clean water through its top screw lid at the same time as the main tank is filled. A discharge tap is provided on either side of the sprayer for convenient access.

### Suction Filter

The suction filter should be cleaned after each tank of chemical mixture is emptied and at the end of each day. This routine ensures it is ready for the next filling. Refer to the Maintenance section for filter cleaning information.

The filter is located at the LH rear of the sprayer. The element can be removed for cleaning by unscrewing the black plastic ring and removing the cover. The sprayer must be stopped before removing the element. To prevent liquid draining from the tank when the element is removed, close the drain valve by turning the handle vertical. Some fluid will drain from the suction line so after refitting the filter it is necessary to expel any air to ensure the pump will prime. Refer to Priming the Pump after Draining the Tank or Removing the Suction Filter on page 15.

## Operation



### Tank Agitator Valve

By-pass from the pump is directed to an agitator in the tank. Flow is controlled by the valve at the rear of the tank, which is open when the handle is in line with the direction of flow and shut when across the direction. The valve should be half open for normal operation. Fully opening the valve may reduce the pressure available for spraying. Fully closing the valve will cause fluid to overheat in the pump and damage the seals.

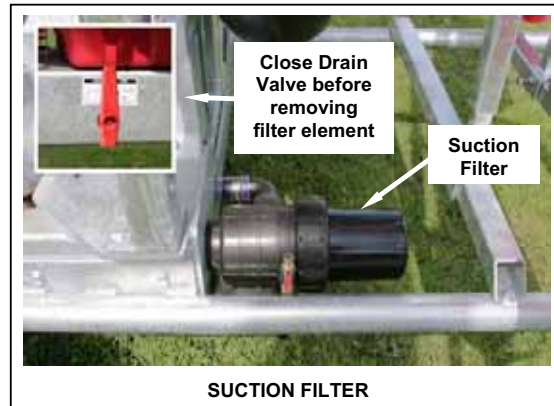
Two propeller type agitators are located in the lower front of the tank and are driven continuously from the PTO shaft.

### Starting the Sprayer for the First Time

Conduct a trial run using water only to familiarise with the operation of the controls and to check that all systems are functioning correctly without leakage. Fill the tank through the bottom fill and ensure that any air is expelled from the suction line, refer to Priming the Pump after Draining the Tank or Removing the Suction Filter on page 15.

It is important that the sprayer is not run dry, as this will damage the pump seals.

The sprayer should be initially started without pressure in the system. On the Farmscan controller, turn the Master switch off (down) and close all Boom switches (down). Turn the Power switch on (down) and set the unit to manual control by depressing the Manual button. Set the spraying pressure to zero by depressing the down button (marked with a downward facing arrow) for a few



seconds to ensure the pressure-regulating valve is fully opened.

Start the tractor, run the engine at low speed and engage the PTO. On the hydraulic pump model open the remote hydraulic flow from the tractor. Allow the sprayer to run slowly in by-pass mode for a few minutes. The belt drive pump will prime automatically but the hydraulic drive pump may not prime immediately. Observe the pressure gauge at the front of the sprayer to see whether the pump is operating. The hydraulic drive pump will not prime if the hoses are incorrectly fitted to the pressure and return sockets of the tractor. It may be necessary to reverse the hoses.

Once running satisfactorily, increase speed to 540 PTO rpm.

Set the controller display to "Pressure" and progressively increase pressure. Refer to the Farmscan Operator's Manual for information on regulating the pressure.

For the initial trial set the pressure to the upper end of the range to be used for spraying, which is normally carried out between 1 to 5 Bar.

Make sure all bystanders are clear then unfold the boom, switch all sections on and check that all nozzles are spraying. Inspect the sprayer for any leaks and tighten connections if necessary. See the Circuit Diagram for information on which part of the boom is controlled by each section switch.

Use the test run to familiarise with the other functions of the Farmscan controller, refer to the Farmscan Operator's Manual.

### Starting Procedure for Regular Operation

After the initial trials the following starting procedure can be used for regular spraying.

1. At the Farmscan controller, set the power switch on, master switch off and close all boom switches.

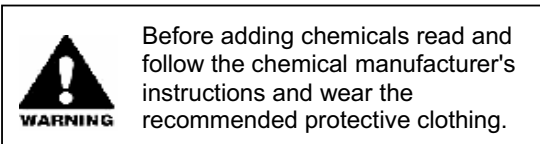
## Operation

2. Start the tractor, engage the PTO and slowly bring the speed up to 540 PTO rpm.
3. On the hydraulic pump drive model, open the hydraulic flow with the tractor control lever.
4. Set the required application rate with the Farmscan controller.
5. Set the master switch on and open and close each boom section to check that it is functioning.
6. To commence spraying open the required boom sections with their control switches.
7. Spraying may then be stopped and started using the master switch to maintain the required boom configuration.

### Sprayer Operating Speed

To maintain the correct airflow the sprayer should always be operated at 540 PTO rpm.

### Adding Chemicals



Carefully read and follow all safety precautions provided by the chemical manufacturer.

Always wear gloves, eye protection and all the recommended protective clothing whilst mixing and filling the sprayer with chemicals. Take care to avoid spillage of chemicals or mixed solution. 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 Probe

Liquid chemicals can be added to the tank safely and conveniently using the inductor probe while the sprayer is running, which will thoroughly mix the solution. Chemical may be transferred by inserting the probe into the original drum or a measured amount can be decanted into a suitable container. Powdered chemical can be added with the probe by first dissolving in water.

Before adding any chemicals fill the tank with approximately 500 litres of water and check that the pump is primed.

Turn the Farmscan controller on and close the boom sections so that the surplus pump output will be by-passed to the tank through the agitator to mix the solution. Set the controller to manual to provide maximum flow to the inductor.



Connect the probe hose to the cam lock connector on top of the main tank.

Open the inductor valve by raising the red lever to a vertical position. Start the sprayer and run at 540 PTO rpm.

Place the probe in the container and open its valve by turning the handle to align with the probe. Chemical will be drawn from the container and transferred to the tank. When all chemical has been added, shut the probe valve and close the inductor valve. Remove the probe hose from the cam lock connector, refit the cap and close the catches.

Continue filling the main tank with water and keep the sprayer running to thoroughly mix the solution.

The probe should be rinsed and left in a safe location at the filling station for the next filling.



## Operation



### Adding Chemicals through the Top Opening

Powdered or liquid chemicals can be added through the rear lid on top of the tank if necessary but this method is not recommended, as it is safer and more convenient to use the probe.

If adding chemicals through the top opening stand on the steel mesh platform on the side of the sprayer. For safety reasons do not climb on the tank or stand on the tyres.

When adding liquid chemical use the basket strainer. If adding powdered chemical remove the basket strainer.

### High Pressure Filters

A high pressure filter is fitted between the pump and the spray lines of each boom section. The four filters are located at the RH rear of the sprayer above the fan housing and should be checked at the end of each day and cleaned if necessary. The element can be removed by unscrewing the filter bowl. The sprayer must be stopped before unscrewing the bowls.

### Draining and Flushing the Sprayer

Carry out the following routine at the end of each day when spraying and before storing the sprayer.

Open the drain valve and empty any unused solution in the tank. Rinse the tank through the top opening with a hose until clean water runs from the drain outlet. Never leave chemicals in the tank that could settle to the bottom and break into lumps that may block the suction filter.

Remove and clean the suction filter. Check and if necessary clean each of the high pressure filters.

Flush the system with clean water to purge the pump, valves and spray lines. This can be done conveniently by connecting a ½ inch hose, fitted with a female snap connector, to the male hose connector of the flushing tap on the suction filter.

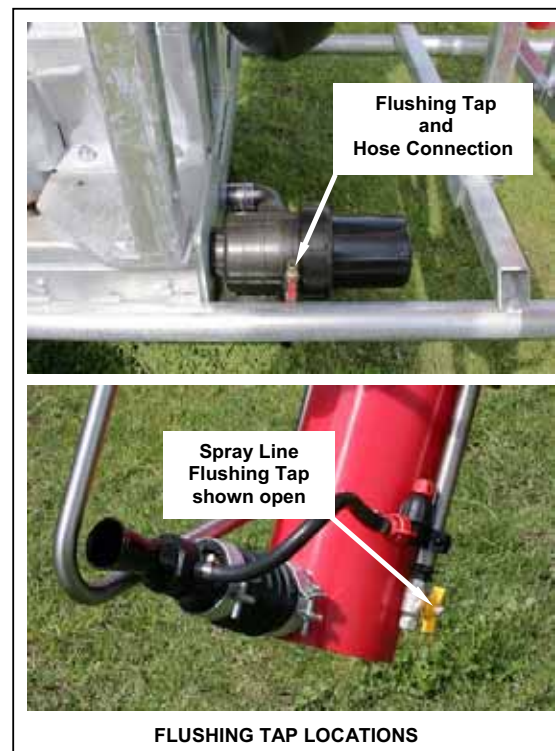
Start the sprayer and run at 540 PTO rpm. Set the Farmscan controller to Manual, this will fully open the pressure regulating valve to enable flushing of the system. Turn the water supply on, then open the tap at the sprayer. Open the yellow tap at the bottom of each spray line to assist flushing. The tap is open when aligned with the spray line and closed when across. Run the sprayer for several minutes with all sections open. Close the flushing taps and continue running until clean water is sprayed from all nozzles.

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

### Priming the Pump after Draining the Tank or Removing the Suction Filter

When the tank is emptied or the suction filter is removed, the suction line will drain and fill with air. After refilling the tank and/or refitting the filter it is important that the air is expelled from the suction line so that the pump will prime.

With liquid in the tank and the drain valve in the "Pump" position, open the flushing tap on the suction filter to expel the air. Once liquid runs from the flushing tap close the tap, start the sprayer and run at approximately 400 PTO rpm. It should take about one minute for the pump to prime. This will be indicated by the pressure gauge on the front of the sprayer rising to approximately 5 Bar.



## Operation

### Spray Boom Operation

The boom is controlled by two sets of remote hydraulic outlets, one for each side. The tractor hydraulic control levers are used for the folding and unfolding operations.

Always ensure that the boom is folded or unfolded in a safe area where it will not foul on any other objects. Look up before folding or unfolding to check for obstructions. Never fold or unfold near overhead power lines. Ensure that all bystanders are clear before moving the boom.

Conduct the folding and unfolding operations with the tractor engine running slowly so that maximum control can be maintained. The speed at which the boom folds can also be regulated by adjusting the valves on the hydraulic cylinders.

The pivot bolt in the attaching brackets at the top of the outer arms allows them to swing back if an object is accidentally contacted.

When folded the arms rest on a support saddle on each side of the sprayer and are not held by any lock mechanism. A ratchet strap is supplied with the sprayer for securing the arms in the folded position when transporting the sprayer on the road.

**Unfolding** The boom will slide free from the saddles when unfolded. Use the tractor hydraulic lever to slowly unfold one arm at a time until the hydraulic cylinder is fully extended.

**Folding** Fold the boom slowly, one arm at a time with the tractor hydraulics until the arm rests on the support saddle. An adjustable stop is fitted to the lower end of the outer air tubes to prevent them contacting the main tank when the boom is folded.

### Adjusting the Boom Fold Stop

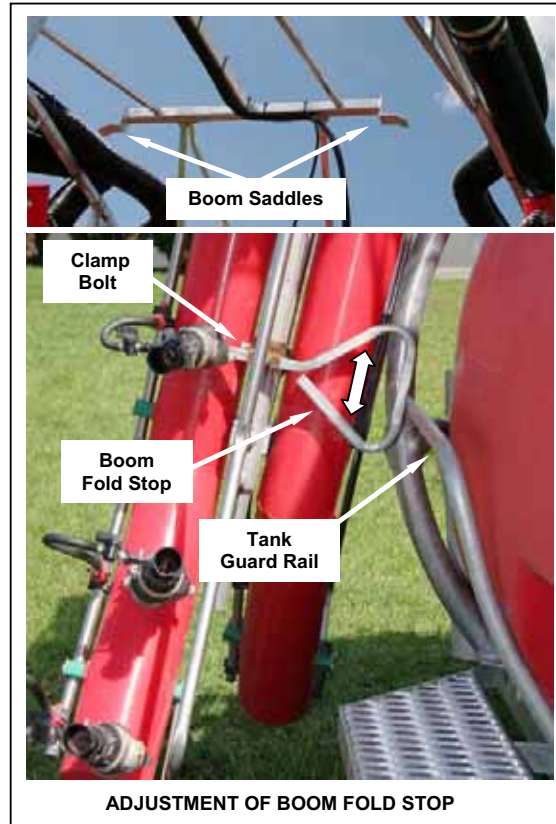
The boom fold stop can be moved up or down to centralise it against the tank guard rail. Loosen the bolt clamping the mounting to the vertical bar and slide the stop to the required position. Re-tighten the clamp bolt.

Unfold and re-fold the boom to check that it sits fully on the support saddles with the stop lightly touching the tank rail. Readjust if necessary.

### Adjusting Boom Fold Speed

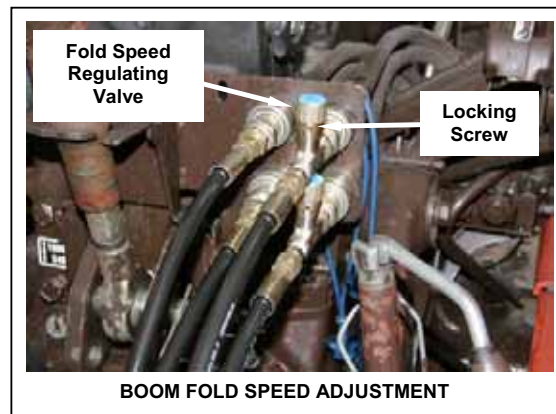
A regulating valve on the pressure hose to each fold cylinder controls the speed of the boom arms. The valves are located adjacent to the quick release couplings at the forward end of the hoses. Turning the valve clockwise reduces folding speed and turning it anti-clockwise increases speed.

Adjust one arm at a time. Loosen the locking screw in the valve knob with an Allen key. Fold and unfold the arm several times and observe the speed. Turn the valve to give the required speed.



Only small adjustments are needed to make a difference to the arm fold speed. When satisfied tighten the locking screw.

Adjust the other arm to a similar speed.



## Operation

### Configuring the Spray Boom

The air tubes are shaped to the contour of the vine canopy and their position can be adjusted to vary the distance between the nozzles and canopy.

The direction of each nozzle can be adjusted and those not required can have the airflow blanked off. A tap at each nozzle enables the spray mix to be turned on or off to vary the spray pattern.

The application rate can be regulated by changing the metering disc in each nozzle.

When changing the boom configuration, the tractor engine must be stopped, the key removed and the parking brake applied. This is an essential safety precaution.

### Adjusting the Air Tubes

Each of the air tubes is attached to a vertical support that can be moved along a horizontal beam to regulate the distance between the nozzles and the vine canopy. The tubes can also be raised or lowered on their vertical supports to match the height of the canopy. The outer tubes can also be rotated to angle the direction of spray.

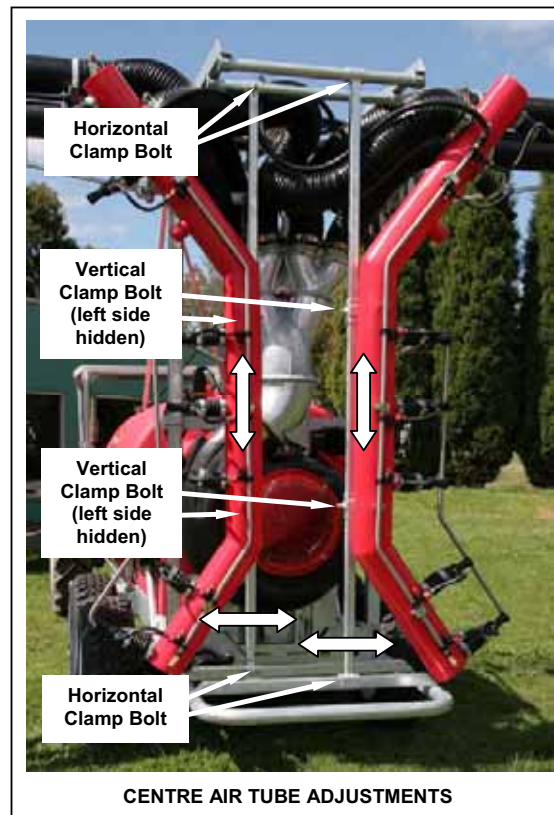
#### 1. Positioning the Centre Tubes

The centre tubes should be set so the nozzles are at a distance from the vine canopy that will give full spray coverage. This will depend upon the row spacing and the stage of crop development. At the start of the season the tubes will need to be set towards the outer limit of the adjustment and brought closer to the centre of the sprayer as the crop develops. The tubes should be equidistant from the sprayer centre line so that the nozzles will be the same distance from the row on either side. When the crop is developed it is important to have the nozzles no closer than 500mm from the edge of the canopy to prevent the spray banding and only giving strip coverage.

To set the horizontal position of the centre tubes loosen the square headed clamp bolt at the top and bottom of each vertical support and slide the tube to the required position, then securely re-tighten the clamp bolts. The upper bolts can be reached with the extension socket supplied with the sprayer.

The vertical position of the air tubes should be set to match the shape of the vine canopy. The two lower nozzles should be positioned so they drive the spray under the canopy to achieve good penetration in the centre.

To adjust the vertical position loosen the two square headed clamp bolts attaching each tube to its vertical support, slide the tube to the required height and securely re-tighten the clamp bolts. Both tubes should be set at the same height.



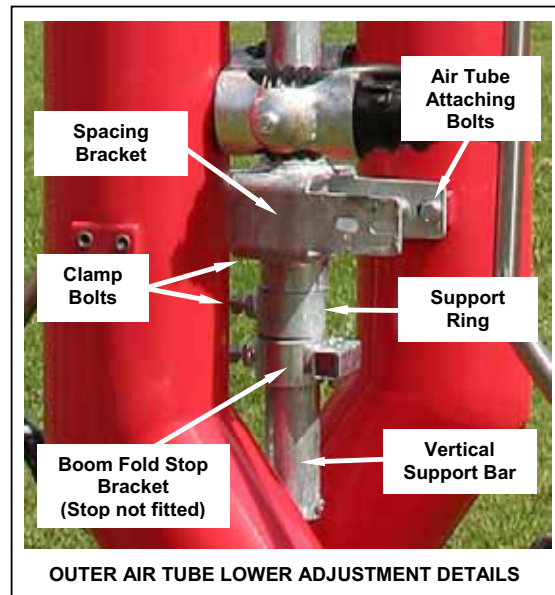
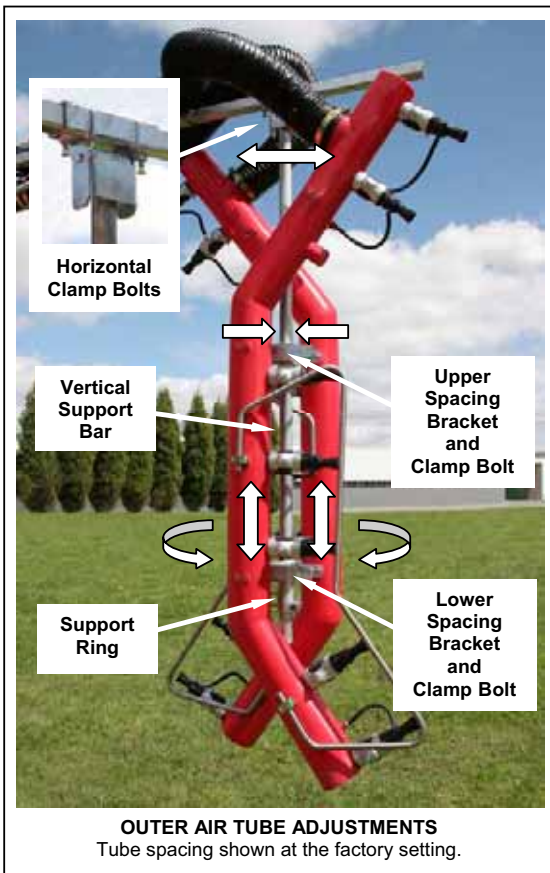
#### 2. Positioning the Outer Tubes

The outer tubes should be positioned so the nozzles on the inward facing tube give full spray coverage to the far side of the row. The distance from the nozzle to canopy should be similar to that set for the centre tubes. The vertical support bar is usually positioned in the centre of the aisle between rows. When the crop is developed the nozzles should be no closer than 500mm from the edge of the canopy to prevent the spray banding.

To set the horizontal position of the outer tubes use the extension handle and socket supplied with the sprayer to loosen the two square headed clamp bolts at the top of each vertical support. Slide each pair of tubes to the required position, then securely re-tighten the clamp bolts. The right and left tubes should be set the same distance from the sprayer centre line. The tube support sleeve will slide freely on the upper rail if you pull back near the bottom of the tube with one hand and push higher up with the other.

The spacing between each pair of outer tubes can be altered so the nozzles of the outward facing tube are moved in or out to provide proper coverage of the next row. The tubes can be attached at either end of the upper and lower spacing brackets to vary the spacing.

**Operation**



As supplied from the factory the outward facing tube is attached at the inner end of the bracket and the inward facing tube is fitted to the outer end, as shown in the illustration. The factory spacing will provide the correct nozzle position for most situations. However, at the start of the season when the canopy is small it may be necessary to move the inward facing tube to the inner end of the spacing bracket and the outward facing tube to the outer end, to bring the nozzles closer to the canopy. To alter the position of the tube remove the two attaching bolts from the upper and lower brackets and refit the tube in the required position.

The vertical position of the air tubes should be set to match the shape of the vine canopy. The two lower nozzles should be positioned so they drive the spray under the canopy to achieve good penetration in the centre. To adjust the vertical position first loosen the clamp bolts in the spacing brackets, then loosen the clamp bolt in the support ring. Slide the tubes and support ring to the required height on the vertical bar. Securely tighten the clamp bolt in the support ring to take the weight of the tubes then tighten the clamp bolts in the spacing brackets. The outer tubes should be set at the same height as the centre tubes.

The outer tubes can be rotated on the vertical support to alter the direction of the nozzles.

At the start of the season when the canopy is thin the nozzles on the inward facing tube should be pointed directly at those on the centre tube so the airstreams meet. This will prevent spray passing right through the canopy.

When the canopy has developed the outer tubes should be rotated to point the inward facing nozzles slightly rearward so the opposing airstreams miss each other and fully penetrate the crop. Combined with the forward speed of the sprayer this will cause the spray to vortex around the target, improving the cover. The distance between the airstreams should be 100mm to 300mm. Use the larger distance if the canopy is vigorous and the ground speed is high (10 kph).

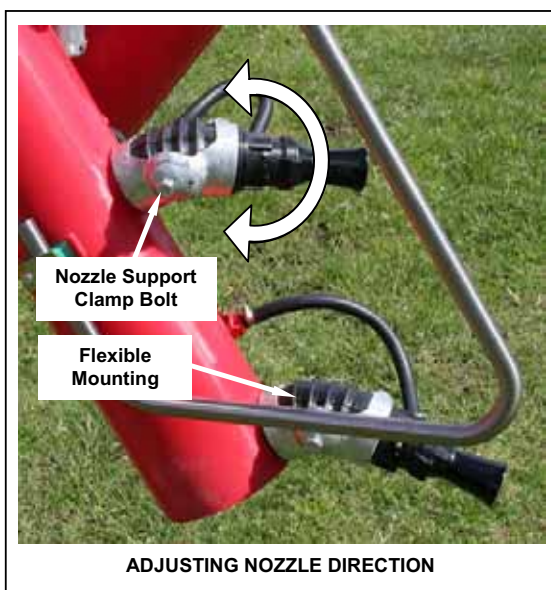
To rotate the tubes, leave the support ring tightened to carry the weight of the tubes. Loosen the clamp bolts in the spacing brackets and rotate the tubes to the required position, then re-tighten.

**Nozzle Adjustment**

By bending the nozzle on its flexible mounting the direction of spray from each nozzle can be varied to suit the shape of the canopy or to concentrate spray from several nozzles in one area. Loosen the clamp bolt on the nozzle support, bend the nozzle to the required direction and re-tighten the clamp bolt.

The chemical flow to individual nozzles can be stopped with the nozzle on/off tap. The airstream will continue to be discharged from the nozzle.

## Operation

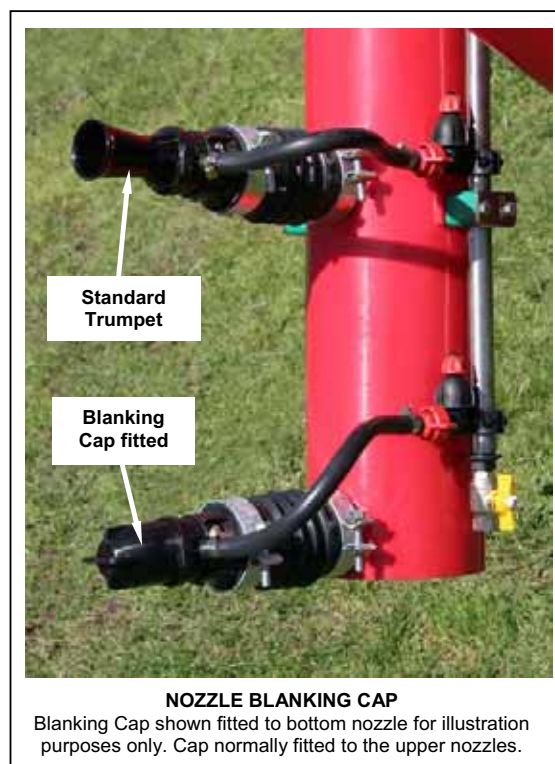
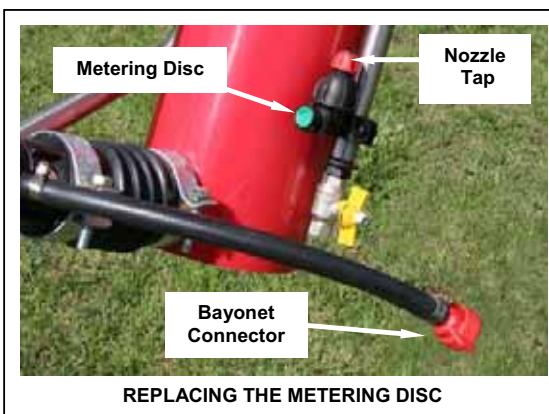


Early in the season the canopy may not be tall enough to require use of the upper nozzles. Turning the chemical off but leaving the airflow on will create a curtain of air that will help keep any off-target spray down towards the canopy.

The airflow from individual nozzles can also be stopped by fitting a blanking cap. The standard trumpet is removed by turning it clockwise on its bayonet mounting and a blanking cap is fitted in its place. Six blanking caps are supplied with the sprayer. Chemical flow must also be stopped with the nozzle on/off tap when a blanking cap is fitted. Blanking off nozzles will increase the airflow to the open nozzles.

### Changing Nozzle Metering Discs

An interchangeable disc is fitted on the outlet side of each nozzle on/off tap. Discs with holes of varying size can be fitted to regulate the spraying application rate, see Calibration section.



To change the metering disc remove the flexible hose from the nozzle tap by turning the bayonet connector anti-clockwise. Remove the disc from the tap outlet and replace it with the required size. Refit the hose and tighten the bayonet connector.

### 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 when all tanks are full could overload the braking capability of the tractor and result in an accident. The tyres are rated to 30 kph for road travel.

Remove the jack from the drawbar to ensure there is adequate ground clearance.

The power and master switches of the Farmscan controller should be switched off.

Ensure that the spray boom is correctly folded and secured with the ratchet strap supplied with the sprayer. Lock the remote hydraulic control lever of the tractor or disconnect the boom hydraulic hoses to prevent accidental unfolding. Watch out for overhead power lines.



## Calibrating the Sprayer

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### Calibration

To select the size of metering disc to achieve a required application rate carry out the following three steps.

#### Step 1 **Operating Factors**

Establish the following factors.

a) **Application Rate (l/ha)** The litres of mixed chemical solution to be applied per hectare.

Application rates will vary depending upon the type of chemical, the crop type and its stage of development and the regional area. Information on application rates should be available from your chemical supplier.

Once selected the rate is set with the Farmscan controller, which will automatically maintain it during operation.

b) **Speed (km/hr)** The average travel speed that is expected to be used during spraying.

The Farmscan controller will automatically maintain the application rate if speed alters.

c) **Spraying Width (m)** The distance between individual rows multiplied by the number of rows being sprayed in one pass.

d) **No. Nozzles Operating** The total number of nozzles spraying, ie. the number of nozzle taps that are open.

#### Step 2 **Output per Nozzle**

Calculate the spray output required in litres/minute for one nozzle, using the above factors in the following formula.

Output per Nozzle (l/min) =

$$\frac{\text{Application Rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Spray Width (m)}}{600 \times \text{No. Nozzles Operating}}$$

#### Step 3 **Metering Disc and Spraying Pressure**

The Farmscan controller will automatically select and regulate the pressure to maintain the application rate. A pressure between 1.5 and 5 Bar is required for efficient nozzle operation. Operating at lower pressure may cause the non-drip modules on the spray lines to open and close intermittently as speed varies, producing irregular spraying.

a) From the Metering Disc Output Chart select the disc that will give the required application rate at the most suitable pressure.

b) Fit the selected disc to the nozzles that are to be in operation. Refer to the illustration on the previous page.

## Calibrating the Sprayer

| METERING DISC OUTPUT CHART |                 |                        |      |      |      |      |      |       |
|----------------------------|-----------------|------------------------|------|------|------|------|------|-------|
| Pressure (Bar)             |                 | 1.0                    | 1.5  | 2.0  | 2.5  | 3.0  | 4.0  | 5.0   |
| Disc No.                   | Disc Colour     | Output (litres/minute) |      |      |      |      |      |       |
| D1                         | Stainless Steel | 0.26                   | 0.32 | 0.37 | 0.43 | 0.47 | 0.55 | 0.62  |
| D1.5                       | Stainless Steel | 0.32                   | 0.44 | 0.53 | 0.58 | 0.63 | 0.72 | 0.81  |
| DVP-2                      | Orange          | 0.48                   | 0.60 | 0.67 | 0.77 | 0.82 | 0.94 | 1.07  |
| DVP-3                      | Green           | 0.63                   | 0.79 | 0.89 | 1.01 | 1.10 | 1.25 | 1.40  |
| DVP-4                      | Yellow          | 1.15                   | 1.39 | 1.60 | 1.81 | 1.96 | 2.22 | 2.40  |
| DVP-5                      | Blue            | 1.78                   | 2.17 | 2.49 | 2.82 | 3.05 | 3.43 | 3.81  |
| D6                         | Stainless Steel | 2.58                   | 3.16 | 3.67 | 3.90 | 4.32 | 4.99 | 5.62  |
| D7                         | Stainless Steel | 3.47                   | 4.32 | 4.84 | 5.40 | 5.88 | 6.71 | 7.55  |
| D8                         | Stainless Steel | 4.48                   | 5.58 | 6.34 | 7.29 | 7.84 | 8.98 | 10.10 |

The DVP discs can be identified by their colour.  
The stainless steel discs have the number stamped on them.

### Calibration Example

#### STEP 1 *Operating Factors*

- a) Required application rate = 300 l/ha
- b) Chosen speed = 8 km/hr
- c) Spraying width = 3 rows x 3 m = 9 m
- d) No. nozzles operating = 42

#### STEP 2 *Output per Nozzle*

Output per Nozzle (l/min) =

$$\frac{\text{Application Rate (l/ha)} \times \text{Speed (km/hr)} \times \text{Spray Width (m)}}{600 \times \text{No Nozzles Operating}}$$

$$= \frac{300 \times 8 \times 9}{600 \times 42} = 0.857 \text{ l/min}$$

#### STEP 3 *Metering Disc and Spraying Pressure*

From the Metering Disc Output Chart find the disc that will give the output closest to 0.857 l/min.

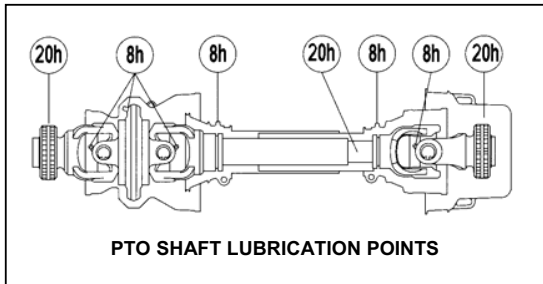
It can be seen that a DVP-3 disc at a pressure of 2.0 Bar will give the required rate.

## Lubrication and Maintenance

### Start-up Inspection

During the first few days of operation, before starting each day check that all hardware is tight, in particular the wheel bolts. Inspect for any leaks whilst running and tighten all hose clamps.

### Wide Angle PTO Shaft



Grease the PTO shaft with multi-purpose grease at the locations shown before starting for the first time and then at the intervals shown. This is the amount of lubrication recommended for normal operation. More frequent inspection and lubrication may be needed under very dusty conditions. Ensure that both universals in the wide angle joint are lubricated.

### Internal PTO Shaft

Grease the single universal joint on the internal PTO shaft, which is connected to the fan drive at the rear of the sprayer, with multi-purpose grease every 300 hours.

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 annual inspection.

### Other Greasing Points

Lubricate the grease nipples on the PTO support bearing, over-run clutch and fan belt tensioner with multi-purpose grease at the frequencies shown in the lubrication schedule on the next page.

### Fan Shaft Bearings

Check the oil level in the fan bearing housing daily and if necessary top up with SAE 90 oil. Unscrew and remove the filler plug and dipstick assembly. Clean the dipstick and re-insert it, then remove and check the oil level, which should be between the two marks on the dipstick. If necessary add oil to bring the level to the top mark. Reinstall the dipstick and tighten securely.

Change the oil annually. Remove the drain plug from the tube beneath the fan and remove dipstick to allow the oil to drain freely. Replace the drain plug and fill with SAE 90 oil to the upper mark on the dipstick. Requires approximately 160 ml of oil.

### Filters

Clean all filters daily or as stated below. More frequent cleaning may be found necessary depending upon circumstances.

Always stop the sprayer and disengage the PTO before inspecting or removing any of the filters.

Check and, if necessary, clean the basket strainer under the tank lid before each top fill.

Always clean the suction filter after each tank of chemicals is emptied. Before removing the element turn the drain valve to the off position to prevent fluid draining from the tank.

Clean and inspect the high pressure filters daily. Unscrew the bowls to remove the elements.

The best method for cleaning filters is to wash them with a soft bristle brush. Check for any tears or holes and replace if damaged. Take care that the sealing 'O' rings are refitted.

### Tank and Spray Lines

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

Never leave chemicals in the tank that may settle to the bottom, harden and break into lumps as this may block the suction filter. Refer to the Operation section for information on draining the tank and flushing the system.

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

### Tyres

Inspect regularly. Keep inflated to 250 kpa (35 psi).





## Lubrication and Maintenance



Before carrying out any lubrication or maintenance, apply the tractor parking brake, switch off the engine and remove the key. Ensure the sprayer and boom arms are 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.

| LUBRICATION SCHEDULE  |                      |                                 |
|---|----------------------|---------------------------------|
| LOCATION  | LUBRICANT TYPE       | FREQUENCY                       |
| PTO Shaft   | Multi-purpose Grease | 8 hrs & 20 hrs Refer to Diagram |
| Internal PTO Shaft  | Multi-purpose Grease | 300 hrs                         |
| PTO Support Bearing   | Multi-purpose Grease | 50 hrs                          |
| Over-run Clutch   | Multi-purpose Grease | 200 hrs                         |
| Fan Belt Tensioner  | Multi-purpose Grease | 200 hrs                         |
| Fan Shaft Bearings  | SAE 90 Oil           | Check Daily<br>Change Annually  |
| Refer to the text and illustrations for locations and further details |                      |                                 |



**Caution -** Do not use a high pressure washer to clean around fan bearings or electric valves.

## Lubrication and Maintenance

### Adjustment of Drive Belts

Check the tension on the belts driving the fan, pump and agitators regularly and if necessary adjust, as described below.

#### Fan Drive Belt

As the fan belt transmits considerable power, correct tension needs to be maintained to avoid loss of airflow due to belt slippage. Tension is applied by an adjustable spring-loaded link connected to the arm of an idler pulley that runs on the back of the belt. The spring loading maintains correct tension and minimises the need for frequent adjustment.

The tension spring is accessible from the RH side of the sprayer, refer illustration on previous page. To adjust, loosen the locknut and turn the inner nut so that the length of the spring is between 9 and 12 cm. Re-tighten the locknut.

#### Pump Drive Belt (Belt Drive Pump only)

A vee section belt from the fan shaft drives the centrifugal pump, which is mounted on a pivoting bracket. Tension is applied by an adjustable spring-loaded link connected to the pump bracket. It is essential to keep the spring adjusted to the correct length to avoid low fluid pressure due to belt slippage.

The spring is accessible at the LH rear of the sprayer. To adjust, turn the nut so the length of the spring is between 4 and 5 cm.

#### Agitator Drive Belts

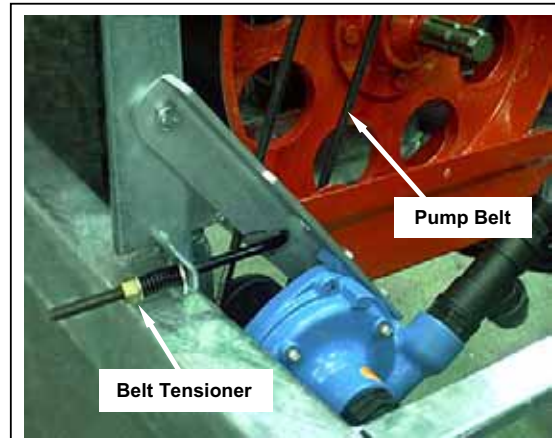
The two propeller agitators are driven from the PTO shaft at the front of the sprayer by flexible tubular belts that are self tensioning. To check whether the agitators are driving correctly observe them through the top opening of the tank. If they are not driving continuously it probably indicates that one or both of the belts has stretched and requires shortening.

To access the belts remove the four bolts attaching the mesh safety guard and remove the two sections of the guard. If necessary cut the plastic ties connecting the guard sections and the pressure gauge hose.

Remove the belt from the agitator pulley and cut it at either side of the join, adjacent to the ends of the connector piece. Shorten the belt to 630 mm, remove the connector from the cut section and use it to rejoin the shortened belt. Refit the belt to the agitator pulley.

Shorten the other belt by the same method, if required.

Refit the safety guard and tighten the four attaching bolts securely.



**PUMP BELT TENSION ADJUSTMENT**  
Similar arrangement to Tri-Wrap 3500 shown.  
Some components removed for clarity

#### Wheel Hubs

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

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

#### Annual Inspection

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 and that all hose connections are tight.



**AGITATOR BELT ADJUSTMENT**

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