

# INSTRUCTION AND PARTS MANUAL



## SAM ORCHARD SPREADERS

(All models)



2.5 CUBIC METRE SINGLE-AXLE



BANDING/PILING VIEW



SPREADING VIEW

## THANKS FOR CHOOSING A SAM

This Instruction and Parts Manual covers all SAM Orchard Spreaders fitted manufactured since 2020.

For all other SAM Machinery Instruction Manuals please visit [www.sammachinery.co.nz](http://www.sammachinery.co.nz)

## SERIAL NUMBER

All SAM Machinery products are identified with a unique serial number located on the front of the machine (e.g. '20 O 1234'). Please include this number with all parts and servicing enquiries so we can provide you with fast and accurate assistance.



## INTRODUCTION

SAM Machinery have created SAM Orchard Spreaders from over 70 years' experience making agricultural machinery in New Zealand. SAM's set the benchmark for Spreaders in New Zealand. Strong, simple and smart, each machine is handcrafted from the very best materials and componentry we can find. They are known for their practical design and easy to use operation.

A family-owned and operated company, located in the heart of the Waikato, SAM Machinery control the complete manufacturing process of the iconic SAM range: Fertiliser Spreaders, Combo Spreaders, Orchard Spreaders, Feed Wagons, Hydraulic Trailers and Quick Hitches.

We stand by the quality of all of our products - our team have put the hard work in so you can expect a long working life out of your gear. All the best with your new SAM. We trust you will love it.

For all parts, servicing or support enquiries please contact us on 07 847 8492. For international parts and servicing please contact 0064 7 847 8492.

[www.sammachinery.co.nz](http://www.sammachinery.co.nz)  
[instagram/@samfarmmachinery](https://www.instagram.com/samfarmmachinery)  
[facebook/@newsfromSAM](https://www.facebook.com/newsfromSAM)  
[tiktok/@samfarmmachinery](https://www.tiktok.com/@samfarmmachinery)

## MODEL DETAILS

MODEL	
SERIAL NUMBER	

## QUALITY GUARANTEE

SAM Machinery products are guaranteed against any defects in either material or manufacture for a period of 24 months from delivery date, provided that the equipment is properly maintained and has not been subject to abuse or misuse, operated incorrectly, over loaded or used for purposes other than for which the equipment is designed or is not maintained correctly or if fitted with other than genuine parts.

Claims are only valid when approved by the manufacturer. No person or agent is authorised to assume any liability.

As the use of the equipment is outside our control we can only guarantee quality. No liability for loss, direct expenses incurred from the use of this equipment or from any other cause of in respect of performance etc. can be accepted.

Defective parts must be returned freight paid to the manufacturer or available to be inspected as directed. Should such parts prove to the manufacturers satisfaction to be faulty - repair of - replacement of defective parts shall constitute fulfillment of guarantee obligations. Parts destroyed, lost or tampered with nullify guarantee.

## WARRANTY

SAM Machinery products are warranted against faulty workmanship and defective materials for a period of 24 months from date of purchase. Such warranty is subject to the following conditions:

1. That the basic maintenance (as noted in p5) is followed.
2. This warranty covers the repair or replacement of parts or machinery sold by SAM Machinery Ltd and damaged as a result of faulty workmanship of materials.  
It does not extend to any other loss or damage including consequential loss or damage to other property or persons, or damage through poor maintenance.
3. No responsibility will be accepted for repairs made other than by SAM Machinery Ltd or its accredited agent and without prior authorisation by SAM Machinery Ltd.  
Without limiting the generality of paragraph 2. above, this warranty does not cover the following;
  - a. Losses sustained through delay in delivery
  - b. Travel expenses
  - c. Damage caused by accident, misuse or abuse
4. Damage to any goods which have been altered or modified by someone other than SAM Machinery Ltd or its authorised dealers.
5. Procedure for recovery under warranty;
  - 5.1. No loss or damage will be covered under warranty unless the following procedure is followed by the purchaser.
    - 5.1.1. If the purchaser is an authorised dealer -
      - a. SAM Machinery Ltd must first be advised of details of the goods concerned, the loss or damage sustained and the circumstances in which the loss or damage arose.
      - b. SAM Machinery Ltd will then decide if such loss or damage is within the terms of warranty and shall advise the dealer as to how the loss or damage is to be repaired.
    - 5.1.2. If the purchaser is not an authorised dealer -
      - a. The loss or damage should be reported directly to SAM Machinery Ltd who will advise whether it is covered by the warranty and direct the purchaser accordingly as to what action is to be taken.

## BASIC SAFETY



Many agricultural machines have potentially dangerous moving parts which can cause serious or fatal injuries. Remember:

- Read ALL warning labels on the machine and ensure you understand operating instructions
- Turn off the tractor before removing any guards, blockages or servicing the machine
- Never use your hands or fingers to check for hydraulic oil leaks
- Keep at least 15 metres distance from the spinner discs when operating
- Do not use the machine in steep areas where there is a high-risk of rollover occurring

## OPERATIONAL CHECK

Before you start work with a machine there are a few basic checks that can be carried out. Ask yourself:

- Is the machine you intend to use suitable for the job e.g. in good working order and safe to use?
- Are all safety devices such as guards in place and working correctly?
- Are there any known mechanical defects – pay particular attention to items such as wheels and tyres, and moving parts?
- Are you (or the operator) properly trained to do this job/use this machine?
- Has the instruction manual for the machine been provided, read and understood?
- Is the right personal protective equipment (PPE) available and worn?
- Has a risk assessment been carried out?
- Has the work been properly planned and communicated to those who may be at risk?
- Is the machine operator competent to do the job safely?
- Hitching and attachment points for trailed machinery - check that it has been safely attached to the towing vehicle such as a tractor. Pay attention to the condition of drawbar/pick-up hitch, and hitch rings, pins, clips etc.
- Carry out any pre-use checks as specified.

## HEALTH & SAFETY RISK ASSESSMENT



HAZARD	HARM	CONTROLS
Contact, impact or entanglement from moving parts/ loose objects inc. gears, chains, sprockets, spinner shafts and discs, and wheels.	<ol style="list-style-type: none"> <li>1. Deep cuts or amputation</li> <li>2. Bruising</li> <li>3. Fractures</li> </ol>	<p>Avoid wearing loose clothing, jewellery or gloves - they increase the risk of entanglement.</p> <p>Stand a safe distance from the machine when under operation.</p>
Leaking hydraulic hoses and/or couplings.	<ol style="list-style-type: none"> <li>1. Leaking oil may get into skin</li> <li>2. Skin and eye irritation</li> <li>3. Breathing difficulties</li> </ol>	<p>Apply a programme of preventive maintenance (hydraulic hoses and hydraulic hose couplings).</p> <p>Leaking oil, or bulging or abraded hose walls, must have faulty parts replaced.</p> <p>Never use hands or fingers to detect leaks.</p> <p>Wear appropriate PPE (personal protective equipment).</p>
Tractor and/or Fertiliser Spreader roll-over due to instability under varying conditions and terrain.	<ol style="list-style-type: none"> <li>1. Serious injury</li> <li>2. Fatality</li> </ol>	<p>Do not use the machine in steep areas, or on unstable ground.</p>



To keep your SAM Orchard Spreader in excellent working condition, please follow these basic maintenance procedures as you go.

1. Keep your machine fairly clean and very well greased.
2. Before and after each use; visually check there is no material caught under the side conveyor.
3. Before each use; check the hydraulic system for signs of oil leaks or wear. Check there is no play in the spinner bearings by lifting up on the spinner discs. Tension the spinner bearings by tightening the large nyloc nut at the top of the spinner shaft (this can be adjusted by undoing the grub screws).
4. After every five hours of operation grease all nipples on the front and back floor shafts, and the four spinner shaft bearings should be well greased.
5. After every ten hours of operation check all bolts are tight, including the wheel nuts, joiners and spinner discs and vanes. Check all nipples and grease points on the front floor adjusters slides, drawbar jack, clutch pivot bearings, back door jack, hubs and tandem axle pivot points.
6. The floor-belt should be tensioned with a 40mm sag below the middle of the chassis, with an even curve/sag from front to back. Adjust when necessary.
7. All roller chains should be kept well oiled, particularly during long periods of storage.
8. Check the couplings above the spinner tubes stay approximately 4mm between the top and bottom halves.
9. Keep conveyor greased and belt tracking in the centre of the rollers (by adjusting at the non-drive end).
10. Check your linkage/tow pins.
11. Always ensure tractor oils are kept in excellent condition. Beware when changing a Spreader between different tractors. Pump oil out of the hoses unless they use the same hydraulic oil.
12. If you have load cells, please make sure the bolts are regularly tightened.
13. **Avoid high pressure hosing/waterblasting around your electronics.**

**Please keep these checks up for the lifetime of your SAM.**



## SET-UP AND OPERATION - PLEASE READ!

Before starting work with your SAM Orchard Spreader please read the following application and set-up instructions to ensure safe and productive operation.

### HYDRAULICS (TRACTOR OIL FLOW REQUIREMENTS)

For the Spreader to operate at its maximum rates, a tractor hydraulic flow of at least 55 Litres per minute is required. Standard SAM Orchard Spreaders are fitted with two OMP50 hydraulic motors running in series, requiring an external oil flow of a max of 30 litres/minute (to spread at 10m centres).

The floor drive requires approximately 25 Litres to rotate at its maximum speed.

**It is very important that you adjust the hydraulic oil flow from the tractor as above.** Note, the higher the bypass oil flow, the higher the pressure in the Fertiliser Spreader's hydraulic system.

### COUPLING THE HYDRAULICS

- The live hose (red) must be coupled to a high pressure outlet point on the tractor's external hydraulic system. This take off point can be fitted to an existing double acting valve already fitted for farm machinery, or a new fitting can be installed.
- The return hose (yellow) must be coupled into the same double acting bank using the quick release coupling supplied.

### HYDRAULIC OPERATION

The hydraulic spinners and valve control must be coupled to the tractors hydraulic system to ensure safe operation. If you are unsure of set up please contact your local dealership or SAM Machinery directly.

Always ensure tractor oils are kept in excellent condition. Beware when changing an Orchard Spreader between different tractors. Pump oil out of the hoses unless they use the same hydraulic oil.

### COMPUTER SET-UP

1. Mount the screen in a suitable location using the supplied mounting brackets.
2. If your tractor has switch panels that you can remove, pop one out and add in your switch. If it doesn't you can find an alternative position. Some users have positioned it beside their seat.
3. The power supply could be wired to the key, so that the computer is off when the tractor is off. Otherwise use the Euro plug provided.

The 'esc' button is your back function. It will take you to the previous screen.

This is how you navigate to 'HOME'. The 'HOME' screen is shown here.

The computer control unit automatically turns off with the ignition off.

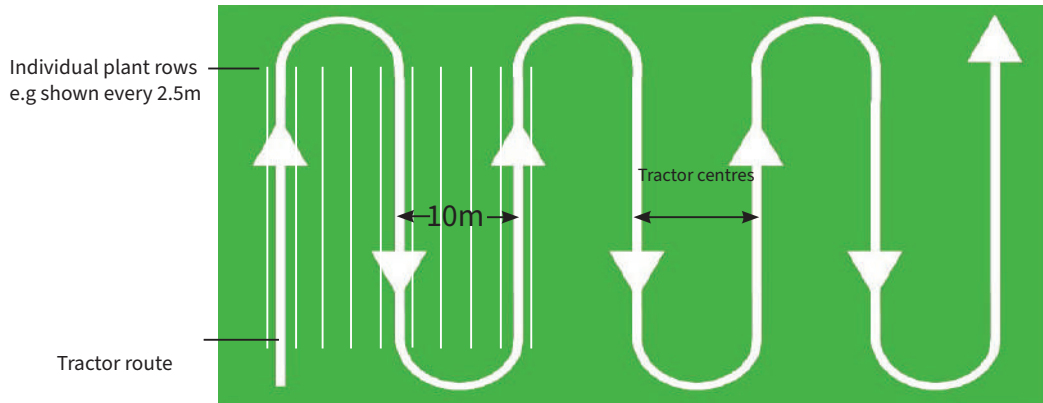


# SPREADING CENTRES

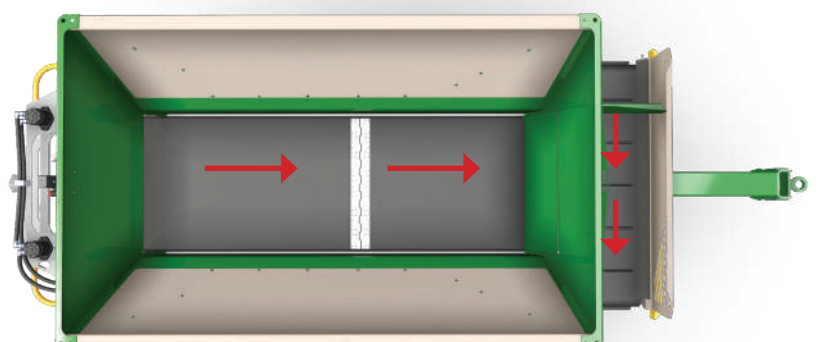
## HOW TO MEASURE SPREADING CENTRES

Spreading centres will be determined by your crops row widths. We recommend spreading at a MAXIMUM of 10 metre centres to achieve a good spread pattern. This may change with different products.

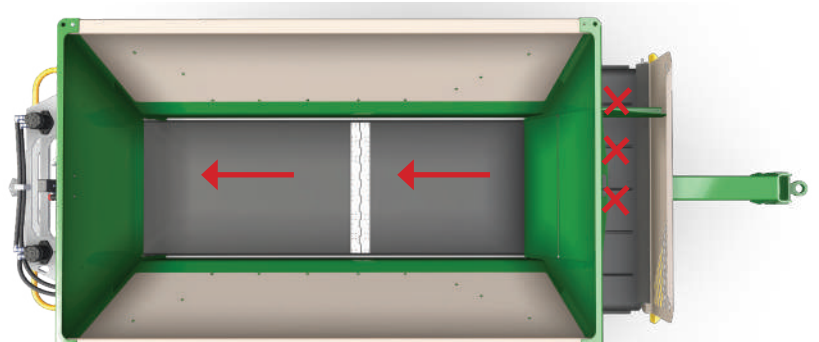
An example is below. You can adapt to suit your needs.



## Banding/Piling



## Spreading



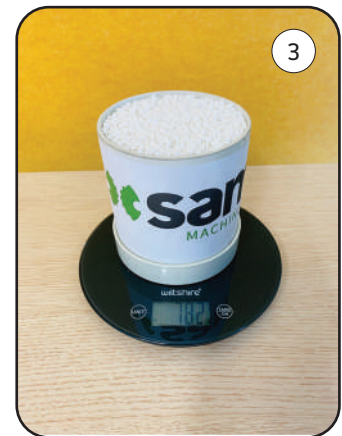
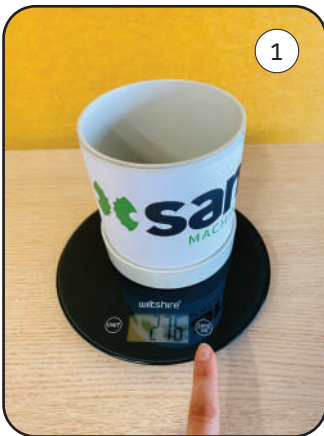
## BULK DENSITY

### TO MEASURE BULK DENSITY

This quick process is very important for spread accuracy.

1. Turn on the scales. Put the empty scoop on the scales. Then zero the scale (by pressing the TARE button).
2. Take scoop off the scales and fill to the top. Product must be level with the top.
3. Put the scoop and product back on the scales and weigh it.

782 grams = a density of 782 kilograms per cubic metre.



## CHUTE ATTACHMENT ASSEMBLY

If your machine was manufactured with a centre chute attachment assembly for rocks and heavy material and you want to change it from the standard side conveyor belt to the centre chute:

1. Untension the side feed belt using the adjusters on the idler roller end of the conveyor.
2. Remove the conveyor belt joiner pin and the conveyor belt.
3. Remove the conveyor bed centre plate to create the opening.
4. Install the two large chute deflectors then the triangular side deflectors. Bolt in place using existing holes (use nuts, bolts and washers provided).
5. Reverse this procedure to convert back to the banding conveyor configuration if required.





### THERE ARE THREE POSITIONS FOR THE FRONT DOOR

1. The first position is closed. This is the position to use while spreading to the rear of the machine.
2. The second position is half open. This position is used for banding at a volumetric rate in conjunction with the SAM rate controller.
3. The third position is completely removed. This position is designed to be used in situations where you want to spread material like bark, woodchip, compost or green waste. Normally the 'Full speed' mode would be used on the SAM controller.

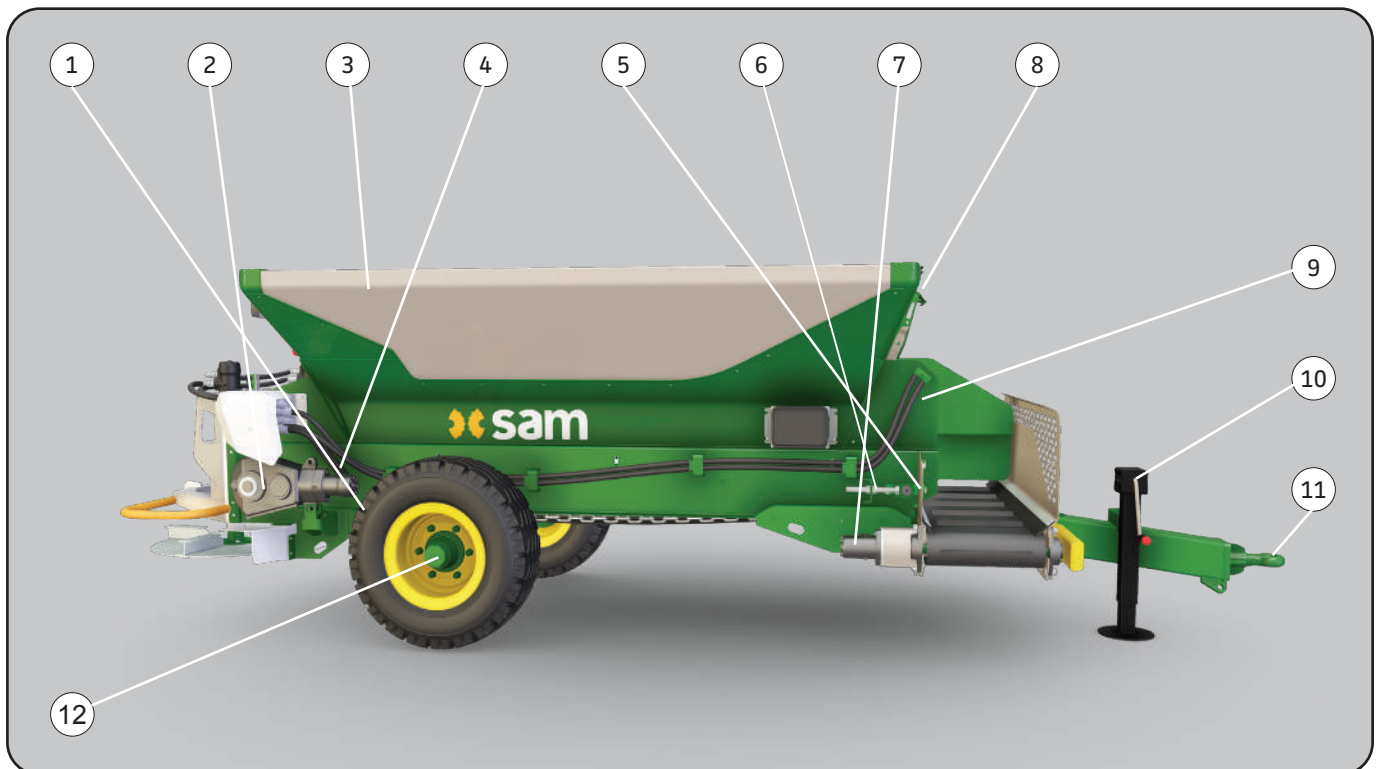


MACHINE SIDE-VIEW

REFERENCE	PART NUMBER	DESCRIPTION	QTY.
1*	7328	Wheel & Tyre - 10/75 x 15.3 (10ply)	2
2	4440	Gear Box	1
3	7467	Stainless Side Panel (Specify Left or Right)	2
4	5901	Hydraulic Motor	1
5	P5003	Front Floor Shaft (Complete) - Inc. Sprockets + Spacer Ring	1
6	P5069	Belt & Floor Chain Tension Adjusters - Left/Right	
7	3576	Hydraulic Motor	
8	1609	Serial Number Plate	1
9	7699	Hose Kit	1
10	P1402	Jack Stand (70sq) - DG701	1
11	P5070	Swivel Tow Hitch (12mm Mounting Plate) - 45mm Donut eye	
12	1007	Hub & Stub (ADR70)	2

HUB MAKE / MODEL	HUB SIZE	BEARINGS	SEAL	HUB CAP
ADR Mk7	70sq	30213/32210	100 x 120 x 8	Screw on

Please include the machine serial number with all parts and servicing enquiries.



MACHINE REAR-VIEW - SPINNER SET-UP

REFERENCE	PART NUMBER	DESCRIPTION	QTY.
1	P4751/P5077	Danfoss OMP32/OMP50 Hydraulic Motor & Seal Collar	2
2	P3040	Skirt Pressing (S/S) - (inc. Rubber + Rivets) 2860mm - Specify Left or Right	2
	P4686	Skirt Rubber & Rivet Set - (2.77 x 80mm) + 34 Rivets	2
3	P3067	Floor-belt and Chain (Complete) 800mm	1
4	P4995	Orchard Spinner Frame	1
5	P5006	Deflector	1
6	P2809	Back Door Jack (DT490)	1
7	7591	Hydraulic Flow Control Valve - HCV 3880	1
8	P440	Flexi Coupling CA90 - 25mm/1"	2
9	3424	UNF Nyloc Nut 1 1/4" & Grubscrew 3/8"	2
10	P200	Orchard Spinner Tube - Complete	2
11	P4695	Mollybush Bearing and Housing - Set	2
12	P5000	Back Shaft - 50mm (Complete inc. 5T Sprockets)	1
13	P5065	Spinner Disc + Vanes - 5mm (5cr12) Complete each Left Hand	1
14	P5066	Spinner Disc + Vanes - 5mm (5cr12) Complete each Right Hand	1
15	P5067	Orchard Spinner Vanes - Right Hand (5CR12) Long	1
16	P5068	Orchard Spinner Vanes - Left hand (5CR12) Long	1



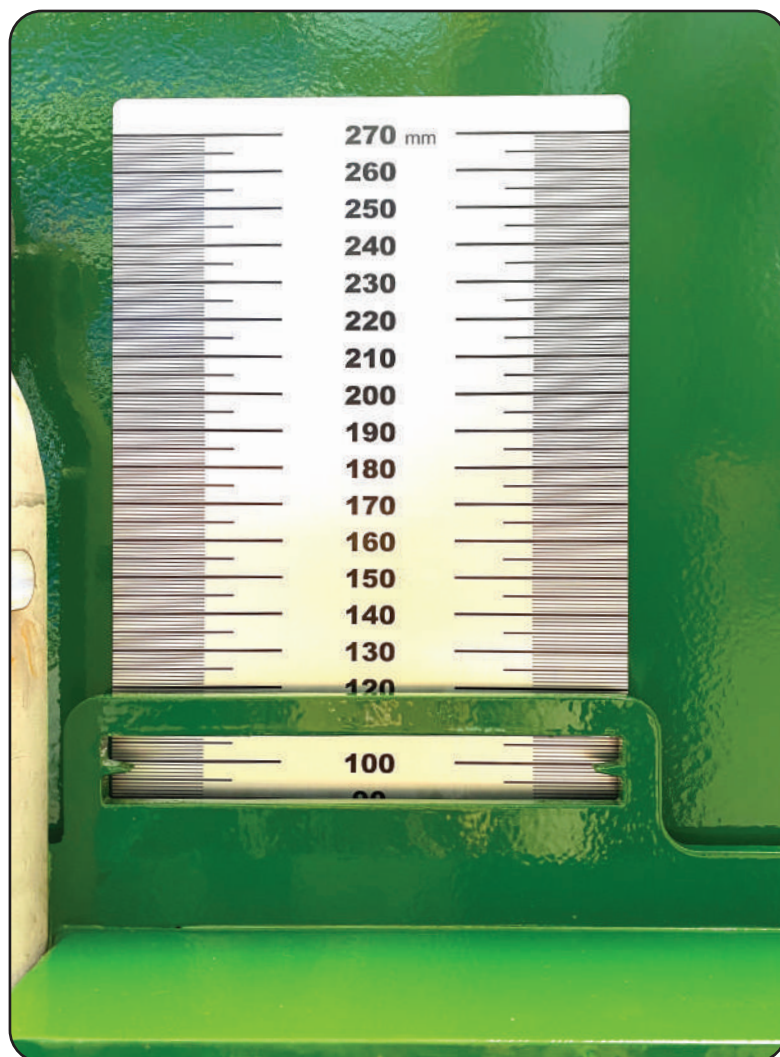
## SPREADING TABLES

The spreading table below is fixed behind the back door of each SAM Orchard Spreader.

For any required spreading rate, the computer controller will suggest a door height in mm.

Simply set the pointers on the back door to line up with the mm on the chart.

The 'DOOR HEIGHT' scale (10-270mm) represents the opening space (in millimetres) between the floor-belt and the bottom of the back door.



SAM Machinery are available for sales and technical support phone 07 847 8492 or see your local dealership.

QUESTION / PROBLEM	SOLUTION
What hydraulic oil flow is required?	<p>Standard SAM Spreaders are fitted with two OMP32 or OMP50 hydraulic motors running in series.</p> <p>As oil is allocated to both the spinners and the floor, the amount of oil is dependant on product rate. 65L total from your tractor is optimal. 55L is the minimum requirement.</p>
What RPM should the spinner shaft turn at?	This will be dependant upon your product and row width. 400rpm is suggested for single row spreading.
What direction do the spinner discs turn in?	When standing at the back of the machine, the right-hand spinner disc should turn anti-clockwise and the left-hand spinner disc clockwise.
How do I prevent fertiliser product falling out the sides and/or front of the spreader bin (e.g. striping)?	The side-skirts (running the length of the machine, inside the plastic bin) will require regular adjustment, particularly when the machine is new. The side-skirts are bolted (slotted holes) onto the machine. These bolts can be simply loosened and the skirt or scraper maneuvered to be flush with the floor-belt. Then the bolts retightened.
What tension should be on the floor-belt and chain assembly?	The floor-belt should be tensioned with a 40mm sag below the middle of the chassis, with an even curve/sag from front to back.
What are the minimum and maximum application rates for various fertiliser products?	This will be dependant upon your product, your row width and your speed.
What is the spreader bin capacity?	<p>2 cubic metres (2.5 heaped)</p> <p>Superphosphate - 2.2 Tonne</p> <p>Lime - 3.2 Tonne</p> <p>Urea - 1.5 Tonne</p>
What paint treatment does the chassis receive?	The chassis is firstly sand-blasted, then thermal-arc spray galvanised, primed, followed by a final two-pot epoxy top-coat. Tough stuff!
Can I get different wheel/tyre options?	Please contact SAM Machinery directly for more information.

ITEM	PD	BEFORE EACH USE	EACH MONTH	AFTER 1 YR	AFTER 2 YR
<b>Tyres</b> Check for air and wear.	X	X	X	X	X
<b>Spinners</b> - Check the rubber in the spider coupling for wear. - Check there is no play in the spinner bearings by lifting up on the spinner discs. (Tension the spinner bearings by tightening the large nyloc nut at the top of the spinner shaft (this can be adjusted by undoing the grubscrews).	X	X	X	X	X
<b>Load cells</b> - If you have load cells, make sure the bolts are regularly tightened. - Avoid high pressure hosing/waterblasting around your electronics.	X		X	X	X
<b>Tow eye</b> - Check front tow eye for corrosion, wear or cracking.	X		X	X	X
<b>Couplings</b> - Check the couplings above the spinner tubes stay approx. 3mm between the top and bottom halves and the grub screws are tight.	X		X	X	X
<b>Nuts &amp; bolts</b> - Check all bolts are tight, including the wheel nuts. - Check all wheels are torqued to 270Nm.	X		X	X	X
<b>Grease</b> - Check machine accepts grease in all grease points. - Check all fully greased - grease all nipples on the front and back floor shafts, the four spinner shaft bearings, front floor adjusters slide, drawbar jack, clutch pivot bearings, backdoor jack, hubs and tandem axle pivot points. - Check transmission oil is up to level in gearbox.	X		X	X	X
<b>Bearings and seals</b> - Check all are greased. - Should be greased from factory. Grease if dry.	X		X	X	X
<b>Skirts</b> - Check the condition. - Check pressed on the floor mat with no daylight.	X		X	X	X
<b>Belt</b> - Check the condition (for cracks or perished areas). - Check the joiner. - Check the tension is correct (should have a 40mm sag below the middle of the chassis, with an even curve front to back).	X		X	X	X
<b>Hydraulic hoses</b> - Check condition of all hoses and cylinders for signs of leaks and tears. Including from the tractor to the Spreader.	X		X	X	X
<b>Cleaning</b> - Keep your machine fairly clean. - If not being used for a long period make sure it is clean. Do not store product in it for long periods. - Visually check there is no material caught under the side conveyor.	X		X	X	X
<b>Gear box</b> - If computer controlled (with black gear box) make sure oil is visible in sight glass.	X			X	X
<b>Doors</b> - Check doors (front & back) and Jack(s) operation.	X			X	X
<b>Labels</b> - Check all safety decals and rear spreader chart in place.	X			X	X
<b>Tractor oil</b> - Always ensure tractor oils are kept in good condition and full.		X		X	X
<b>Chains</b> - Check for wear.			X	X	X
<b>Banding conveyor</b> - Keep greased. - Check joiner. - Keep belt tracking in the centre of the rollers (by adjusting at the non-drive end).			X	X	X
<b>Chassis &amp; bin</b> - Check for cracks, excessive rust.				X	X
<b>Molly bushes</b> - Check front and back mollybushes for excessive wear and tear. Should be no 'play'.				X	X
<b>Vanes</b> - Check vanes. Bolts torqued to 55Nm.				X	X
<b>Spinner tubes</b> - Check spinner tube bolts to discs torqued to 55Nm.				X	X

Please keep your checks up for the lifetime of your SAM.