

Marshall Multispread

Service and Technical Support

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850TM 880TM 810TM

Operators Manual



Serial No:		Vee Belt Sizes	
		Location	Belt Size
		PTO Drive	
		Spinner Drive	
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MARSHALL MULTISPREAD 850TM 880TM 810TM

DISCLAIMER

IMPORTANT, READ THIS BEFORE USING THE MARSHALL MULTISPREAD

The Marshall Multispread is to be used in the Agricultural and Horticultural industries to apply granulated and non-granulated fertilisers. It is very important that you follow the Calibration procedures and Operating instructions before using the Marshall Multispread. Calibration and operation of the Marshall Multispread must be in accordance with these instructions. Use of the Marshall Multispread is subject to the following disclaimer;

1. So far as is legally permissible Roesner, or its distributors, shall not be liable, whatever the cause, for any increased costs, loss of profits, business, contracts, income, or anticipated savings or for any special, indirect or inconsequential damage.
2. The capabilities and functions of the Marshall Multispread are limited as set out in the specifications in this manual.
3. Without prejudice to the above it is hereby acknowledged that the Marshall Multispread is not designed nor intended to achieve application rates and spread widths outside the parameters published in this manual.

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1. Overview

This Manual

This manual explains the everyday use of the machine to the operator, including Spinner Setup and Application Rate Charts.

Application

The Marshall Multispread 850TM, 880TM and 810TM Fertiliser Spreader will spread a wide range of granular and non-granular fertilisers, from lime, gypsum and manures through to granulated materials like superphosphate, urea and various seeds.

The machine is fitted with a Ground Driven Feed System. The feed of fertiliser to the spinners, is driven by the jockey wheel which runs on the truck tyre. Application rates are varied by changing the hopper door opening, the width of pass or the drive sprocket settings. The twin 600mm spinners are driven from a 20HP spreader engine or optional hydraulic spinner drive.

2. Caution - For Your Safety

READ BEFORE USING THE SPREADER

Turn off the spreader engine when making adjustments to the v-belts, drive sprockets and feed door or when carrying out normal maintenance.

After servicing the gearbox, final drive sprockets and drive belts ensure that the plastic guards are re-fitted to the spreader.

Do not stand or work near the spinners while they are rotating. Do not operate the spreader within 50m of stock, property or personnel. Failure to do so can result in damage and injury.

Please take notice of following information. Safety stickers are located on your machine for further reference.

Forward speed is not to exceed 25km/h when loaded with product. Excess speed will increase the chances of rollovers and also effect the accuracy of the spread pattern due to a slipstream effect behind the machine.

It is not recommended to operate on inclines greater than 20 degrees, as the chances of rollover are greatly increased.

Do not ride on Spreader under any circumstances.

Stay well clear of the hydraulic hoses and pipes that run the spinner and feed belt systems.

The machine is fitted with safety stickers, do not remove under any circumstances.

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3. *Operating Instructions*

3.1 *20HP Engine Spinner Drive*

Standard 800 Series Truck mounted machines are fitted with a electric start 20HP petrol engine to drive the spinners.

The engine is located at the front of the spreader as shown in Fig 1 below. A 12V battery is fitted at the front of the spreader chassis, with a 25L fuel tank located on the passenger side.

The 20Hp engine Vee Belt drive is configured according to the chart below.



Fig 1

Spinner RPM	Pulley - Engine Output	Pulley - Side Shaft	Engine RPM
900	4.5"x 2B	15 x 2B"	2500

3.2 *Hydraulic Spinner Drive (Optional)*

Machines that are fitted with an optional hydraulic spinner drive require an oil flow from the truck according to the chart below.

To set the correct spinner speed follow this procedure:

1. Connect the two hoses to the truck pump - the pressure hose is the one marked IN on the spreader flow control valve.
2. Run the truck until the oil has reached operating temperature and then increase the truck engine to full throttle and adjust the spreader flow valve so that the spinners are running at the desired RPM, see the chart above. To adjust the spinner speed use the flow control valve (FCV) on the control valve block. See Fig 2 opposite.
3. When the spinners are running at the desired RPM with the truck at full throttle, the truck engine speed should be lowered to where the spinners drop below 700RPM. (At this point make note of this lower truck engine speed, as you can work from this engine speed up to full throttle without alerting the spinners RPM.

Spinner Diameter	Oil Flow (L/min)
600mm	45
700mm	60

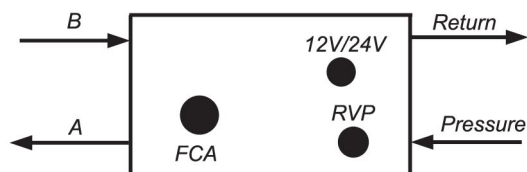


Fig 2



Fig 3

3.3 *Application Rates*

Application Rates are altered by changing the speed of the feed belt and feed door opening. The feed belt speed is altered by using different drive sprocket combinations located on the final drive. (see Section 6 of this manual)

The feed door opening is adjusted by the feed door shaft located at the rear of the machine and is held in place by the feed door adjuster disc and spring loaded pin. (See Figure 3)

Refer to the charts in Section 8 of this manual for correct drive sprocket and feed door settings for different fertiliser types.

The outer holes on the disc equate to 5mm of feed door movement. The inner set of holes are used for fine adjustment in application rate and equate to 2.5mm of feed door movement.

3.4 *Width of Pass*

The Width of Pass is the distance between the centres of each run or pass in the paddock. Some initial testing is required to determine the correct width of pass for a particular material being spread. You should allow for wind conditions and fertiliser consistency.

There are three different spinner vane configurations fitted to Marshall Multispread 800 Series machines. The spinner vane design determines the width and accuracy of the machines spread pattern. Refer to Section 5 of this manual for details on the vane configuration.

It is strongly advised, for all granulated and non-granulated products, that a trial run or test is done to determine the best and most even spread width between passes, as wind conditions and product consistency may vary.

!! CHECK SPINNER VANE CONFIGURATION BEFORE STARTING WORK !!

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3.5 *Starting and Stopping Work*

To start work in the paddock :

1. Ensure that the spreader is at least 50m from stock, personnel and property.
 2. Start the 20HP engine, allow the engine to idle for a few minutes to reach operating temperature. Then increase the engine RPM to between 2300-2700 RPM. At 2500 RPM the spinners will be running at approximately 900 RPM, the recommended speed for most applications.
 3. Engage the engine jockey arm using the manual lever or using the optional compressed air cylinder.
 4. Engage the wheel drive arm using the manual lever or via the optional compressed air cylinder switch located in the truck cabin.
- **It is recommended that the wheel drive arm is engaged whilst the machine is stationary. Engaging the wheel drive arm at speeds greater than 10km/h will lead to premature wear and subsequent failure of the jockey wheel gearbox.**
5. Begin Work.

To finish work in the paddock :

1. Stop the truck.
2. Disengage the Engine drive using the manual lever or optional compressed air cylinder.
3. Disengage the Wheel drive arm using the manual lever or optional compressed air cylinder

NB : In all circumstances when the spreader is not in work ensure that the wheel drive arm is lifted off the truck tyre. When driving on roads for extended periods it is recommended that the wheel drive arm is fastened to the hopper using a chain and "D" shackles.

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4. *Maintenance*

4.1 *Bearings*

The machine is fitted with sealed self aligning bearings, however due to the abrasive nature of fertilisers, grease must be applied regularly. There are a series of yellow stickers fixed to the machine that indicate the location of grease points and greasing intervals. The top and bottom spinner bearings must be greased once every four hours of operation.

4.2 *Drive Chains*

The Machine is fitted with roller chain drives on the wheel drive arm and feedbelt final drive. The specifications of these chains are :

Location	Type	Qty
Wheel Drive	60-H Roller Chain - 3/4" pitch	5 ft
Final Drive	80-H Roller Chain - 1" pitch	5 ft

4.3 *Cleaning and Storage*

After using the spreader all fertiliser should be removed from the hopper and spinner areas, then wash down the machine with a high pressure water hose.

DO NOT USE OIL OR DIESEL NEAR THE 2 PLY FEED BELT.

Always store the machine under cover and in a dry place. The 2 Ply feed belt should not be exposed to prolonged periods on sunlight.

4.4 *Gearbox Maintenance*

The gearbox oil used on all 20:1 ratio gearboxes is : 85W140. The gearbox capacity is located at the rear of the machine. Please check oil regularly, the chart below indicates filling capacity :

Please Note : All Gearboxes are labelled and have ID Plates.

Gearbox	Capacity	Output Shaft Size
Leroy Somer	1000 mL	28mm / 8mm Key
Fenner "D"	1500 mL	25mm / 8mm Key
Fenner "C"	1000 mL	22mm / 6mm Key
Rossi	1000 mL	24mm / 8mm Key

4.5 *Recommended Drive Tyre Pressure*

CHECK TYRE PRESSURE REGULARLY

It is important that the ground drive wheel is inflated to the correct pressure as incorrect inflation can cause issues with the feed belt mechanism.

Tyre Size	Pressure (psi)	Pressure (bar)
Wheel Drive Tyres		
145x10 (800 Series)	22	1.5

4.6 *20HP Engine Drive*

Ensure that the engine is serviced regularly based on the requirements set out in the service manual that is provided with the spreader.

Check the 12V battery, fuel tank and fuel line regularly to ensure correct operation.

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4.7 CC180 Spinner Drive Belt

CHECK FOR CORRECT V-BELT ALIGNMENT AND TENSION

The V-Belt should clear the left hand spinner pulley by approx 3 to 4mm (Fig 4) - adjust this by moving the side shaft pulley on the side shaft.

The tension pulley should just clear the V-Belt by about 2mm near the right hand spinner pulley (Fig 5 - adjust the angle at the tension pulley mount (Fig 6).

For the correct V-Belt tension see figure (7), once tension has been taken up there should be approximately 40mm from the top of the V-Belt to the top of the side shaft as shown. (Fig 7). To adjust tension loosen off the tension pulley shaft nut (Fig 3) then tension the adjuster (Fig 8).

Important Note: ENGAGING SPINNER DRIVE.

Before engaging the Engine or Hydraulic Drive, the truck engine should be idling at the lowest possible engine speed. Engage the spinner drive and then bring the truck engine up to normal working RPM.

Fig 3 & 4

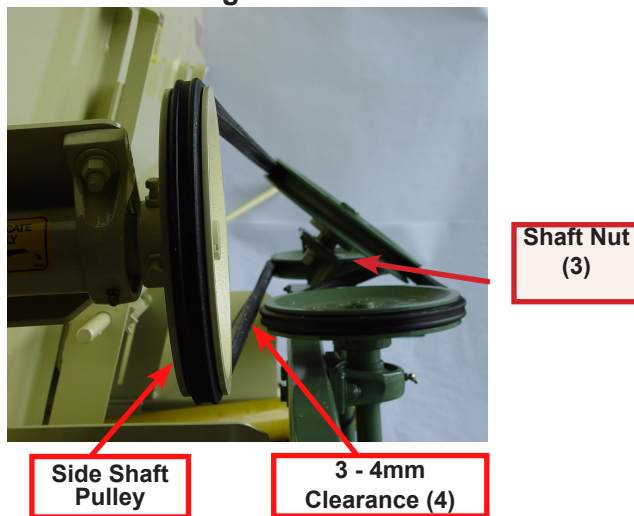


Fig 5 and 6

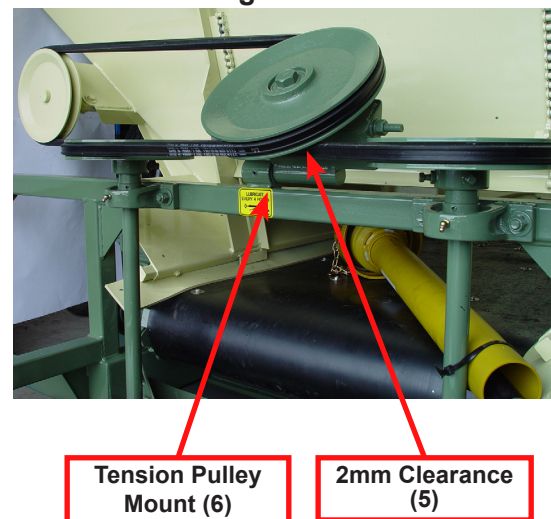


Fig 7

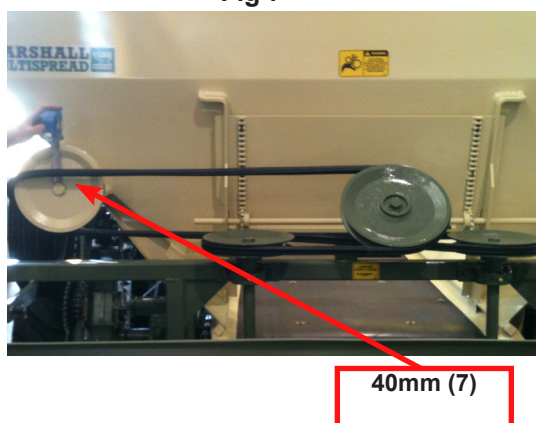


Fig 8

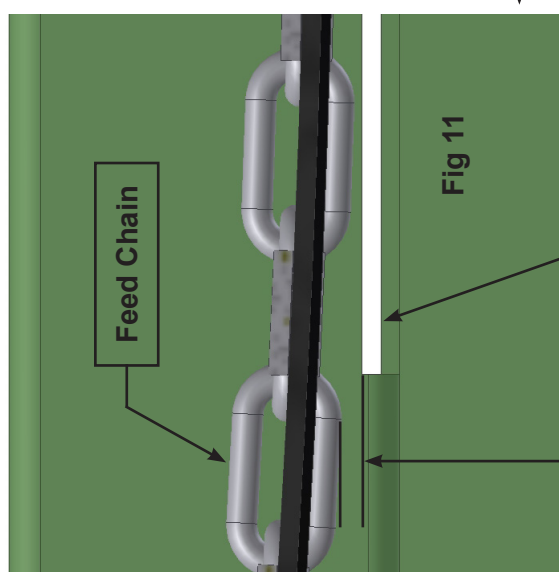


4.8 Feed Chain Adjustment

Fertiliser is delivered to the spinners by a feedbelt attached to a high grade chain assembly located at the bottom of the hopper. The feed chain is supported by top and bottom nylon runners. It is important that the feed chain is kept under correct tension at all times as incorrect tension will lead to premature wear and damage to mechanical components that make up the drive system.

The images below detail the correct chain tension. Fig (10) details a cross section of the chain, the detail Fig(11) shows a close up of the bottom feed chain runner. The chain should be lifting off the front the bottom runner by 5mm at all times.

Adjust tension on the feed chain by adjusting the front bearing slide. Fig(12)



Bottom Nylon Runner

5 mm

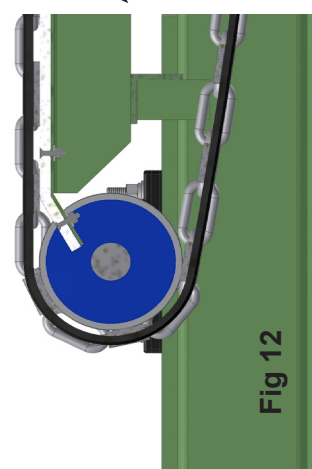
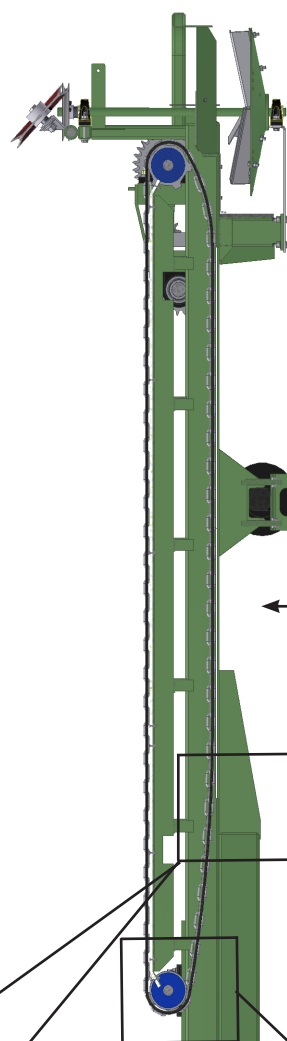


Fig 10

5. *Spinner Vane Setup*

5.1 *Multispread Spreading Performance*

There are many variables that affect the spreading performance of the Marshall Multispread. These variables include;

1. **Wind Speed and Direction.** Winds above 10 km/h influence the evenness of the spread pattern. In windy conditions it is recommended that the tractor/spreader is driven into the wind.
2. **Ground Speed.** In all cases ground speed should not exceed 25 km/h.
3. **Ground Contour.** The particles being spread up the slope will land at narrower widths and the width of pass should be reduced to compensate for this affect.
4. **In Crop Applications / Spreading in Stubble.** When spreading in standing crop or stubble the plants will dampen the flight and deflect the fertiliser to ground, narrowing the spread width.
5. **Component Wear.** Fertilisers can be abrasive which leads to component wear. It is recommended that the spinner discs and vanes are regularly checked for wear and replaced if necessary.
6. **Fertiliser Consistency.** Factors such as bulk density and particle size distribution influence the aerodynamic characteristics of the fertiliser particles. For example when spreading **Urea** it is recommended that the average particle size is greater than 3mm in diameter.

Before spreading it is recommended that a trial run is conducted on bare ground to visually inspect the evenness of the spread pattern.

For further information on spreader setup contact Roesner Pty Ltd support or your local Marshall Multispread dealer for more information.

5.2 *Type A Vanes and Fertiliser Deflector*

Older model Multispreaders were fitted with 6 mild steel angle spinner vanes on each spinner disc. These vanes can be used to spread granulated fertilisers up to 24 metres and non-granulated products up to 10 metres.

The spinner vanes can be adjusted to spread light applications of granulated fertilisers and seeds as well as heavy rates of non-granulated materials such as lime, gypsum and manures.

Each vane is attached to the spinner disc by two bolts - an inner and an outer. The outer bolt can be varied to alter the angle of the spinner vanes. see fig 13 and 14 below.

For non-granulated materials the fertiliser deflector chute should be removed to prevent clogging around the spinners.

Material	Outer Bolt Position	Fertiliser Deflector Chute Fitted
Granulated Fertilisers, Grain and Seeds	A	YES
Light to Medium Applications of Non-Granulated Product - Lime/Gypsum/Manures	A	NO
Heavy Applications of Non-Granulated Product - Lime/Gypsum/Manures	B	NO

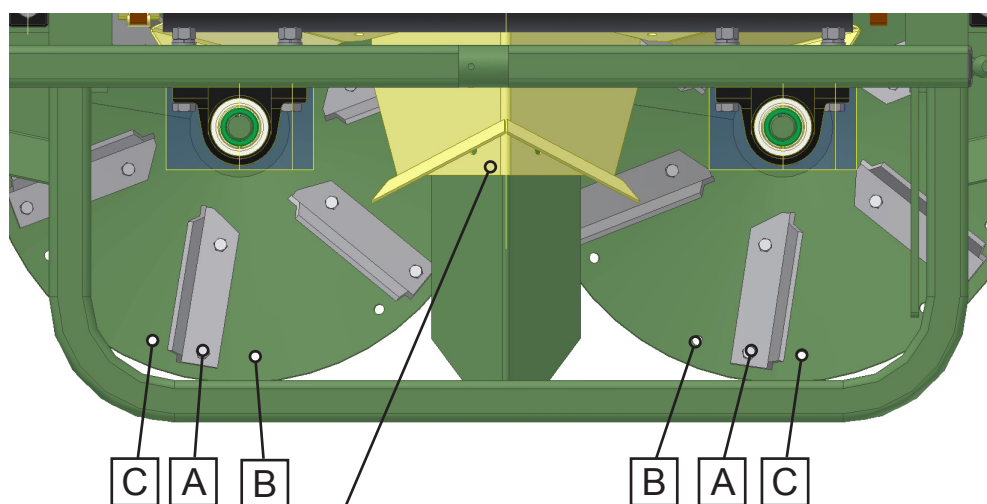


Fig 13

Fertiliser Deflector Chute

NOTE : POSITION C NOT BE USED

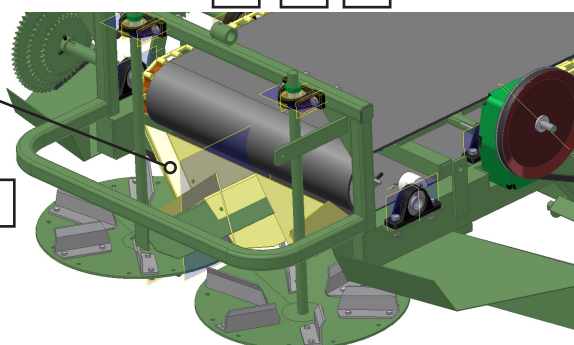


Fig 14

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5.3 *Type B Vanes and Fertiliser Deflector*

800 Series Multispreads from 2006 production are fitted with 3 spinner vanes, pressed in a “C” channel and manufactured from 5mm Mild Steel. A simplified fertiliser deflector is also fitted.

The pressed “C” channel vanes can be used to spread granulated fertiliser up to 28 metres and non-granulated products up to 14m.

The pitch or angle of each spinner vane can be altered to suit different fertiliser application rates. However a general setting to suit granulated fertilisers and non-granulated products is to have 3 vanes on each spinner on three different angles. This is done by setting each vane on different outer holes on the spinner disc - see Fig 15 below.

The Fertiliser Deflector should be fitted for both granulated and non-granulated products.

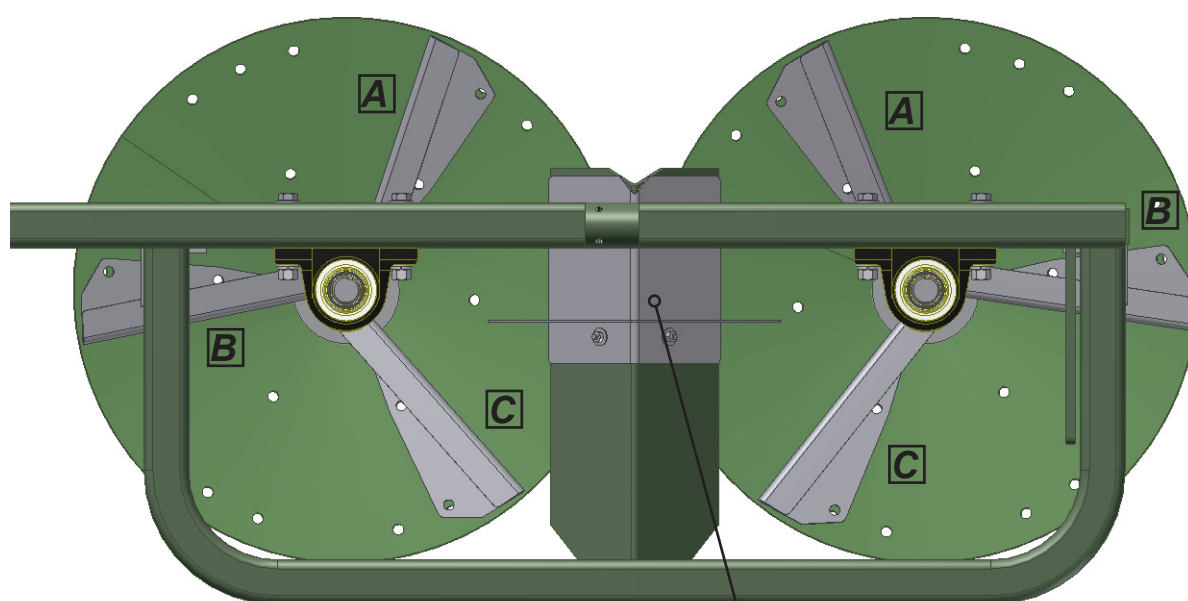


Fig 15

Vane Position	Outer Bolt Position
Position A	Centre Hole
Position B	Clockwise Hole
Position C	Counter Clockwise Hole

Fertiliser Deflector Chute

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5.4 *Type C Vanes and Fertiliser Deflector*

900 Series Multispreads from 2009 production were fitted with two 700mm diameter spinners, with convex centre dish. Six spinner vanes, pressed in a “C” channel and manufactured from 5mm mild steel are fitted to each spinner. see Fig 15 below.

All granulated Fertilizers, Seed and Dry Lime

For the best spread widths and uniformity it is recommended that the Fertilizer Deflector Chute be fitted and each spinner vane be bolted to the disc in the middle outer hole.

Spinner Speed - 800 RPM

Spread widths between passes

Seed - the spread width will depend on the size of seed.

Urea (approx 750kg/m³) 22m to 28m

Compound Fertilizers (approx 950kg/m³) 24m to 28m

Superphosphate (approx 1150kg/m³) 26m to 32m

Dry Lime (approx 1000kg/m³) 10m to 12m

Non Granulated Products - Lime, Gypsum and Manures

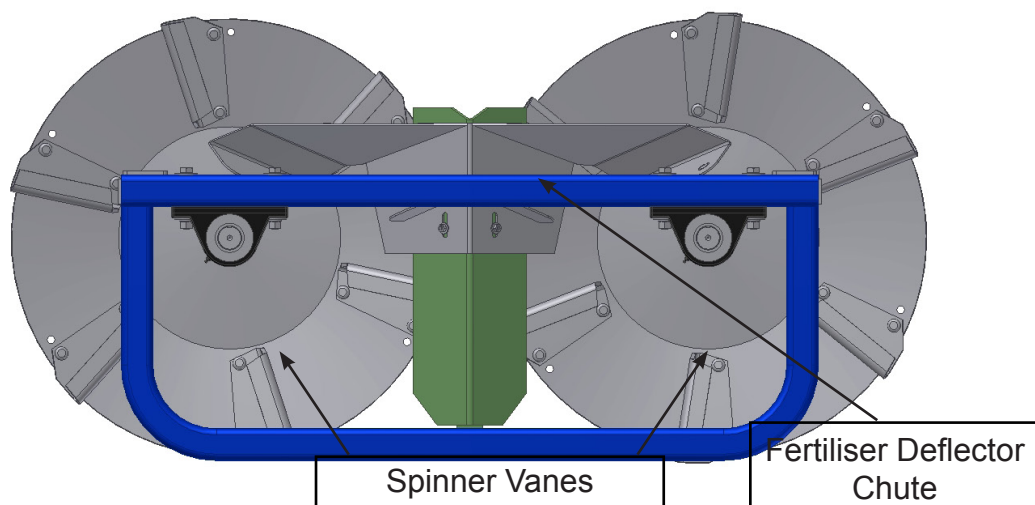
To spread these non-granulated products that may be lumpy and damp and are generally applied at higher rates, it is recommended that the Fertilizer Deflector Chute is removed leaving only the fixed divider above the spinners. Each spinner vane is to be bolted to the disc in the middle outer hole.

Spinner Speed 700 to 800 RPM

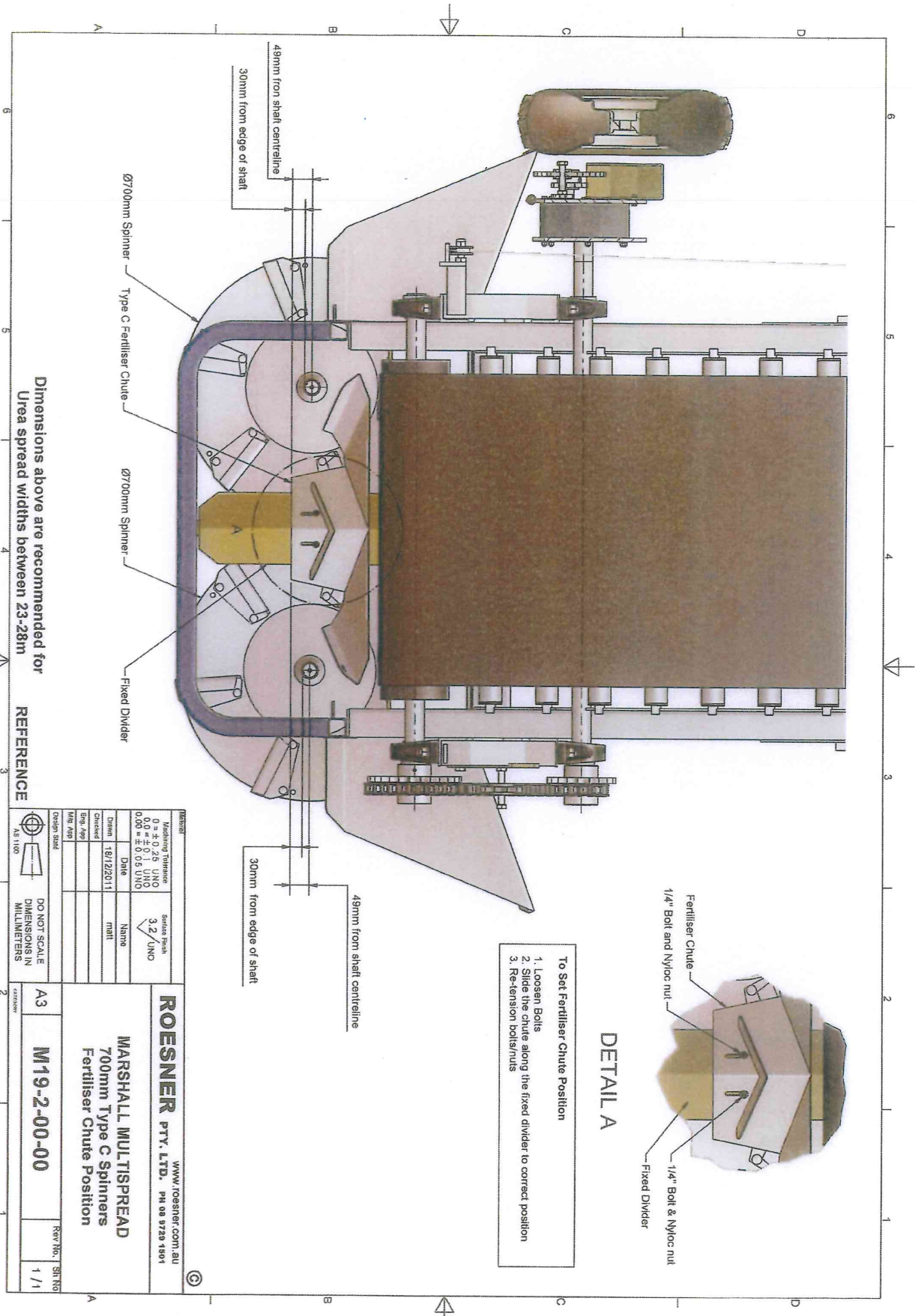
Spread widths between passes

Non-granulated products - 6m to 12m

For further information on the fertiliser chute position see the drawing on the following page.



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5.5 *Type D/D2 Spinner, Vanes and Fertiliser Deflector*

Multispreads from 2012 production are fitted with two 600mm diameter spinners. There are two long vanes and two short vanes fitted to the spinner discs. The long vanes have an effective diameter of 700mm and are normally in the radial position on the disc. The short vanes have an effective diameter of 600mm, their angular position is adjusted to alter the spreading width of different fertilisers.

A two part fertiliser chute consisting of a top deflector assembly and lower baffle plate is used to guide fertiliser and screened product onto the spinners. For lumpy non granulated product the fertiliser chute may have to be removed to eliminate blockage of the chute and vanes.

In 2016 the Type D2 vane, spinner and chute upgrade was introduced. The Type D2 configuration should be fitted when spreading Urea and other non-granulated fertilisers. For more information on the Type D/D2 vane configuration see Type D/D2 Spinner Supplement at the back of this manual.



Type D configuration (left), Type D2 configuration (right)

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6. *Drive Sprocket Settings*

The machine is fitted with four sets of feedbelt drive sprockets, two on each side of the machine, see fig 16 and 17 below. These sprockets are used to alter the feedbelt gearing to suit the different rates and types of fertilisers. A common drive chain runs between the sprocket sets. Release the spring loaded jockey to move the chain position.



Fig 16

SIDE A - WHEEL DRIVE

Possible Combinations

14 tooth driving 30 tooth
(outside set)

30 tooth driving 14 tooth
(inside set)

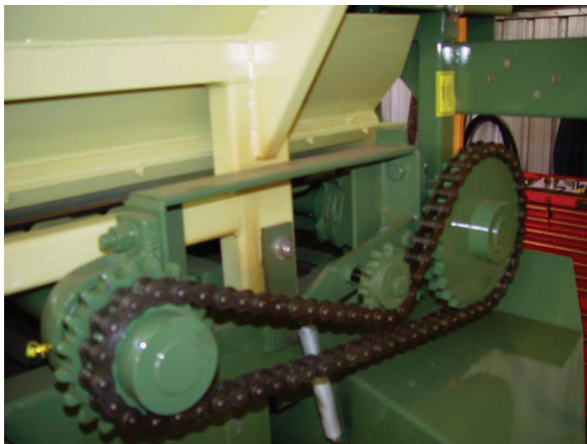


Fig 17

SIDE B - FINAL DRIVE

Possible Combinations

15 tooth driving 30 tooth
(outside set)

20 tooth driving 28 tooth
(inside set)

!! REPLACE FINAL DRIVE GUARD AFTER ALTERING FINAL DRIVE RATIO !!

7. *Application Rate Calculations*

Application rates contained in this book are to be used as a guide only. The following can be used if you wish to check the application rate of the particular material that you are spreading.

1. Check the width of pass for the most even spread of material you will be using.
Spreading Width Guide:
Urea 16 - 28m
Superphosphate 16 - 30m
Lime and Gypsum 6 - 14m
2. Obtain the circumference of the wheel drive tyre.
Circumference = diameter x 3.141
example: jockey tyre diameter = 0.47m
Circumference = 0.47×3.141
= 1.476m
3. Put a small quantity of the material to be spread in the hopper and ensure that the material is packed evenly around the feed door opening.
4. Rotate the wheel drive tyre until the material is falling evenly off the feedbelt.
Note: The material must be falling evenly off the feedbelt to give an accurate reading.
5. Place a cardboard box or tarpaulin under the spinners to catch the material off the feedbelt.
6. Rotate the wheel drive wheel 10 times and then weigh the material caught off the feedbelt.
7. Multiply the distance travelled in the 10 turns of the wheel drive tyre by the width of pass.
example: $1.476 \times 10 = 14.76$ metres.
Width of pass = 16m
Then multiply $16 \times 14.76 = 236.128\text{m}^2$
8. Divide the weight of the material collected by the square metres of spread over 10 turns of the wheel drive.
example : 2.5kg of material divided by 236.128 = 0.0106
 0.0106×10000 to convert to kg/ha.
= 106 kg/ha.

To vary spread rates make adjustments to the drive sprocket settings and the opening of the feed door.

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8. Application Rate Charts

8.1 Type Of Material - Lime, Gypsum and Manure - 1000kg/m³

Due to the variation of weight per cubic metre between the different types of materials the chart below is intended as a guide only.

1. Changing the drive sprocket settings.
2. Adjusting the feed door openings.
3. Varying the width of pass. (The closer the pass the heavier the applications.)

All values are measured in kg/ha. To convert to lb/acre deduct 10% from each value.

DRIVE SPROCKET SETTINGS	DOOR OPENING (mm)	WIDTH OF PASS				
		6	8	10	12	14
SIDE A 14 TOOTH DRIVNG	65	300	225	180	150	129
	30 TOOTH	600	450	360	300	257
SIDE B 15 TOOTH DRIVING	195	900	675	540	450	386
	30 TOOTH	1200	900	720	600	514

SIDE A 14 TOOTH DRIVNG	65	450	337.5	270	225	193
30 TOOTH	130	900	675	540	450	386
SIDE B 20 TOOTH DRIVING	195	1350	1012.5	810	675	579
28 TOOTH	260	1800	1350	1080	900	771

SIDE A 30 TOOTH DRIVNG	65	1350	1012.5	810	675	579
14 TOOTH	130	2700	2025	1620	1350	1157
SIDE B 15 TOOTH DRIVING	195	4050	3037.5	2430	2025	1736
30 TOOTH	260	5400	4050	3240	2700	2314

SIDE A 30 TOOTH DRIVNG	65	2100	1575	1260	1050	900
14 TOOTH	130	4200	3150	2520	2100	1800
SIDE B 20 TOOTH DRIVING	195	6300	4725	3780	3150	2700
28 TOOTH	260	8400	6300	5040	4200	3600

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8. Application Rate Charts

8.2 Type Of Material - Granular Fertiliser - 1000kg/m³

Due to the variation of weight per cubic metre between the different types of materials the chart below is intended as a guide only.

1. Changing the drive sprocket settings.
2. Adjusting the feed door openings.
3. Varying the width of pass. (The closer the pass the heavier the applications.)

All values are measured in kg/ha. To convert to lb/acre deduct 10% from each value

DRIVE SPROCKET	DOOR OPENING	WIDTH OF PASS (M)						
SETTINGS	(mm)	24	26	28	30	32	34	36
	20	19	18	16	15	14	13	13
SIDE A	25	24	22	20	19	18	17	16
14 TOOTH	30	29	26	24	23	21	20	19
DRIVING	35	33	31	29	27	25	23	22
30 TOOTH	40	38	35	33	30	29	27	25
	45	43	39	37	34	32	30	29
	50	48	44	41	38	36	34	32
SIDE B	55	52	48	45	42	39	37	35
15 TOOTH	60	57	53	49	46	43	40	38
DRIVING	65	62	57	53	49	46	44	41
30 TOOTH	70	67	61	57	53	50	47	44
	75	71	66	61	57	53	50	48
SIDE A	20	31	29	27	25	23	22	21
14 TOOTH	25	39	36	33	31	29	27	26
DRIVING	30	47	43	40	37	35	33	31
30 TOOTH	35	54	50	47	43	41	38	36
	40	62	57	53	50	47	44	41
SIDE B	45	70	64	60	56	52	49	47
20 TOOTH	50	78	72	66	62	58	55	52
DRIVING	55	85	79	73	68	64	60	57
28 TOOTH	60	93	86	80	74	70	66	62
	65	101	93	86	81	76	71	67
	70	109	100	93	87	81	77	72
	75	116	107	100	93	87	82	78
SIDE A	20	87	80	75	70	65	61	58
30 TOOTH	25	109	100	93	87	82	77	73
DRIVING	30	131	120	112	104	98	92	87
14 TOOTH	35	152	141	131	122	114	107	102
	40	174	161	149	139	131	123	116
	45	196	181	168	157	147	138	131
SIDE B	50	218	201	186	174	163	154	145
15 TOOTH	55	239	221	205	191	179	169	160
DRIVING	60	261	241	224	209	196	184	174
30 TOOTH	65	283	261	242	226	212	200	189
	70	305	281	261	244	228	215	203
	75	326	301	280	261	245	230	218

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8. Application Rate Charts

8.3 Type Of Material - Granular Superphosphate - 1150 kg/m³

Due to the variation of weight per cubic metre between the different types of materials the chart below is intended as a guide only.

1. Changing the drive sprocket settings.
2. Adjusting the feed door openings.
3. Varying the width of pass. (The closer the pass the heavier the applications.)

All values are measured in kg/ha. To convert to lb/acre deduct 10% from each value.

DRIVE SPROCKET	DOOR OPENING	WIDTH OF PASS (M)						
SETTINGS	(mm)	24	26	28	30	32	34	36
	20	23	21	20	18	17	16	15
SIDE A	25	29	27	25	23	22	20	19
14 TOOTH	30	35	32	30	28	26	24	23
DRIVING	35	40	37	35	32	30	28	27
30 TOOTH	40	46	42	39	37	35	32	31
	45	52	48	44	41	39	37	35
	50	58	53	49	46	43	41	38
SIDE B	55	63	58	54	51	47	45	42
15 TOOTH	60	69	64	59	55	52	49	46
DRIVING	65	75	69	64	60	56	53	50
30 TOOTH	70	81	74	69	64	60	57	54
	75	86	80	74	69	65	61	58
SIDE A	20	38	35	33	30	29	27	25
14 TOOTH	25	48	44	41	38	36	34	32
DRIVING	30	57	53	49	46	43	40	38
30 TOOTH	35	67	61	57	53	50	47	44
	40	76	70	65	61	57	54	51
SIDE B	45	86	79	73	68	64	60	57
20 TOOTH	50	95	88	81	76	71	67	63
DRIVING	55	105	96	90	84	78	74	70
28 TOOTH	60	114	105	98	91	86	80	76
	65	124	114	106	99	93	87	82
	70	133	123	114	106	100	94	89
	75	143	132	122	114	107	101	95
SIDE A	20	99	91	85	79	74	70	66
30 TOOTH	25	124	114	106	99	93	87	83
DRIVING	30	149	137	127	119	111	105	99
14 TOOTH	35	173	160	149	139	130	122	116
	40	198	183	170	158	149	140	132
	45	223	206	191	178	167	157	149
SIDE B	50	248	228	212	198	186	175	165
15 TOOTH	55	272	251	233	218	204	192	182
DRIVING	60	297	274	255	238	223	210	198
30 TOOTH	65	322	297	276	257	241	227	215
	70	347	320	297	277	260	245	231
	75	371	343	318	297	278	262	248

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8. Application Rate Charts

8.4 Type Of Material - Granular Urea - 750 kg/m³

Due to the variation of weight per cubic metre between the different types of materials the chart below is intended as a guide only.

1. Changing the drive sprocket settings.
2. Adjusting the feed door openings.
3. Varying the width of pass. (The closer the pass the heavier the applications.)

All values are measured in kg/ha. To convert to lb/acre deduct 10% from each value.

DRIVE SPROCKET	DOOR OPENING	WIDTH OF PASS (M)						
SETTINGS	(mm)	24	26	28	30	32	34	36
	20	15	14	13	12	11	11	10
SIDE A	25	19	17	16	15	14	13	13
14 TOOTH	30	23	21	19	18	17	16	15
DRIVING	35	26	24	23	21	20	19	18
30 TOOTH	40	30	28	26	24	23	21	20
	45	34	31	29	27	25	24	23
	50	38	35	32	30	28	26	25
SIDE B	55	41	38	35	33	31	29	28
15 TOOTH	60	45	42	39	36	34	32	30
DRIVING	65	49	45	42	39	37	34	33
30 TOOTH	70	53	48	45	42	39	37	35
	75	56	52	48	45	42	40	38
SIDE A	20	23	21	20	18	17	16	15
14 TOOTH	25	29	27	25	23	22	20	19
DRIVING	30	35	32	30	28	26	24	23
30 TOOTH	35	40	37	35	32	30	28	27
	40	46	42	39	37	35	32	31
SIDE B	45	52	48	44	41	39	37	35
20 TOOTH	50	58	53	49	46	43	41	38
DRIVING	55	63	58	54	51	47	45	42
28 TOOTH	60	69	64	59	55	52	49	46
	65	75	69	64	60	56	53	50
	70	81	74	69	64	60	57	54
	75	86	80	74	69	65	61	58
SIDE A	20	65	60	56	52	49	46	43
30 TOOTH	25	81	75	70	65	61	57	54
DRIVING	30	98	90	84	78	73	69	65
14 TOOTH	35	114	105	98	91	85	80	76
	40	130	120	111	104	98	92	87
	45	146	135	125	117	110	103	98
SIDE B	50	163	150	139	130	122	115	108
15 TOOTH	55	179	165	153	143	134	126	119
DRIVING	60	195	180	167	156	146	138	130
30 TOOTH	65	211	195	181	169	158	149	141
	70	228	210	195	182	171	161	152
	75	244	225	209	195	183	172	163

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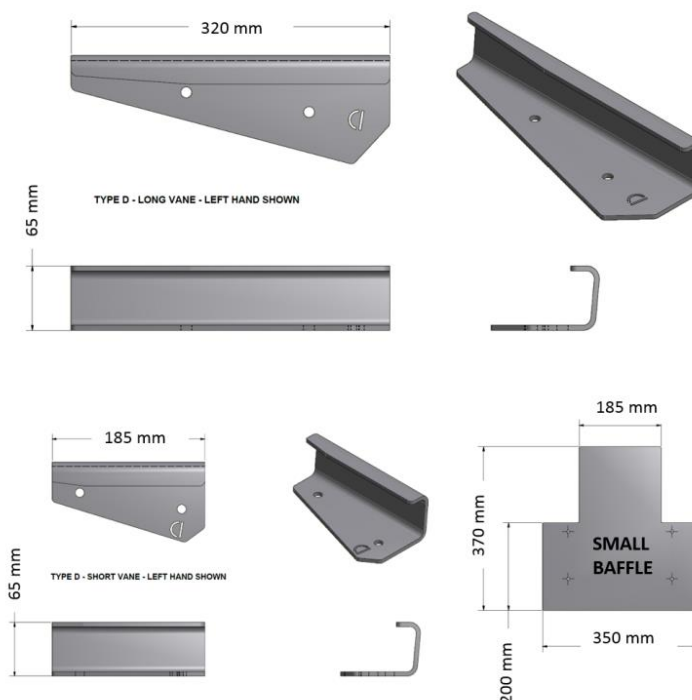
Marshall Multispread – Type D/D2 Spinner Vane Setup Supplement

Lime, Gypsum and Non-Granulated Fertilisers



When spreading lime, gypsum, dolomite, manure, mulch and sulphate of ammonia, two Type D short and two Type D long vanes should be fitted to each spinner. The short chute baffle should also be fitted.

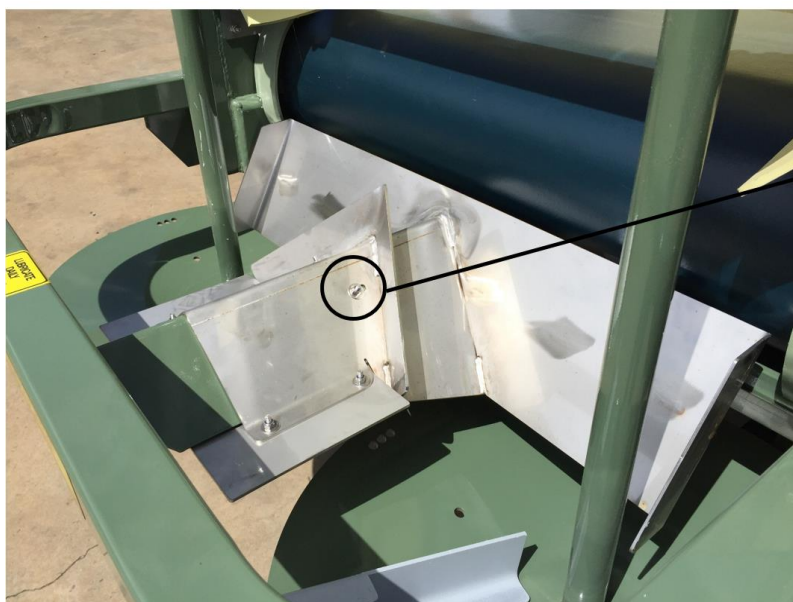
The Type D vanes are shown fitted to the spinner above. Overall dimensions of the Type D vanes and short baffle are shown below.



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Lime, Gypsum and Non-Granulated Fertilisers – Chute Setup



Feedbelt

→
Bolt in rear hole
(toward back of
spreader)

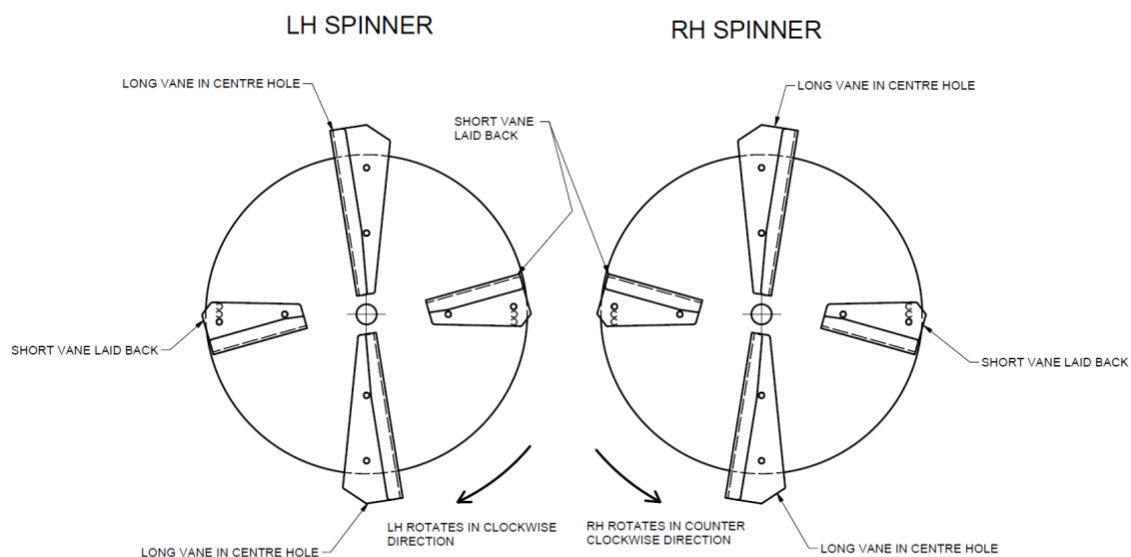
Fertiliser chute should be installed on fixed divider plate with the small baffle bolted on the underside of the fertiliser chute as shown. (M6 x 25mm bolt/nyloc nut)

The fertiliser chute should be set as close to the feedbelt as possible in the rear hole in the chute. Move the chute by undoing the central bolts and sliding the chute on the fixed divider.

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Marshall Multispread – Type D/D2 Spinner Vane Setup Supplement

Lime, Gypsum and Non-Granulated Fertilisers – Vane Setup



Long Vane on LH Spinner



Long Vane on RH Spinner



Short Vane on LH Spinner



Short Vane on RH Spinner

Lime, Gypsum and Non-Granulated Fertilisers – Factors that affect Spread Pattern

It is important that the following variables are well understood prior to fertiliser application. Operational adjustments maybe required to maintain an even spread pattern to optimise fertiliser placement. Agronomic factors such as soil type, background soil nutrient levels and seasonal conditions should also be considered prior to spreading and setting application rates. Regular soil sampling is essential to understanding crop nutrient requirements. **Before starting work it is recommended that a short trial run over bare ground is undertaken to visually inspect the spread pattern. Width of pass should be adjusted in order to maintain an even spread pattern.**

1. Spinner Speed

Nominal Spinner speed for spreading Lime, Gypsum, Manure and SOA is 900 RPM. For finer materials reducing the spinner speed to 700 RPM may improve the spread pattern as less material is drawn in behind the spreader by the air flow caused by the rotation disc. When spreading, monitor the spinner speed using the tachometer provided with the spreader.

2. Wind Speed and Direction

Fertiliser particles have relatively small diameters and masses, and as such their ballistic trajectories are influenced by wind speed and direction. Wind Conditions must be taken into account when choosing the width of pass in the paddock. It is recommended that spreading is carried out in still conditions with wind speeds no greater than 10 km/h. When spreading in a cross wind, the width of pass should be reduced to maintain a consistent overlap and ensure the accuracy of the spread distribution. Spreading with the wind may increase the spread width however the accuracy of the spread pattern maybe compromised. Spreading into the wind will ensure an even distribution but the overall width maybe reduced.

3. Fertiliser Consistency

Fertiliser properties such as particle size distribution and bulk density will vary depending on where the product is sourced from and environmental factors such as humidity and moisture content. Finer particles have smaller masses and as such they don't spread as far as larger heavier particles. It is important to consider particle size and bulk density prior to selecting the spread width in the field.

4. Component Wear

Worn spinner vanes and discs compromise the performance of the spreader. It is recommended that the vanes are kept clean and checked for wear on a regular basis. Vanes should be replaced if wear is visible.

5. Field Conditions

Spreading in stubble and on slopes will reduce the effective spread width of the spreader.

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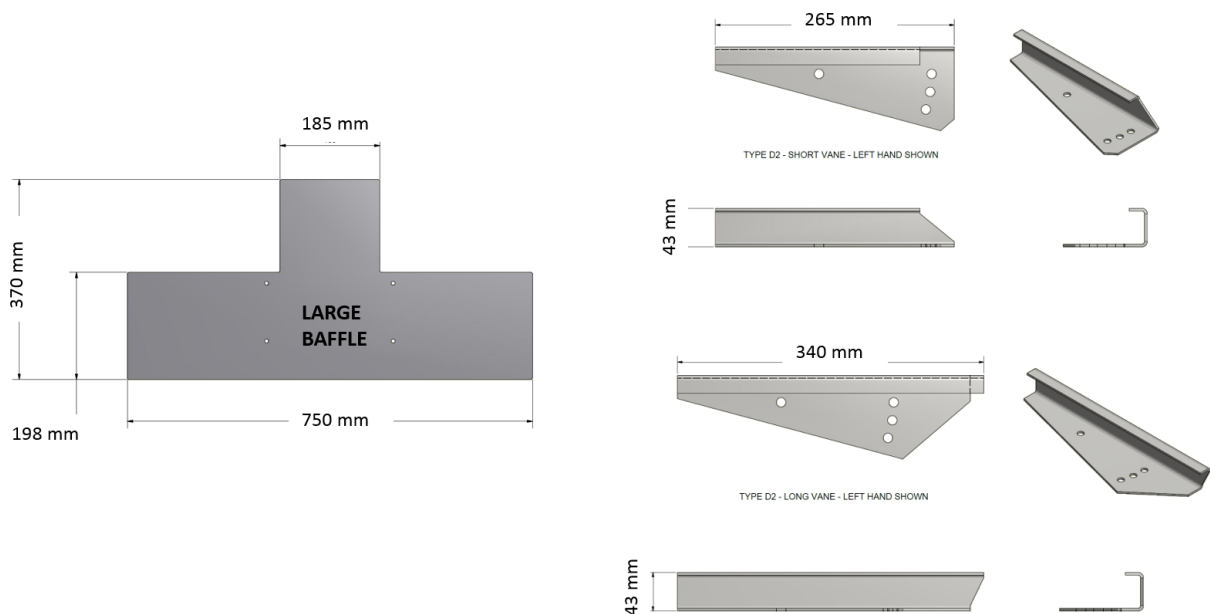
Marshall Multispread – Type D/D2 Spinner Vane Setup Supplement

Urea, Superphosphate and other Granular Fertilisers



When spreading Urea, Superphosphate and other granulated fertilisers two Type D2 short and two Type D2 long vanes should be fitted to each spinner. The large chute baffle should also be fitted.

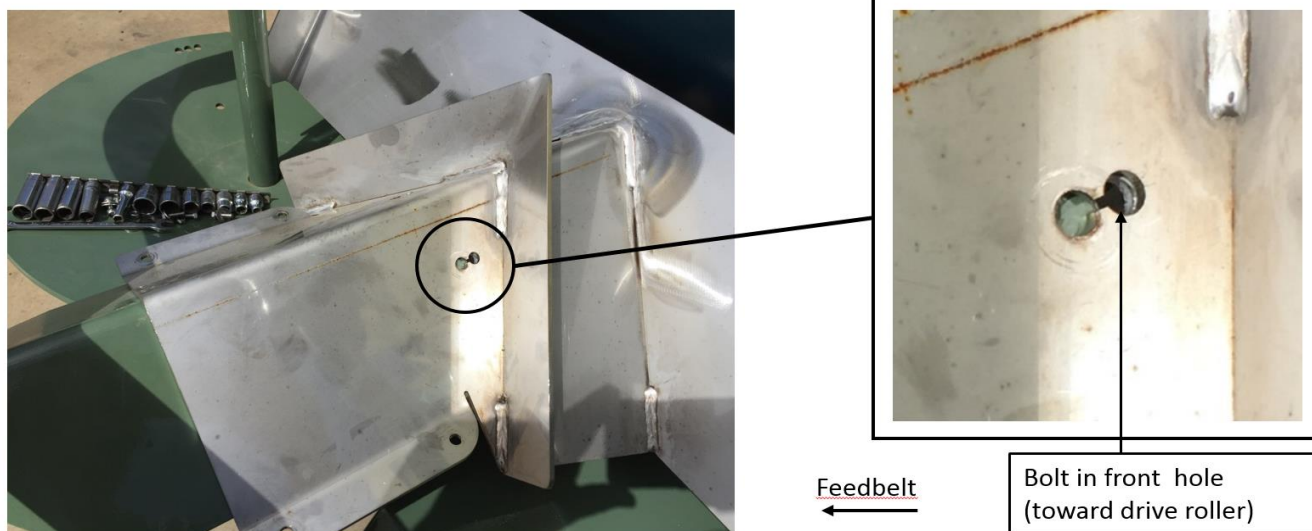
The Type D2 vanes are shown fitted to the spinner above. Overall dimensions of the Type D2 vanes and long baffle are shown below.



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Marshall Multispread – Type D/D2 Spinner Vane Setup Supplement

Urea, Superphosphate and other Granular Fertilisers - Chute Setup



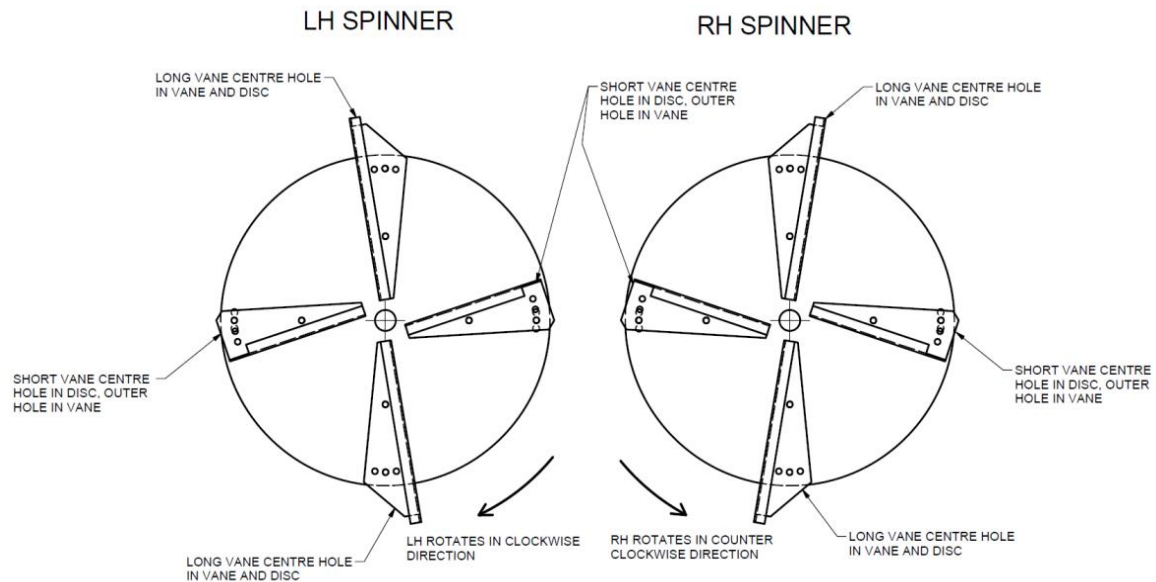
Fertiliser chute should be installed on fixed divider plate with the large baffle bolted on the underside of the fertiliser chute. (M6 x 25mm bolt/nyloc nut)

The fertiliser chute should be set away from feedbelt as possible in the front hole in the chute. Move the chute by undoing the central bolts and sliding the chute on the fixed divider.

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Marshall Multispread – Type D/D2 Spinner Vane Setup Supplement

Urea, Superphosphate and other Granular Fertilisers - Vane Setup



Long Vane on LH Spinner



Long Vane on RH Spinner



Short Vane on LH Spinner



Short Vane on RH Spinner

Urea, Superphosphate and other Granulated Fertilisers – Factors that affect Spread Pattern

It is important that the following variables are well understood prior to fertiliser application. Operational adjustments may be required to maintain an even spread pattern to optimise fertiliser placement. Agronomic factors such as soil type, background soil nutrient levels and season conditions should also be considered prior to spreading and setting application rates. Regular soil sampling is essential to understanding crop nutrient requirements. **Before starting work it is recommended that a short trial run over bare ground is undertaken to visually inspect the spread pattern. Width of pass should be adjusted in order to maintain an even spread pattern.**

1. Spinner Speed

Nominal Spinner speed for spreading all granulated fertilisers is 900 RPM. Variation in spinner speed compromises the width and accuracy of the spread pattern. When spreading, monitor the spinner speed using the tachometer provided with the spreader.

2. Wind Speed and Direction

Fertiliser particles have relatively small diameters and masses, and as such their ballistic trajectories are influenced by wind speed and direction. Wind conditions must be taken into account when choosing the width of pass in the paddock. It is recommended that spreading is carried out in still conditions with wind speeds no greater than 10 km/h. When spreading in a cross wind, the width of pass should be reduced to maintain a consistent overlap and ensure the accuracy of the spread distribution. Spreading with the wind may increase the spread width however the accuracy of the spread pattern may be compromised. Spreading into the wind will ensure an even distribution but the overall width may be reduced.

3. Fertiliser Consistency

Fertiliser properties such as particle size distribution and bulk density will vary depending on where the product is sourced from and environmental factors such as humidity and moisture content. Finer particles have smaller masses and as such they don't spread as far as larger heavier particles. It is important to consider particle size and bulk density prior to selecting the spread width in the field.

4. Component Wear

Worn spinner vanes and discs compromise the performance of the spreader. It is recommended that the vanes are kept clean and checked for wear on a regular basis. Vanes should be replaced if wear is visible.

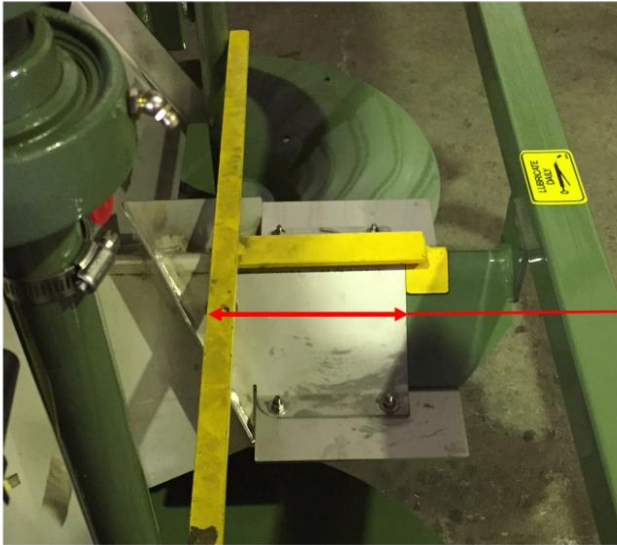
5. Field Conditions

Spreading in stubble and on slopes will reduce the effective spread width of the spreader.

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Marshall Multisread – Type D/D2 Spinner Vane Setup Supplement

Type D/D2 Chute Reference Dimensions



To check the chute position relative to the spinner shafts :

- Place straight edge between spinner shafts
- Measure from the inside edge of the straight edge to the end of the chute as shown

187mm : Lime, Gypsum and Non-Granulated Fertilisers

177mm : Urea and Granulated Fertilisers