

Marshall Multispread

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825T

Operators Manual



Serial No:	Vee Belt Sizes		
	Location	Belt Size	
	PTO Drive		
	Spinner Drive		

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MARSHALL MULTISPREAD 825T

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 825T 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 from the hopper to the spinners, is driven by a C-Section Vee-Belt located behind the spreader tyre. This vee belt also acts as the feed clutch and is activated by the hydraulic cylinder, which is controlled from the tractor cab.

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2. Caution - For Your Safety

READ BEFORE USING THE SPREADER

Turn off the tractor engine (and the Spreader engine if fitted) when making adjustments to the v-belts, drive sprockets and feed door or when carrying out normal maintenance.

When 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.

Disconnecting the machine from the tractor drawbar when the hopper is partially empty will cause the machine to overbalance and damage the spinners.

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

Forward speed is not to exceed 40km/h when machine unloaded and 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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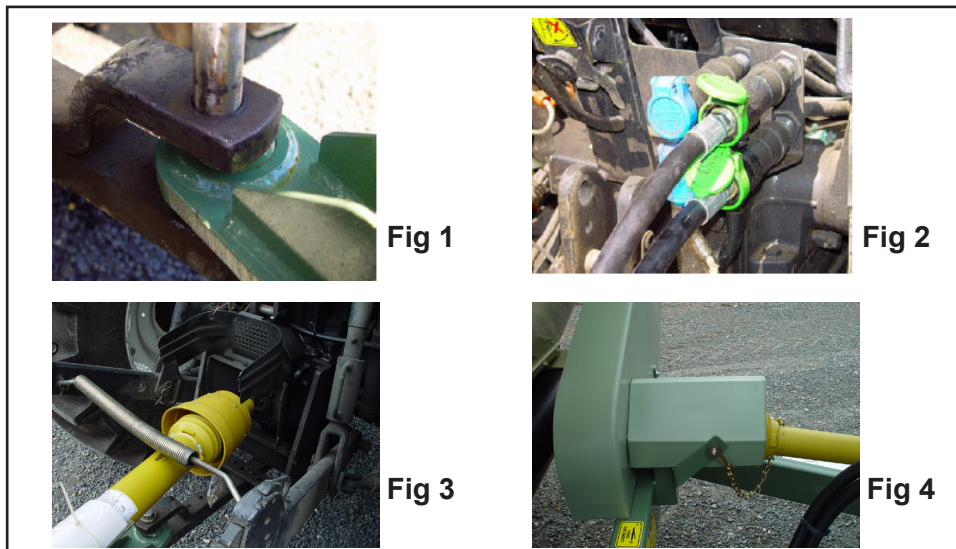
3. Operating Instructions

3.1 Attaching To Tractor

Attach the spreader to the tractor drawbar securely using a high tensile pin, see Fig 1. The pin slips between the spreader drawbar hole and the drawbar tongue of the tractor. Plug the hydraulic lines into the tractor hydraulic remotes, ensuring that the hydraulic lines cannot be damaged when the machine is turning, see Fig 2.

On standard machines there is one set of hoses to activate the hydraulic cylinder that engages the wheel drive. There is an additional set of hoses if optional hydraulic spinner or feedbelt drives are fitted.

Ensure oil flow from tractor is minimised when activating the hydraulic cylinder. Excess oil flow and pressure will result in damage to the cylinder seals.



3.2 PTO Drive Machines

Attach the PTO shaft to the tractor as shown in Fig 3 and 4. Ensure that the female spline on the PTO shaft is firmly fitted to the tractor PTO and the locking pin is engaged.

The PTO is fitted with a safety chain, ensure the chain is fastened to the poly guard retaining lugs as shown in the photo above.

Machines are supplied with 540 or 1000 RPM PTO drives or optional dual speed PTO. The table below details the correct gearing and RPM for each drive setup.

PTO Config.	Pulley - PTO	Pulley - Side Shaft	PTO Spline Size	Spinner RPM
540 RPM	12 x 2B	7 x 2B	6 spline	900 RPM
1000 RPM	7 x 2B	7 x 2B	20 or 21 spline	900 RPM
Dual - 540 RPM	12 x 1C	8 x 1C	6, 20 or 21 spline	900 RPM
Dual - 1000 RPM	10 x 1C	10 x 1C	6, 20 or 21 spline	900 RPM

Ensure correct PTO gearing and PTO RPM before starting work.

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3.3 *Hydraulic Spinner Drive (Optional)*

Machines that are fitted with an optional hydraulic spinner drive require an oil flow from the tractor of 45 litres/min.

To set the correct spinner speed follow this procedure:

1. Connect the two hoses to the tractor couplings - the pressure hose is the one marked **IN** on the spreader flow control valve.
2. Run the tractor until the oil has reached operating temperature and then increase the tractor engine to full throttle and adjust the spreader flow valve so that the spinners are running at 900RPM see Fig 5 below. (To check the spinner RPM you will need a rev counter.)
3. When the spinners are running at 900RPM with the tractor at full throttle, the tractor engine speed should be lowered to where the spinners drop below 700RPM. At this point make note of this lower tractor engine speed, as you can work from this engine speed up to full throttle without altering the spinners RPM. see Fig 5 below.

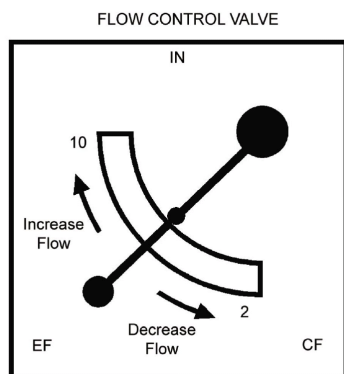


Fig 5



Fig 6

3.4 *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 6)

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.

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3.5 *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 two 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 granulated and non-granulated products, that a trial run or test is done to determine the best and most even width between passes, as wind conditions and product consistency may vary.

!! CHECK SPINNER VANE CONFIGURATION BEFORE STARTING WORK !!

3.6 *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. Engage the Wheel drive Vee Belt using the hydraulic cylinder. (NB : the wheel drive should not be engaged at speed greater than 5 km/h. Engaging at faster speeds will result in damage to the spreader feed mechanism.)
3. Turn on the Spinner Drive using the PTO or Hydraulic control switches in the tractor.
4. Begin Work.

To finish work in the paddock :

1. Turn the spinners off using the PTO or Hydraulic control switches in the tractor.
2. Slow down below 5km/h
3. Disengage the Wheel drive Vee Belt using the hydraulic cylinder.

NB : In all circumstances when the spreader is not in work ensure that the wheel drive vee-belt is disengaged. When transporting the machine over long distances it is recommended that the vee belt is placed in the angle holder and tied to the chassis with a cable tie or rope.

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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 a roller chain drive on the feedbelt final drive. The specifications of this chain is :

Location	Type	Qty
Final Drive	50-H Roller Chain - 1/2" 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 825T is fitted with a 5:1 gearbox. The gearbox is packed with grease and sealed shut during manufacture. It does not require additional grease during its life-span.

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4.5 *Recommended Tyre Pressures*

CHECK TYRE PRESSURE REGULARLY

The table below details recommended spreader tyre pressures. Pressures can be adjusted to suit ground conditions, the values in the table below are a guide only.

It is important that the spreader tyre is correctly inflated to prevent tyre wear and soil compaction.

Tyre Size	Pressure (psi)	Pressure (bar)
Spreader Tyres		
900x16	36	2.4
1100x16	36	2.4
400/60-15.5	22	1.5
14.9x24	26	1.8
16.9x28	28	1.9
18.4x28	32	2.2
23.1x26	32	2.2
500/60-22.5	22	1.5
550/60-22.5	23	1.6
600/55-26.5	25	1.7
600/60-30.5	26	1.7
650/65-30.5	24	1.6
750/60-30.5	22	1.5

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4.6 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 7) - 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 8) - adjust the angle at the tension pulley mount (Fig 9).

For the correct V-Belt tension see figure (10), 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 10). To adjust tension loosen off the tension pulley shaft nut (Fig 6) then tension the adjuster (Fig 11).

Important Note: ENGAGING TRACTOR PTO DRIVE.

Before engaging the tractor PTO drive, the tractor engine should be idling at the lowest possible engine speed. Engage the PTO and then bring the tractor engine up to normal working RPM.

Important Note: 540/1000 RPM PTO GEARING

The correct spinner speed is between 700 and 900 RPM. If the PTO gearing is incorrect, the spinners will over-rev and the spinner V-Belt may be dislodged from the rear pulleys. see Section 3.2 of this book for more info.

Fig 6 & 7

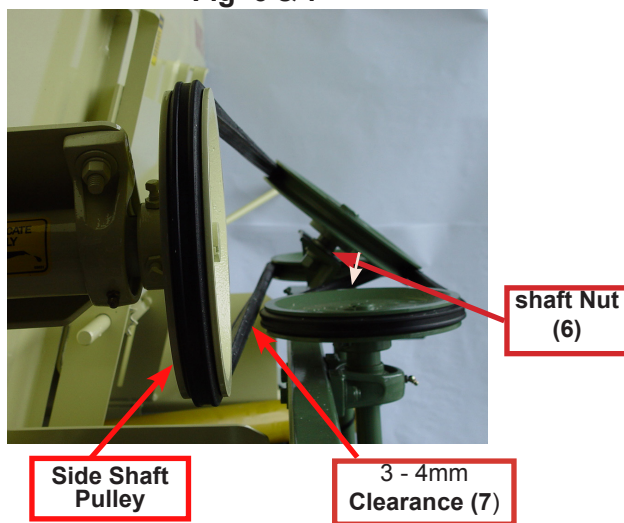


Fig 8 and 9

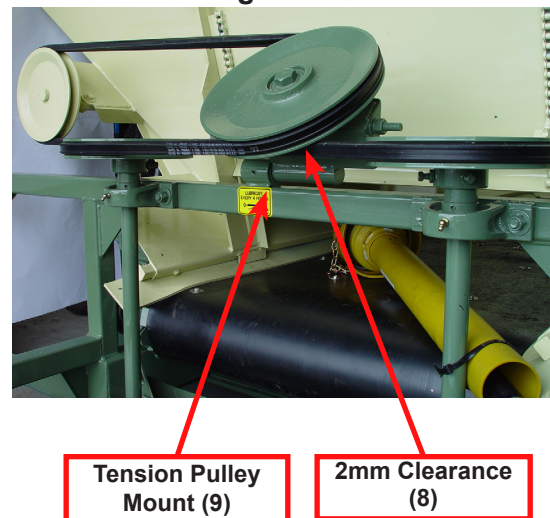


Fig 10

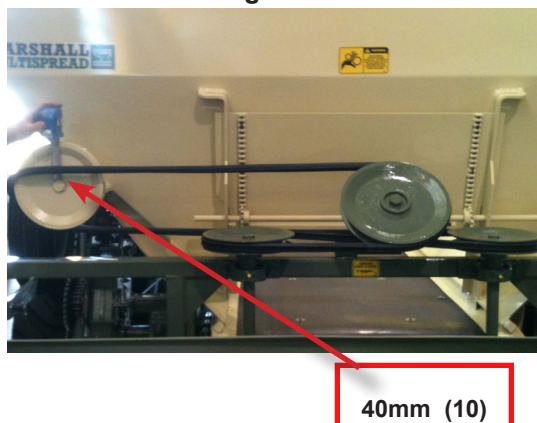


Fig 11



4.7 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 (13) details a cross section of the chain, the detail Fig(14) shows a close up of the bottom feed chain runner. The chain should be lifting of the front the bottom runner by 5mm at all times.

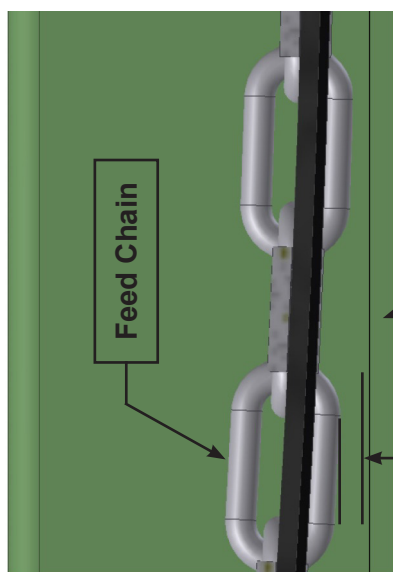


Fig 14

Adjust tension on the feed chain by adjusting the front bearing slide. Fig(15)

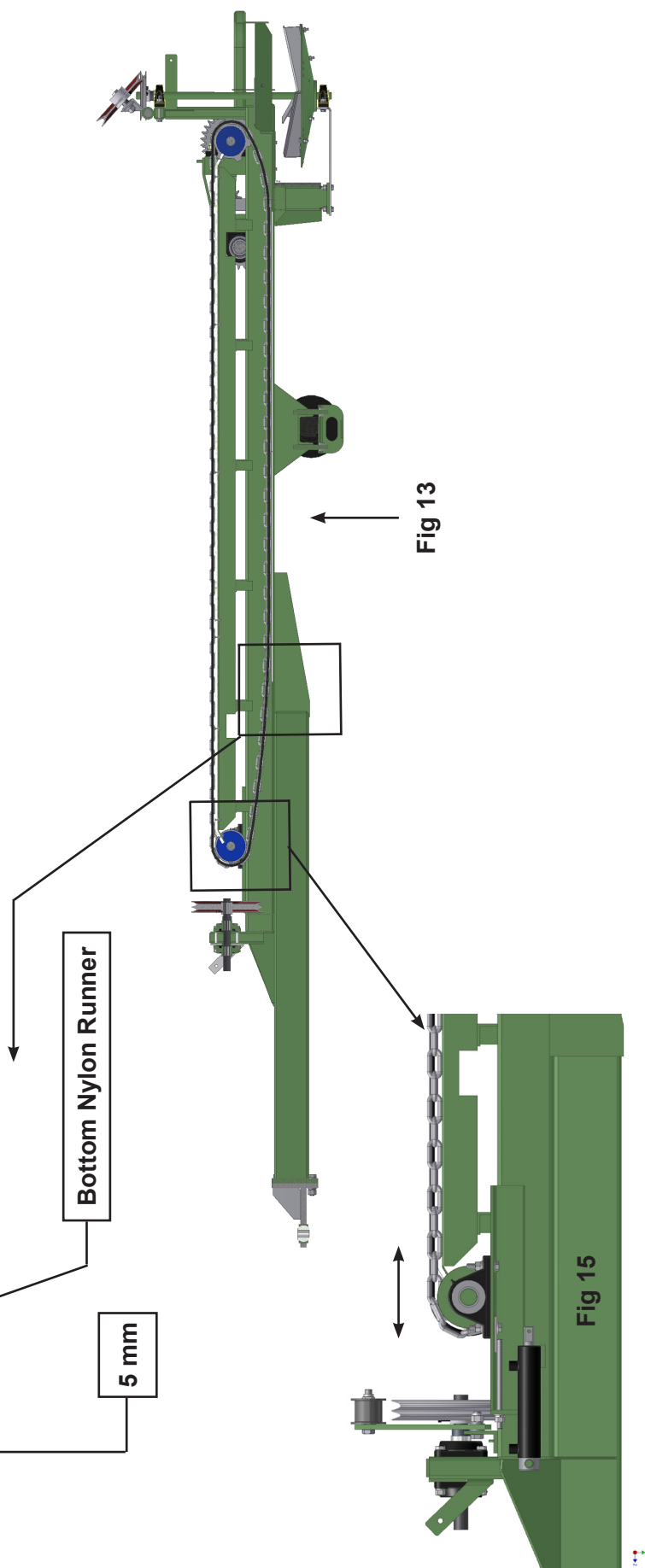


Fig 13

Fig 15

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5. Spinner Vane Setup

5.1 Type A Vanes and Fertiliser Deflector

Older model Multispread 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 16 and 17 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

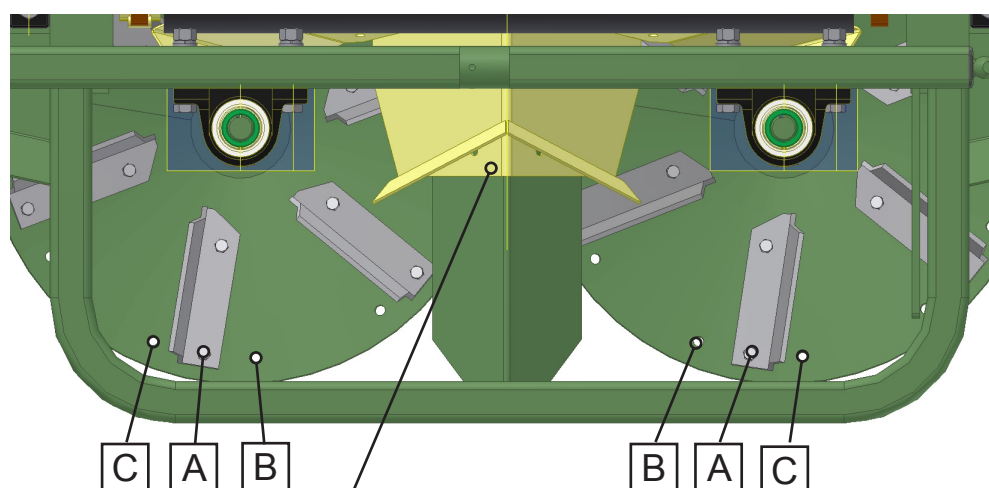


Fig 16

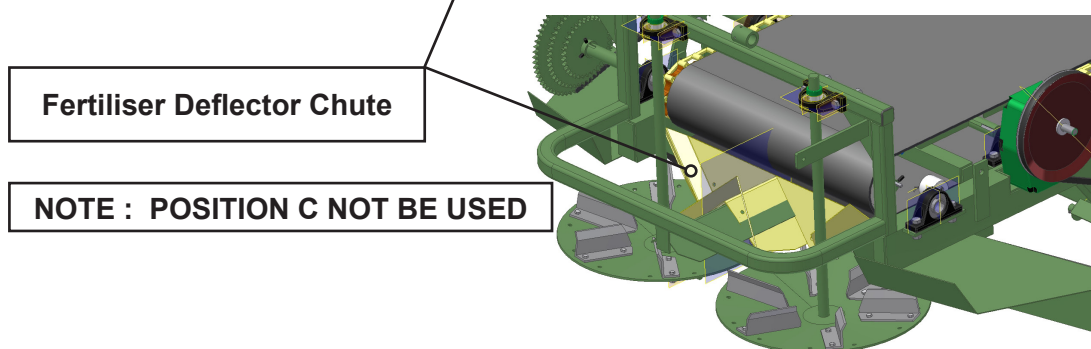


Fig 17

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5.2 *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 12m.

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 the 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 18 below.

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

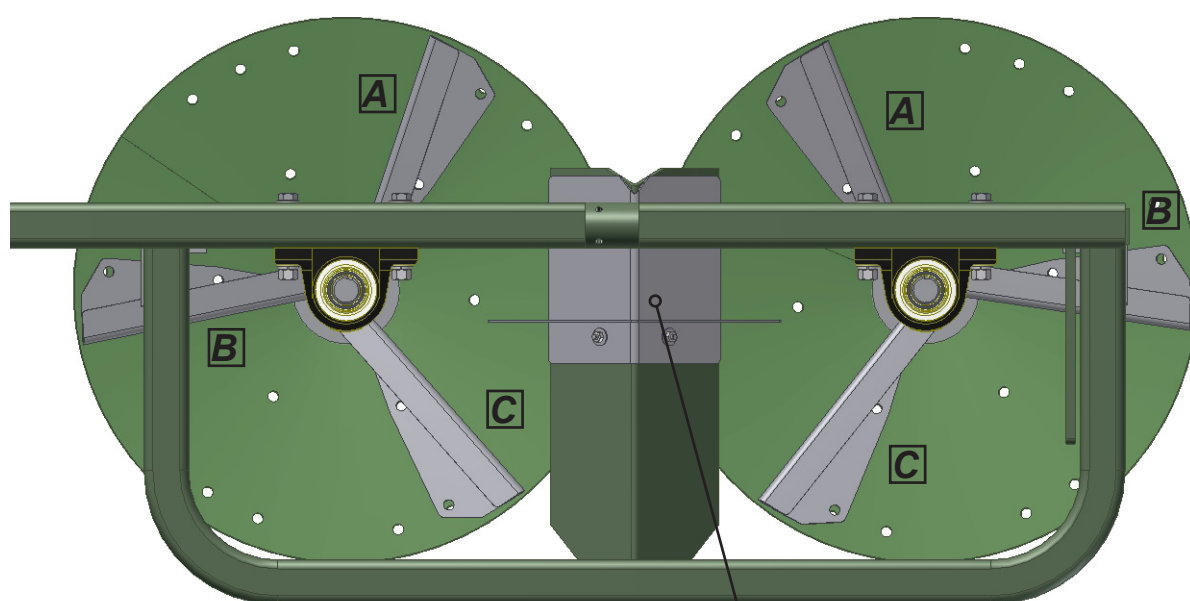


Fig 18

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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6. *Drive Sprocket Settings*

The machine is fitted with three sets of feedbelt drive sprockets, located on the final drive. These sprockets are used to alter the feedbelt gearing to suit the different rates and types of fertilisers. see Fig 19 below.

A common drive chain runs between the sprocket sets. Release the spring loaded jockey to move the chain position.



Fig 19

Possible Combinations

14 Tooth Driving 60 Tooth (Outside Set)

26 Tooth Driving 48 Tooth (Middle Set)

38 Tooth Driving 34 Tooth (Inside Set)

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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 spreader tyre.
Circumference = diameter x 3.141
example: tyre diameter = 0.85m
Circumference = 0.85×3.141
= 2.67m
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 spreader 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 spreader tyre 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: $2.67 \times 10 = 26.70$ metres.
Width of pass = 16m
Then multiply $16 \times 26.70 = 427.2\text{m}^2$
8. Divide the weight of the material collected by the square metres of spread over 10 turns of the wheel drive.
9. example : 2.5kg of material divided by 427.2 = 0.0059
 0.0059×10000 to convert to kg/ha.
= 59 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 (M)				
		6	8	10	12	14
14 TOOTH DRIVING 60 TOOTH						
	65	432	324	259	216	185
	130	864	648	518	432	370
	195	1296	972	778	648	555
	260	1728	1296	1037	864	741
26 TOOTH DRIVING 48 TOOTH						
	65	1004	753	602	502	430
	130	2008	1506	1205	1004	861
	195	3012	2259	1807	1506	1291
	260	4016	3012	2410	2008	1721
38 TOOTH DRIVING 34 TOOTH						
	65	2072	1554	1243	1036	888
	130	4144	3108	2486	2072	1776
	195	6216	4662	3730	3108	2664
	260	8288	6216	4973	4144	3552

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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 SETTINGS	DOOR OPENING (mm)	WIDTH OF PASS (M)					
		18	20	22	24	26	28
14 TOOTH DRIVING 60 TOOTH	15	30	27	25	23	21	19
	20	40	36	33	30	28	26
	25	50	45	41	38	35	32
	30	60	54	49	45	42	39
	35	70	63	57	53	48	45
	40	80	72	65	60	55	51
	45	90	81	74	68	62	58
	50	100	90	82	75	69	64
	55	110	99	90	83	76	71
	60	120	108	98	90	83	77
	65	130	117	106	98	90	84
	70	140	126	115	105	97	90
	75	150	135	123	113	104	96
26 TOOTH DRIVING 48 TOOTH	15	71	64	58	53	49	46
	20	95	85	77	71	66	61
	25	118	107	97	89	82	76
	30	142	128	116	107	98	91
	35	166	149	136	124	115	107
	40	189	170	155	142	131	122
	45	213	192	174	160	147	137
	50	237	213	194	178	164	152
	55	260	234	213	195	180	167
	60	284	256	232	213	197	183
	65	308	277	252	231	213	198
	70	331	298	271	249	229	213
	75	355	320	290	266	246	228
38 TOOTH DRIVING 34 TOOTH	15	146	131	119	110	101	94
	20	195	175	159	146	135	125
	25	243	219	199	183	168	156
	30	292	263	239	219	202	188
	35	341	307	279	256	236	219
	40	389	350	319	292	270	250
	45	438	394	358	329	303	282
	50	487	438	398	365	337	313
	55	535	482	438	402	371	344
	60	584	526	478	438	404	375
	65	633	569	518	475	438	407
	70	681	613	557	511	472	438
	75	730	657	597	548	505	469

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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 SETTINGS	DOOR OPENING (mm)	WIDTH OF PASS (M)					
		18	20	22	24	26	28
14 TOOTH DRIVING 60 TOOTH	15	32	29	26	24	22	21
	20	43	38	35	32	30	27
	25	53	48	44	40	37	34
	30	64	58	52	48	44	41
	35	75	67	61	56	52	48
	40	85	77	70	64	59	55
	45	96	86	79	72	66	62
	50	107	96	87	80	74	69
	55	117	106	96	88	81	75
	60	128	115	105	96	89	82
	65	139	125	113	104	96	89
	70	149	134	122	112	103	96
	75	160	144	131	120	111	103

26 TOOTH DRIVING 48 TOOTH	15	74	67	61	56	51	48
	20	99	89	81	74	68	63
	25	123	111	101	93	85	79
	30	148	133	121	111	102	95
	35	173	155	141	130	120	111
	40	197	178	161	148	137	127
	45	222	200	182	167	154	143
	50	247	222	202	185	171	159
	55	271	244	222	204	188	174
	60	296	266	242	222	205	190
	65	321	289	262	241	222	206
	70	345	311	283	259	239	222
	75	370	333	303	278	256	238

38 TOOTH DRIVING 34 TOOTH	15	152	137	124	114	105	98
	20	203	182	166	152	140	130
	25	253	228	207	190	175	163
	30	304	274	249	228	210	195
	35	355	319	290	266	246	228
	40	405	365	332	304	281	261
	45	456	410	373	342	316	293
	50	507	456	415	380	351	326
	55	557	502	456	418	386	358
	60	608	547	497	456	421	391
	65	659	593	539	494	456	423
	70	709	638	580	532	491	456
	75	760	684	622	570	526	489

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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 SETTINGS	DOOR OPENING (mm)	WIDTH OF PASS (M)					
		18	20	22	24	26	28
14 TOOTH DRIVING 60 TOOTH	15	21	19	17	16	15	14
	20	28	25	23	21	19	18
	25	35	32	29	26	24	23
	30	42	38	34	32	29	27
	35	49	44	40	37	34	32
	40	56	50	46	42	39	36
	45	63	57	52	47	44	41
	50	70	63	57	53	48	45
	55	77	69	63	58	53	50
	60	84	76	69	63	58	54
	65	91	82	74	68	63	59
	70	98	88	80	74	68	63
	75	105	95	86	79	73	68
26 TOOTH DRIVING 48 TOOTH	15	50	45	41	38	35	32
	20	67	60	55	50	46	43
	25	83	75	68	63	58	54
	30	100	90	82	75	69	64
	35	117	105	95	88	81	75
	40	133	120	109	100	92	86
	45	150	135	123	113	104	96
	50	167	150	136	125	115	107
	55	183	165	150	138	127	118
	60	200	180	164	150	138	129
	65	217	195	177	163	150	139
	70	233	210	191	175	162	150
	75	250	225	205	188	173	161
38 TOOTH DRIVING 34 TOOTH	15	102	92	83	77	71	66
	20	136	122	111	102	94	87
	25	170	153	139	128	118	109
	30	204	184	167	153	141	131
	35	238	214	195	179	165	153
	40	272	245	223	204	188	175
	45	306	275	250	230	212	197
	50	340	306	278	255	235	219
	55	374	337	306	281	259	240
	60	408	367	334	306	282	262
	65	442	398	362	332	306	284
	70	476	428	389	357	330	306
	75	510	459	417	383	353	328