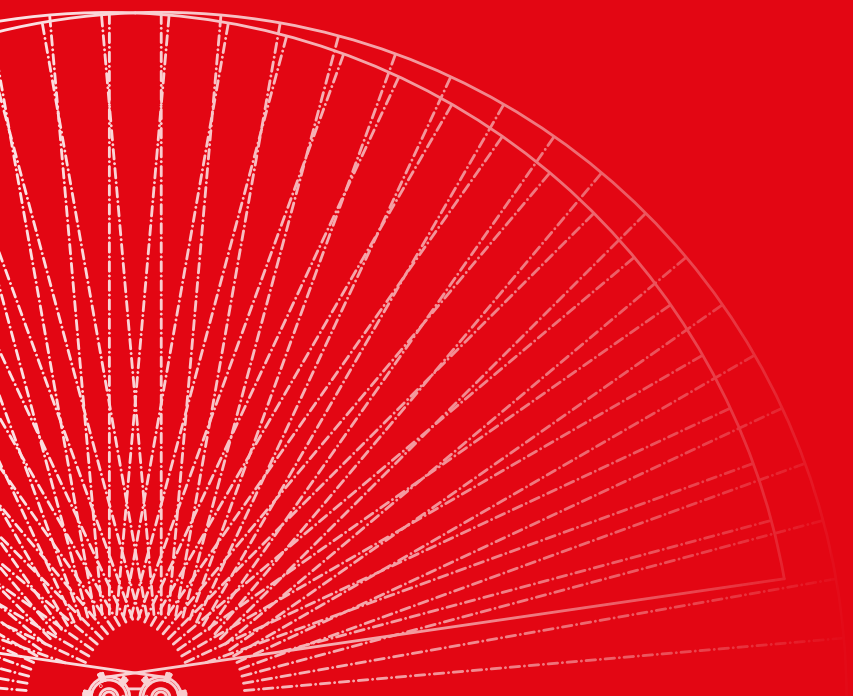
BREDAL

EN

MANUAL K SERIES

BASIC



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Bredal K series is designed to spread chemical fertilizers and lime, or similarly structured materials on farmland. The operator is responsible for ensuring that the machine is solely used for the intended purpose to avoid property damage and personal injury.

The machine is equipped with a rating plate on which the serial number and year of production are specified. The maximum gross weight and net weight are also specified on the rating plate.
The difference between the two is the maximum permissible load. If other wheels are mounted, the user is responsible for ensuring that these can bear the load of the spreader's gross weight.

This instruction manual contains instructions for operating the spreader and setting it to spread generally available commercial fertilizers and lime.

As fertilizer quality can fluctuate greatly from one year to the next and from consignment to consignment, it is advisable to always perform a spreading test if there is any doubt whether the type of fertilizer can be spread on the preferred working width with reasonable results. The latest settings for the most common types of available fertilizer can be downloaded at any time from Bredal's website. It is advisable to always do a spreading test using the type of fertilizer to be spread to test the settings recommended by Bredal. The user is solely responsible for ensuring that the machine is correctly set and that it works correctly to achieve acceptable spreading. Bredal accepts no liability for spreading errors.

The safety distance from the spreading discs is at least 30 meters when these are rotating. If people or animals are within this distance, the tractor's PTO must be disengaged.

Never operate the headland gear or adjust the spreader while the spreading discs are rotating.

When loading the spreader, keep foreign objects, such as stones, etc., from getting in the machine's hopper, as they can cause damage and be very hazardous for the surroundings.

Sitting/standing on the machine while it is operating or during road transport is not permitted.

Before working on the machine, make sure to disengage the tractor's PTO and depressurise the hydraulic system.

Shields on PTO shafts and the implement must be intact and correctly attached.

> TRAFFIC SAFETY

As traffic safety is important when driving on public roads, the following must be checked:

- The light system must be connected to the tractor's light socket, the lamps must be cleaned, and turning signals and brake lights must work correctly.
- Reflective warning triangles must be intact and clean.
- All hitch and wheel bolts must be tightened to the correct torque.
- The tire pressure must be correct.
- Make sure there are no cracks in tires, axles or rims.
- The hitch peg must be properly dimensioned and locked so that it cannot be ejected.
- Brakes must be connected and working correctly.
- For trailers with a bogie, the bogie MUST be locked at all times in road transport, because otherwise there is a risk that the vehicle will begin to sway and cause an accident.
  Also, the bogie MUST always be locked when driving in reverse as otherwise there is a risk of damaging the lock cylinder.
  Lock the bogie by pressing on the outlet and possibly locking the ball valve as an additional precaution. Unlock the bogie by putting the tractor's hydraulic system in float position.

CONNECTING THE SPREADER

When connecting the spreader to the tractor, it is important that it stands horizontally or slightly forward to obtain the best possible spreading results. It is possible to slightly adjust the height by moving the hitch in its bolt holes on the spreader's undercarriage.

The light plug is inserted in the tractor's light outlet.

The ISOBUS plug is inserted in the tractor's ISOBUS socket.

Connect the PTO shaft to the tractor's PTO.

Connect hydraulic/air hoses for brakes to the tractor's outlet (see "Overview of hydraulic connections" section)

OVERVIEW OF HYDRAULIC CONNECTIONS

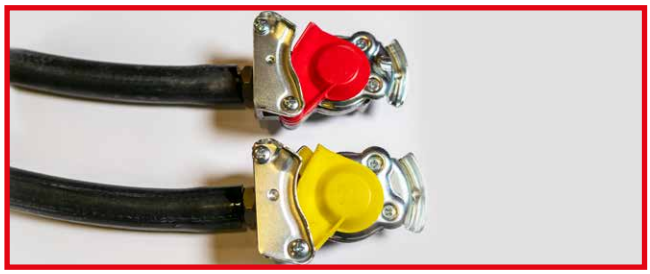
Belt (+ any external hydraulic functions)
Constant flow, 50–60 l/min.
Pressure (1 red band)
Return flow (2 red bands)

Headland gear
Engage (1 blue band)
Disengage (2 blue bands)

Jacks

Cover, hydraulic
Open (2 green bands)
Close (2 black bands)

Brakes, hydraulic



Brakes, air

Steering axle
Constant flow, 30-40 l/min.
Pressure (1 yellow band)
Return flow (2 yellow bands)

HYDRAULIC SPREAD UNIT, OIL FROM TRACTOR
Floor belt + discs, forward motion, two
Constant flow, 130 l/min. total

Return flow (1" coupling)
"return to open tank"

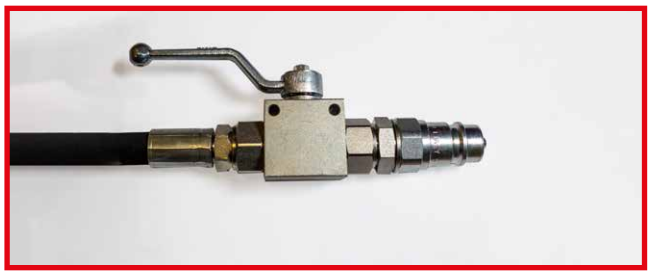
Drain from oil motor
"return to open tank"

HYDRAULIC SPREAD UNIT, PTO-DRIVEN PUMP
Drain from oil motor + return circulation from pump. (1" coupling)
"return to open tank"

OVERVIEW OF HYDRAULIC CONNECTIONS

Landwheel drive (spreader with mechanical landwheel drive)
Green

Belt-load reducer
Yellow/blue



Bogie lock
1/2 ball valve

K-XESC
External hydraulic functions and section control
Constant flow, 70 l/min.
Pressure (1 red with arrow)
Return (2 red with arrow)

DRIVING DEPENDENT BELT DRIVE, KB3 (SPREADERS WITH MECHANICAL LANDWHEEL DRIVE)

To connect, attach the spreader's hydraulic hose to the tractor's hydraulic outlet. Engaging and disengaging the application will now be done using the tractor's hydraulic system. A pilot-operated check valve is installed. This prevents the application wheel from being accidentally engaged if there is a leak in the tractor's hydraulic system.

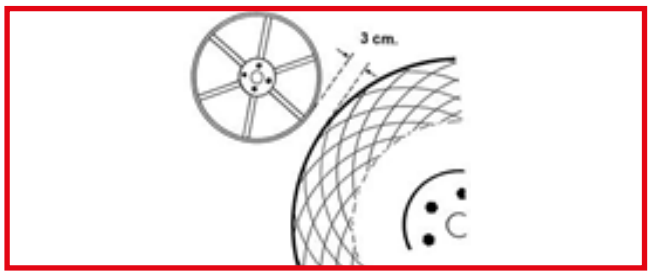
The driving-dependent belt drive has the feature of enabling the forward speed to be freely selected without affecting the application rate set in liters/hectare.
As the application wheel runs on the vehicle-wheel surface, one meter driven forward in the field will be directly transferred to the application wheel's circumference, which will also rotate the equivalent of one meter's driven forward. The vehicle wheel can be replaced without this affecting the application accuracy.

Setting the application wheel:

The application wheel can be adjusted forward and backwards as well as out and in.

When disengaged, the space between the application wheel and the vehicle wheel must be 3–5 cm.

The application wheel must run as close to the center of the vehicle wheel as possible. If the vehicle wheel has a tractor tread pattern, the application wheel must run on both sets of lugs.
If the application wheel bounces on the vehicle wheel, the spreader's application rate will not be correct.



> APPLICATION PRINCIPLE

Bredal K spreaders are configured with forced application, comprising an adjustable shutter (application door) and a wide belt in the bottom of the container that forces the application of fertilizer.

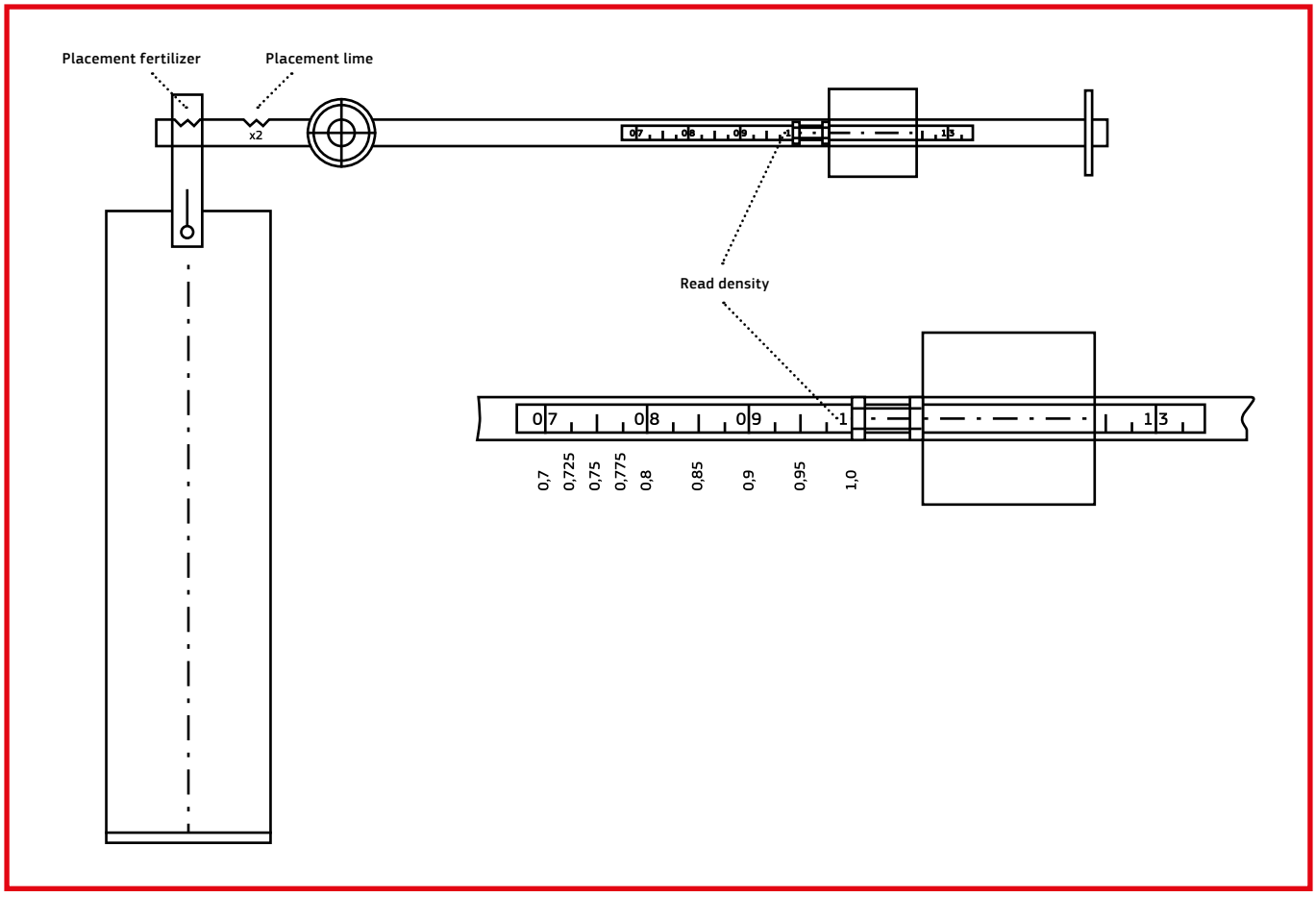
The application rate (belt speed) is driving dependent and the belt on the standard model is driven by an application wheel that is interconnected with the spreader wheel. On models with hydraulic rating, the belt is driven by an oil motor that varies the belt speed depending on the driving speed. This makes it possible to freely select the forward speed. Forced application means that all you need to do is adjust the fertilizer's calibration kit to adjust the spreader.

> CALIBRATION KIT

Use the calibration kit to determine the bulk density of the material.
Fill the bucket with fertilizer from the consignment loaded on the spreader. Knock it gently against the floor a few times and fill up. Smooth off the top. Then hang the bucket on the scale in the notch (x1). Set the counterweight so the bracket balances. Read the fertilizer's density on the scale next to the end of the bolt.

The two notches are used when determining the density of very heavy materials (more than 1.3 kg/liter). Fill the bucket, hang it on the two notches, make the setting and read the counterweight. Multiply the determined value by two.

If the scale needs adjustment or verification, do this by filling the bucket with water. When the weighing bracket is in balance, the bolt end must be at 1.0 kg per liter. If this is not the case, adjust the bolt until the setting is correct.



HOW TO USE THE APPLICATION CHART (FOR SPREADERS WITH MECHANICAL LANDWHEEL DRIVE)

To use the application chart, you must know the preferred volume in terms of **kg/ha** as well as the fertilizer's bulk density in terms of **kg/liter.** After this, find the setting based on the instructions below.

To determine the setting, first convert the volume from kg/ha to liter/ha by dividing kg/ha by the fertilizer's bulk density (calibration kit).

Example:
400 kg of fertilizer per hectare must be spread. The bulk density is 1.10 kg/liter.

$$\frac{400 \text{ kg/ha}}{1.10 \text{ kg/liter}} = 360 \text{ liter/ha}$$

Refer to the application chart under the working width to be run. If you want to spread 360 liter/ha on a 24-meter working width, find '360 liters' or the number closest to this on the chart. Now read which gear to select and the rear-door setting (axle 1 and scale approx. 70).
Avoid selected from the shaded area.

As a general rule, select the highest gear (high belt speed) and thus the smallest shutter opening possible. This is particularly relevant when spreading in hilly terrain and when spreading smooth-flowing finely grained fertilizer.

APPLICATION CHART (FOR MECHANICAL LANDWHEEL DRIVE)

9 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	57	113	213
20	127	253	499
30	196	392	791
40	270	539	1077
50	339	678	1363
60	413	825	1636
70	477	954	1909
80	552	1104	2181
90	629	1257	2454
100	699	1397	2727
110	768	1536	2999
120	838	1676	3272
130	908	1815	3544
140	978	1955	3817
150	1048	2095	4090
160	1117	2234	4362
170	1187	2374	4635
180	1257	2514	4908
190	1327	2653	5180
200	1397	2793	5453
220	1536	3072	5998
240	1676	3352	6544
260	1816	3631	7089
280	1955	3910	7634

10 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	51	102	192
20	114	228	450
30	177	354	714
40	243	486	972
50	306	612	1230
60	372	744	1476
70	435	870	1722
80	498	996	1968
90	567	1134	2214
100	630	1260	2460
110	693	1386	2706
120	756	1512	2952
130	819	1638	3198
140	882	1764	3444
150	945	1890	3690
160	1008	2016	3936
170	1071	2142	4182
180	1134	2268	4428
190	1197	2394	4674
200	1260	2520	4920
220	1386	2772	5412
240	1512	3024	5904
260	1638	3276	6396
280	1764	3528	6888

12 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	43	85	160
20	95	190	375
30	148	295	585
40	203	405	810
50	255	510	1025
60	310	620	1230
70	363	725	1435
80	415	830	1640
90	473	945	1845
100	525	1050	2050
110	578	1155	2255
120	630	1260	2460
130	683	1365	2665
140	735	1470	2870
150	788	1575	3075
160	840	1680	3280
170	893	1785	3485
180	945	1890	3690
190	998	1995	3895
200	1050	2100	4100
220	1155	2310	4510
240	1260	2520	4920
260	1365	2730	5330
280	1470	2940	5740

= AVOID THIS APPLICATION RANGE

15 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	34	68	128
20	76	152	300
30	118	236	476
40	162	324	648
50	204	408	820
60	248	496	984
70	290	580	1148
80	332	664	1312
90	378	756	1476
100	420	840	1640
110	462	924	1804
120	504	1008	1968
130	546	1092	2132
140	588	1176	2296
150	630	1260	2460
160	672	1344	2624
170	714	1428	2788
180	756	1512	2952
190	798	1596	3116
200	840	1680	3280
220	924	1848	3608
240	1008	2016	3936
260	1092	2184	4264
280	1176	2352	4592

16 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	32	64	120
20	72	143	281
30	111	221	446
40	152	304	608
50	192	383	769
60	233	465	923
70	272	544	1076
80	312	623	1230
90	355	709	1384
100	394	788	1538
110	433	866	1691
120	473	945	1845
130	512	1024	2000
140	552	1103	2153
150	591	1181	2306
160	630	1260	2460
170	670	1339	2614
180	709	1418	2768
190	748	1496	2921
200	788	1575	3075
220	867	1733	3383
240	945	1890	3690
260	1024	2048	4000
280	1103	2205	4305

18 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	29	57	107
20	64	127	250
30	99	197	397
40	135	270	540
50	170	340	684
60	207	414	820
70	242	484	957
80	277	554	1094
90	315	630	1231
100	350	700	1367
110	385	770	1504
120	420	840	1641
130	455	910	1778
140	490	980	1914
150	526	1051	2051
160	561	1121	2188
170	596	1191	2324
180	631	1261	2461
190	666	1331	2598
200	701	1401	2735

= AVOID THIS APPLICATION RANGE

20 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	26	51	96
20	57	114	225
30	89	177	357
40	122	243	486
50	153	306	615
60	186	372	738
70	218	435	861
80	249	498	984
90	284	567	1107
100	315	630	1230
110	347	693	1353
120	378	756	1476
130	410	819	1599
140	441	882	1722
150	473	945	1845
160	504	1008	1968
170	536	1071	2091
180	567	1134	2214
190	599	1197	2337
200	630	1260	2460

24 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	22	43	80
20	48	95	188
30	74	148	298
40	102	203	405
50	128	255	513
60	155	310	615
70	182	363	718
80	208	415	820
90	237	473	923
100	263	525	1025
110	289	578	1128
120	315	630	1230
130	342	683	1333
140	368	735	1435
150	394	788	1538
160	420	840	1640
170	447	893	1743
180	473	945	1845
190	499	998	1948
200	525	1050	2050

28 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	18	36	69
20	41	82	161
30	64	127	255
40	87	174	347
50	110	219	440
60	133	266	528
70	156	311	616
80	178	356	704
90	203	405	792
100	225	450	879
110	248	495	967
120	270	540	1054
130	293	585	1140
140	315	629	1230
150	338	675	1318
160	360	720	1405
170	383	765	1494

30 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	17	34	64
20	38	76	150
30	59	118	238
40	81	162	324
50	102	204	410
60	124	248	492
70	145	290	574
80	166	332	656
90	189	378	738
100	210	420	820
110	231	462	902
120	252	504	984
130	273	546	1066
140	294	588	1148
150	315	630	1230
160	336	672	1312
170	357	714	1394

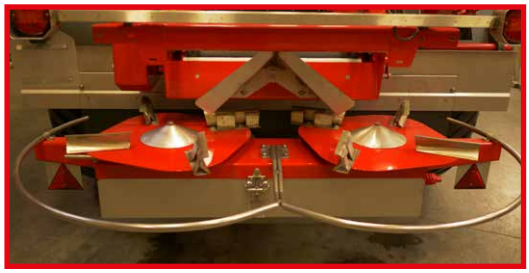
32 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	16	32	60
20	36	71	141
30	56	111	223
40	76	152	304
50	96	191	384
60	117	233	461
70	136	272	538
80	156	311	615
90	177	354	692
100	197	394	769
110	217	433	846
120	237	473	923
130	256	512	999
140	276	551	1076
150	296	591	1153
160	315	630	1230
170	357	669	1307

36 METERS			
SCALE	GEAR ½	GEAR 1	GEAR 2
10	14	28	53
20	32	63	125
30	49	98	198
40	68	135	270
50	85	170	341
60	103	206	410
70	121	241	478
80	138	276	545
90	158	315	614
100	175	350	683
110	193	385	751
120	210	420	819
130	228	455	887
140	245	490	956
150	262	524	1024
160	280	559	1092
170	297	594	1161

= AVOID THIS APPLICATION RANGE

SPREADING OF LIME

> MOUNTING OF LIME EQUIPMENT



For spreading lime, attach the K discs (spreading discs for lime) and the lime downchute.

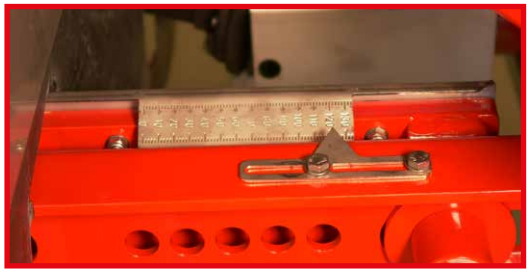
Adjust the spread-unit position to setting 110 (see the next section 'Lime spreading adjustment').

Disassemble the fertilizer distributor and screen before spreading lime.

Remember that spreading discs used for spreading lime should not be used to spread fertilizer.

BASIC SETTING FOR SPREADING LIME ACROSS 12–16 METERS.
Mechanical spread unit: PTO 540 rpm
Hydraulic spread unit: 600 rpm
Spread-unit position: 110

> LIME SPREADING ADJUSTMENT

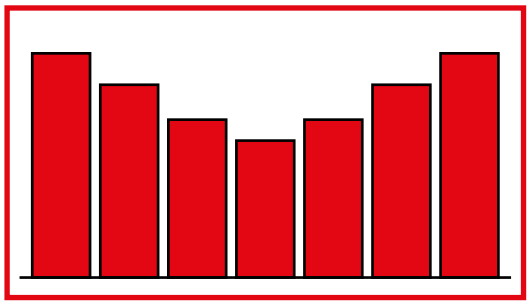


For spreading lime, it is possible to adjust the settings if the spreading is not ideal. Before adjusting the spread unit, check whether the unsatisfactory spreading result is caused by worn vanes or inadequately tensioned V-belts.

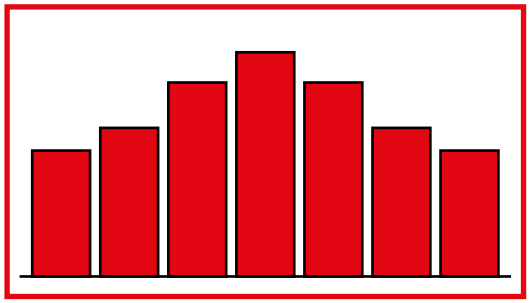
Change the working width by adjusting the spread unit forward or backwards. Do this by first loosening the two bolts on each side.

Afterward, the spread unit can be moved forward or backward to a different scale setting. This is done using the accompanying shaft and holes in the side members.

Remember to tighten the spread unit after completing the adjustment.

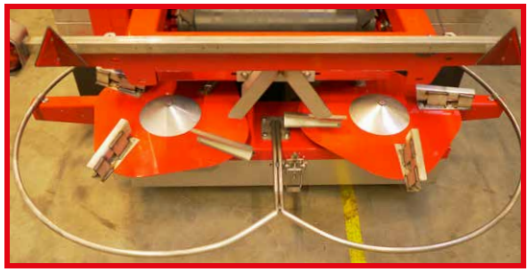


IF EXCESSIVE LIME IS DEPOSITED BETWEEN THE WHEEL TRACKS
Adjust the spread unit away from the tractor (increase the setting).
Adjust 10–20 scale steps at a time.



IF EXCESS LIME IS DEPOSITED BEHIND THE SPREADER
Adjust the spread unit towards the tractor (decrease the setting).
Adjust 10-20 scale steps at a time.

> SPREADING WITH REVERSED SPREAD UNIT



For spreading overly moist lime, etc., it is advisable to spread with a reversed rotation direction on the discs.

The spreader is available with a reversed spread unit for this purpose. Attach a special downchute separator and ordinary K discs, as shown in the photo.

The maximum working width with this equipment is 10–12 meters.

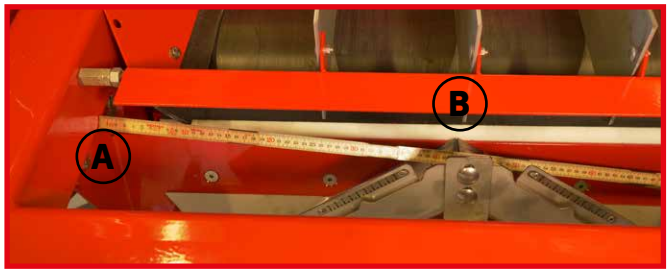
Remember that the reversed spread unit cannot be used for spreading fertilizer.

BASIC SETTING FOR SPREADING LIME WITH A REVERSED SPREAD UNIT

Mechanical spread unit: PTO 540 rpm
Hydraulic spread unit: 600 rpm
Spread-unit position: 20

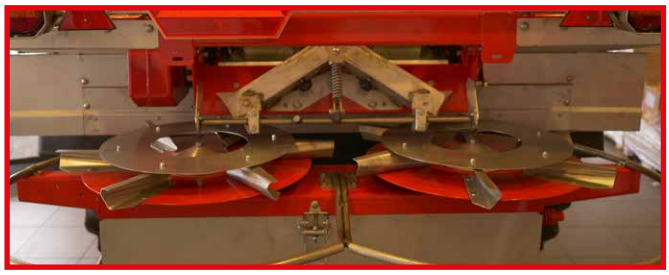
ATTACHING FERTILIZER EQUIPMENT FOR A DISCS

1. Disassemble the K discs and lime downchute.

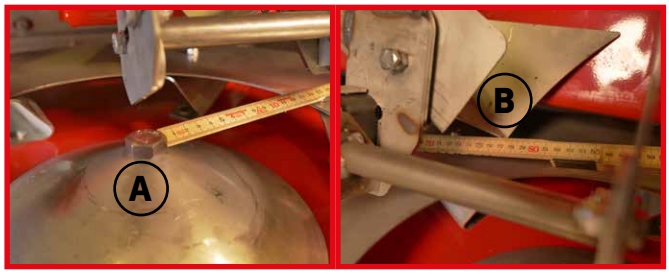


2. Attach the fertilizer downchute. Center the downchute on the rubber belt. The distance (A=B) must be the same from the right to the left side. Measure the distance from the side element (A) to the center of the downchute (B).
   If necessary, adjust the downchute by loosening the three bolts and shifting it sideways.

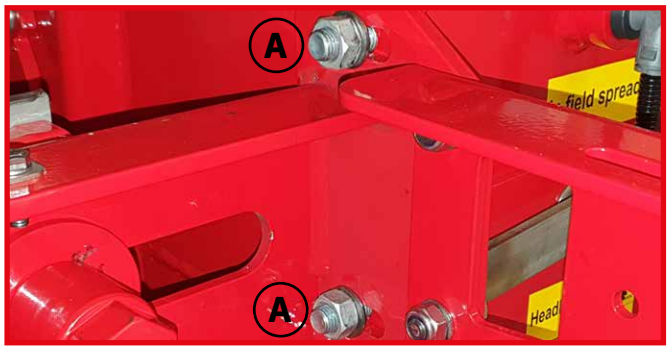
3. The downchute (B) must fit snugly against the plate for the downchute (A) Adjust the bolt (C) so the downchute fits snugly against the plate for the downchute.



4. Now, attach the A discs. Follow the same procedure as used for the K discs.



5. The spread unit must be centered. Set the downchute at the same scale value on each side.
   Make a diagonal measurement from the bolt head (A) on the cone to the bottom tip of the downchute on the opposite side (B).
   This dimension must be identical when measuring from the right and from the left.



5.1 If the two measurements are not identical, center the spread unit. Do this by loosening the two bolts (A) on each side and moving the spread unit sideways until the diagonal measurements on each side are identical.

6. Adjust the guide plate until the distance from the guide plate to the center bolt is 40–45 mm. Do this by loosening the two bolts and then adjusting the guide plate until it touches the stainless steel top.

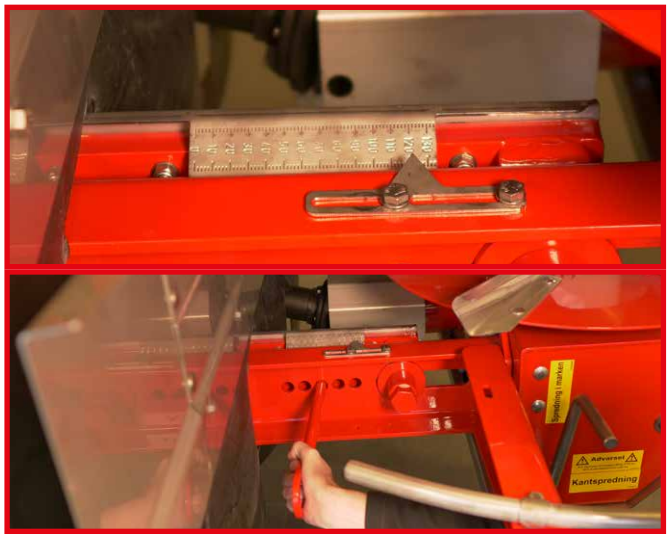
   Make sure that it is possible for the guide plates to tilt up without hitting the stainless steel top disc.

7. Adjust the right-hand guide plate by loosening the bolts. The guide-plate notch must then fit over the bolt in the stainless steel top. The guide plate MUST touch the stainless steel top.

   Make sure that it is possible for the guide plates to tilt up without hitting the stainless steel top disc.

8. Attach the fertilizer components over the rubber belt.
   The component plates must lightly touch the belt.

9. Install a screen in the container.



10. Adjust the spread-unit position to 120 as the basic setting, unless otherwise specified for the actual fertilizer to be spread.

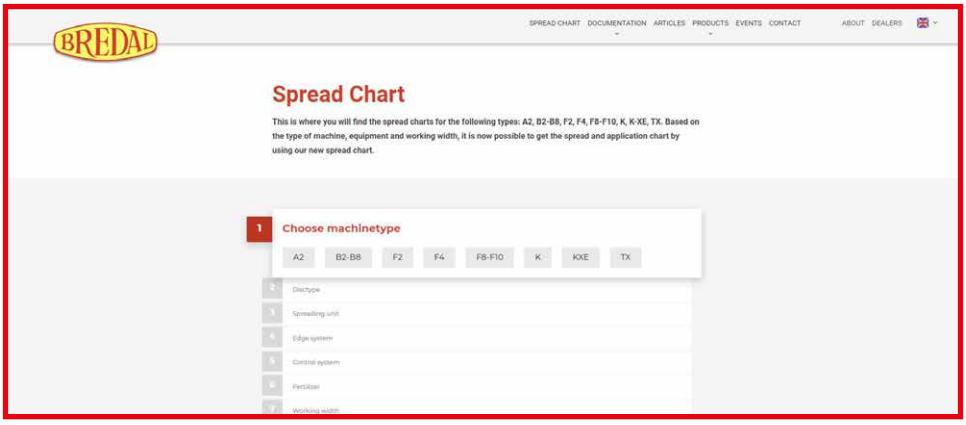
SPREADING OF FERTILIZER

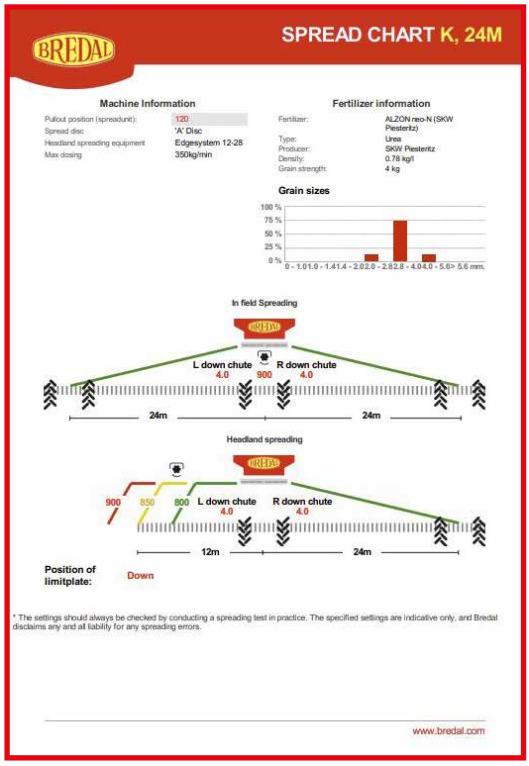
For the spreading of fertilizer, it is advisable to always use the A discs (12–36 meters) and associated fertilizer equipment.

> SETTINGS FOR VARIOUS TYPES OF FERTILIZER

The most precise settings are obtained by using the spreading settings for the type of fertilizer to be used from Bredal's website www.bredal.com. It is advisable to use these spread charts wherever possible.

Settings for various fertilizer types can be downloaded from Bredal's website. The settings are determined by testing the various fertilizers in practice. Update the settings on an ongoing basis to make sure they are up to date. It is advisable to use these settings. It is also advisable to carry out a fertilizer spreading test in the field to make sure that a satisfactory spreading pattern is achieved (see p. 34).
Go to Bredal's website www.bredal.com





At the website, select "Spread Chart" in the menu at the top of the screen.

Under "Machine type", select "K"

It is possible to choose between an A or H disc (the default K setting is A discs)

Select mechanical or hydraulic spread unit

Select the type of fertilizer to be spread

Select the working width to be used

Press "Download as PDF"

This will take you to the results page with the settings that fit the type of fertilizer selected.
Enter the recommended downchute settings for field and headland spreading in the computer.
Also, the spreader should be set to run at the recommended PTO rpm.

The fertilizer, name, manufacturer, density, crushing strength and granule distribution selected appear in the spread chart at the top of the results page.

The recommended downchute settings and PTO rpm for field spreading are shown in the center of the chart.

The recommended downchute settings and PTO rpm for headland spreading are shown at the bottom of the chart (scroll down).

Red = complete spreading to boundary // Yellow = medium spreading along boundary // Green = very little fertilizer beyond boundary

> RECOMMENDED UNIVERSAL SETTINGS

If you are unable to find the fertilizer to be used or similar on the website, as an alternative, you can use the **recommended universal settings** for ordinary NPK, NS, PK and N fertilizers. Spread charts with universal settings for field spreading are found on the following pages.

For spreading special fertilizers such as potash, granular urea, ammonium sulfate and N34, the downchute setting must typically be 1–3 scale steps higher than the recommended universal setting.

For working widths greater than 24 meters, always perform a field spreading test to make sure you get a satisfactory spreading result (see the section 'Spreading test and adjustment').

RECOMMENDED UNIVERSAL SETTING FOR A DISCS, FIELD SPREADING, 12–36 METERS

Mechanical spread unit:
The guide plates MUST ALWAYS be up for field spreading.

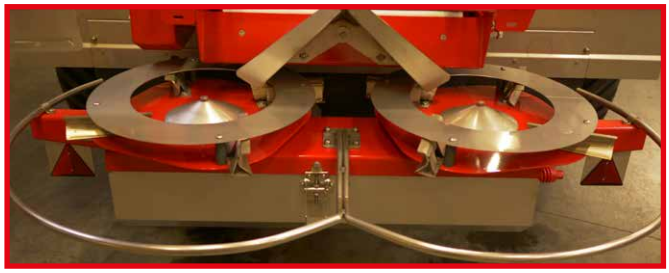
Mechanical spread unit:
Set the engage/disengage handle for the headland gear in the top position 'field spreading'.

A			 SPREAD-UNIT POSITION
12 M	0	450	**120**
15 M	1	540	
16 M	1	540	
18 M	2.0	600	
20 M	2.5	800	
24 M	4	900	
28 M	4	1000	
30 M	4.5	1000	
32 M	5	1000	
36 M	5.5	1000	

HYDRAULIC SPREAD UNIT:
Multiply the specified PTO rpm in the spread chart above by 1.1 to find the disc rpm for hydraulic spread units.
Example (for 24 meters): the spreading disc rpm equation is 900 x 1.1 = 990 rpm

> SPREADING WITH K DISCS WITH A TOP DISC (12–24 METERS)

K discs with a top disc (12–24 meters) can be used instead of A discs, however.
Use the lime downchute for spreading of fertilizer with K discs.
If K discs are used for to spread fertilizer, it is advisable to have two sets of spreading discs if the spreader is also used for spreading lime: one set for spreading lime and one set for spreading fertilizer.



RECOMMENDED UNIVERSAL SETTINGS FOR THE SPREADING OF FERTILIZER WITH K DISCS WITH A TOP DISC, FIELD SPREADING, 12–24 METERS

A		SPREAD-UNIT POSITION
12 M	540	**120**
15 M	800	
16 M	800	
18 M	800	
20 M	1000	**110**
24 M	1000	

HYDRAULIC SPREAD UNIT:
Multiply the specified PTO rpm in the spread chart above by 1.1 to find the disc rpm for hydraulic spread units.
Example (for 24 meters): the spreading disc rpm equation is 1000 x 1.1 = 1100 rpm

ADJUSTING THE SPREADING PATTERN
If the spreading pattern is not satisfactory, the working width/distribution can be adjusted by pulling the spread unit forward or backward using the same procedure as specified for spreading lime.

HEADLAND SPREADING

The headland spreading system works by reducing the speed of the spread disc on the side facing the boundary. At the same time, ideal headland spreading is achieved by either pulling down the guide plates or changing the downchute positions.
Wherever possible, use the rpm and downchute settings indicated on the spread chart on Bredal's website or use the recommended universal setting shown in the tables below.

MECHANICAL SPREAD UNIT WITH HEADLAND GEAR
The headland gear is positioned under the left spread disc and reduces the disc's rpm when it is activated.
Drive with the left side facing the boundary.

To adjust the spreader for headland spreading, move the gear selector on the spread unit to the lowest position.
If the spreader comes with a hydraulic operated headland gear, use the double-action hydraulic outlet on the tractor to activate/deactivate the headland spreading.
At the same time, the guide plates for headland spreading must be pulled down, unless otherwise indicated on the spread chart.
The spread discs must NOT rotate when changing between field and headland spreading.

As a general rule, the guide plates must be lowered for headland spreading, unless otherwise indicated in the spread chart.

Set the engage/disengage handle for the headland gear in the bottom position 'headland spreading'.

HYDRAULIC SPREAD UNIT
On spreaders with hydraulic spread units, it is possible to select spreading to the right or left side along a boundary.

Headland spreading is engaged/disengaged via the operation screen on the ISOBUS program.

Unlike mechanical spread units, hydraulic spread units have no guide plates. This means that you must change the downchute position whenever you switch to headland spreading.

If complete application to boundary is desired, increase the rpm by roughly 100 rpm compared to the chart.
To prevent spreading beyond the boundary, reduce the rpm by roughly 100 rpm compared to the chart.

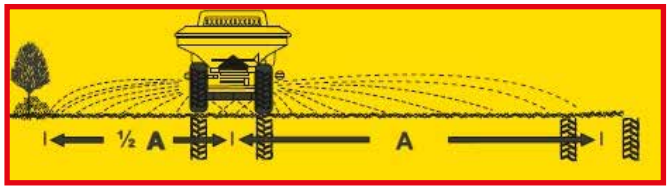
> RECOMMENDED UNIVERSAL SETTING FOR HEADLAND SPREADING

If you are unable to find the fertilizer to be used or similar on the website, as an alternative, you can use the **recommended universal settings** for ordinary NPK, NS, PK and N fertilizers. Spread charts with universal settings for headland spreading are found on the following pages.

For spreading special fertilizers such as potash, granular urea, ammonium sulfate and N34, the downchute setting must typically be 1–3 scale steps higher than the recommended universal setting.

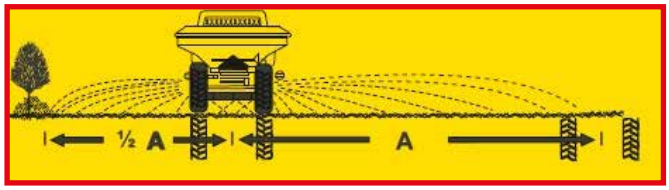
If complete application to boundary is desired, increase the rpm by roughly 100 rpm compared to the chart.
To prevent spreading beyond the boundary, reduce the rpm by roughly 100 rpm compared to the chart.

RECOMMENDED UNIVERSAL SETTING FOR HEADLAND SPREADING WITH A 12–28 M HEADLAND GEAR



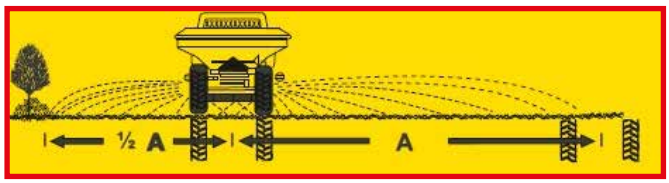
A	Downchute, left and right		
12 M	0	450	**GUIDE PLATES DOWN**
15 M	1	500	
16 M	1	540	
18 M	2.0	600	
20 M	2.5	700	
24 M	4	900	
28 M	4	1000	

RECOMMENDED UNIVERSAL SETTING FOR HEADLAND SPREADING WITH A 24–36 M HEADLAND GEAR



A	Downchute, left and right		
24 M	4	540	**GUIDE PLATES DOWN**
28 M	4	650	
30 M	4.5	700	
32 M	5	800	
36 M	5.5	900	

RECOMMENDED SETTING FOR HEADLAND SPREADING WITH HYDRAULIC SPREAD UNIT (WITHOUT GUIDE PLATES)



A	Downchute, left and right	Border side	Disc rpm Field side
12 M	4	200	450
15 M	5	250	500
16 M	5	250	550
18 M	5	300	650
20 M	6	350	700
24 M	6	450	750
28 M	6	500	800
30 M	7	550	850
32 M	8	600	900
36 M	9	700	1000

FERTILIZER QUALITY

Fertilizer quality is crucial for spreading quality. In order to check fertilizer quality and get an idea of the spreading power, the following values are the most important to know:

- Particle strength
- Particle size
- Dust content
- Bulk density
- Particle shape

Particle strength can be measured using the crushing strength tester included in the supply. Press the granule with the crushing strength tester until the granule ruptures and then read the crushing strength. Repeat this with several granules, big and small, and then calculate the mean crushing strength.

Particle size can be measured using Bredal's sieve shaker. Fill the space above the biggest-meshed sieve, attach the lid and shake until the distribution of granules remains constant. Turn the sieve shaker so the lid is facing up again. Now it is possible to determine the distribution of particle size.
The dust content appears after finding the distribution of particle size, as relative percentage of the fertilizer below the smallest sieve. In many cases the dust content can also be estimated visually.

Bulk density is usually specified by the fertilizer manufacturer; otherwise it can be determined by using a Bredal calibration kit (extra accessory).

Particle shape can be assessed visually. The smoother and rounder the particle, the further it can be flung through the air. A very angular granule or a granule with many surface nodules is less aerodynamic, impeding its ability to cover the entire swath of wide working widths.

> EFFECT OF FERTILIZER QUALITY ON SPREADING PROPERTIES

Low crushing strength means that the fertilizer tends to get crushed, both during transportation and spreading. Low crushing strength is often related to dust content, as fertilizer with a low crushing strength is easily crushed during transportation and reloading. The crushing strength is usually up to par when the fertilizer leaves the factory, but if the fertilizer has been subjected to moisture or water, it loses its original crushing strength and never regains it, even if the fertilizer consignment is dried. Certain types of fertilizer always have a low crushing strength, such as prilled urea. In order to be able to spread a fertilizer over wider working widths (24 meters or more), the crushing strength should at least be 3–4 kg. If it is below this, the discs' revolutions need to be reduced to avoid crushing the fertilizer, thereby narrowing the working width, eliminating the option of wide working widths.

The particle size affects how far the fertilizer can be flung. Large fertilizer granules can be flung further than small ones, which means that a certain particle size is required to cover the entire swath of wide working widths. The average particle size should be more than 3 mm to make it possible to spread up to 36 meters. In other words, more than 50% of the particles should be in the section above the 3 mm sieve in Bredal's sieve shaker.

The dust content increases with the number of treatments (reloading, transportation, etc.) to which the fertilizer is subjected. If much of the fertilizer has been crushed into dust, this will be deposited as a layer behind the spreader, usually 4–5 meters wide across the tracks, and it will usually make it difficult to obtain satisfying spreading results.
Heavy fertilizer particles can be flung further than light ones, which is why fertilizer density is crucial for the working width. Most types of fertilizer have a density of around 1.0 kg/liter or slightly more. A few have a lower density (0.7–0.75 kg/liter), but it is difficult for these types to fully cover 36-meter working widths.

Rectangular or irregular fertilizer has poor aerodynamic characteristics, which is why it cannot be flung as far. Wide working widths require aerodynamic fertilizer granules. These characteristics are difficult to measure in practice, but a visual assessment is sufficient and not difficult to make, as round and especially smooth granules can be thrown the furthest.

> LIME (K DISCS)

To avoid overloading the transmission, do not let the application rate exceed the following:

- SPC 4500-1 spread unit (1 belt): 1200 kg/min. at 540 rpm
- SPC 4500-2 spread unit (2 belts): 1600 kg/min. at 540 RPM
- Hydraulic spread unit: 1600 kg/min. at 600 RPM

> FERTILIZER (A DISCS OR K DISCS WITH TOP DISC)

It is advisable not to spread more than 350 kg/min.
The spreader can spread large volumes but the spreading pattern of certain types of fertilizer will be impaired if the application rate exceeds 350 kg/min.
If a larger volume needs to be spread, a spreading test should always be done in the field at the given volume to ensure that satisfactory spreading results can be achieved.

SPREADERS WITH MECHANICAL LANDWHEEL DRIVE

Calculate the actual application rate per minute using the following formula:

$$\frac{\text{Km/h x working width x kg/ha}}{600} = \text{kg/min.}$$

$$\text{Example } \frac{12 \text{ km/h} \times 24 \text{ m} \times 450 \text{ kg/ha}}{600} = 216 \text{ kg/min.}$$

It is also possible to calculate the maximum driving speed for a specific application rate and working width as follows:

$$\frac{600 \text{ x max. kg/min.}}{\text{width x kg/ha}} = \text{km/h (max.)}$$

$$\text{Example } \frac{600 \times 1600 \text{ kg/min.}}{15 \text{ m} \times 4500 \text{ kg/ha}} = 14.2 \text{ km/h (max.)}$$

SPREADERS WITH HYDRAULIC RATING

The application rate per minute for computer-controlled spreaders can be read directly on the display.

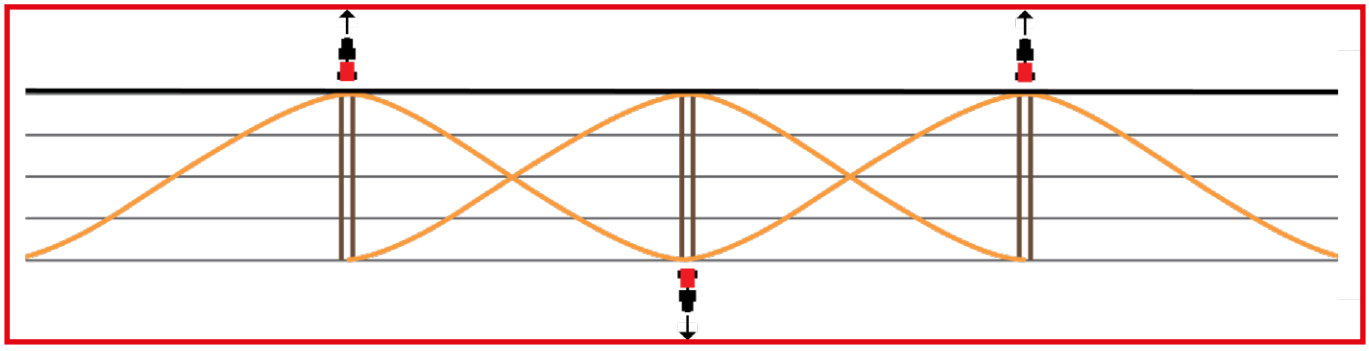
FERTILIZER SPREADING TEST AND SPREADING ADJUSTMENT

A spreading test should always be done in the field to ensure satisfactory spreading patterns. Consider the following factors when conducting a fertilizer spreading test:

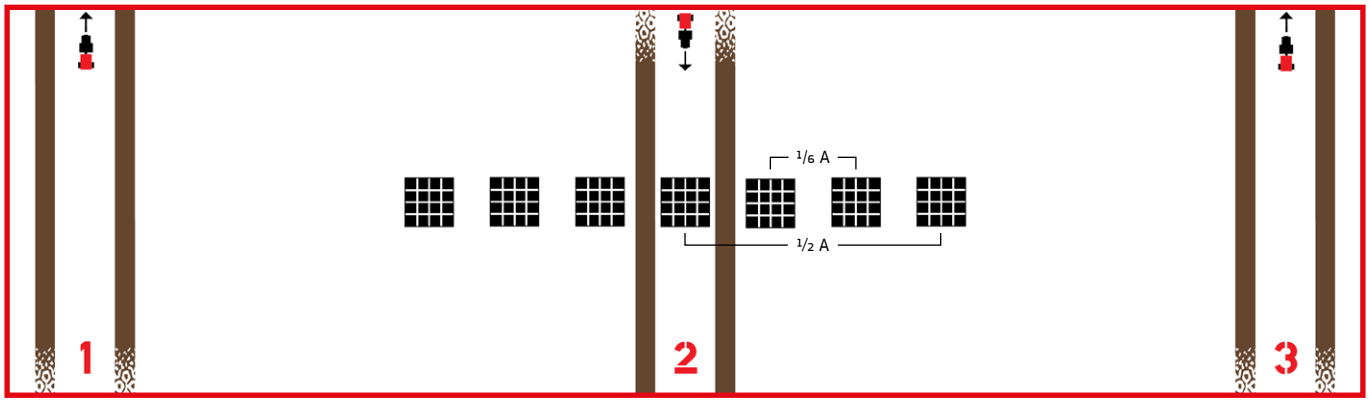
- Perform the test in dry conditions (field/implement).
- Perform the test in a field covered with a healthy crop: approx. 10 cm of thick plant growth, to avoid ricocheting granules.
- Conduct the test on a flat section of the field and, when setting out trays, make sure that all of them are level wherever possible.
- Conduct the test at the forward speed normally used for spreading (ideal: 14–15 km/h, if the field allows).
- Let 100–200 kg of fertilizer run through the spreader before conducting the test. There may be deposits of old fertilizer, verdigris or rust on the spreading discs and vanes. These deposits must be worn off before the spreader can produce a constant spreading pattern.
- Set up the trays at one-half of the working width on both sides of the centremost of the three wheel tracks. Distance between the trays = 1/6 of the working width
  Example: 30-meter working width = 5 meters between the trays. Drive forward in the first, back in the second and forward again in the third track. To get sufficient volumes in the trays so that they can be used for an assessment, it is necessary to spread at least 200 kg/ha.
- Make sure to drive far ahead of the trays before disengaging the application, as the spreader flings the fertilizer far to the rear.

If a sufficient spreading width cannot be obtained at the highest downchute position (9), it is possible to move the spread unit forward. Shift the spread-unit position 20 steps at a time.

With H discs, it is advisable to change the spreading vanes' position from the square to the round hole.

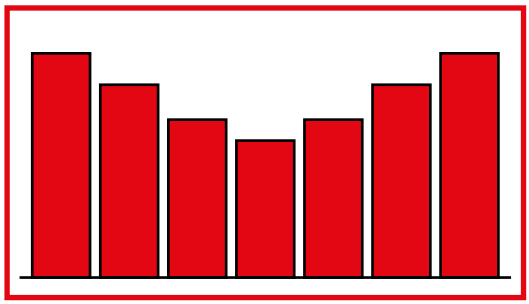


Ideal distribution of fertilizer using overlapping.



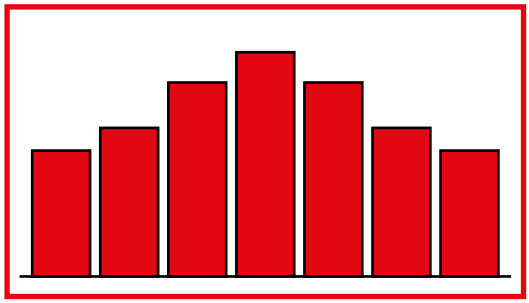
Setting up testing trays in the field.

After pouring the fertilizer into the measuring cups, assess the spreading results. A correction of the spreading picture is shown on the next page.



IF EXCESS FERTILIZER IS DEPOSITED BETWEEN THE WHEEL TRACKS

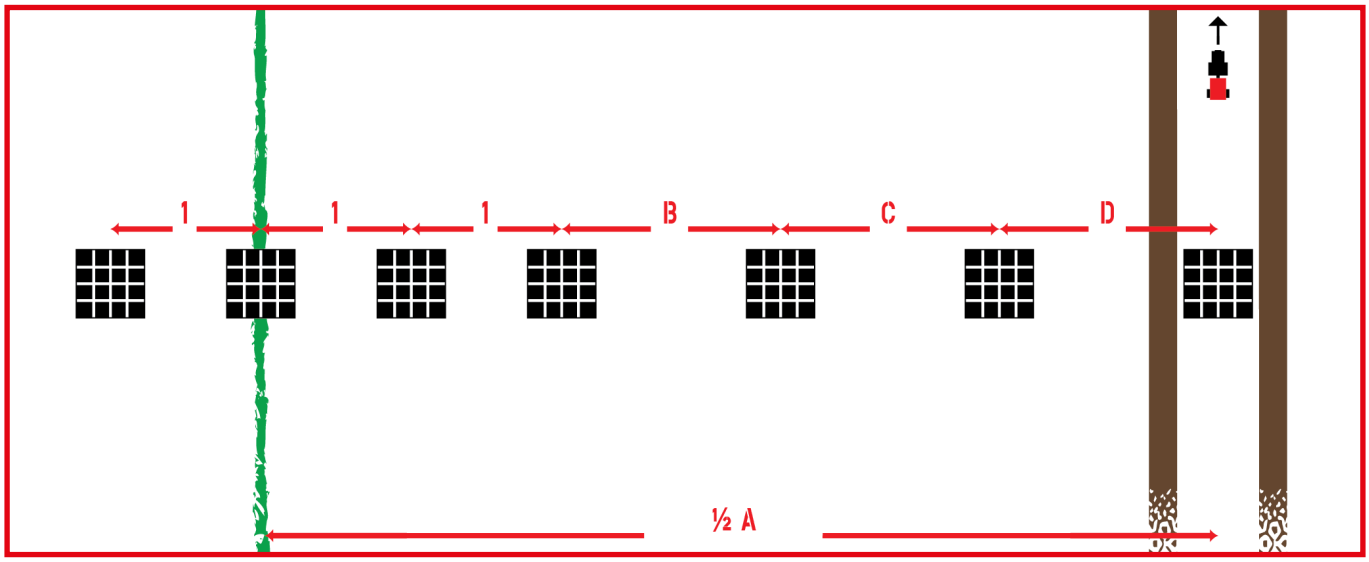
- Set the downchute position to a lower value. Preferably set it 2 steps lower. If a subsequent test shows that two steps was too much, the difference between the two tests will indicate how much the scale needs to be moved back.



IF EXCESS FERTILIZER IS DEPOSITED BEHIND THE SPREADER

- Set the downchute position to a higher value. Preferably set it 2 steps higher. If a subsequent test shows that two steps was too much, the difference between the two tests will indicate how much the scale needs to be moved back.
  If a sufficient spreading width cannot be obtained at the highest downchute position (9), it is possible to move the spread unit forward. Shift the spread-unit position 20 steps at a time.
  With H discs, it is advisable to change the spreading vanes' position from the square to the round hole, instead of moving the spread unit forward.
- If lots of fertilizer dust accumulates right behind the spreader, this could be caused by fertilizer being crushed at an excessively high disc speed or if the crushing strength of the fertilizer is too low.
  Try reducing the rpm by 100–200 rpm

> SPREADING SAMPLE: HEADLAND SPREADING



Position the trays as shown below. If the spreader deposits too much fertilizer beyond the boundary in relation to the preferred amount, lower the rpm by 50–100 rpm per test until the spreading result is acceptable. Conversely, the rpm setting should be increased by 50–100 rpm if spreading to the boundary is insufficient.

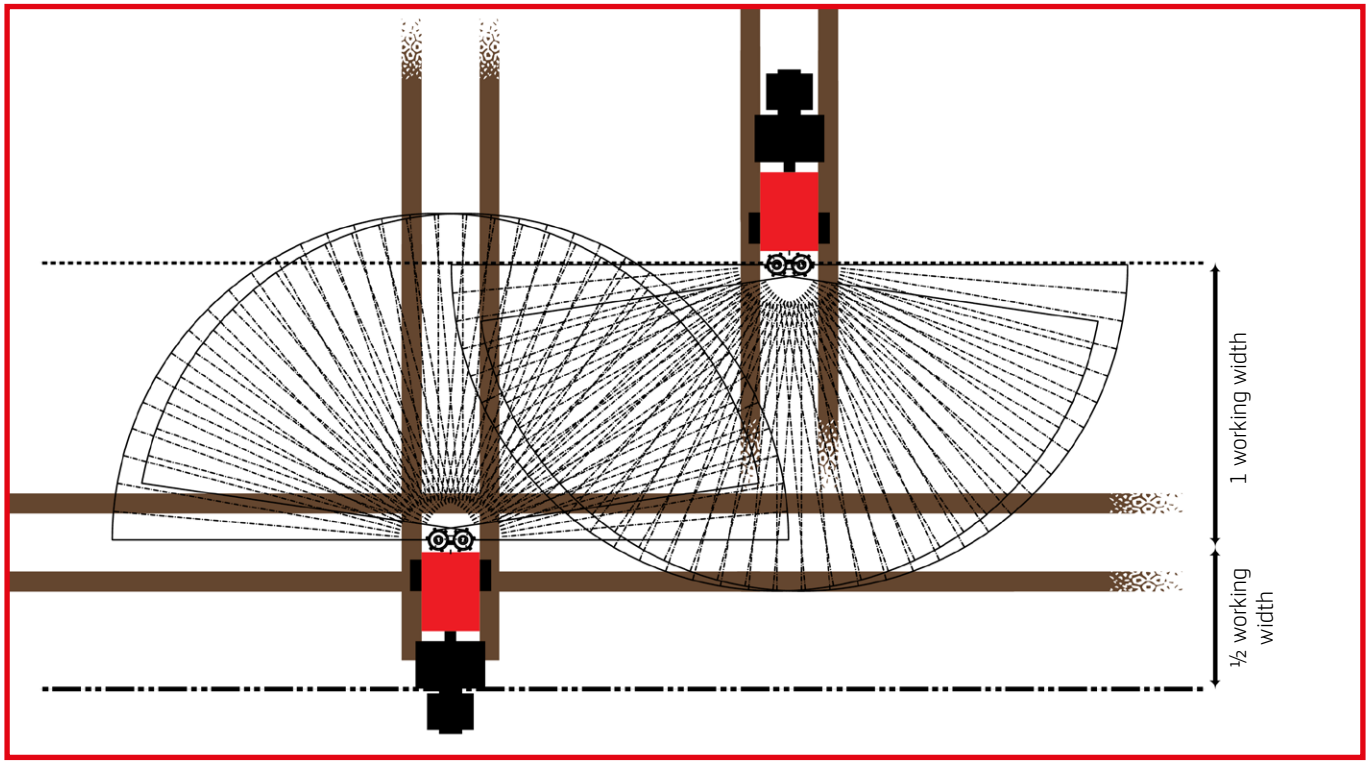
ENGAGING/DISENGAGING IN HEADLAND (MANUALLY)

Engage and disengage the spreading in the headland at the right time.

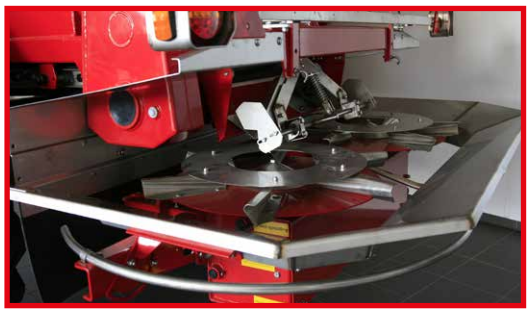
General rule:

When the discs pass the headland's tracks, disengage them (for working widths above 24 meters, slightly before this, however).

Re-engage when the discs are one working width from the headland's tracks.



LATE APPLICATION WITH LATE APPLICATION EQUIPMENT



Late application equipment can be used to spread in tall crops when parts of the crops are at a height up to the top edge of the spread discs. (Late application equipment is extra equipment.)

Bolt the late application equipment to the brackets holding the safety bars on both sides, and in the middle it will rest on the center bracket.

It is crucial to mount this equipment in a level position on the spreader, as otherwise the spreading will be laterally distorted.

Note that the late application equipment lifts the fertilizer, which means that the spreading will be more sensitive to wind than usual, so do not use this equipment in windy conditions.

The PTO setting must be slightly lower and the downchute setting should be slightly lower than normal when late application equipment is attached. The table below shows how much needs to be subtracted compared to the settings for normal operation.

For headland spreading, activate the headland gear as usual, but using the settings specified below.

The spread-unit position must always be set at 120.

	Field spreading		Headland spreading	
Working width	**rpm**	**Downchute**	**rpm**	**Downchute**
12	-100	0	-50	0
15	-100	-1.0	-50	-1.0
16	-100	-1.0	-50	-1.0
18	-100	-1.0	-50	-1.0
20	-100	-1.0	-50	-1.0
24	-200	-2.0	-150	-2.0
28	-200	-1.0	-100	-1.0
30	-150	-0.5	-100	-0.5
32	-150	0	-50	0
36	-150	0	-50	0

Example:
A 30-meter working width will be used. According to the settings on Bredal's website, the PTO rpm should be set at 1000 rpm and the downchute position at 5.0.

According to the table under 30 meters, subtract 150 rpm from 1000 rpm, so that the spreader operates at 850 rpm.
Normally the downchute position is 5.0, but according to the table, 0.5 should be subtracted from so the downchute position is 4.5.

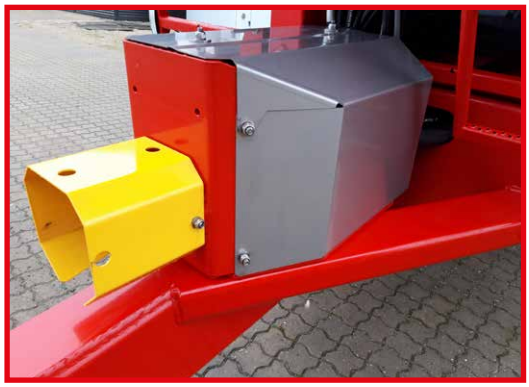
DRIVING WITH A BOGIE

For trailers with a bogie, the bogie MUST be locked at all times during road transport, because otherwise there is a risk that the vehicle will begin to sway and cause an accident.

Also, the bogie MUST always be locked when driving in reverse as otherwise there is a risk of damaging the lock cylinder.

Lock the bogie by pressing on the outlet and possibly locking the ball valve as an additional precaution.

Unlock the bogie by putting the tractor's hydraulic system in float position.



Spreaders with hydraulic spread units are available with a PTO-driven hydraulic pump unit.

The pump unit is a separate system whose sole purpose is to drive the discs.

OPERATION

PTO working range: 800–1000 rpm, depending on the disc rpm preferred.
Check the following daily:

- The oil must be visible in the sight glass. If it is not, top up with oil and check the system for leaks.
- The oil temperature should not exceed 70°C.
- The manometer indicator should be in the green field when the discs rotate at operating speed. If the indicator is in the red field, this indicates that the suction filter, filler cap and oil must be replaced/changed.

MAINTENANCE

The following service should be done after six months of operation and every two years after this.

- Change the oil.
- Replace the suction filter.
- Replace the filler cap (with built-in air filter).

  Unscrew the filler cap, unscrew the drain plug to drain the oil and replace the suction filter. Reinsert the drain plug, fill up with fresh oil, and replace the filler cap.
  The spreader is filled with Q8 Haydn 46 hydraulic oil ex works, but it is also possible to use a similar hydraulic oil of a different make. Volume: approx. 60 liters.

Start-up procedure after the oil change:

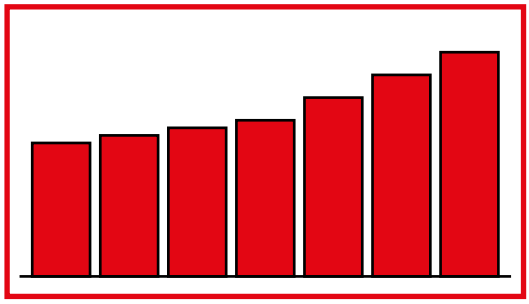
- Start the PTO at idling speed and let the pumps run for one minute WITHOUT starting the discs. Then take a one-minute break.
- Repeat the above procedure.
- Repeat the procedure once more, but now let it run for five minutes.
- Start the discs and allow them to run at 200 rpm with the PTO at idling speed for five minutes.
- The spreader is now ready for operation.

Satisfactory spreading is contingent on the spread unit being clean and in working order and the spreading vanes being correctly mounted on the spreading discs (see 'Other maintenance and cleaning').

General adjustment of the spreading pattern is found in 'Spreading test and adjustment'.

> LATERALLY DISTORTED SPREADING

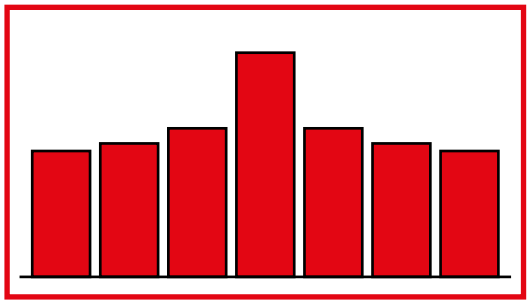
If the spreading is laterally distorted, in other words if more fertilizer is spread on the right side than on the left, and vice versa:



- Make sure the spreading vanes are correctly mounted on both spreading discs
- Make sure that the right and left downchutes are set at the same value.
- Make sure the rear door is correctly set to have an identical opening on the right and left sides (see 'Checking the rear door and its basic setting').
- Make sure the downchute is centered on the belt (see 'Adjustment of downchute and scraper')
- Make sure the spread unit is centered (see 'Centering the spread unit')
- Make sure the spread-unit position is calibrated and has the same setting on both sides (see 'Calibrating the spread-unit position').

> EXCESSIVE FERTILIZER IMMEDIATELY BEHIND THE SPREADER

If excess fertilizer is deposited behind the spreader:



- Make sure the scraper on the plate for the downchute fits snugly against the rubber belt so that no fertilizer can run down between them (see 'Adjustment of downchute and scraper').
- Check whether lots of fertilizer dust accumulates immediately behind the spreader during spreading. If so, this could be caused by the fertilizer being crushed (fertilizer crushing strength is too low) or by the disc speed being too high. Try reducing the rpm by 100–200 rpm.

> INCORRECT APPLICATION RATE (SPREADERS WITH MECHANICAL LANDWHEEL DRIVE)

If for whatever the reason, the spreader is not applying fertilizer correctly, follow the following prioritization:

- Check whether the fertilizer's bulk density is correct. This is done using the scales for direct reading of bulk density (available as optional accessory, see 'Application rate').
- Verify that the calculation from kg/ha to liter/ha was done correctly (see 'Application rate')
- Make sure the application wheel runs correctly on the spreader wheel (see 'Connecting the spreader').
- Make sure the rear door setting is correct (see 'Checking the rear door and its basic setting').
- Make sure that the floor belt and edge molding do not bulge outwards, as this will change the area of the door opening and thus the application rate. This can occur if they are subjected to oil, in which case they should be replaced.

IF NONE OF THE ABOVE MEASURES HELPS:
Determine how much of a scale step or how many scale steps is/are faulty.

Example:
For a 12-meter working width, set the spreader for spreading 405 liters per hectare, equivalent to axle 1, scale 40.

After having spread a few hectares, you detect that the spreader is only spreading 355 liters per hectare This equates to scale 35. The difference is 5 mm on the scale.

Loosen the bolt holding the scale and adjust it upwards by 5 mm. Retighten the bolt and set the rear door at scale 40.

Now it will spread 405 liters per hectare.

After this, this adjustment will apply to the entire scope of the scale.

> INCORRECT APPLICATION RATE (COMPUTER-CONTROLLED SPREADERS)

If for whatever the reason, the spreader is not applying fertilizer correctly, follow the following prioritization:

- Check whether the fertilizer's bulk density is correct. This is done using the scales for direct reading of bulk density (available as optional accessory, see 'Application rate').
- Also make sure that the correct bulk density has been entered in the computer.
- Make sure the correct working width is entered in the computer.
- Verify that the displayed forward speed is correct.
- Make sure the rear door setting is correct (see 'Checking the rear door and its basic setting') and whether the current setting is entered in the computer.
- Make sure that the floor belt and edge molding do not bulge outwards, as this will change the area of the door opening and thus the application rate. This can occur if they are subjected to oil, in which case they should be replaced.

IF NONE OF THE ABOVE MEASURES HELPS:
The most common remedy is to change the flow factor. If the spreader is equipped with weight cells and dynamic weighing, the flow factor will automatically change during spreading.

Otherwise, change this manually as follows:

Example:
The application rate is 6% too low. Change the flow factor from 1.00 to 1.06.
The application rate is 3% too high. Change the flow factor from 1.00 to 0.97.

OTHER FAULTS ON COMPUTER-CONTROLLED SPREADERS:
See the 'K Series ISOBUS' manual.

CALIBRATING THE SPREAD-UNIT POSITION

To verify whether the scale setting on a K spreader is correct, use the 'calibration figure' (scale 120).

Calibration figure

The 'calibration figure' must follow the plate for the downchute as shown in the center photo, and at the same time it must touch the disc and the edge of the cone beside the disc center.

If this is not the case, move the spread unit forward or backward until it is properly positioned.

Once the calibration figure is positioned as shown in the photo, set the spread-unit position at 120 (bottom photo). If this scale does not show 120, loosen the two screws holding the scale arrow and set it at 120 on the scale.

It is crucial to perform this calibration on both sides.

Position of figure at scale 120

Scale value 120

FLOOR BELT ADJUSTMENT

Normally, the belt does not need to be tightened unless it slips on the rollers and cannot keep up. In many cases, this may be necessary after the first few days of operation, as the belt stretches a little when new.
If the belt needs to be tightened, tighten the bolts on both sides of the belt one revolution at a time until the belt moves with the rollers.

The belt must run on the center of the rollers.

If the belt runs out to one side, tighten the nut on the side to which the belt is running out. Tighten the nut about one-quarter of a turn at a time.

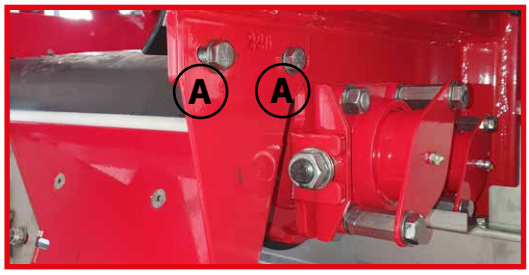
Also verify the following:

- The scraper cleans the belt at the front roller
- All belt rollers are rotating
- The guide rollers are rotating
- The snap roller is rotating
- The belt frame is squared.

Adjust the belt rollers so they run perpendicular to the stainless steel belt frame. Ordinarily, they do not need to be adjusted, unless the belt drive has been disassembled.

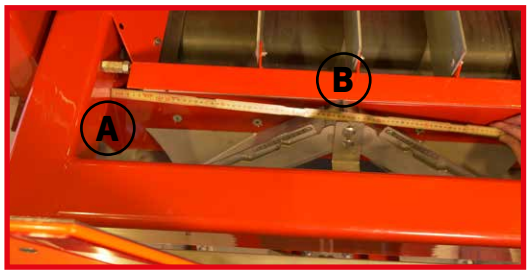
Check that the belt frame is perpendicular by laying a large square along the frame. There is a notch in front of the eccentric on either side of the frame. These two notches must be align with the angle square across the frame.
To adjust the frame, loosen all bolts and adjust the frame until it is perpendicular using the holes in the eccentric.

ADJUSTING SCRAPER AND DOWNCHUTE



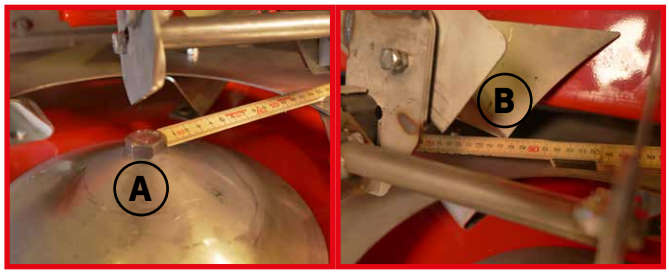
A nylon strip is attached to the rear side of the plate for the downchute which scrapes the belt clean. Adjust the plate for the downchute so the scraper fits snugly against the belt. Do this by loosening the two bolts (A) on each side. It must not be possible for fertilizer to flow between the nylon strip and the belt. When adjusting the downchute, make sure that only the nylon strip – and nothing else (i.e. no bolts, etc.) – touches the rubber belt to prevent the belt from being damaged.

The nylon strip is a wearing part and must be replaced occasionally. Its typical service life is two or three seasons.

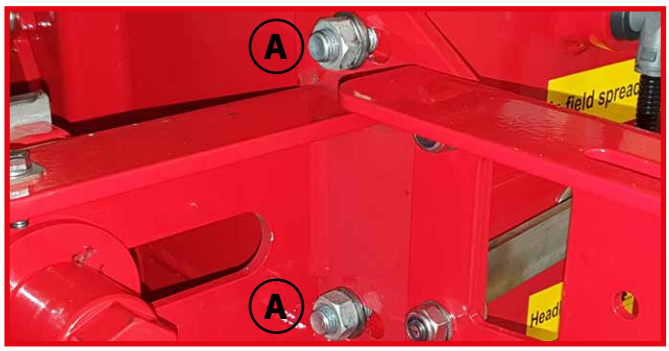


Center the downchute on the rubber belt. The distance (A=B) must be the same from the right to the left side. Measure the distance from the side element (A) to the center of the downchute (B).
If necessary, adjust the downchute by loosening the three bolts and shifting it sideways.

CENTERING THE SPREAD UNIT



The spread unit must be centered. Set the downchute at the same scale value on each side.
Make a diagonal measurement from the bolt head (A) on the cone to the bottom tip of the downchute on the opposite side (B).
This dimension must be identical when measuring from the right and from the left.



If the two measurements are not identical, center the spread unit.
Do this by loosening the two bolts (A) on each side and moving the spread unit sideways until the diagonal measurements on each side are identical.

CHECKING THE REAR DOOR AND ITS BASIC SETTING

The basic setting of the rear door must be correct in order for the spreader to apply correctly. It is possible to check the setting by setting the scale at 40 and placing two 40 mm square pipes on the belt underneath the door. If the setting is incorrect, adjust the door on its tension rod.

Set the rear door's scale at 40

Place two square pipes underneath the door on each side. The pipes should be able to move freely under the door with almost no clearance.

If the setting does not correspond, adjust the rear door up/down to the profiled pipes. Then adjust the scale using the top nuts (A) until the scale is at 40.

Make sure that the floor belt and edge molding do not bulge outwards, as this will change the area of the door opening and thus the application rate. In some cases, the molding is exposed to oil, and if it has, replace it.

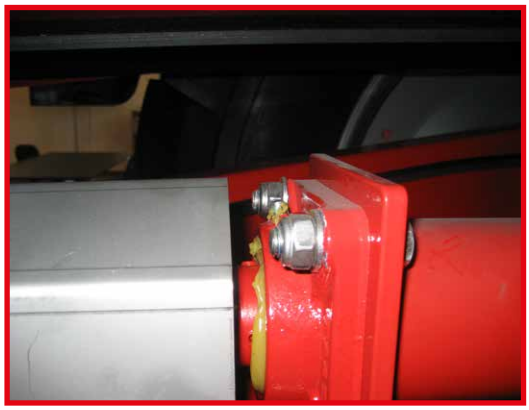
LUBRICATION POINTS

The different lubrication points on the implement are shown below. The number of operating hours for each lubricating interval is specified at each lubricating point.

> EVERY 50 HOURS

Flange bearing and 6-grooved axle towards the tractor. Disassemble the PTO shaft towards the tractor so that the 6-grooved axle can be lubricated.

Cardan shaft under the spreader (remove the stainless steel shield so lubrication is possible).



Flange bearing in the middle under the spreader.

Flange bearing at the rear axle.

PTO shaft under the spreader: disassemble the PTO shaft and lubricate the 6-grooved ends with grease.

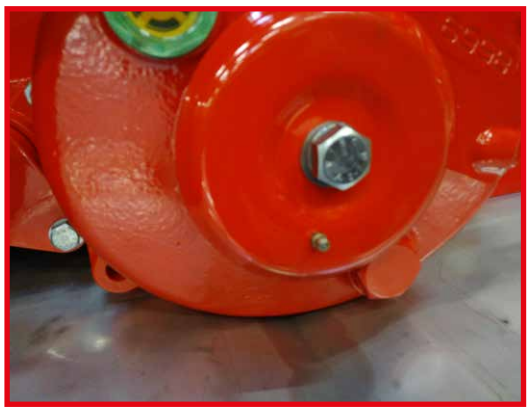
Input shaft on the spread unit.

> EVERY 100 HOURS

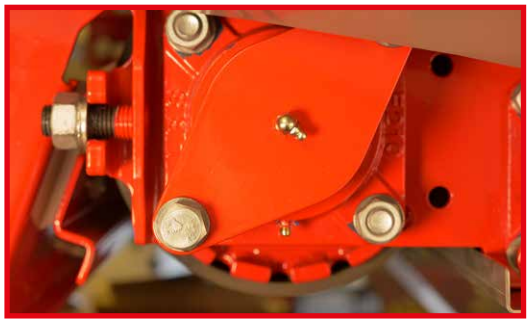
Front roller bearings (two lubrication points): it can be necessary to run the belt to access the grease nipple.

The belt's guide rollers (two lubrication points).

The belt's snap rollers (two lubrication points).



Sealing on the outside of the gearbox (computer-controlled spreaders).

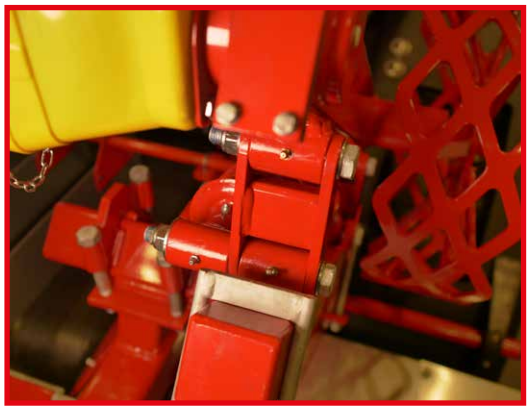


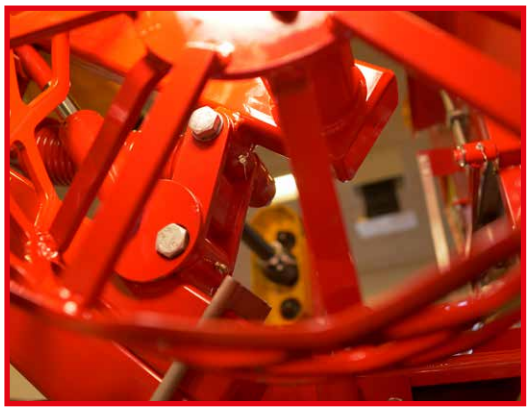
Flange bearings for the floor belt's powered rollers.

Right and left top, just below the discs.

Rear-door handle: lubricate the bushing.

> EVERY 100 HOURS, CONTINUED

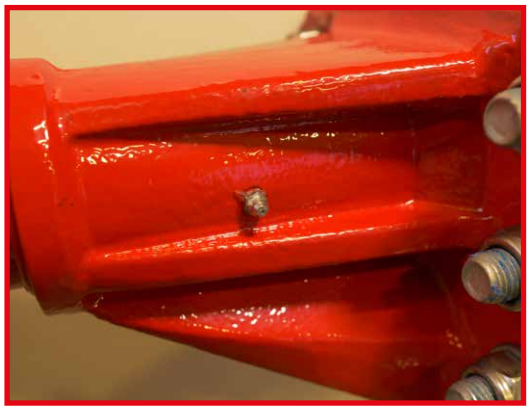




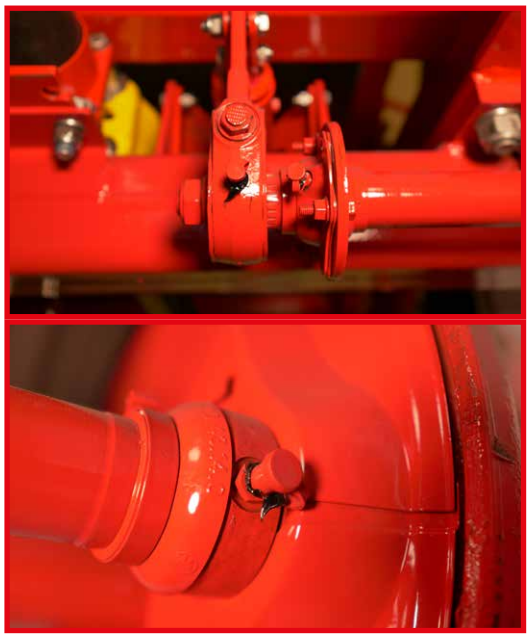
Mechanical landwheel drive: there are a total of 7 lubrication points on the mechanical landwheel drive.

> EVERY 200 HOURS

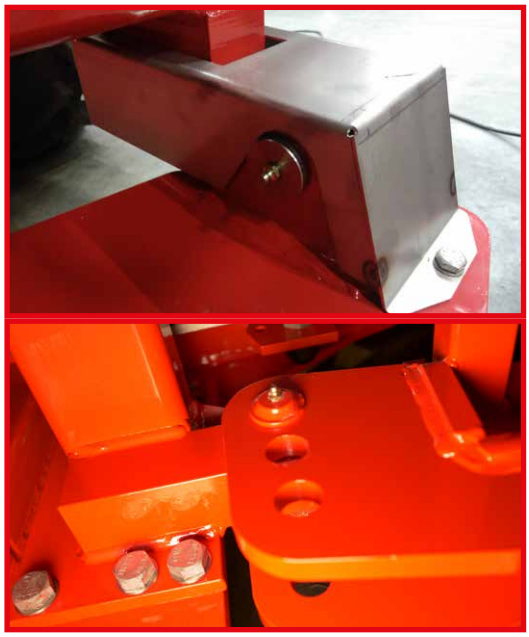
Tightening device on the spread unit.



Tow bar/ball hitch



Seals by the rear axle's brake toggles and drums.



Weight cells front and rear.

Hinges and ends of cylinder for hydraulic hopper extension.

Manual jacks.

MAINTENANCE AND LUBRICATION OF SPREAD UNIT (SPC4500-1)

It is important to keep the spread unit properly maintained/lubricated. There is a general time interval for how often the spread unit should be lubricated. Otherwise, it is important to lubricate the headland gear, etc., especially after washing the spreader and before putting the spreader into storage for winter. Also, it is important to test the headland gear's function when the spreader is attached to the tractor and after a long idle period. Check the tightness of the V-belts at regular intervals. The procedures for inspecting and maintaining the spread unit are shown below.

> V-BELT TIGHTNESS

A spring to tension the V-belts is attached to the right side of the spread unit. Tension the spring to 93–95 mm when the spread unit is cold. Check the tightness after every 20 hours of operation. Re-tighten if the spring is measures more than 95 mm.

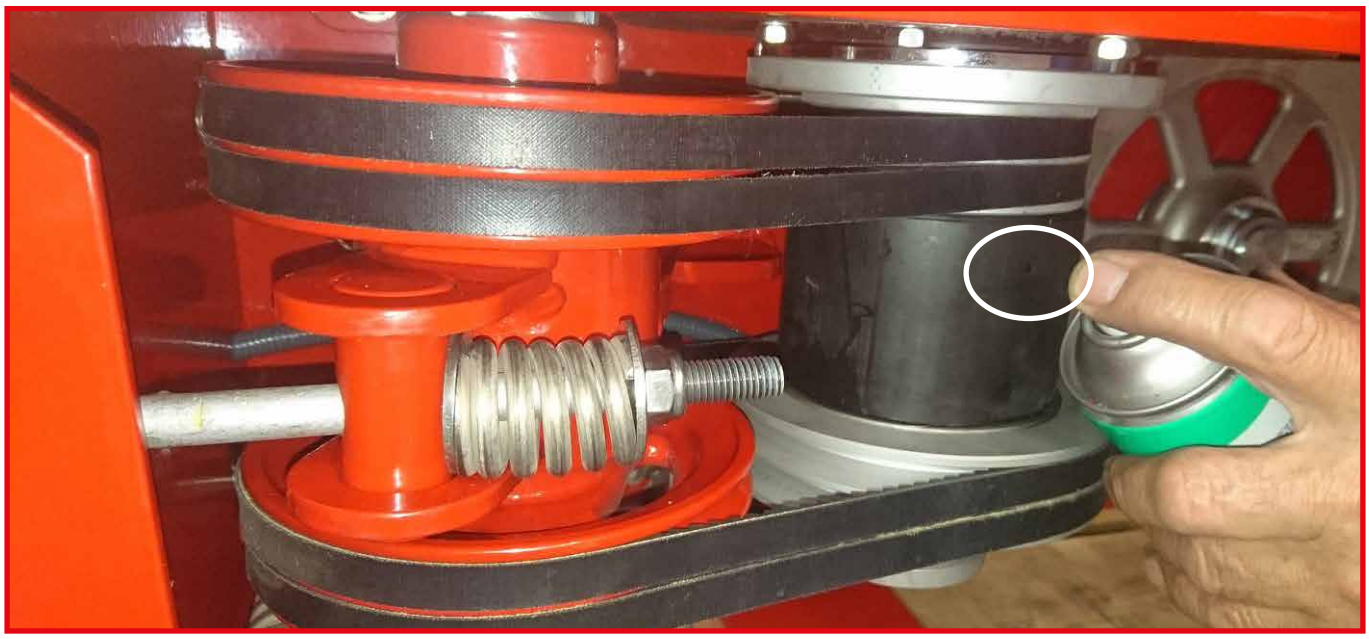
> HEADLAND GEAR FUNCTION

Check the headland gear by rotating the left disc after switching between field and headland spreading. If the headland gear is activated, the left disc must rotate more slowly than the right disc. If field spreading is active, the discs must rotate at the same speed. After switching, a distinct "clunk" sound will be heard when rotating the disc to indicate that the claw clutch is engaged.

> LUBRICATION AND ADJUSTMENT OF HEADLAND GEAR

The headland gear's claw clutch is protected by a plastic tube perforated by a 3 mm hole. Lubricate the clutch before the season begins and after every 100 operating hours by spraying a thin oil or rustproofing oil through the hole.Always lubricate if the inside of the spread unit has been washed and before putting the spreader into storage for the winter.

The spring that keeps the headland gear's V-belt tight must be tightened to a length of 43–45 mm when the spread unit is cold. Check the tightness after the first 20 hours of operation and then after every 100 hours of operation. Re-tighten if the spring measures more than 45 mm.



MAINTENANCE AND LUBRICATION OF SPREAD UNIT (SPC4500-2)

It is important to keep the spread unit properly maintained/lubricated. There is a general time interval for how often the spread unit should be lubricated. Otherwise, it is important to lubricate the headland gear, etc., especially after washing the spreader and before putting the spreader into storage for winter. Also, it is important to test the headland gear's function when the spreader is attached to the tractor and after a long idle period. Check the tightness of the V-belts at regular intervals. The procedures for inspecting and maintaining the spread unit are shown below.

> V-BELT TIGHTNESS

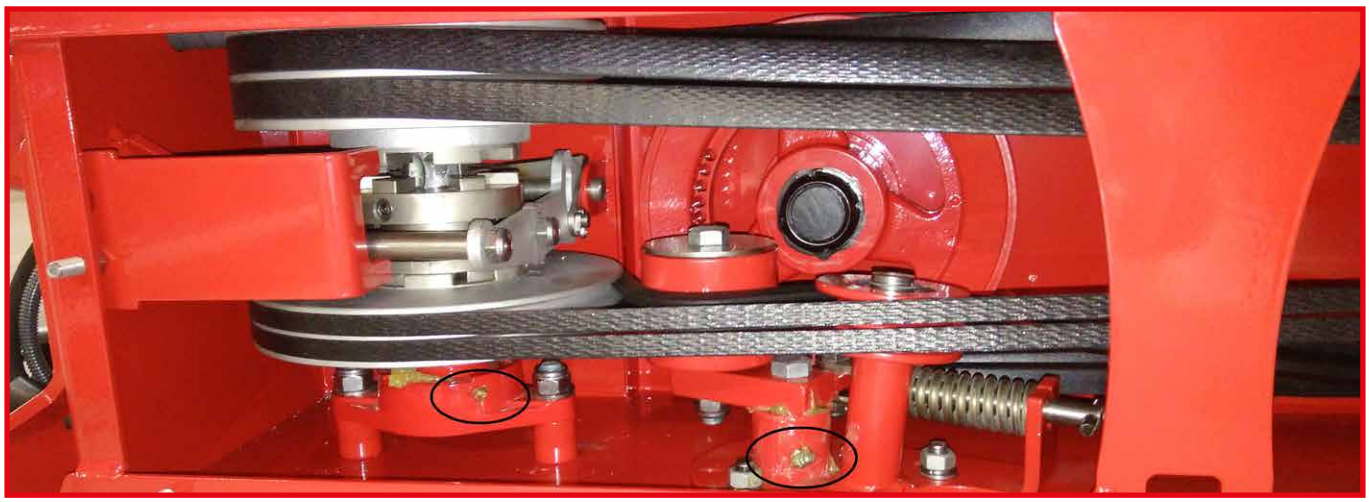
A spring to tension the V-belts is attached to the right side of the spread unit. Tension the spring to 93–95 mm when the spread unit is cold. Check the tightness after every 20 hours of operation. Re-tighten if the spring is measures more than 95 mm.

> HEADLAND GEAR FUNCTION

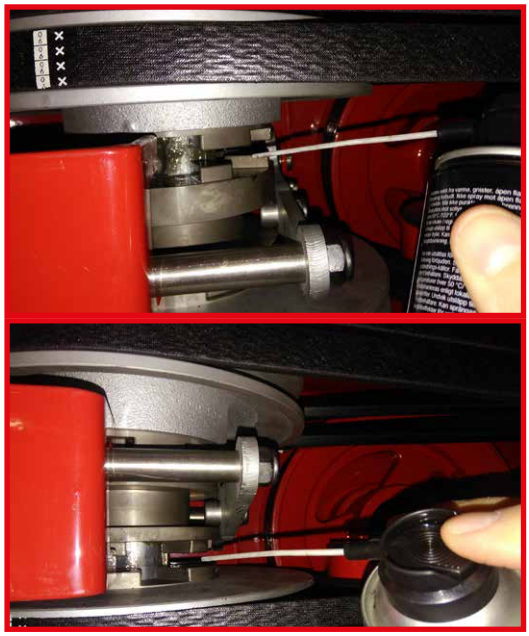
Check the headland gear by rotating the left disc after switching between field and headland spreading. If the headland gear is activated, the left disc must rotate more slowly than the right disc. If field spreading is active, the discs must rotate at the same speed. After switching, a distinct "clunk" sound will be heard when rotating the disc to indicate that the claw clutch is engaged.

> LUBRICATION

There are two lubrication points on the inside of the spread unit. These must be lubricated every 200 operating hours.
Always lubricate the spread unit after every washing of its insides and thoroughly spray the headland gear with oil.



Spray the headland gear with oil on the shaft where the claw clutch slides up and down.



Make sure that the shaft is lubricated both above and underneath the claw clutch.

> RT GEAR (COMPUTER-CONTROLLED SPREADERS)

The floor belt is operated by a gearbox.

The oil must be visible in the sight glass.

For ordinary operation, it is not necessary to replace or replenish the gear oil.

A small wing screw is attached to the top of the gearbox for manual floor belt operation. When there is oil flow from the tractor, the belt can be started by screwing in the thumb screw.

NB: screw out the screw as far as possible for normal operation.

> KB3 GEAR, LANDWHEEL DRIVE AND REVERSING GEAR

For ordinary operation, it is not necessary to replenish or replace the oil in the closed three-gear chain drive (KB3), the chain drive for the application wheel or the reduction gear.

Control the oil level if there are signs of leakage, however.

Keep the oil at a level so that the chain just reaches the oil and no more.

KB3 gear

Landwheel drive:

Reduction gear (1000/540):

> GEARBOX OIL VOLUME

Gear type	Oil volume, liters
RT 300 (K45/K65)	3.5 l
RT 500 (K85/K105)	5.5 l
RT 800 (K135/K165)	8.5 l
KB3	1.5 l
Landwheel drive bracket	0.7 l
Reduction gear (1000/540)	0.7 l

The spreader is filled with Castrol SP 150 gear oil ex works, but a similar gear oil of a similar make can also be used.

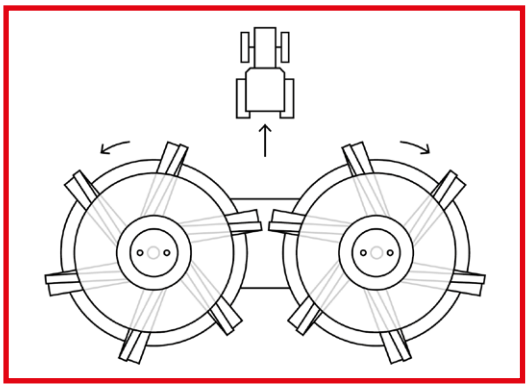
OTHER MAINTENANCE AND CLEANING

> OIL FILTER (COMPUTER-CONTROLLED SPREADERS)

The spreader's hydraulic system for operating the belts is fitted with an oil filter. The filter's replacement interval largely depends on the operating conditions, and the meticulousness with which the tractor's hydraulic system is kept clean, but it is advisable to replace the filter every two to four years.

< The oil filter is placed inside the control box on spreaders with mechanical spread units. On spreaders with hydraulic spread units, it is placed underneath the oil divider.

> SPREADING SYSTEM



Check that the spreading system is clean and in working order every day. Insufficient cleaning or worn-out spreading vanes can result in poor spreading patterns.

Certain types of fertilizer and humid weather can create coatings on downchutes and spreading vanes, so these should be inspected and cleaned regularly during operation.

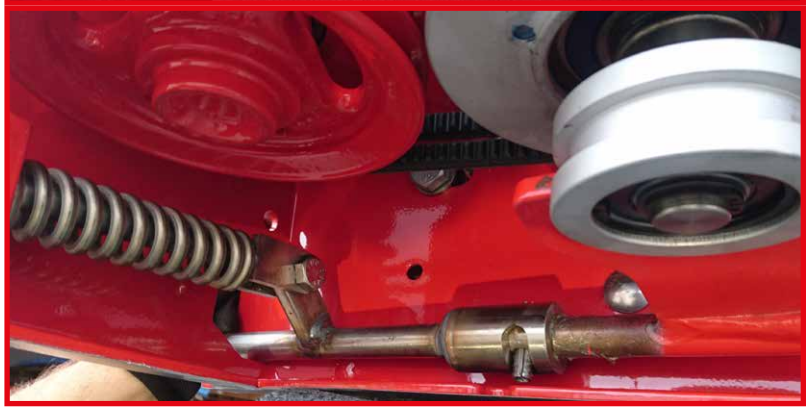
Replace the spreading vanes if holes are worn into them. **It is very important that the spreading vanes are correctly mounted on the spreading discs, as shown in the picture.**

> WASHING AND STORAGE

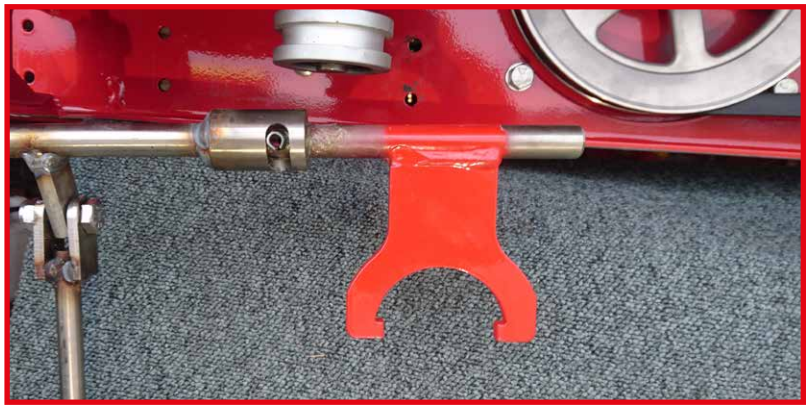
Always be careful when washing with a high-pressure washer and never spray directly on bearings, sensors, etc.

Before winter storage, clean the spreader carefully and apply a layer of rust-protective oil to the implement. **Be careful not to apply oil on the rubber belt as this will dissolve the rubber.** It is advisable to first spread a layer of cat litter or sawdust on the belt to absorb excess oil. Remember to remove the material after four or five days once all the oil has been absorbed.

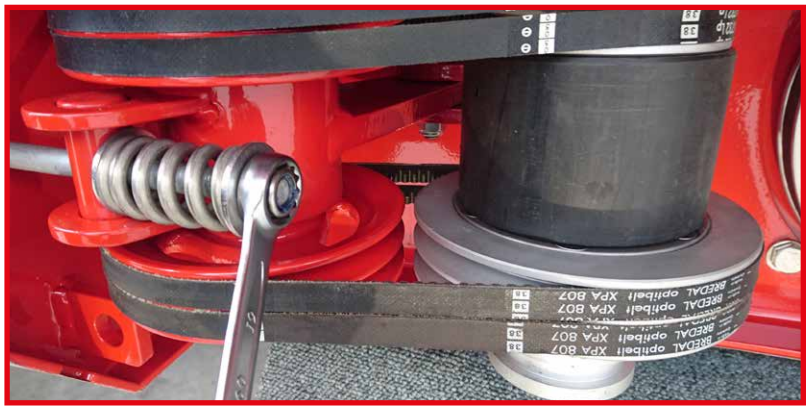
REPLACING V-BELTS ON SPC4500-1 WITH HEADLAND GEAR



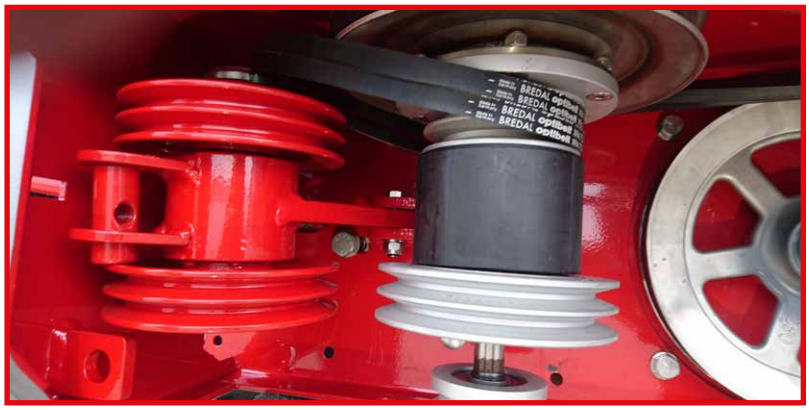
Completely disassemble the three plastic bearings for the headland gear's shifter shaft.
If the headland gear is hydraulically shifted, screw off the hydraulic cylinder from the shifter shaft.



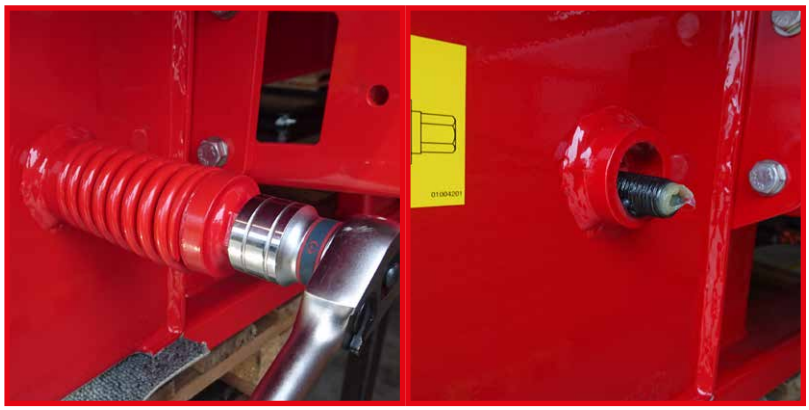
The shifter shaft with shifter fork is now clear and can be removed.



Completely unscrew the headland gear's belt tightener with spring.



Disassemble the bottom two and then the upper two V-belts on the headland gear.

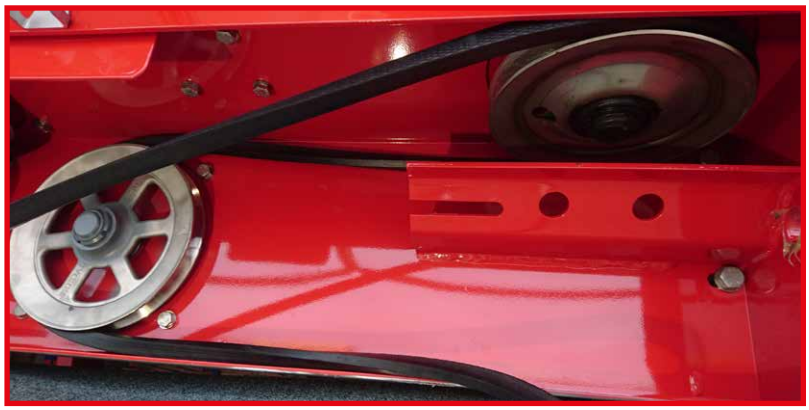


Disassemble the spring for the belt tightener.

Take off the belt tightener and remove the belt.

The spread unit is now ready to be fitted with a new belt.

First wind the belt around pulley 1.



Twist the top of the belt on pulley 1 and lead it behind pulley 2.

Twist the belt half a turn.

Wind the belt around the pulley on the headland gear.

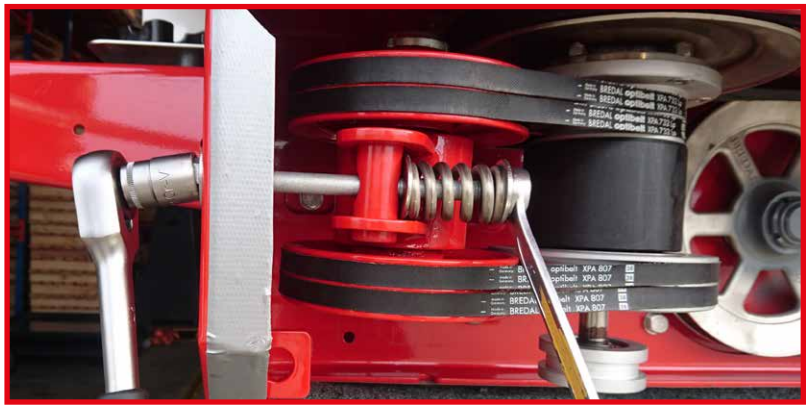
Insert the belt tighteners into the loose ends of the belt. Then attach the spring to the belt tightener.

Tighten the spring until it has a length of 91–93 mm.

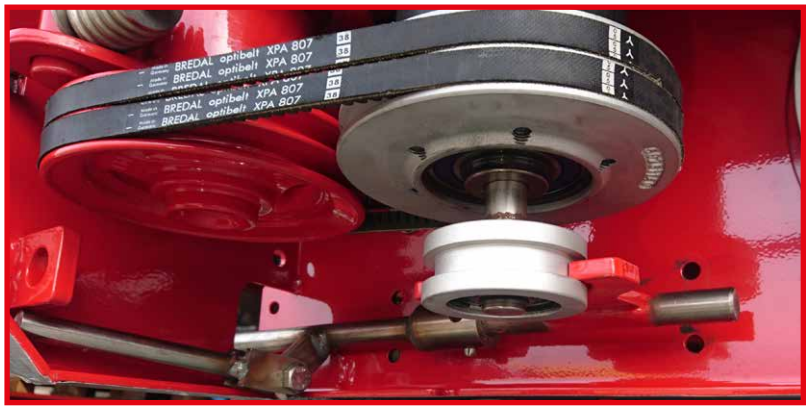
Attach the upper two V-belts to the headland gear.

Attach the bottom two V-belts to the headland gear.

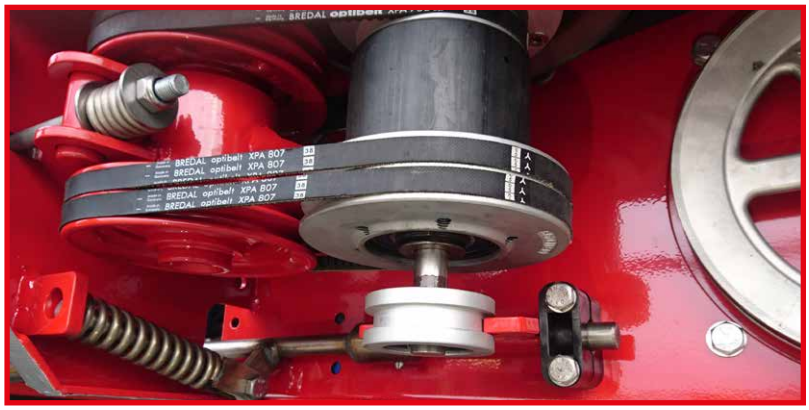
Use a screw clamp to tighten the belts for the headland gear.



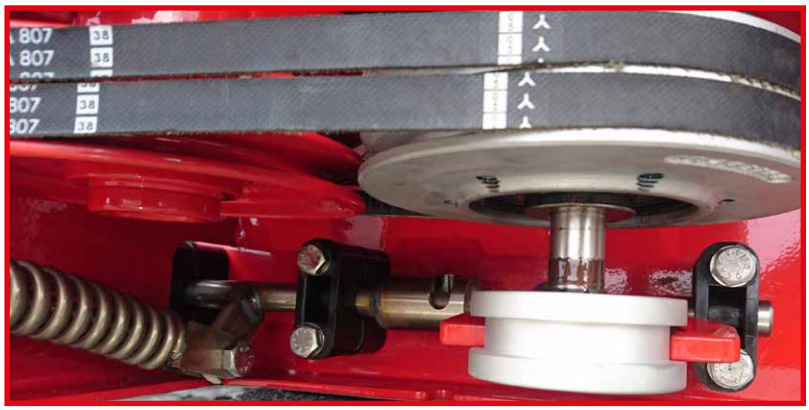
Attach the screw for the belt tightener with a spring and tighten until the spring length is 43–45 mm.



Attach the shifter shaft with shifter fork.



Attach the spring to the spring guide and insert the guide into the hole.
Loosely mount the plastic bearing furthest to the right.



Mount the last two plastic bearings. If necessary, use a crowbar or similar to move the shifter shaft into place. Tighten all plastic bearings. Make sure the shaft can still freely rotate when tightening, i.e. do not overtighten.

If relevant, complete the process by attaching the hydraulic cylinder for shifting the headland gear.

REPLACING V-BELTS ON SPC4500-2 WITH HEADLAND GEAR

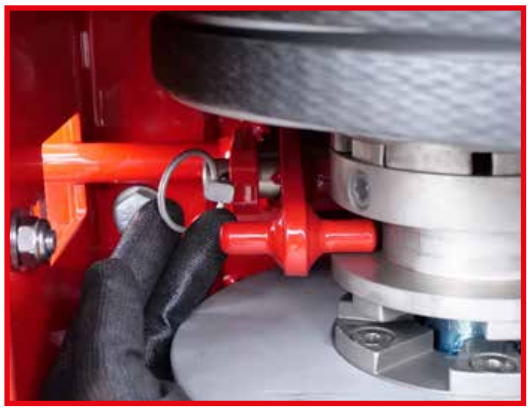
Disassemble the spring and belt tightener.

Disassemble the hydraulic cylinder or the handle for mechanical headland changeover.

Disassemble the closing plate

Disassemble the tighteners.

Disassemble the spacer tubes under the headland gear. It is now possible to remove the bottommost belts.



Remove the cotter pin and disassemble the shifter shaft.

Rotate the shifting fork and disassemble.

It is now possible to remove the top belts.

Feed the new belts around the belt disc on the input axle.

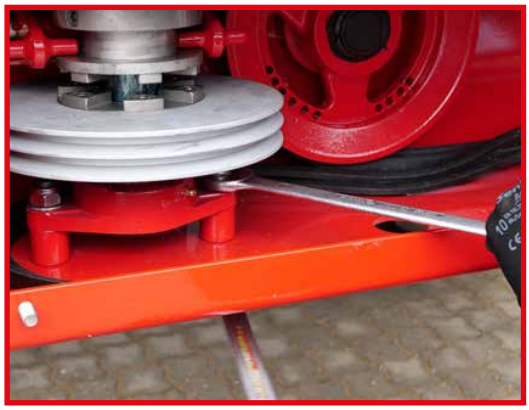
Twist the top section of the belts 90 degrees around belt disc 2 so that the innermost belt is on top.

Twist the belts 180 degrees. The top belt is still at the top.

Guide the belts under the headland gear and around the top belt discs on the headland gear.

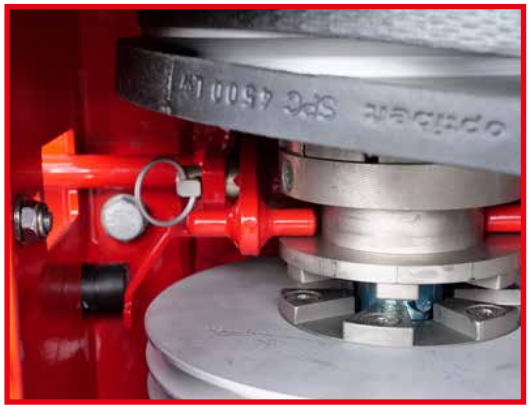
Guide the 2 small belts under the headland gear.

Attach the shifting fork and rotate it into position.



Attach the spacing tubes for the headland gear

Attach the shifter shaft and insert the cotter pin.



Attach the closing plate.
Attach the hydraulic cylinder or the handle for mechanical headland changeover.

Attach the tightener.

Attach the belts to the headland gear.

Insert the belt tightener into the loose ends of the belts. Tighten the belt tightener, and then loosen it by a half to a full turn, so the belt tightener can slide freely back and forth.

Attach the spring for the belt tightener until it has a length of 91–93 mm.

REPLACING V-BELTS ON SPC4500-1/4500-2 WITHOUT HEADLAND GEAR

Disassemble the belt tightener (belt disc 4 with fittings) before starting to attach the belt.
On spreaders with two belts, attach both of them at the same time.

1. Mound the belt on disc 1. The end must face right.

2. Lead the top of the belt on disc 1 behind disc 2.

3. Twist the belt half a turn. Lead it from disc 2 to the rear side of disc 3.

4. Insert disc 4 (the belt tightener) into the loose ends of the belt between discs 1 and 3. Then mount disc 4 with fittings and tighten the belt.

TIRE-PRESSURE TABLE

TIRE SIZE	TIRE BRAND/TYPE	RECOMMENDED TIRE PRESSURE
16.9/14 – 30	ALLIANCE 324	1.7 BAR
23.1/18–26	ALLIANCE 329	2.3 BAR
340/85 R36	ALLIANCE FARM PRO	1.6 BAR
520/85 R38	ALLIANCE FARM PRO	3.6 BAR
650/65 – 30.5	BKT/TRELLEBORG	2.0 BAR
710/50 – 30.5	TRELLEBORG T423	2.4 BAR
710/75 R32	TRELLEBORG TM2000	3.2 BAR
750/60 – 30.5	BKT/TRELLEBORG	2.0 BAR
750/60 R30.5	TRELLEBORG TWIN RADIAL	4.0 BAR
800/65 R32	ALLIANCE 360	3.6 BAR

The table values are recommended tire pressures at maximum load and 40 km/h.

In case of doubt, contact Bredal or the tire supplier.


MANUAL
K SERIES
EN

For more than 50 years, BREDAL has specialized in the development and production of high-quality lime and fertilizer spreaders for agricultural purposes. The company's goal is to build reliable machinery, precise in use, and simple to operate and maintain. In recent years, the product line has also included winter equipment such as sand and salt spreaders.

The company's interests in countries importing BREDAL machinery are represented by local importers who sell BREDAL spreaders and provide technical support and service.

BREDAL is located in Vejle, Denmark, where it has state-of-the-art production facilities with the latest technologies ensuring the production of top-quality machines.

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