COSMO

2000

I Manuale d'istruzione e parti di ricambio

GB Owner's manual - Spare parts catalogue

F Emploi et entretien - Catalogue des pieces de rechange

D Düngerstreuer

MODEL PDN 400 - 500
MODEL PDSN 600 - 800 - 1000

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GB

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GENERAL SAFETY REGULATIONS

In addition to the safety regulations given in this manual it is imperative that the general rules for safety and hygiene at work be respected at all times, as well as the public highway code.

1. Before starting at work with the machine it is necessary to become familiar with control and operating devices.

2. Before switching on the machine make sure that there is nobody within the radius of the fertilizer spread.

3. Do not handle the machine when the power take-up is rotating.

4. Do not exceed the maximum load capacity of fertilizer recommended by the manufacturer.

5. Keep the power take-up cover in good condition. You are recommended to fit a permanent protector which, as it does not rotate with the transmission, offers protection to the joints of the tractor and the machine, the transmission joints and the extension tube. **(We have a protector of the type indicated available. Please consult.).**

6. Before switching on the tractor make sure that all the protection elements are correctly assembled.

7. Before hooking -up the power take-up, switch off the tractor.

8. The counter weight of the tractor with the front counterweight is important to ensure sufficient weight on the front wheels of the tractor.

9. Insufficient fertilizer could cause serious damage to people, animals, plants and soil. Therefore, please consult your fertilizer dealer and read the instructions carefully.

DRIVING THE TRACTOR WITH THE SPREADER

1. Observe the rules concerning load limits on the front and rear axles of the tractor, making sure not to pass the maximum permissible weights.
2. On the road respect the rules with regard to lighting, signalling and safety first.
3. Do not drive long distances with the hopper full and do not place bags on top of the fertilizer in the hopper as the fertilizer may compress.
4. On sharp bends with overhanging equipment or instruments being trailed, take into consideration the radius of turn and the centrifugal force of the equipment.
5. Adjust the driving speed to the conditions of the terrain. When driving uphill, downhill or straight along a sloping surface you should avoid making abrupt turns. Never freewheel or change gear when going downhill.
6. Before leaving the tractor make sure that it cannot slip into gear accidentally by using a wedge, applying the hand-brake and leaving it in gear.
7. Before leaving the tractor lower all instruments to the ground.

TECHNICAL CHARACTERISTICS OF PENDULAR SPREADERS

Pendular spreaders are suitable for the spreading of granulated and crystallized fertilizers as well as for sowing.

The most important constructive characteristics of the pendular spreader range are the following:

- Polyester hopper which does not rust or deteriorate.
- Distributor disc, metering windows, screws etc. in stainless steel.
- The fertilizer shut-off may be carried out automatically or manually.
- Special mixer.
- Special filter screen to keep strange objects from entering and so avoiding breakdowns.
- Fast hook-up in some models.
- Pendular group in cast iron, bodywork of the group in welded steel, lubricated bearings, all of which is protected with a polyethylene casing.
- Working widths: minimum of 6 and maximum of 12 metres.

MODELS	LOAD CAPACITY IN LITRES	MAXIMUM HEIGHT METERS	MAXIMUM WIDTH METERS	MAXIMUM LENGTH METERS	WEIGHTS KG.
PDN 400	400	0,900	1,050	1,360	125
PDN 500	500	1,000	1,050	1,360	130
PDSN 600	600	0,970	1,300	1,900	165
PDSN 800	800	1,070	1,300	1,900	175
PDSN 1000	1000	1,200	1,300	1,900	180

ACCESSORIES

The following table gives the accessories which can be included in the range of pendular spreaders. Where there are double entries in the table, if a mark appears in the box corresponding to the model and the accessory, this means that it is included. Otherwise, it is necessary for you to request the item as an extra accessory.

	ACCESSORIES				
MODELS	HOPPER SUPPLEMENT	TRANSMISSION PROTECTION (SECURED)	CLOSURE WITH MANUAL LEVER	REMOTE HYDRAULIC CLOSURE	MIXER FOR POWDERED PRODUCTS
PDN 400	/	YES	YES	EXTRA	EXTRA
PDN 500	YES	YES	YES	EXTRA	EXTRA
PDSN 600	/	YES	YES	EXTRA	EXTRA
PDSN 800	YES	YES	YES	EXTRA	EXTRA
PDSN 1000	YES	YES	YES	EXTRA	EXTRA

RECOMMENDATIONS FOR A GOOD FERTILIZER SPREAD

h the technology used in the pendular spreaders we are able to obtain good performance vork and a correct distribution of fertilizer and seeds. In order that this could be possible, necessary to pay attention to the following points:

Use fertilizer in perfect condition; a damp or sticky fertilizer cannot be spreaded correctly.

Mount the spreader on the tractor using the hook-up devices supplied by the manufacturer, making sure that they are in the correct position and at a height of 70-80 cm. before beginning the fertilizer spread.

Insert the power take-up when the tractor is turning over slowly. After some time accelerate to obtain the required revolutions per minute (540 r.p.m.).

Open the metering windows when the required speed and revolutions in the power take-up are reached, making sure that these remain stable while the tractor moves forward.

Always carry out a test run for the kg/ha you wish to spread before working with the machine.

It is important to try to spread the fertilizer on days when there is no wind as this helps to guarantee a better distribution.

MAINTENANCE AND CLEANING

ore starting the cleaning of the machine, lubrication or any other maintenance work the tor motor and the power take-up must be switched off.
thermore, it is necessary to wait until all the rotating parts have come to a complete stop.

maintenance and cleaning follow the recommendations outlined below:

After each season carry out a complete check-up of the machine; paying particular attention to the discs and metering windows and more general attention to the lubrification and care of the pendular group.

Before using the machine check over all the screws of the group, making sure that they are in perfect condition. It is important that the screws for the adjustment of the angle range of the spreader tube are always well tightened.

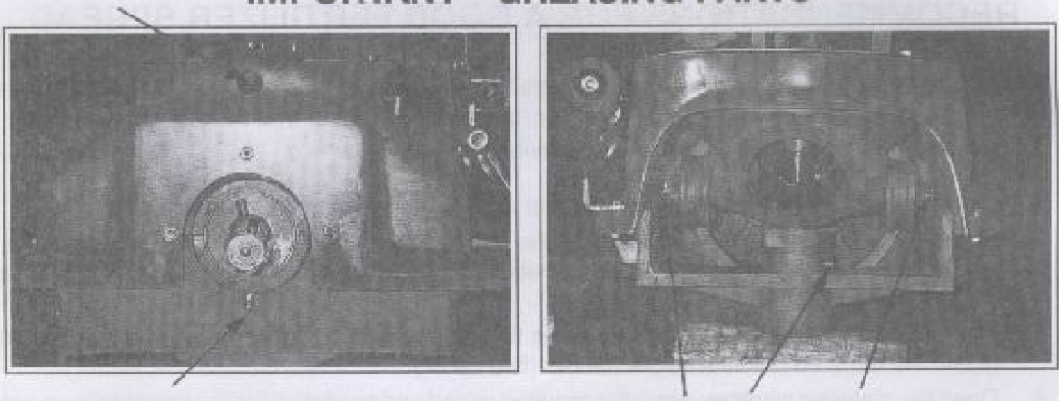
At the end of each day' s work remove any remaining fertilizer from the hopper, disengage the mixer and clean the hopper, the mixer, the disc and metering windows with water. After this, oil all the lubrification points.

Fertilizers are generally quite corrosive and for this reason it is important that no particles of fertilizer remain in the machine for long periods of time.

At the end of the fertilizing season, after washing and drying the machine, tighten all the screw and check all the operations of the machine.
Lubricate all the sliding or rotating parts of the machine with grease. Once all this has been done the machine can be covered with a fine layer of oil, provide for greasing it, as shown in the following page.

Do not wait until you need to use the machine. Repair or replace parts which are worn out or broken, in this way your machine will always be ready to use.

IMPORTANT - GREASING PARTS



DISTRIBUTION ERRORS

Errors are generally easy to detect and can be grouped in the following manner:

Operation errors

a. Incorrect number of revolutions in the pto shaft
b. Incorrect assembly of the spreader
c. Inadequate forward speed
d. Incorrect width of word
e. Height of spreader not adjusted
f. Inconsistent driving of the tractor
g. Defect of cleanliness of disc, metering windows, cone, pendular tube, etc.

Errors arising from unsuitable fertilizer

a. The batch of fertilizer does not correspond to the specification. If it is lumpy the spread is reduced.
b. Soggy fertilizer. Avoid travelling long distances with the hopper full.
c. Do not use damp or sticky fertilizer. Fertilizer must be protected from dampness during storage.

Errors due to maladjustment of the machine

a. Badly adjusted opening of the metering windows. Check the Kg/ha required to be spread.
b. One of the distribution parts is worn out.

CONTROL OF THE FERTILIZER QUANTITY TO BE SPREADED

Tables are giving approximate indications of the kilos per hectare to be spreaded in relation to the width of work and the forward speed of the tractor for each position of the measurement index, can be found at the end of this manual. However, these are approximate values obtained with a particular type of fertilizer, with specific humidity, size of grain and weight, etc. which may undergo variations between one batch and another. This is why we recommend checking over the quantity of fertilizer to be used per hectare for each lot before commencing the spreading. In this way it is possible to obtain a correct, exact and economic measurement in the majority of cases.

Hving justified the need to do this check we will outline the procedure by means of some examples.

Although the procedure to be followed for fertilizer and seeding is very similar we will outline two examples so as to be completely clear.

FERTILIZER

Imagine the following example:
you wish to spread 237kg/ha of fertlizer at a speed of 8 km/h with a widht of 12 metres.

In order to ensure that the quantity to spread is what we want, it is necessary to take the following steps:

1. Remove the two screws and nuts joining the pendular tube and remove the tube so that opening the iron cone is completely free.

2. To position the index in the approximate position, consult the tables at the end of this manual. It can be seen that for the example given, we must position the index at approximately 6.5.

3. With the following formula we calculate the kilos which must fall through the opening of the iron cone, which we previously revealed, in the time of one minute.

$$P = \frac{V \times A \times C}{600}$$

P = kilos per minute
V = speed in km/h
A = Width of work in metres
C = Measurement in kg/hectare

For the example given we have:

$$P = \frac{8 \times 12 \times 237}{600} = 38 \text{ kg./minute}$$

4. When this index is positioned at 6.5, activate the lever, so that the metering windows of the regulating discs open.

5. By placing a container under the metering windows we can collect the fertilizer which would fall during the time of one minute.

6. Using scales, weigh the fertilizer previously collected. This should weigh 38 Kg like the example given.

7. If the fertilizer does not weigh exactly 38 kg. it is necessary to move the index so as to open or close the metering windows and repeat the previous process the number of times necessary until the estimated weight is reached.

To operate the index it is necessary to remove the pressure on the hydraulic cylinder which is done by activating the hydraulic distributor value of the tractor.

SEEDS

With our spreader it is possible to undertake sowing tasks with grasses, legumes, etc. with great precision and performance.

Given that these seeds have a low specific weight and a reduced size, the test previously described would not give a correct adjustment of the machine.

To carry out correct sowing with the spreader, begin by positioning the index in the lowest position using the divisions which go in stages of 0.25 in order to obtain a small opening in the metering windows.

We calculate the width of work at less than 12 meters as an efficient width with seeds, because of their low specific weight, will be between 6 and 8 metres.

Supposing that we wish to sow alfalfa at a dose of 18 kg/ha, a tractor speed of 8 km/h and 6 metres working width.

To check the dose, position the metering mechanism at the same opening and keep in this position for 5 minutes with the tractor at the normal motor revolutions. The kilos of seed collected will have to be calculated using this formula:

$$P = \frac{8 \times 6 \times 18 \times 5}{600} = 7.2 \text{ kg.}$$

Speed 8 km/h
Width of work 6 m
Dose 18 kg./Ha
Time 5 minutes

Kilos in the weighing 7.2

Should the theoretical weighing (7.2) not coincide with the reality it will be necessary to modify the position of the index and repeat the process outlined above until the kilos calculated using the formula are obtained.

HOOK-UP AND SWITCHING ON THE SPREADER

HOOKING-UP THE MACHINE

The machines after the 600 litre model are fitted with fast hook-up (Fig. 1) devices which consist of a bar (A) and two clamps (B). To hook-up to the tractor, first position the bar (A) on to the lower arms of the tractor and secure using the two security bolts.

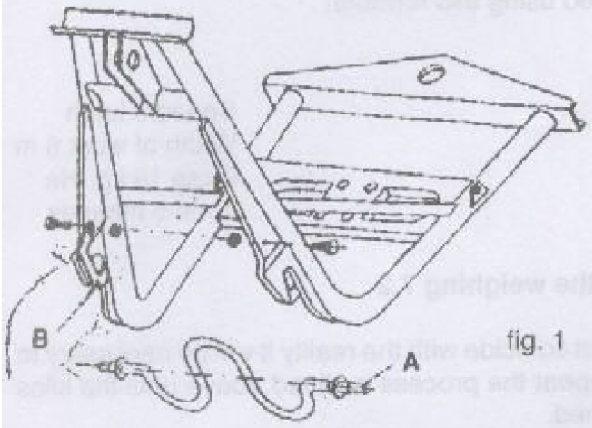


fig. 1

To connect the machine, lift the clamps (B) of the fast hook-up and insert the bar, which is already secured to the arms of the tractor, underneath. (Fig.1).

The lower arms of the tractor should be well tightened to keep the spreader from swinging when the tractor is in movement.

The positioning of the third point is done using a bolt and safety catch. For the correct assembly of the spreader it must be set between 70 and 80 cm from the ground, measured in the field with the hopper full. (Fig. 2).

The power take-up must be connected at the end and when disengaging the spreader it must be the first to be removed .

It is important that the power take-up is not rotating when the spreader is raised or lowered.

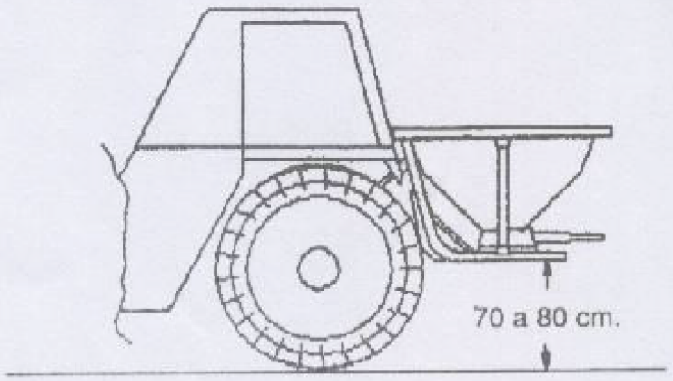


fig. 2

CHECKING THE LENGTH OF THE POWER TAKE-UP

Once the machine is hooked on to the tractor, raise the spreader as high as possible and position the two end pieces of the power take-up, without inserting them into the tractor and group bearings. In this position check to see that the length of the power take-up is suitable. The tubes should overlap when possible a minimum of 150 mm and must have a minimum margin at the ends of 25 mm. (Fig. 3).

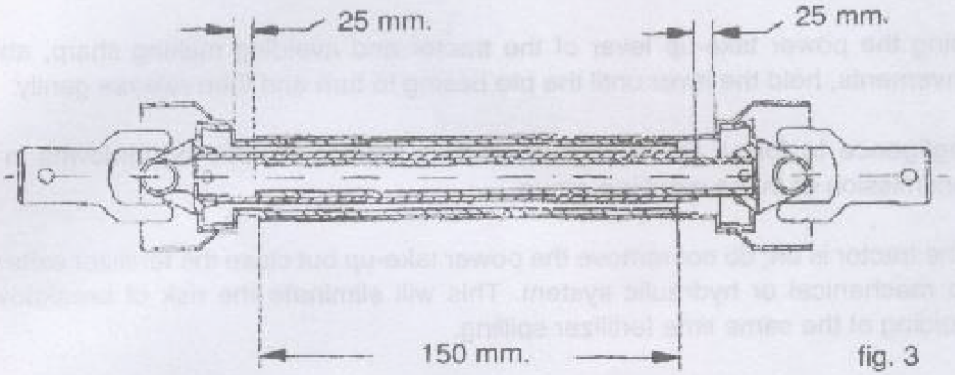
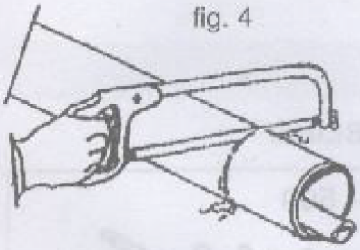


fig. 3

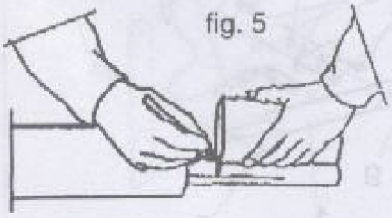
fig. 4



If the power take-up is too long, cut the same length off the two protecting tubes until the correct length is obtained (Fig. 4).

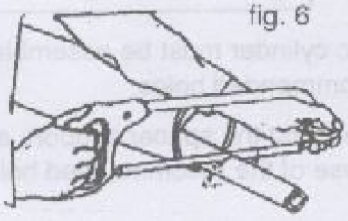
Afterwards, the same length is to be removed from the two profile tubes (Figs. 5 and 6).

fig. 5



Once this has been done, remove the dust and any rough edgings and apply grease to the outer part of the inner tube (Figs. 7 and 8).

fig. 6



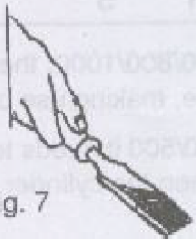


fig. 7

fig. 8

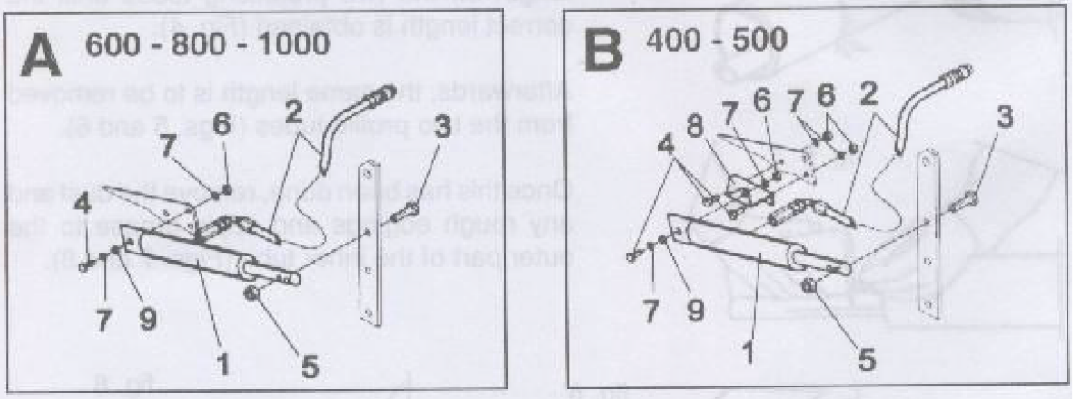
SWITCHING ON

The following instructions for handling the spreader must always be taken into consideration given their importance for the correct operation of the machine.

- Do not insert the power take-up with the tractor accelerating. In other words, lower the revolutions of the motor to a minimum (motor ticking over).
- Using the power take-up lever of the tractor and avoiding making sharp, abrupt movements, hold the lever until the pto besing to turn and then release gently.
- Negligence to follow these instruction may lead to serious breakdowns in the transmission or in the machine group.
- If the tractor is on; do not remove the power take-up but close the fertilizer exits with the mechanical or hydraulic system. This will eliminate the risk of breakdowns, avoiding at the same time fertilizer spilling.

VERY IMPORTANT

HYDRAULIC SYSTEM ASSEMBLING



A) On models 600/800/1000, the hydraulic cylinder must be assembled as shown in the above table, making use of the recommended holes.

B) On models 400/500 it needs to assemble first the spacer support, as shown in the above table, then the cylinder making use of the recommended holes.

DISTRIBUTION CURVE AND METHOD OF SPREADING FERTILIZER IN THE FIELD

DISTRIBUTION CURVE

The width of work with pendular fertilizers varies from 6 to 12 metres, for which we vary the position of the camshaft above the groves of the wheel (Fig. 9).

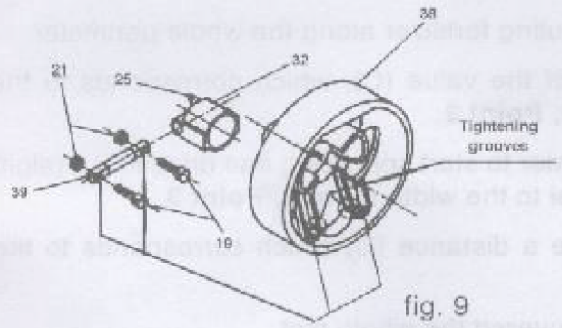


fig. 9

Generally the machines leave the factory positioned for the pendular tube to rotate at the maximun angle (12 mts of width of work). However, if you wish to modify the widht of work you can do so between 6 and 12 metres. This is done by loosening the cone head screws (19) and sliding the position of the axle (39) on the tightening grooves marked on the wheel (38).

The distribution curve is symmetrical, spreading a greater quantity of fertilizer in the central part than the sides, as can be observed in Figure 10.

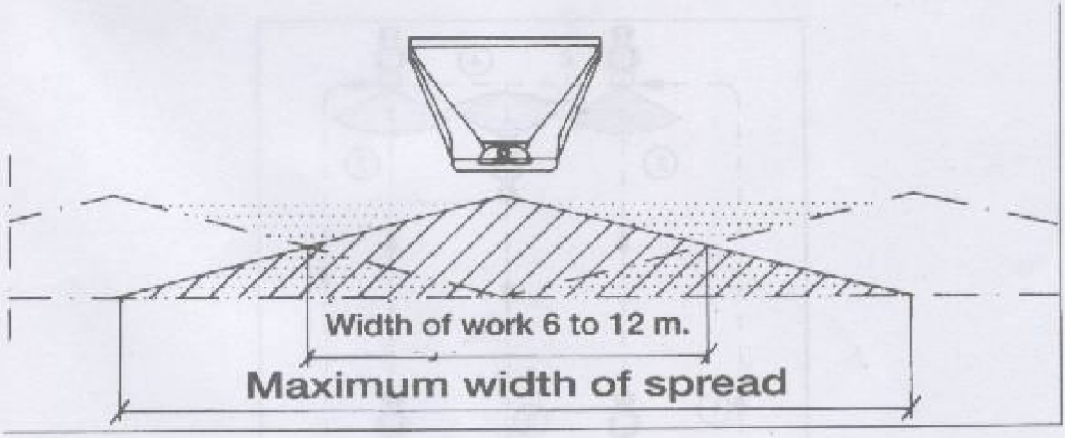


fig. 10

This distribution forces us to overlap fertilizer at the ends, in this way balancing out the quantity of fertilizer and obtaining pratically uniform distribution throughout the plot.

For the widths of work given in the tables the overlaps are included and therefore involves the movement of the tractor between runs.

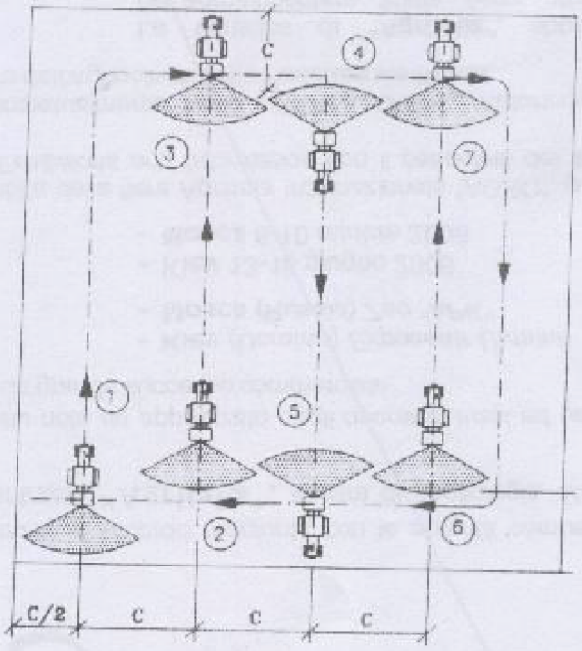
METERING TABLES FOR FERTILIZERS

Approximates values

Km/h		6			8			10			12		
V/min.		540			540			540			540		
		70-80 cm.			70-80 cm.			70-80 cm.			70-80 cm.		
		m			m			m			m		
INDEX	Kg/min.	6	9	12	6	9	12	6	9	12	6	9	12
1	0,06	1	1	1	1	1	-	1		-	1	-	-
1,5	0,4	7	4	3	5	3	2	4	3	2	3	2	1
2	1,4	23	15	11	17	11	8	13	9	6	11	8	5
2,5	3	49	33	24	37	24	18	29	20	15	24	16	12
3	5	84	57	42	64	42	32	50	34	25	42	28	21
3,5	7,5	125	83	62	94	62	47	75	50	37	62	42	31
4	11,5	191	128	96	144	96	72	115	77	57	96	64	48
4,5	15	248	165	124	186	124	93	148	99	74	124	83	62
5	21	333	222	167	250	167	125	200	133	100	167	111	84
5,5	26	433	289	217	325	217	162	260	173	130	217	144	108
6	32	533	355	267	400	267	200	320	213	160	267	178	134
6,5	38	633	422	317	475	317	237	380	253	190	317	211	158
7	42	700	467	350	525	350	262	420	280	210	350	233	175
7,5	48	800	533	400	600	400	300	480	320	240	400	267	200
8	56	933	622	467	700	467	350	560	373	280	467	311	233
8,5	64	1.067	711	533	800	533	400	640	427	320	533	355	266
9	74	1.233	822	617	925	616	462	740	493	370	617	411	308
9,5	82	1.367	911	683	1.025	683	512	820	547	410	683	455	342
10	88	1.467	978	733	1.100	733	550	880	586	440	733	489	366
10,5	102	1.700	1.275	850	1.275	850	675	1.080	720	540	900	600	450
11	108	1.800	1.200	900	1.350	900	675	1.080	720	540	900	600	450
11,5	122	2.034	1.355	1.017	1.525	1.016	762	1.220	813	610	1.017	678	508
12	140	2.334	1.555	1.167	1.750	1.166	875	1.400	933	700	1.167	778	584

DISTRIBUTION OF FERTILIZER IN THE FIELD

There are various ways to distribute fertilizer in the field; however the manufacturer recommends the distribution be carried out as indicated below:

1. Position the tractor at the beginning of the plot at a distance (C/2) equal to half of the working width to be used. **Point 1.**
2. Go around the whole plot, distributing fertilizer along the whole perimeter.
3. Move the tractor at a distance of the value (C), which corresponds to the width of work desired (6 to 12 m), **Point 2.**
4. Open the metering windows in order to start spreading and drive in a straight line to distance (C) which is equal to the width of work, **Point 3.**
5. Turn the tractor round and move a distance (C) which corresponds to the width of work, **Point 4.**
6. Repeat point (5) until you have covered the whole plot.

NOTE: When tractor movement being carried out, the metering windows must be closed so as not to waste fertilizer.