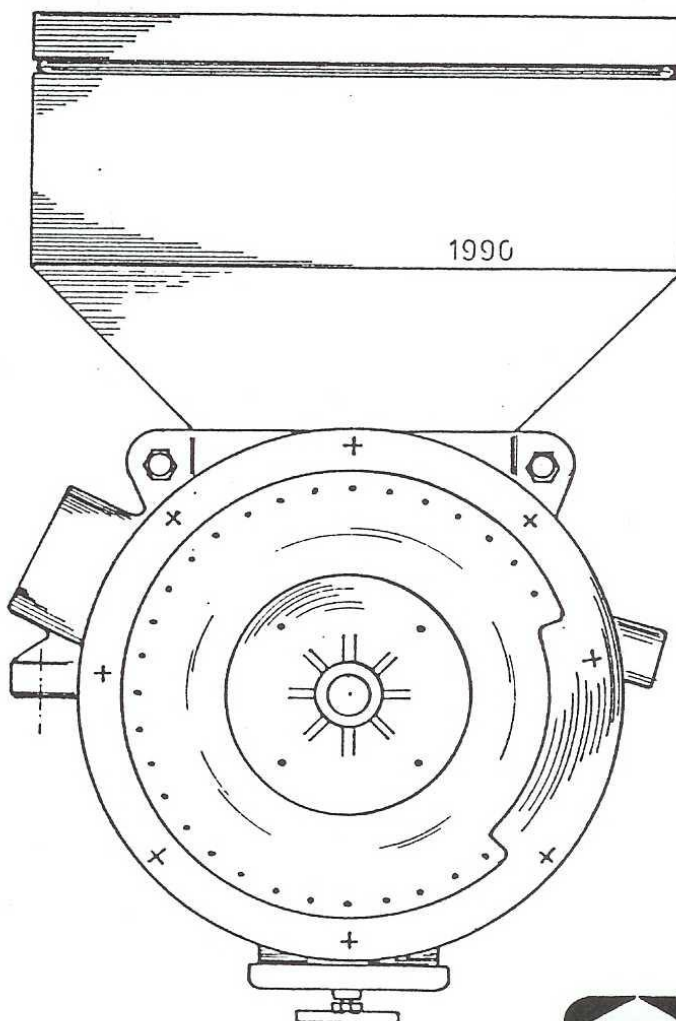


user - manual

PRÉCI - 2000

PRECISION DRILL



K KONGSKILDE

	INTRODUCTION	1
1	TECHNICAL DATA	2
2	WORKING PRINCIPLE	4
3	THE SOWING ELEMENT	5
4	SAFETY PRECAUTIONS	7
5	PREPARING THE MACHINE FOR FIELD OPERATION	8
6	DRILLING	13
7	FERTILIZER EQUIPMENT	16
8	MAINTENANCE	18
9	TROUBLE SHOOTING	22
10	ACCESSORIES	23

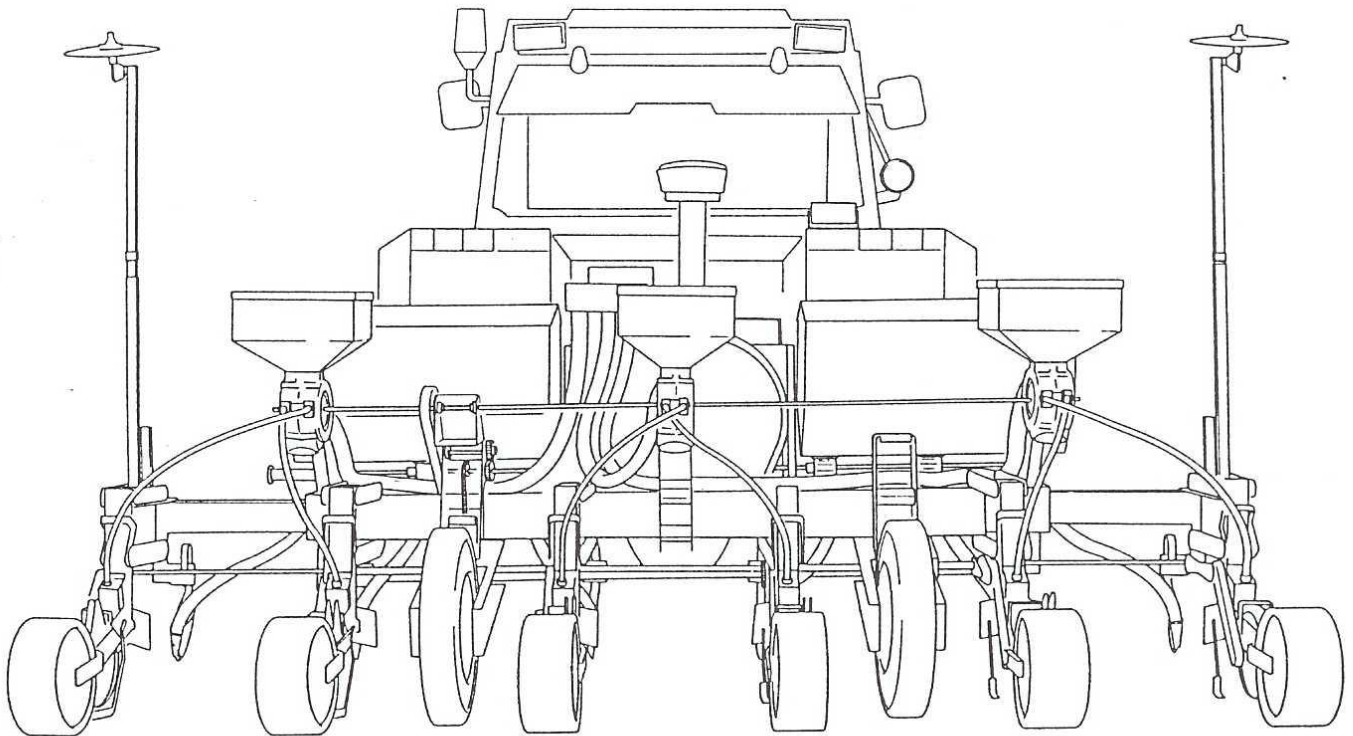
INTRODUCTION

The Précí-Sem precision drill has been designed to lay all kinds of seed for precision drill at regular distance and depth in the seedbed.

The following basic versions are available:

Model 04-30-RR:	4-rows maize seed drill.
Model 06-30-RR:	6-rows fieldbeans seed drill.
Model 06-30-FR:	6-rows beets seed drill.
Model 06-40-RH:	6-rows maize seed drill, hydraulically telescopic.
Model 08-37-RR:	8-rows bean seed drill.
Model 12-37-FR:	12-rows peas seed drill.

From these basic models the machines can be converted for other kinds of seed.



06-40-RH, 6-rows hydraulically telescopic

TECHNICAL DATA

MODEL	04-30-RR maize	06-40-RH maize hydraul.	06-30-RR field- beans	08-37-RR beans	12-37-FR peas	06-30-FR beets
Width (cm)	300	395/300	300	380	380	300
Depth (cm)	185	185	185	185	155	155
Height (cm)	205	205	205	205	205	205
Weight (kg)	585	850	725	850	1050	650
Nr. of rows	4	6	6	8	12	6
Row distance (cm)	65-85	75-80	30-55	30-40	22-25	30-55
Drill depth (cm)	0-8	0-8	0-8	0-8	0-8	0-8
Intermediate steps (cm)	1	1	1	1	0,5	0,5
Contents seed-hopper (l) per 2 rows	57	57	57	57	57	57
Contents (l) fertilizer hopper total	360	360	340	360	-	-
Wheels	400 x 16	500 x 15	400 x 16	500 x 15	500 x 15	400 x 16
Tyre pressure (bar)	2,0	2,0	2,0	2,0	2,0	2,0
Overpressure (bar)	0,065	0,065	0,08	0,065	0,065	0,05
3-Point susp.	cat. II	cat. II	cat. II	cat. II	cat. II	cat. II
Sowing distances (cm)	7,5-17	7,5-17	7,5-17	5,0-12,0	6,2-13,6	9,5-20,5
P.T.O.	1 3/8" - 6			Option: 1 3/8" - 21		
Speed	540 rpm			Option: 700 rpm/1000 rpm		

INFORMATION

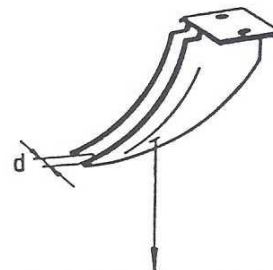
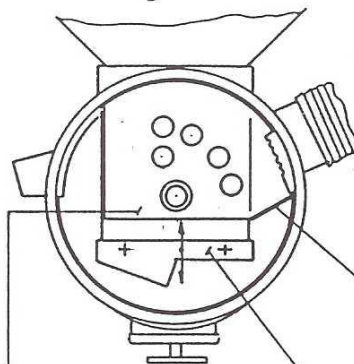
Kinds of seed

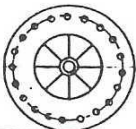
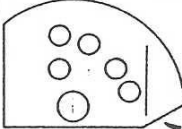
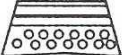
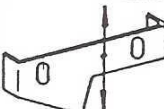
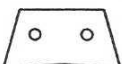
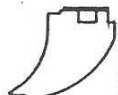
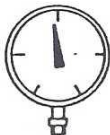
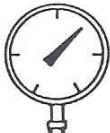
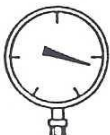
Seed discs

Sowing unit

Pressure

Seed coulter



	seed disc	15.000.096/097	15.000.736	15.001.499/500	15.000.099	coulter	pressure
							
Sugarbeet pill	15.000.517 30 x 2,2 - 213	x	↓	x	d = 7 mm 15.000.185		
Sugarbeet round	15.000.579 30 x 2,0 - 215						
Sorghum	15.001.266 60 x 2,5 - 213						
Sunflower	15.000.580 18 x 2,8 - 214,5	x	↑	x	d = 15 mm 15.000.186	50 mbar	
Colza	15.001.362 90 x 1,1 - 215	x	↓	x	15.000.185 d = 7 mm		
Sojabbeans	15.000.902	x		-	d = 15 mm 15.000.186		
Peas < 200 gr/1000 grains	60 x 4,2 - 212		↓				
Peas > 200 gr/1000 grains	15.000.924 60 x 4,5 - 210	x	↓	-	d = 15 mm 15.000.186		
Peas 85 - 200 gr/1000 gr	15.000.995 45 x 4,8 - 210	x		-	d = 15 mm 15.000.186		
Peas < 85 gr/1000 grains	60 x 3,0 - 212 15.001.300		↓				
Beans < 325 gr/1000 grains	15.000.578 36 x (3x5) - 214	x	↑	-	d = 15 mm 15.000.186		
Lupin	36 x 5,2 - 210 15.001.264	x	↑	-	d = 15 mm 15.000.186		
Beans < 140 gr/1000 gr	15.001.537 60 x 3,2 - 213	x	↑	-	d = 15 mm 15.000.186		
Soft maize	15.000.518	x	↑	-	15.000.186 d = 15 mm ou d = 19 mm 15.000.749	65 mbar	
Beans / MAIZE > 350 gr/1000 grains	36 x 4,5 - 213						
Field beans	15.000.581 36 x 5,2 - 210	LAUSE MEENERS	↑	-	d = 19 mm 15.000.749		
						80 mbar	

2

WORKING PRINCIPLE

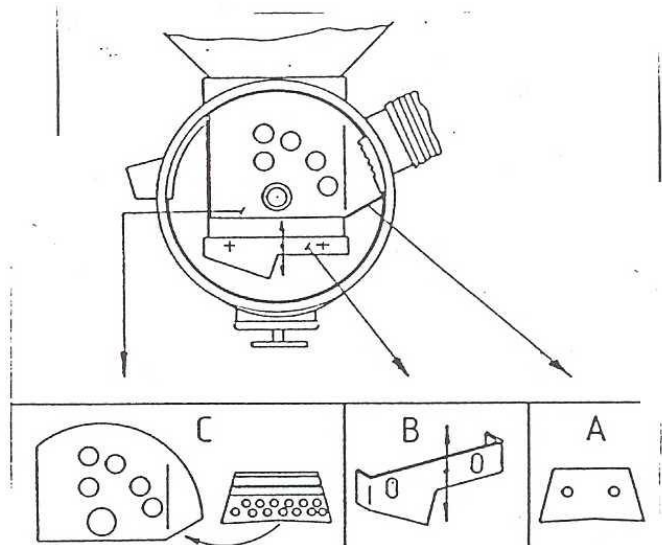
The task of the separator, the heart of each precision drill, is to take the seeds one by one from the seed stock in order to create the possibility of drilling the seeds separately. The unique separator of the Précisem is capable of drilling two rows.

The separator is connected to a blower. This blower gives an overpressure in both the separator and the seedbox. Synthetic sowing plates, mounted on each side of the separator (surrounded by seed holes) take care of the seed metering. The sowing plates move against the sealing flanges. They close the separator on both sides. The sowing plates are driven by the left drive wheel of the machine.

At the bottom of the separator the sowing plate takes the seed out of the seed stock (owing to the overpressure). Then, the rotating sowing plate causes the seeds to pass a fixed selector. This selector pushes away the extra seed from the holes in order to get only one seed per hole.

When the holes are opposite the flow-out opening the holes are closed by the sealing flanges on the outside of the sowing plate.

The seed is then caught in an airstream. By means of air as a medium of transport the seed is blown to the furrow.



For an accurate seed metering system with all kinds of seed various sowing plates are available. Each plate has its own code (ref. technical data). Because of the large differences in the weight of 1000 grains some adjustments of the sowing unit are necessary, see table page 3. The adjustments can be as follows:

- * mount or remove plate A under between the airstream plates
- * remove or mount airstream plates C
- * change the length of the channel (plate B on both sides of the channel is adjustable in height)

Different sowing distances can be obtained by changing chains and gear wheels.

The separator blows the seed at a high speed to the seed furrow. For catching and pressing the seed in the furrow we need a special coulter and seed pressure wheel (see drawing).

By means of a special path in the coulter the seed is blown into the furrow under the seed pressure wheel. This wheel catches the seed and presses it into the underground. In this way the seed gets into good contact with the moist underground. This leads to fast germination of the seed.

Most of the time it is not necessary to drill as deep as with the conventional sowing systems. Our system presses the seeds into the underground, while the conventional systems drop the seeds onto the underground.

3 THE SOWING ELEMENT

The sowing element of the Précis-Sem knows two basic types:

- 3.1 A sowing element for coarse seeds
- 3.2 A sowing element for fine seeds

For special crops combinations of both elements can be made.

3.1 Sowing element for coarse seeds

A Parallellogram

Each sowing element is suspended in a parallellogram in order to follow the field contours independently of each other. This provides optimal drilling depth.

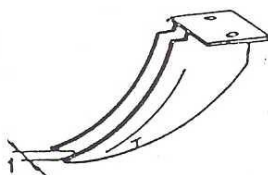
The parallellogram can be spring loaded in order to achieve better penetration into heavy soils.

B Clod deflector

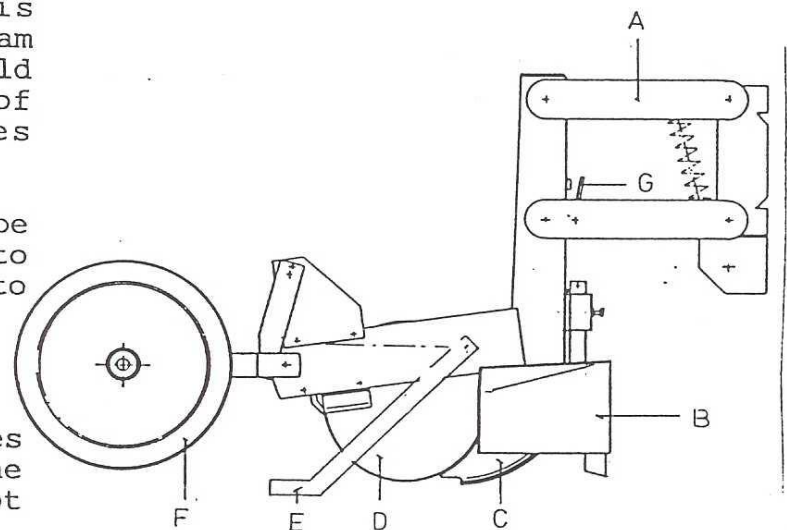
The clod deflector removes clods and stones out of the drilling track. This is not mounted as standard.

C Coulter

The drill coulter makes the seed furrow and puts seed in the centre of the furrow. There are three kinds of coulters, for the coarse kinds of seed, and for the fine kinds of seed (specially for sugar beets). Dimension d depends on the size of the seed. 7 Mm for fine seeds, 15 mm for middle seeds and 19 mm for coarse seeds. See also the information on page 3.



dl = 7 mm
dl = 15 mm
dl = 19 mm

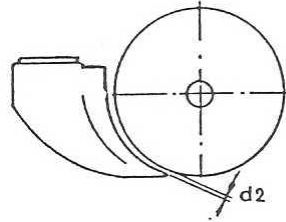


for sugarbeet and other small seeds
for mais, sunflower, beans a.s.o.
for fieldbeans

Coulter adjustment

The distance between the lowest part and the seed pressure wheel must be:

- fieldbeans : $d_2 = 4 \text{ à } 5 \text{ mm}$
- mais : $d_2 = 3 \text{ mm}$
- beans : $d_2 = 3 \text{ mm}$
- sunflowers : $d_2 = 2 \text{ à } 3 \text{ mm}$
- sugarbeet : $d_2 = 2 \text{ mm}$



D Seed pressure wheel

The seed pressure wheel presses the seed into the bottom of the furrow. In this way the seed comes into contact with the moist soil. The seed pressure wheel is driven by the right drive wheel to prevent the seed pressure wheel from slipping. A rubber scraper keeps the wheel clean.

E Seed coverer

The seed coverer covers the furrow with a loose layer of soil. The coverer can be spring loaded.

F Soil pressure wheel

The soil pressure wheel presses the soil alongside the furrow. On top of the seed remains a loose layer of soil. The soil pressure wheel is also used for depth adjustments. Farmflex soil pressure wheels can also be supplied.

G Parallellogram locking

During transport the parallellogram can be locked.

3.2 Sowing element for fine seeds

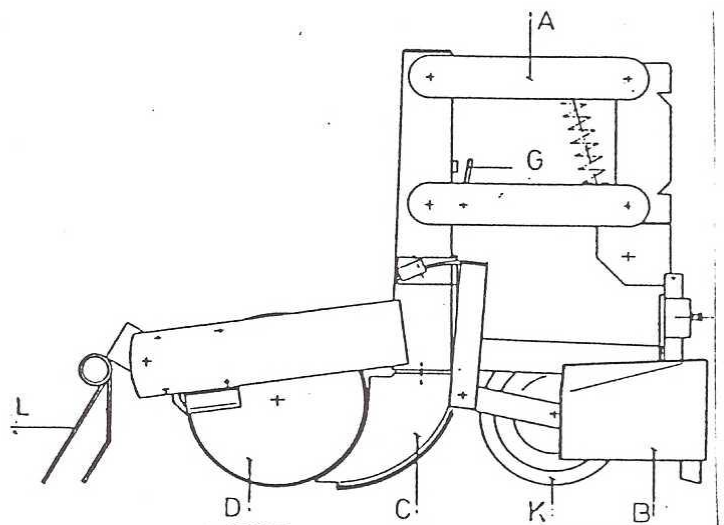
This sowing element is almost equal to the one described in section 3.1. There are some adaptations for a more accurate depth adjustment.

K Depth wheel

The drilling depth is adjusted by means of the depth wheel in front of the coulter. This wheel also compresses the loose seed bed in front of the drill coulter.

L Spring tines

The spring tines behind the coulter put a minimal loose layer of soil over the seed. Consequently oxygen and heat can reach the seed fast, which is necessary for fast germination. It is also possible to mount farmflex soil pressure wheels instead of spring tines. These wheels can be spring loaded.



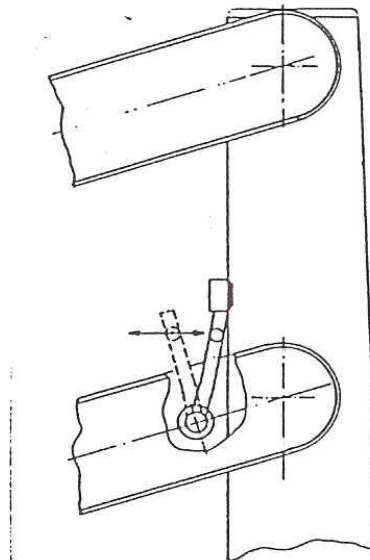
4 SAFETY PRECAUTIONS

- 4.1 The power-take-off must be equipped with a safety guard. This safety guard must be provided with a safety chain to prevent rotation.
- 4.2 **ATTENTION:**
If the tractor is executed with a p.t.o.-shaft with brake, the p.t.o.-shaft of the machine must be executed with a freewheel clutch. This is to avoid damaging of V-belt and bearings.
- 4.3 Always start the p.t.o.-shaft at the idle speed of the engine. To protect the drive a slip coupling can be mounted (15.000.970/1 3/8" - 6).

NOTE:

When carrying out repairs or alterations to the machine, always make sure to switch off the power-take-off first.

- 4.4 Make sure that all guards are always in the right position and that they are safely secured when the machine is in operation.
- 4.5 The blower is designed for 540 r.p.m. of the p.t.o.-shaft. Never run with a higher r.p.m. as this may cause damage to the blower and transmission. Pulley 3SPZ71 is available to work with the p.t.o. in 1000 r.p.m. position (max. 700 r.p.m.).
- 4.6 During transport the parallellograms must always be locked (see drawing). They will hang steadily when driving on bumpy roads.
- 4.7 In case of transport over roads the markers must be locked in vertical position. The scrapers are collapsed, within the 3 m transport width.



- 4.8 Always lower the support legs in front of the tool bar when the machine is disengaged from the tractor. Put a pin in each support leg.

5 PREPARING THE MACHINE FOR FIELD OPERATION

5.1 Set fertilizer coulters

The fertilizer coulters are set in the highest position. Place the machine on a flat, concrete floor with 1 cm boards under the machine supports. Provisionally set the fertilizer coulters in such a way, that the lower side touches the floor. The fertilizer coulters must be mounted at least 5 cm from the sowing line to prevent "burning" of the plants.

Shorten the fertilizer hose at the top to get a straight line to the coulters, to guarantee the flow of fertilizer.

5.2 Sowing unit

Check if the right seed discs are mounted in the unit (see info page 3).

If the discs have to be changed, it has to be done as follows:

- a Loosen the fixing bolts of the sealing rings a few turns with a hexagon 5 mm screwdriver. Turn the sealing rings in such a way, that the large holes are under the heads of the bolt and take the rings off the sowing unit. Check the rings and if necessary inject teflonspray.
- b Take the sowing discs off the shaft.
- c Check if plate A is mounted under the air inlet. The plate is mounted with clips in the holes under between the airstream plates.
- d Check the position of the tube extensions. The partitions have slotted holes and can be mounted in top or bottom position.
Compare the settings in the sowing unit and the sowing discs with the information of page 3 and adjust these if necessary.
- e Place the sowing discs on the shaft and mount the locking pins.
- f Place the sealing rings over the heads of the fixing bolts, with the grooves turned to the sowing unit. Turn the rings until it blocks at the end of the groove. Tighten the bolts with the hexagon screwdriver.

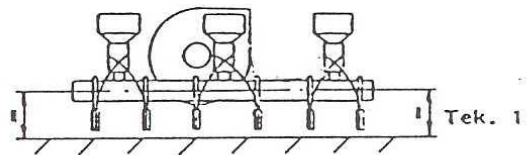
5.3 Coupling

Connect the machine to the tractor. When doing this the first time make sure that the power-take-off has the right length.

IMPORTANT:

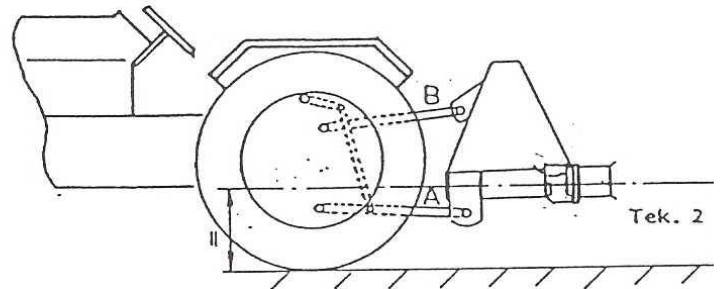
When lifting the machine on the threepoint suspension the p.t.o.-shaft is shortened. When the p.t.o.-shaft is still too long, damage may be caused to both the tractor and the blower. So, always check the length of the p.t.o.-shaft beforehand. If necessary, adjust the length. De-burr tubes and remove chips. Be sure you leave no chips in the telescopic pipes, as these can cause fast wear of the p.t.o.-shaft pipes. Apply grease to both telescopic pipes.

Adjust the tractor's lower links so that the tool bar will hang in horizontal position (see drawing 1).



Adjust the top link of the tractor so that the seed drill will be in horizontal position (see drawing 2).

This is very important for a correct (horizontal) position of the drill coulter. The drill coulter has to move in horizontal position through the seed furrow. Always check this after a few meters of drilling.



5.4 Markers

The markers can be used for both track marking and centre line marking.

Machines with a work width of more than 3 m have disc markers. Other machines are equipped with scrapers. If the marker track is not clear enough, you can increase the marker disc angle. Slotted holes in the connection allow this.

The scrapers can be made heavier with weights, if necessary. Provisionally set the markers at the figured distances: measure the distance between the outside sowing element and the centre of the tractor wheel. Add one row distance and you have the distance between the outside row and the marker line. For middle marking you have to add half the distance between the tractor wheels. Do this separately for the right and the left marker. Check the marker distance in the field.

5.5 Sowing element

a Row distance

With the division marked on the tool bar it is easy to adjust the correct row distance. If you loosen one bolt, the sowing elements can be moved onto the tool bar. Make sure that the tracks of the tractor fit the row spacing, so check the position of the three point hitch and the track width as well.

If, when sowing with a converted machine, sowing elements are in transport position, because of sowing with fewer rows, the horizontal drive chain must be disconnected from the seed pressure wheel to prevent the drive from damage and unnecessary wear.

b Spring load

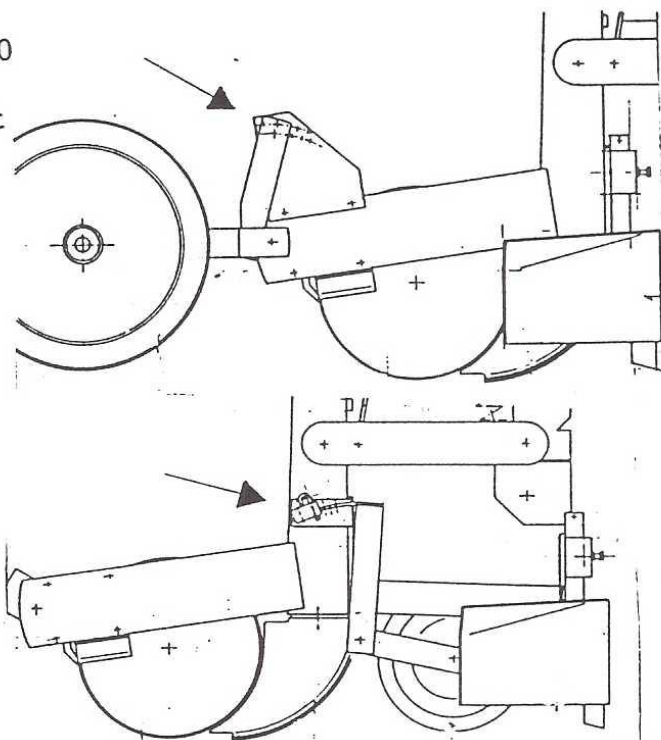
The parallelograms, the coverers and the farmflex soil pressure wheels (accessories for sugar beets) can be spring loaded.

NOTE: Only use spring load if it is really necessary (hard soil conditions). Too much spring load can decrease the plant germination.

c Sowing depth adjustment

Remove the boards under the machine supports. Place one sowing element with the coulter on the floor and choose a depth adjustment, that corresponds with the desired sowing depth. Set all sowing elements in the same position.

On the sowing element with depth adjustment behind the seed coulter the sowing depth is adjustable by means of the adjustable soil pressure wheel. It is an easy pin-hole construction (see drawing).



The sowing depth is adjustable from 0 - 8 cm by steps of 1 cm.

On the sowing element with depth adjustment in front of the seed coulter the sowing depth is adjustable by means of the adjustable depth wheel. Also with an easy pin-hole construction (see drawing). This gives a very accurate depth adjustment. For fine seeds this is very important. The sowing depth is adjustable from 0 - 8 cm by steps of 0,5 cm.

ADVICE:

Adjust the sowing depth of each element accurately; a correct adjustment of the sowing depth conduces to a faster germination.

c Clod deflector

Mount a clod deflector if the circumstances require so. The clod deflector should only push aside clods and stones and should not move soil. By loosening one bolt it is possible to adjust the stone deflector in vertical position.

5.6 Shear pin

The shear pin protects the drive mechanism of the sowing discs and the seed pressure wheels against too much overload. The shear pin is fitted at the beginning of the drive near the drive wheel. When the shear pin breaks, first of all check the cause and repair this before mounting a new shear pin.

5.7 Adjustment of sowing distances

Subjoined table gives a view of the amount of seeds that belongs to a certain sowing distance (cm) and to a certain row distance (cm).

	22,5	25,0	37,5	40,0	45,0	50,0	55,0	60,0	65,0	70,0	75,0	80,0
3,0	1666600	1481400	1333300	888800	833300	740700	666600	606000	555500	512800	476100	444400
3,5	1428500	1269800	1142800	761900	714200	634900	571400	519400	476100	439500	408100	380900
4,0	1250000	1111100	1000000	666600	625000	555500	500000	454500	416600	384600	357100	333300
4,5	1111000	987600	888800	592600	555500	493800	444400	404000	370300	361800	317400	296300
5,0	1000000	888800	800000	533300	500000	444400	400000	363600	330500	307700	285700	266600
5,5	909000	808000	727200	484800	454500	404000	363600	330500	303000	279700	259700	242400
6,0	833300	740700	666600	410200	384600	341800	307600	279700	256400	236600	219700	205100
6,5	769200	683700	615300	371400	351100	317400	285700	259700	236600	219700	205100	192300
7,0	714200	634900	571400	380900	357100	323300	296300	266700	242400	219700	204000	190400
7,5	666600	592500	533300	355600	333300	312500	277700	250000	227200	205100	190500	177800
8,0	625000	555500	500000	333300	313700	294100	261400	235300	213900	196100	181000	166600
8,5	588200	522800	470500	444400	416700	370400	333300	303000	277800	256400	238100	222200
9,0	555500	493800	444400	410200	384600	341800	307600	279700	256400	236600	219700	205100
9,5	526300	467800	421000	380900	357100	323300	296300	266700	242400	219700	204000	190400
10,0	500000	444400	400000	363600	341800	317400	285700	259700	236600	219700	205100	192300
10,5	476100	423200	380900	351100	323300	296300	266700	242400	219700	204000	190400	177800
11,0	454500	404000	363600	323300	296300	266700	242400	219700	204000	190400	177800	166600
11,5	434700	386400	347800	311900	285700	259700	236600	219700	204000	190400	177800	166600
12,0	416600	370300	333300	296300	277700	250000	227200	205100	190500	177800	166600	156250
12,5	400000	355500	323300	285700	266600	242400	219700	204000	190400	177800	166600	156250
13,0	384600	341800	307700	277700	259700	236600	219700	204000	190400	177800	166600	156250
13,5	370300	329200	296200	266600	242400	219700	204000	190400	177800	166600	156250	147100
14,0	357100	317400	285700	258000	235300	213900	196100	181000	168100	156900	147100	138800
14,5	344800	306500	275800	248000	225000	202000	181800	165200	151500	138800	128200	119000
15,0	333300	296200	266600	235300	213900	196100	181000	165200	151500	138800	128200	119000
15,5	322600	286700	258000	225000	202000	181800	165200	151500	138800	128200	119000	110000
16,0	312500	277700	250000	225000	202000	181800	165200	151500	138800	128200	119000	110000
16,5	303000	269300	242400	216200	193800	171400	151100	136000	125000	114300	103900	95200
17,0	294100	261400	235300	208000	185200	164600	148100	133300	121200	111100	102600	93300
17,5	285700	254000	228500	202000	179600	158700	142900	129900	119000	109900	102000	95200
18,0	277700	246900	222200	197500	175000	154300	138900	125400	114900	106100	98500	92000
18,5	270200	240200	216200	193800	171400	151100	136000	125000	114300	103900	95200	88900
19,0	263100	233900	210500	188000	165500	145000	129600	117600	107000	98000	90500	83300
19,5	256400	227900	205100	183000	160500	140000	124600	112600	102000	92500	84000	78400
20,0	250000	222200	200000	181800	159300	138800	123400	111400	101000	92500	84000	78400
20,5	243900	216800	195100	173000	150500	130000	114600	102600	93200	85500	78900	73300
21,0	238000	211600	190400	169000	146500	126000	110600	98600	88700	81300	75000	69700
21,5	232500	206700	186000	163000	140500	120000	104600	92600	82700	75300	69000	63700
22,0	227200	202000	181800	159300	136800	116300	100400	88400	78500	71100	64800	59500
22,5	222200	197500	177700	156800	134300	113800	97900	85900	76000	68600	62300	57000
23,0	217300	193200	173900	151900	130400	109900	94000	82000	72100	64700	58400	53100
23,5	212700	189100	170200	149400	127900	107400	91500	79500	69600	62200	55900	50600
24,0	208300	185100	166600	145000	123500	103000	87100	75100	65200	57800	51500	46200
24,5	204000	181400	163200	140800	119300	98800	82900	70900	61000	53600	47300	42000
25,0	200000	177700	160000	138800	117300	96800	80900	68900	59000	51600	45300	40000
25,5	196000	174200	156800	134300	112800	92300	76400	64400	54500	47100	40800	35500
26,0	192300	170900	153800	130400	108900	88400	72500	60500	50600	43200	36900	31600
26,5	188600	167700	150900	126600	105100	84600	68700	56700	46800	39400	33100	27800
27,0	185100	164200	148100	123500	102000	81500	65600	53600	43700	36300	30000	24700

SOWING DISTANCE (CM)

NUMBER OF PLANTS PER HECTARE

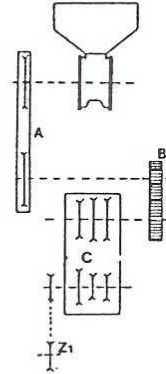
The sowing distance can be adjusted by means of alteration in the drive. This gives maximally 12 different sowing distances. A certain distance implies a certain amount of plants per hectare (amount of seeds/hectare).

The sowing distance is adjustable by means of changing the three drive sets A, B and C (see drawing).

A The chain wheel cassette. On the cassette is at one side number 1 and at the other side number 2. Make sure that the number is always readable (upright) when mounting the cassette (this in order to have the tensioner always in correct position).

B The gear wheels. They are coloured red (26 teeth) and black (29 teeth).

C A chain wheel combination set. When you are standing behind the seed drill, the left gear combination is C1, the middle combination C2 and the right combination C3.



Chain wheel Z1, supplied as an accessory, gives the possibility of another area of sowing distances. The chain wheel can be mounted on the shaft of the left drive wheel.

This table gives a view of the sowing distance adjustment (the same table can be found on the lid of the seed hopper).

ZAAI AFSTANDEN SOWING DISTANCES DISTANCES DE SEMIS KORNABSTANDEN	Aantal cellen zaaischijf Number of holes in disc Nombre d'alvéoles de la roue Anzahl der Zellen des Flügelrades	Instelling tandwiel aandrijving/Selection of gearbox/Sélection de la boîte de distance/Einstellung des Getriebekastens			Aantal cellen zaaischijf Number of holes in disc Nombre d'alvéoles de la roue Anzahl der Flügelrades					
		Z = 25 t standaard			Z = 37 t					
		90	60	45	36	30	18			
		Z	Z	Z	Z	Z	Z			
		25	25	25	25	25	25			
		3,1	4,7	6,2	7,8	9,3	15,6			
		3,5	5,2	7,0	8,7	10,4	17,4			
		3,9	5,8	7,7	9,7	11,6	19,4			
		4,3	6,5	8,7	10,8	13,0	21,6			
		4,7	7,1	9,4	11,8	14,1	23,6			
		5,0	7,4	9,9	12,4	14,9	24,8			
		5,3	7,9	10,5	13,2	15,8	26,3			
		5,5	8,3	11,1	13,8	16,6	27,7			
5,9	8,8	11,7	14,7	17,6	29,3					
6,2	9,2	12,3	15,4	18,5	30,8					
6,6	9,8	13,1	16,4	19,7	32,8					
6,9	10,3	13,8	17,2	20,7	34,4					
		Instelling tandwiel aandrijving/Selection of gearbox/Sélection de la boîte de distance/Einstellung des Getriebekastens			Aantal cellen zaaischijf Number of holes in disc Nombre d'alvéoles de la roue Anzahl der Zellen des Flügelrades					
					Z = 21 t					
					90	60	45	36	30	18
					Z	Z	Z	Z	Z	Z
					21	21	21	21	21	21
					3,7	5,6	7,4	9,3	11,1	18,5
					4,1	6,2	8,3	10,3	12,4	20,7
					4,6	6,9	9,2	11,5	13,8	23,0
					5,2	7,7	10,3	12,9	15,5	25,8
					5,6	8,4	11,2	14,0	16,8	28,1
					5,9	8,8	11,8	14,7	17,7	29,5
					6,3	9,4	12,5	15,7	18,8	31,4
6,6	9,9				13,2	16,5	19,8	32,9		
7,0	10,5	14,0	17,5	20,9	34,9					
7,3	11,0	14,7	18,3	22,0	36,7					
7,8	11,7	15,6	19,5	23,4	39,0					
8,2	12,3	16,4	20,5	24,6	41,0					
		Instelling tandwiel aandrijving/Selection of gearbox/Sélection de la boîte de distance/Einstellung des Getriebekastens			Aantal cellen zaaischijf Number of holes in disc Nombre d'alvéoles de la roue Anzahl der Zellen des Flügelrades					
					Z = 17 t					
					90	60	45	36	30	18
					Z	Z	Z	Z	Z	Z
					17	17	17	17	17	17
					4,6	6,9	9,2	11,4	13,7	22,9
					5,1	7,7	10,2	12,8	15,3	25,6
					5,7	8,5	11,4	14,2	17,1	28,5
					6,4	9,5	12,7	15,9	19,1	31,8
					6,9	10,4	13,9	17,3	20,8	34,7
					7,3	10,9	14,6	18,2	21,8	36,4
					7,7	11,6	15,5	19,4	23,2	38,7
8,1	12,2				16,3	20,3	24,4	40,7		
8,6	12,9	17,2	21,6	25,9	43,1					
9,1	13,6	18,1	22,6	27,2	45,3					
9,6	14,5	19,3	24,1	28,9	48,2					
10,1	15,2	20,2	25,3	30,4	50,6					

6 DRILLING

6.1 Filling of the seed hoppers

Check, before filling the seed hoppers, whether the valve at the bottom of the separator is closed correctly. Fill the seed hoppers and close the lids carefully. After drilling you can empty the seed hoppers by removing the valve at the bottom of the separator.

NOTE:

Never remove the lid of the seed hopper when the blower is running. The overpressure will immediately blow the seed out of the seed hopper.

6.2 Unlocking the parallelograms

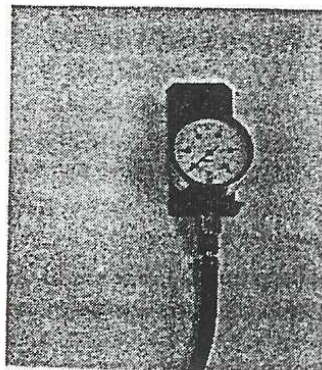
Unlock the parallelograms.

6.3 Starting the blower

Switch on the p.t.o.-shaft to the blower. Do this with a low engine r.p.m. to prevent overload of the transmission. Slowly increase the r.p.m. of the tractor until the pressure gauge gives the right pressure. A pressure gauge is directly connected with a tube to a sowing unit. The pressure gauge must be mounted free from vibrations in the tractor cabin. For the right pressure see the table on page 3.

Never let the p.t.o.-shaft run faster than 540 r.p.m., if pulley 3SPZ71 is mounted, 700 r.p.m. or, if pulley 3SPZ100 is mounted, 1000 r.p.m.

Adjust the pressure, when the cells in the sowing discs are filled with seed.



6.4 Air pressure

During drilling there must continuously be an overpressure in the separator. If the pressure in the separator is lowered too much, the seeds will come off the holes of the sowing plate. After the correct overpressure has been realized, the sowing plates must rotate about $3/4$ of a revolution before there is any seed in front of the flow-out opening. Therefore lower the machine and move forward approximately 2 meters before starting to drill or turn the left drive wheel till the sowing plates are filled with seed. Now check the air pressure again!

NOTE:

Too low a pressure causes more failures!
Too high a pressure causes more doubles!

6.5 Drilling

Check after a few meters of drilling the following points:

- * The horizontal position (see page 8).
- * The sowing depth of each row.
- * The seed covering.
- * The row distance.
- * The marker adjustment.

6.6 Driving with the machine

Never drive backward without lifting the machine above the ground, otherwise the coulters will be clogged with soil and consequently be blocked. The parallellograms can be damaged too. When starting to drill, lower the machine gradually. Lift it out of the ground as soon as you stop.

6.7 Area meter

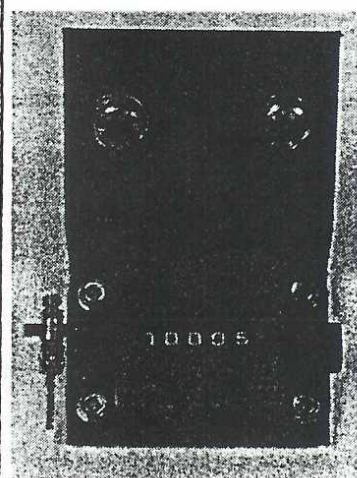
The area meter is mounted on the left wheel frame (drive wheel of the sowing plates). The wheel is the reference. Each revolution of the wheel is counted (circumference of the wheel is about 2,00 m).

With a conversionfactor it now is possible to calculate for a machine with 3 m work width the number of square meters that have been drilled. This conversionfactor is 3,3. To get the number of hectares, divide the result by 10.000.

For a machine with 4,5 respectively 6,0 work width, the conversionfactor is 4,85 respectively 6,5.

Example of area calculation at a fixed position of the area meter:

POSITION METER (REVOLUTIONS)	SOWN AREA IN HA		
	3,0 M WORK- WIDTH	4,5 M WORK- WIDTH	6,0 M WORK- WIDTH
1000	0,33	0,49	0,65
2000	0,66	0,97	1,30
3000	0,99	1,46	1,95
3095	1,00	1,50	2,00
4000	1,32	1,94	2,60
5000	1,65	2,43	3,25
6000	1,98	2,91	3,90
6190	2,00	3,00	4,00
7000	2,31	3,40	4,55
8000	2,64	3,88	5,20
9000	2,97	4,37	5,85
9285	3,00	4,50	6,00
10000	3,30	4,85	6,50
	FAKTOR 3,3	FAKTOR 4,85	FAKTOR 6,5



6.8 Putting rows out of circuit

When sowing on slanting fields it may be necessary to put two or more rows out of circuit.

The outer sowing units can be put out of circuit by removing the connecting shaft between the units. In this way two or four rows can be put out of circuit.

One single row can be put out of circuit by mounting collar 15.000.710 on the shaft against the sowing disc, when the system is under pressure. Pull the locking pin out of the sowing disc, so that this one does not rotate during sowing.

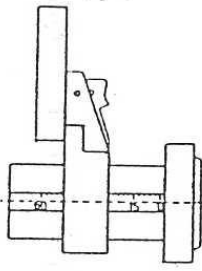
The subject sowing elements are placed in transport position (page 7). If sowing with elements in transport position takes a longer time, than the horizontal chains must be removed to avoid damage to the drive.

FERTILIZER EQUIPMENT

On the maize and beans drills fertilizer boxes are mounted, thus making it possible to apply fertilizer to each row. The fertilizer is dosed by means of a fertilizer metering unit for each row (with force feed rollers). This guarantees an accurate distribution.

The fertilizer quantity is adjusted by means of a handle (see drawing). By turning this handle the fertilizer quantity is either increased or decreased. If the force feed roller moves into the feed cell, the quantity decreases. If the force feed roller moves out of the feed cell, the quantity increases.

A blocking handle protects the handle from turning after the adjustment. The numbers on the scale in the handle help to adjust the correct quantity of fertilizer. The handle is rightly adjusted if the number is at the blocking. The scale has steps of three numbers, which means that one revolution of the handle is three steps, so 3 - 6 - 9 - 12 - etc. Intermediate steps are also possible (each revolution has four possible fixations). In the table for the fertilizer quantity only the quantities for complete revolutions are mentioned, not the intermediate steps. The table is only a recommendation, applicable to granular fertilizer. In the lid of the fertilizer box the same table is to be found.

	Instelling kunstmesthoeveelheid (kg/ha)				
	Adjusting the fertilizer quantity (kg/ha)				
	Einstellung der Düngermenge (kg/ha)				
	Réglage de la quantité de fertilisant (kg/ha)				
	Rijenafstand (cm)				
	Row spacings (cm)				
	Reihenabstand (cm)				
	Espacement (cm)				
	37,5	50	70	75	80
3	50	40	25	25	25
6	95	70	50	50	45
9	140	105	75	70	65
12	180	135	95	90	85
15	225	170	120	110	105
18	275	205	145	135	130
21	320	240	170	160	150
24	370	280	200	185	170
27	415	310	220	210	195
30	465	350	250	230	220
33	515	385	275	255	240
36	570	425	305	285	265
39	615	460	330	310	290
42	670	500	355	335	310
45	715	535	380	360	335

* Test

It is possible to do a test for other kinds of fertilizer yourself. Slide the intermediate shaft of the fertilizer drive from the bottom sprocket chain wheel of the vertical fertilizer drive chain. Set the dosage handle on the value corresponding with the quantity of fertilizer you want to distribute. Do some fertilizer in the hopper and remove the valve above subject housing. Place a key on the fertilizer distribution shaft and put a box under the outlet. Turn the distribution shaft 100 revolutions and weigh the distributed quantity of fertilizer in kg. Multiply the number of kg/100 revolutions by factor 43 and divide the result by the row distance in meters.

$$\frac{43 \times (\text{kg}/100 \text{ rev.})}{\text{row distance (mtr)}} = \text{kg/hectare}$$

Adjust the position of the dosage handle if necessary.

* Cleaning of fertilizer boxes

Clean the fertilizer boxes regularly. Wet fertilizer can form a hard crust in the boxes, which may cause rust in the boxes soon. Therefore, clean the boxes regularly (e.g. with a high pressure cleaner). Leave the boxes to dry before filling them again with fertilizer.

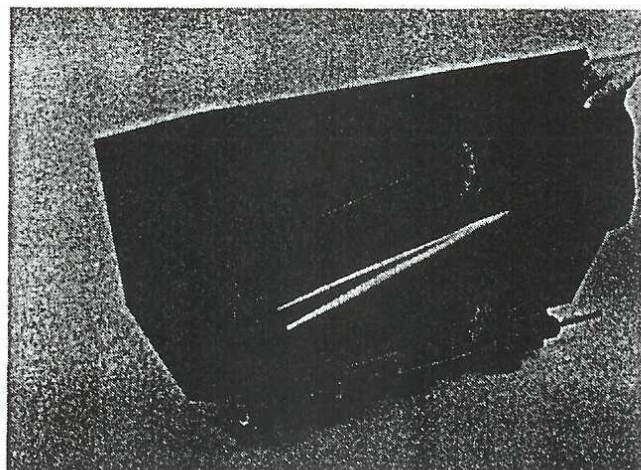
At the bottom of each feed cell is a small opening. This opening is to remove the water out of the feed cell after cleaning it. Wet fertilizer can block this opening. Therefore, make these holes open (if necessary) before cleaning the fertilizer boxes.

ONLY USE DRY FERTILIZER!

ADVICE:

If the machine has driven in the field or on the road in the rain or in wet weather, then turn the right drive wheel a few times round as soon as you arrive in the work shop, to remove wet fertilizer from the feed cells. This will prevent the feed cells from blocking by clods of fertilizer.

Available as an accessory is a set of guard flaps to keep the water of the tractor wheels out of the feed cells.



8 MAINTENANCE

8.1 Lubrication

- Power-take-off : Grease the universal joints after every eight working hours.
Grease the telescopic pipes after every eight working hours, make sure there is always enough grease between both pipes, otherwise the pipes will wear very fast.
- Markers : Grease the markers every eight working hours (disc markers).
- Bearings seed pressure wheels : Demount the seed pressure wheel and the shaft after every season. Clean the shaft and the bearings. Grease the space between the bearings. The space in the plastic seed pressure wheel, which slides over the bearing housing, has to be filled with grease as well, so that no dirt can enter into the bearing.
- Sealing flanges and sowing plates : If necessary use teflonspray between plate and sealing flange.
- Tool bar 6-rows hydro : Grease the telescopic parts and the hexagonal drive shafts every week, make sure that these are always well greased.

8.2 Retightening

On a new machine all bolts are to be retightened after the first working day. Check the bolts once more after the first working week, particularly those of the threepoint suspension and the wheel supports. The parts will first have to "mould" themselves to each other. Due to this bolts can come loose.

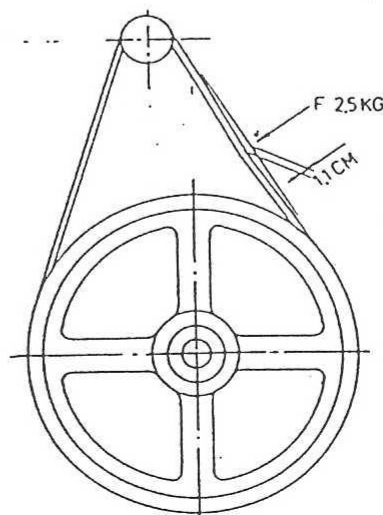
After retightening the bolts of the wheel supports it is advisable to undo all the bolts, that keep the bearing housings to the parallelograms (gear on seed pressure wheel shaft near the parallelogram) and then to retighten them again. The shaft can then adjust itself again.

Apart from this you should take care that the bolts are tight at any time.

8.3 V-belt tension

Check regularly whether the V-belts are tight, especially if they are new. New V-belts normally require adjustment after 15 minutes and then again after 2-3 hours of work. The belts of a new machine have been adjusted for the first time at the factory.

In order to check the V-belts the belt guard should be removed. Apply a force of 2,5 kg at the centre of the span. The deflection distance then has to be 1,1 cm (see drawing).



If the belts need tightening, loosen the four bolts securing the blower bracket and tighten the belts with the two tightening screws. Remember to retighten the four bolts that secure the blower bracket.

When replacing the belts we recommend to use Gates belts, type XPZ1612, or belts of the same quality, which have the longest possible life.

8.4 Chain adjustment

The following chains must be checked for the right tension:

- * For the drive of the sowing plates:
 - * the chain of the left drive wheel
 - * the chain in the cassette
- * For the drive of the seed pressure wheels:
 - * the chain of the right drive wheel that drives the hexagonal shaft

Remove the guard of the drive chain, loosen the bolts of both chain tensioners and adjust the chain. Tighten the bolts again. Now turn the wheel one complete revolution by hand. Check the tension during this revolution; when there is too much tension on the chain, turning the wheel feels heavy at some points. In this case the chain tensioner should be loosened slightly. The other chains can be adjusted in the same way.

8.5 Bearings in parallelograms

The parallelograms can move up and down by means of eight conical bearings. These bearings can be retightened. The bearings must be without much play. So, tighten the bolts correctly, but take care that the parallelogram can still move smoothly. This is necessary in order to follow the contours of the field.

IMPORTANT:

It is important that the parallelograms should move freely at any time. Because of this it is important to clean and grease the bearings if necessary and certainly after the sowing season. The procedure to do this is as follows. First dismount the two parallelogram arms above, not the four arms at a time, because then it will be difficult to rebuild the parallelogram. After removing the arms you will see synthetic cups on the bearings; remove these. Clean the surface of the conical bearings and make the surface smooth. Grease the surface and clean the synthetic cups. If they are worn too much they should be replaced. Mount the cups again. Clean the parallelogram arms too and mount them again. Now clean the other two arms.

8.6 Sealing flanges

The sowing plates move against the sealing flanges. There should be no impurities between either of them, to have as little friction as possible. Due to this a number of grooves has been made in the sealing flanges. Through these grooves the dirt can escape. If the weather is very dry the blower sucks a lot of dust out of the air and blows it into the separator (despite the cyclone). The impurities will then block the grooves. This gives friction as a result of which the sowing discs will run heavily. Then it is necessary to clean the grooves in the sealing flanges, or to use teflonspray between sealing flange and sowing plate.

Clean the sealing flanges also very good after the sowing season. Grease the sealing flanges with a thin layer of oil to protect them against rust. Although the sealing flanges are galvanized, the zinc may fade away in due course of time, because the sowing plates move against the sealing flanges during drilling. If the zinc is gone the sealing flanges can start to rust. Then there will be too much friction. So, grease the sealing flanges after the season or use teflonspray.

The sealing flanges have a rapid fixing system to exchange the sowing discs. Loosen all socket screws some turns with a socket-head screw driver. Turn the sealing flange in such a way, that the large holes are under the socket screws. The flange can now be removed from the sowing unit in axial direction. Mounting in reversed sequence. Put the flange well against the end of the slotted holes, and tighten the socket screws with the socket-head screw driver. Do not use a socket-head screw wrench.

8.7 Drilling coulter

The drilling coulter should always be sharp. Specially for drilling sugar beets a sharp coulter with the shape of a V is required. Check this regularly. Worn coulters do not only cause bad sowing results, but can also decrease the seed germination. Replace worn coulters or weld the coulter back to the original shape. Use a new coulter as an example.

8.8 Seed pressure wheel

Check the synthetic seed pressure wheels regularly for damage. Damage to the seed pressure wheels can influence the precision drilling.

The scraper on the seed pressure wheel is spring loaded. When the scraper is worn it has to be replaced. A side scraper for the seed pressure wheel is available (15.001.531) in case of very wet weather conditions.

8.9 Alignment shaft sowing unit

It is very important that the shafts of the sowing units and eventual bearing supports are well aligned. With the aid of a special tool all shafts are aligned. Only demount a sowing unit or a bearing support when it is absolutely necessary. Moving the sowing unit or bearing support together with mounting support or wheel support (fixed to tool bar) is no problem. Always check the alignment in vertical and horizontal direction, by tightening a thin rope parallel to the sowing shaft.

First tighten the wheel supports (9,0 kgm) and retighten the bolts after a week of work (9,0 kgm) (M12). The sliding parts between the units must always be a bit loose, not under tension.

8.10 Sowing disc

Regularly check the sowing discs for damage. Also check if all the holes are open. Damage to the periphery of the sowing discs can cause resistance during the rotation of the sowing discs. This can influence the precision drilling.

8.11 Cyclone

Most of the dust, sucked up by the blower, is filtered out by the cyclone. Under very dry conditions, with much dust in the air, the cyclone may very quickly get filled with dust. Then the cyclone should be cleaned immediately (sometimes it even is necessary to do this several times a day). If there is too much dust in the air you can put an extra pipe between the cyclone and the blower, thus raising the cyclone above the dusty air.

8.12 Hydraulically telescopic machine

The outer parallellograms are mounted to telescopic parts. These parts must always be well greased. Also the hexagonal drive shafts, which slide in and out, must be greased. Check daily and grease every week, or more often if necessary.

Demount the telescopic parts and the drive shafts after the sowing period. Clean all parts and grease the inner and outer tube and the drive shafts.

8.13 Manually telescopic machine

The telescopic extensions of the tool bar can be blocked in four positions, depending on the number of rows and the row distance. Slide the extensions to the required position in the main bar, so that the holes of both parts correspond. Place mounting aid nr. 15.000.966 in the extensions and mount from the outside three M10 x 25 bolts.

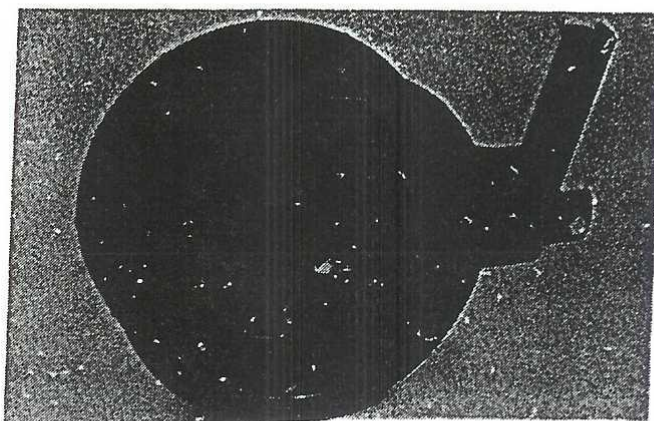
* After-season-service

Clean the machine carefully and grease all moving parts with a thin layer of oil. Store the machine in a dry place, protected against wind and humidity, if it will not be used for a long time.

FAILURE	CAUSE	REMEDY
Too many doubles	Too high an air pressure Wrong sowing plate	Reduce the air pressure Check the plate
Too many failures	Too low an air pressure	Increase the air pressure
	Too high a driving speed	Lower the driving speed
	Leaks in the separator	Repair the leaks
	Cells are blocked	Clean the cells
Seed on top of the soil	Sowing depth not deep enough	Increase the sowing depth
	Coulters are worn out	Replace the coulters
	Machine not horizontal	Adjust top link
Blower does not give enough pressure	V-belts are not adjusted properly or are worn out	Adjust or replace V-belts
	Loss of air due to leaks	Make sure all tubes and connecting elements are properly fastened
Wrong drill spacing	Wrong adjustment	Adjust the drill spacing as indicated in the table
	Drive wheel slips	Check and clean, if necessary, sowing plates and drive
Drilling too deeply	Clod deflector goes too deeply	Adjust clod deflector
	Too much spring load	Reduce spring load of the parallelogram
	Too much spring load on scraper COVERER.	Reduce spring load
Drill coulter does not penetrate the soil properly	Hard soil	Increase spring load of the parallelogram
	The sowing coulters are worn out	Replace sowing coulters
Sowing discs do not rotate	Shear pin is broken	Replace shear pin (clean sowing disc first) Check the drive
Irregular sowing distance	Machine not horizontal Seedhose gabled TUBE	Adjust top link Mount new seedhose

10.1 Farmflex soil pressure wheels

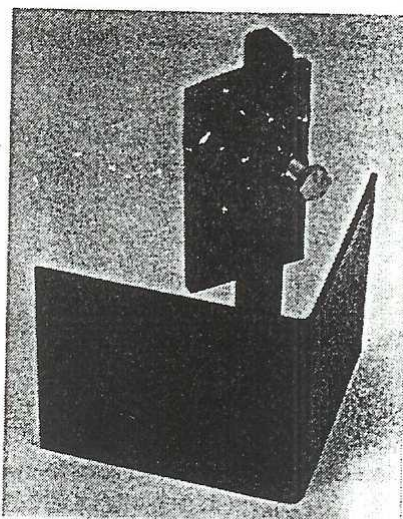
Instead of the metal soil pressure wheel, which are mounted on some machines as standard, for the basic sowing element for larger seeds, a farmflex pressure wheel is available, viz. 370 x 165 mm. With farmflex pressure wheels it is possible to continue sowing under humid circumstances. Normally you can use the farmflex wheel 370 x 165 mm.



This is most satisfying as the sowing element is rather light. Instead of the spring tines for the sowing element with front depth adjustment there are also farmflex soil pressure wheels. These are useful when the soil is moist. The farmflex soil pressure wheels move freely behind the sowing element. The wheels can be spring loaded.

10.2 Clod deflectors

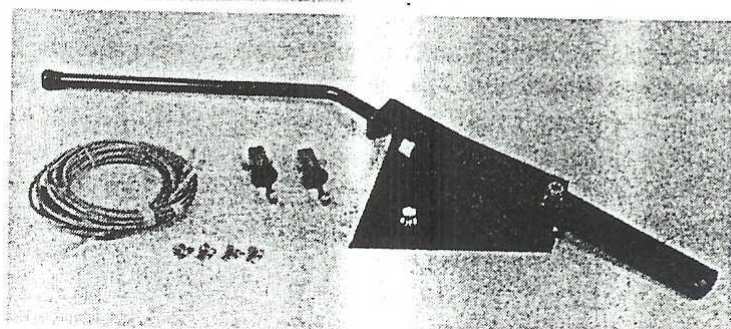
Both sowing elements can be equipped with clod deflectors, that push away too large clods and make an even seedbed. Only use the clod deflectors when necessary.



10.3 Marker change

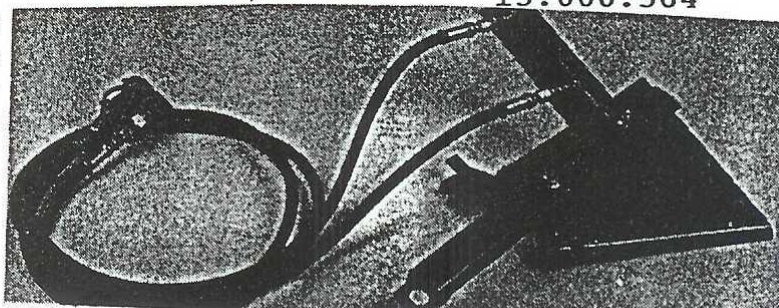
For machines with tine markers both a manual and a hydraulic marker change are available.

For the hydraulic version the tractor requires a double acting hydraulic control.



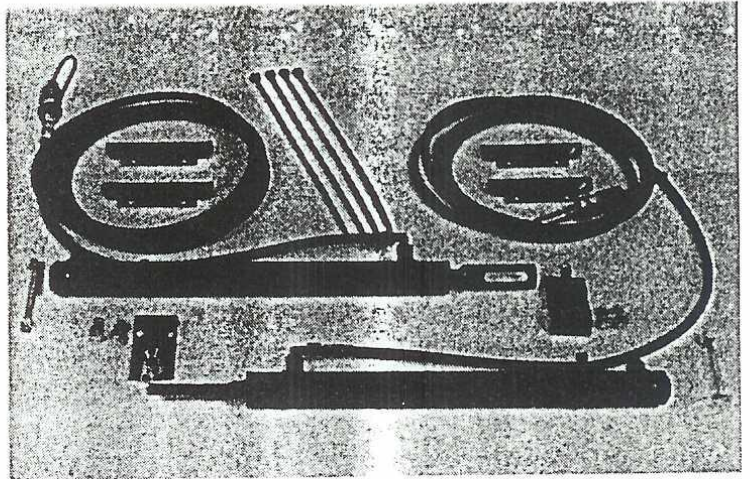
15.000.564

For machines with disc markers a hydraulic change is available with one cylinder per marker arm. This requires two single or double acting controls.



15.000.743

For machines with disc markers a hydraulic change is available with one cylinder per marker arm. This requires two single or double acting controls.



15.001.370

10.4 Granular applicator

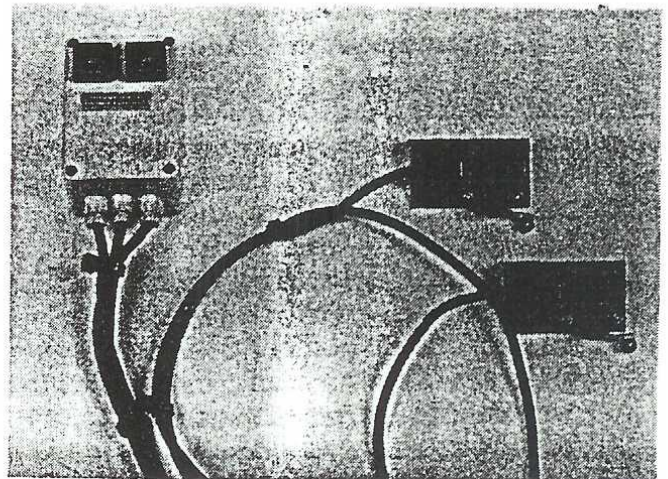
For each Précisem a granular applicator is available, which can be mounted on the machine bar by means of supports.

Granular applicator	4-rows:	15.000.524
Granular applicator	6-rows:	15.000.523
Granular applicator	8-rows:	15.001.416
Granular applicator	12-rows:	15.001.257

10.5 Control equipment

a Shaft indicator

The machine can be executed with a device in the tractor cabin to check whether the shafts of the sowing units and pressure wheels turn. A possible stop of the shaft(s) may be caused by a broken safetypin or chain. The device in the cabin has two warning lights. These lights give an impulse at each revolution of the above mentioned shafts.

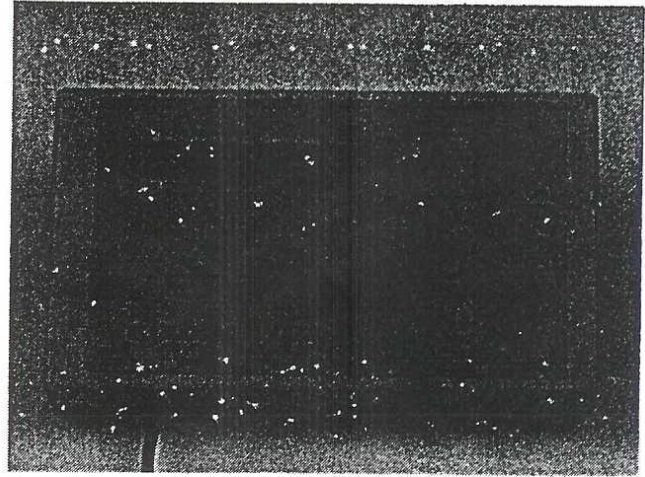


15000 742

b Seed monitor

The seed monitor checks:

- 1 Seed supply
- 2 Seed pressure wheel shaft
- 3 Sowing shaft
- 4 Speed
- 5 Number of seeds/ha
- 6 Drilled surface/field
surface/day
- 7 Time



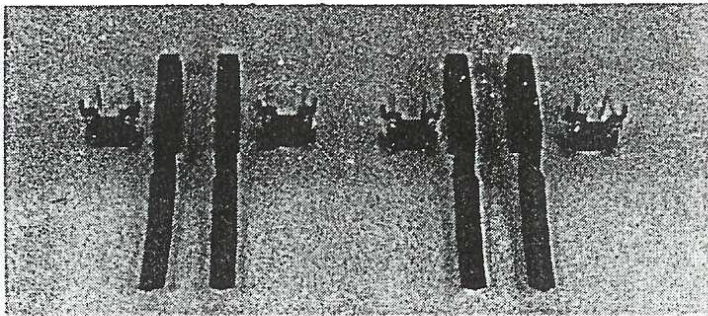
The seed monitor has a separate manual.

15 000963

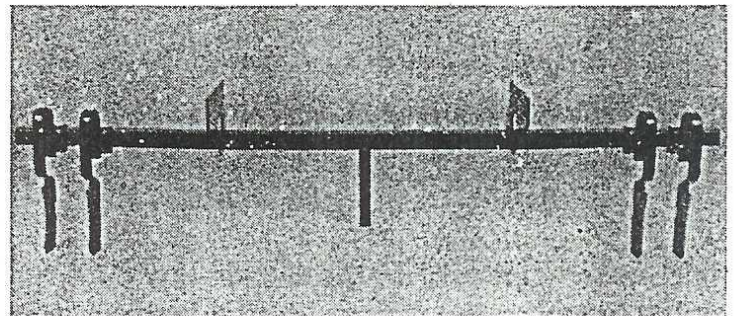
10.6 Track looseners

The Précis-Sem seed drill can be equipped with track looseners. The track loosener teeth are mounted on the beam of the fertilizer teeth.

For machines without fertilizer equipment the beam will be supplied as extra.



15.001.373



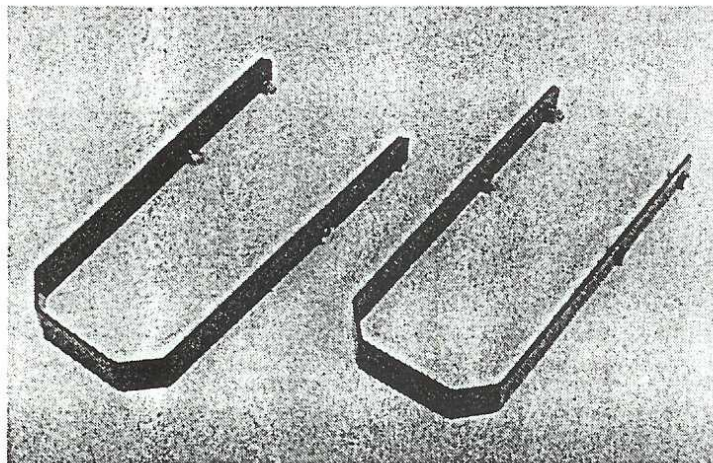
15.001.372

10.7 Wheel scrapers

Available sets of scrapers:

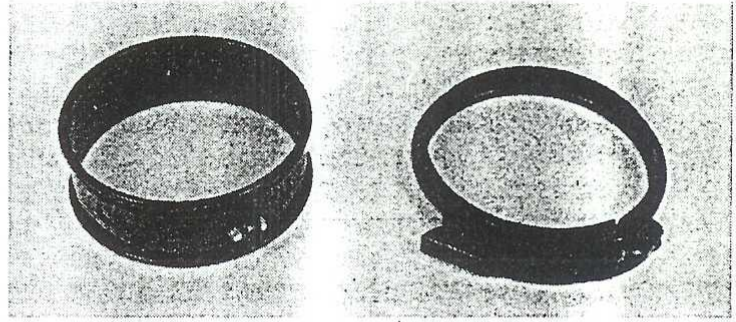
15.001.378 for 400 x 16

15.001.379 for 500 x 15



10.8 Air regulator

When the engine speed of the tractor is too low at a certain air pressure, a valve can be mounted between fan and distribution block. When turning the ring, part of the air will escape, so that the engine speed will go up in order to reach the requested pressure.



Never exceed the max. p.t.o. speed.

15.001.375

10.9 Semi-automatic coupling 15.001.380

A semi-automatic coupling is available to enable the driver to attach the machine to the tractor in a simple way, all by himself.

