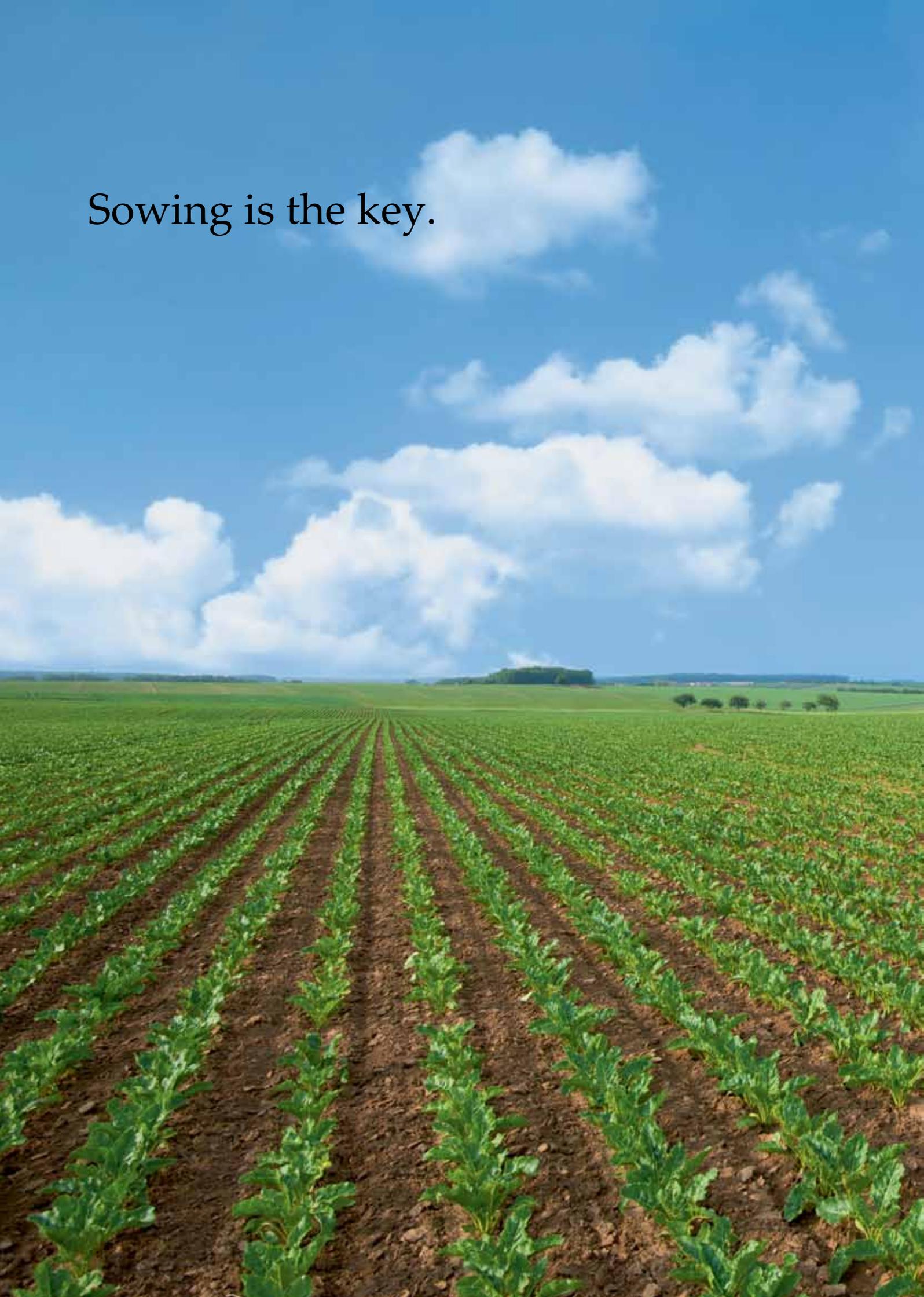




PRECISION SEEDING



Sowing is the key.





Precision Seeding

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mechanical precision seed drills
type UD 2000 - universal sowing heart
type UD 3000 - sowing heart for sugar beets
type M 4000 - sowing heart for maize

page 10

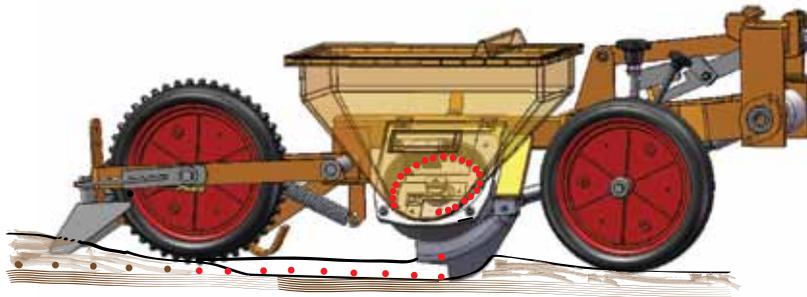
pneumatic precision seed drills
type P 4000

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accessories
interrow fertilizer distributor
spraying track marker
machine track switch-off
seeding control
press wheels
mulching and direct seeding
types of frames
electric drive
table of seeding distances for UD 2000
table of seeding distances for P 4000

Schmotzer UD 2000

- Precision Seed Drill with mechanical all-purpose sowing heart
- Applicable for beets, maize, different types of vegetables
- Robust, easy to use



Precise seed selection and deposition



Two-compartment system

The efficient mechanical precision seed drill "UD 2000" became an all-rounder in organic farming. Beets, as well as small seeds (e.g. rape, cabbage) peas, onions, beetroot, carrots, maize, beans, sunflowers, etc. can be seeded by using various methods. Normal or double seeding (zick-zack-seeding or block-seeding) in row widths from 25 cm to 80 cm can be achieved. The device can be rear or mid-mounted. Everything is possible.

One requirement for such flexibility is the modular set up with the well-established SCHMOTZER base device as the core segment. This is almost identical with UD 3000. It is central driven by two driving wheels (4.00 x 16) and a central sprocket. By default the machine is equipped with sprockets for seeding spaces of 12, 18, and 26 cm. The single seeding devices are driven by a hard-wearing cardan shaft (no chain).

Other sprocket specifications are available on request (e.g. for special crops).

SCHMOTZER also offers a useful sliding and parking equipment (not included) for devices with hy-

draulically foldable frames.

A spindle-adjustable front press wheel (280 mm in diameter) enables exact depth guidance. It is applicable for all variations of shares (i.e. shares for beets, vegetables, zick-zack-seeding, etc.). A special clod clearer can be mounted in front (upon request).

The universal sowing heart is placed inside a parallelogram for perfect adaptation to the soil. Its versatility is based on the sowing system which is rotating in a 45° angle regarding the driving direction.

Schmotzer offers also a broad variety of seed selection units with various numbers of cells, thickness of sowing discs, calibrations, and block-seeding equipment (for double or triple block).

A transparent cover can be used for small seeds instead of the mounted seed box.

The plastic seed boxes are removable, and equipped with shutter automatics. They have a volume of 15L or 35L which is also enough for large seeds such as maize or

field beans. Depletion of boxes or change of seeding discs can be done very easily.



The nobble press wheel behind the share is included by default and universally applicable. Other types of press wheels are also available (for details see page 13, accessories).

Also available on request are: track markers, left and right separately foldable; inter row fertilizer applicators, granulators, hectare meter, band spraying equipment, and lighting equipment (for more details see pages 12 and following).

Table of seeding distances for UD 2000 see page 15.



Sowing discs magazine in a housing made of cast iron. For beets, rape, sugar beets, carrots, (f.l.t.r.) – for a reliable and gentle seed selection for all types of seeds.

Zick-Zack Seeding, Dam and Bed Seeding

Special vegetables such as onions and carrots as well as sesame and other special seeds require specific sowing methods.

For this Schmotzer offers the zick-zack seeding equipment. The twin lines can be seeded optionally on a dam or bed, in a distance of 6 cm.

Adjustable blade wheel flanks enable sowing on a dam as well as on a bed.

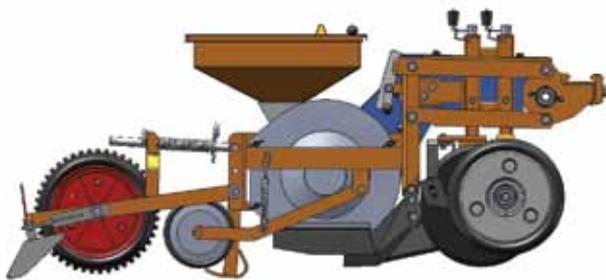


Precision seed drill for bed and zick-zack seeding

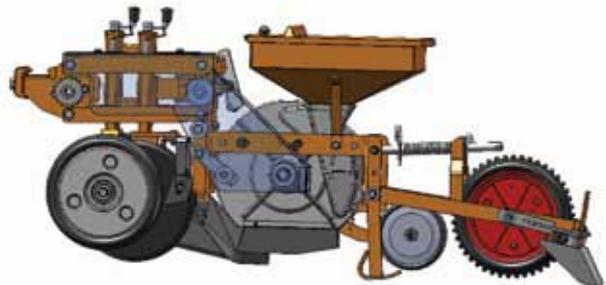


Schmotzer UD 3000

- Precision seed drill with mechanical sowing system
- Especially designed for beets
- Zero-roll system
- Optimal accuracy with nobble press wheel
- High performance germination



Zero-roll for sugar beets



Seeding depth adjustable separately by press wheels, also the cutting depth adjustable separately

While developing the precision seed drill UD 3000 we optimized accuracy and germination.

Zero-roll system

The seeding disc (placed in the sowing heart) has a diameter of 320 mm and is equipped by default with 5 CNC-machined cells. The seed disc is embedded into a large dimensioned housing made of aluminum and protected by a shield made of stainless steel. The disc is of 4 mm thickness guaranteeing long life.

The rotational speed of the seed disc is corresponding to the forward working speed (e.g. 7.2 km/h is corresponding to 5 cells and a seed placement target of 20 cm)

= **Zero-roll**

The seed is placed perfectly and will not roll in the furrow created by the coulter. The inner and/or nobble press wheel stabilizes the seed in the soil. This is the reason why SCHMOTZER has achieved the best performance results in accuracy and germination in public testing over years.

Front Press Wheel

The front press wheel (280x65 mm) is fitted with ball-bearings. A 300x100 mm press wheel is recommended. The seed depth is determined by a front press wheel which is infinitely adjustable along a scale for control.

An adjustable clod deflector is fitted in front of the press wheel.

Rear Press Wheel

Recent independent tests demonstrated that the nobble press wheel (280 x 65 mm) is the best option.

The **coulter** is equipped with a replaceable blade made of chilled iron.

The **drive** is performed directly by 5.00x15 or 7.00x12 wheels. The in-row placement width can be easily adjusted by sprockets and a clamp without needing tools.

A SCHMOTZER standard set consists of 4 in-row placement widths.



In-row placement width

sprockets on gear # of teeth	drive wheel	
	5,0 x 15 5 cells	7,0 x 12 5 cells
35	12,6	13,3
32	13,8	14,5
30	14,7	15,5
28	15,8	16,6
26	17,0	17,9
25	17,7	18,6
24	18,4	19,4
23	19,2	20,2
22	20,1	21,1
21	21,0	22,1
20	22,1	23,3
19	23,2	24,5
18	24,5	25,8
17	26,0	27,4
16	27,6	29,1



Press wheels for all soil conditions

For details please see page 12, accessories



UD3024 in Siberia



UD3018 in China

UD3024 in Siberia



Schmotzer M 4000

- mechanical sowing system
- special seeder for maize and sunflowers
- drilling without pneumatics



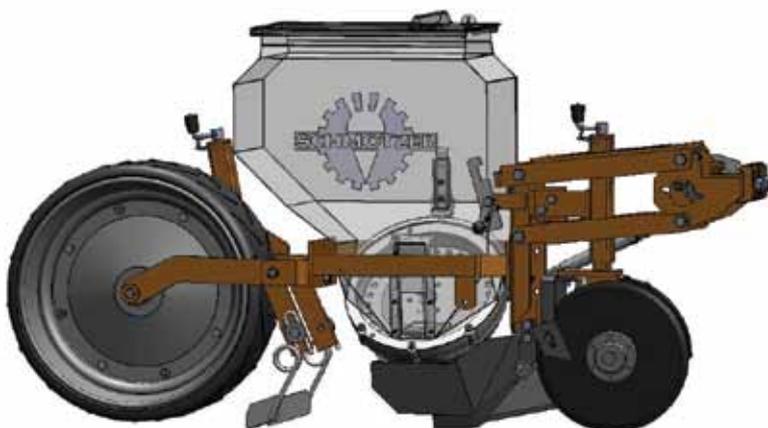
The mechanical sowing heart of the M 4000, especially for maize and sunflowers, is placed in a 50° angle regarding to the driving direction. It is self-cleaning, doesn't require any pneumatics, and

therefore protects honey bees from loose mordant.

A cardan shaft drives the seeding units. The M 4000 is equipped with large volume seed boxes of

50 l. Flex-levelled rubber wheels of 500 mm diameter enable an optimized re-compression of the soil.

type		rows	transport position [mm]			toolbar length mm	weight kg	Distance to balance point mm
			length	width	height			
M 4004	fixed	4	1640	2650	1400	2650	530	600
M 4005	fixed	5	1640	3400	1400	3400	620	610
M 4006 H	hydr. folding	6	1740	3000	2350	5100	1025	570
M 4006 PH	hydr. parallel folding	6	1925	2900	2700	5700	1420	760
M 4008	fixed	8	1840	6000	2000	6000	1100	585
M 4008 H	hydr. folding	8	1740	3000	2850	6100	1100	585
M 4008 PH	hydr. parallel folding	8	1925	2900	2700	5700	1570	775



- 1 - sowing heart with shaft and angular gear
- 2 - magazine - inserted in shaft
- 3 - baffle ring with mask
- 4 - sowing disc (picture: maize)
- 5 - wiper and ejector
- 6 - knurled nut with left-hand thread

Flex-levelled rubber wheels of 500 mm diameter and equipment for direct precision seeding of maize



Dam formation above the seed furrow by a flex-levelled rubber press wheel of 500 mm. The dam helps the soil to warm up – even during morning and evening sun- and therefore supports a faster germination.



Hydraulic vertical folding



Hydraulic parallel folding

in-row distance [cm]	seeds/sqm	seeds/ha	seeds/m	change over sprocket
7,5	17,8	178389	13,4	40
7,9	16,9	169470	12,7	38
8,1	16,5	165010	12,4	37
8,5	15,6	156091	11,7	35
9,3	14,3	142712	10,7	32
10,7	12,5	124873	9,4	28
11,5	11,6	115953	8,7	26
12,0	11,1	111493	8,4	25
12,5	10,7	107034	8,0	24
13,0	10,3	102574	7,7	23
13,6	9,8	98114	7,4	22
14,2	9,4	93654	7,0	21
14,9	8,9	89195	6,7	20
15,7	8,5	84735	6,4	19
16,6	8,0	80275	6,0	18
17,6	7,6	75815	5,7	17
18,7	7,1	71356	5,4	16
19,9	6,7	66896	5,0	15

Schmotzer P 4000

- pneumatic sowing heart
- sugar beet, maize and special seeds
- vacu suck system with double stripers



V-shaped press wheel with middle press wheel in combination with direct seeding equipment



Flex-levelled rubber wheels 500 mm with cutting discs

The robust type P 4000 is designed for large coverage and safety. Continuous improvement made it an all-rounder. Maize and beets, but also specialized seeds such as sunflowers, beans, soybeans, onions, rape, etc. can be drilled without limitations.

The high standards of P 4000 for accuracy, germination, and convenience are based mainly on the Vacu/suck system and many other well proven SCHMOTZER compounds.

The seeds are hauled out of the seeding box without pressure. The seeding box is separate from the seed reservoir. The selection at the sowing disc is done by the SCHMOTZER special pneumatic system.

The adjustment of the double fingers is easily done by a crank at the seed box. It can be adjusted by a scaled notch. The adjustment is only required for one row. The level of this row is then transferred to all other rows. Depending on the type of seeds, different seeding discs with 22 to 72 cells can be used.

The sowing housing is slim and reaches down into the share. The seed is released on a low level to

avoid rolling of the seeds.

The air is supplied by a low noise fan which is adjustable by a Vacuumeter. For devices with 8 rows or more an air system with cross splitters is installed.

For optimal soil adaptation, the sowing units are guided by a parallelogram. The large 35 l volume seed box can be easily emptied by a shutter. Wear-proof shares with replaceable tips are the requirement for high ground coverage when seeding beet and maize.



While using the equipment for maize, the rear pressure wheel 370 mm, adjustable by spindle, (flex-levelled rubber wheels, 500 mm on request) is closing the seeding furrow and is keeping an exact seeding depth. The high weight of machine enables an excellent re-compression of the soil and enhances germination.

When using the equipment for beets, a front press wheel 300 x 100 mm, is guiding the single units horizontally. The V-shaped press wheel covers the seeds and fixes the soil behind the blade.

Retooling times from sugar beet to maize are short. Only the inter-row distances have to be re-adjusted and sowing blades have to be changed. The combination of press wheels remains unchanged.

The basic device, the gear and the track marker are almost identical to those of UD 2000 and UD 3000. P 4000 is carried by two running wheels of 5.00 x 15 as a standard. Optional running wheels of 7.00 x 15 can be used.

The standard in-row seeding widths are 11, 13, and 14 cm for maize, and 12.5, 18 and 21 for beets, respectively.

For a detailed table of in-row seeding widths see page 16.



Different sowing discs with ranges from 26 to 72 cells

The fan output is adjustable



Pneumatic 16-row seeder for maize in Ukraine



Schmotzer is well known for customized solutions. Left picture: single row precision seed drill P 4000 for decorative gourd. A crank for calibration with a scale allows an accurate separation of grains.



A vacuummeter enables the driver – even in a low speed- to be sure that all the cells of the sowing discs are filled with seeds. This is saving fuel.

Schmotzer Accessories

■ Inter-row fertilizer

The Schmotzer inter-row fertilizer is mechanically driven by a trouble-free chain drive and a bucket wheel. The fertilizer has an output ranging from 100 kg to 1000 kg per hectare.

It is mounted on top of the drill's tool bar. An in-front mounted bracket allows a stepless adjustment of the fertilizer share.

The fertilizer reservoirs have a capacity of 175 l or 270 l, respectively. The fertilizer distributor is equipped with sledge shaped shares as a standard. Other disc shares are available upon request.



Pneumatic fertilizer



Sledge shaped share



Disc share



Chain drive

■ Spraying Track Marker

This helpful tool automatically marks the lane for the spraying procedure.



■ Machine Track Control

The machine track control is conveniently performed by the driver by an electro-magnetic coupling. The machine track control units can be mounted on the selected seeding units - depending on the working width of the sprayer. Typically two or four cut-offs are required. A rhythmic track control (Drillmat) or the Müller EcoTerminal are available upon request.

■ Seed Control

An opto-electronic sensor controls the seed placement. The data is visualized on a monitor. This ensures that all seeding units can be checked by the driver.



■ Press Wheels

Schmotzer offers a variety of different press wheels for all soil conditions.

The nobble press wheel (NKD) 280 x 65 mm is the universal type for the all-rounder precision seed drill UD 2000 and sugar beet drill UD 3000. The nobbles on the press wheel compress the soil around the seed. The broad contact surface and the crown of nobbles enable an optimized re-compression of soil without relocating the seeds – even for very flat placement or when working on hill-side. Punctual sealing of the seeding furrow also prevents aggradation.

Adjustable wipers control how much soil covers the seed in the end. The nobble press wheel is a self-cleaning Farmflex™ wheel. Optionally the press wheel can be equipped with an additional weight of 2.3 kg.

We recommend to combine the nobble press wheel with the middle press wheel. This small wheel runs in the furrow in front of the NKD. It positions the seed pill into the layer



nobble



finger



concave



V



flex-levelled 500 mm



370 x 165 mm

of soil that contains the capillary water.

Different types of press wheels are finger shaped, concave shaped, V-shaped and more.

Optionally for seeding maize and special seeds large press wheels 370 x 165 mm or flex-levelled rubber wheels (500 mm) are available instead of the V shaped press wheel.



Field test in Seligenstadt



Germination: left: Schmotzer, right: competitor

Schmotzer Accessories

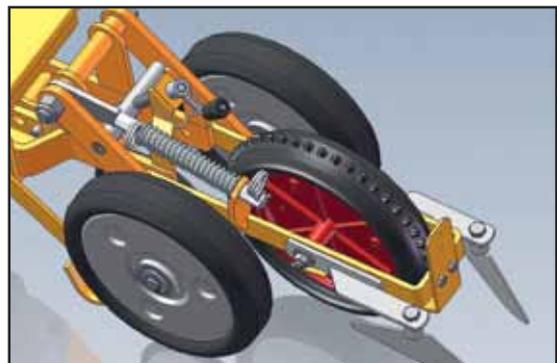
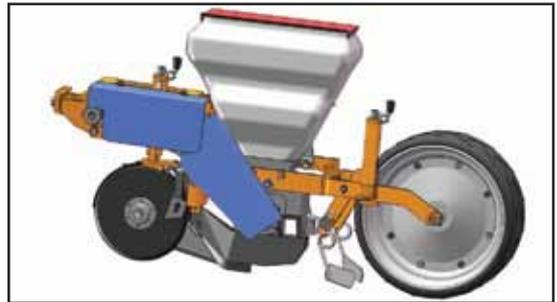
■ Direct Seeding and Mulch Equipment

Two disc coulters with lateral guiding rolls – for self-cleaning and depth adjustment - are installed instead of the front press wheel. A special share is extended to the two disc coulters and avoids clogging. Two V-shaped press wheels are mounted behind the sowing share. The press wheel closes and fixes the seeding furrow.

Alternatively, the height can be adjusted by two farmflex™ wheels, which are mounted behind the single segment (the so called PUMA option). The disc coulters are mounted in front of the sow-

ing share. They cut through old straw and create a furrow in which the sowing share places the seeds. Depending on soil conditions the PUMA option avoids height differences caused by stones and logging.

This is possible because the press wheels are not installed directly underneath the disc coulters. They are mounted laterally behind the single segment, so that they run on dry soil. The seeding unit is guided more gently by the following press wheels (no pushcart effect).



■ Electric Drive

Each seeding unit has its own electric drive. It is mounted on the central toolbar protected from water, dust and stone-chippings. The electric drive is connected to the sowing system either by cardan shaft or chain.



Advantages:

- Longer life cycle due to enhanced protection of the electric drive
- Operates gently due to cardan shaft or chain transmission
- Row distances starting from 25 cm
- Convenience due to stepless adjustment of in-row seeding distances by a central drive (monitored by driver) and automatic machine track control for sprayers with frame widths ranging from 25 to 40 m.
- Row-specific seeding distances for different conditions of soil

■ Types of frames

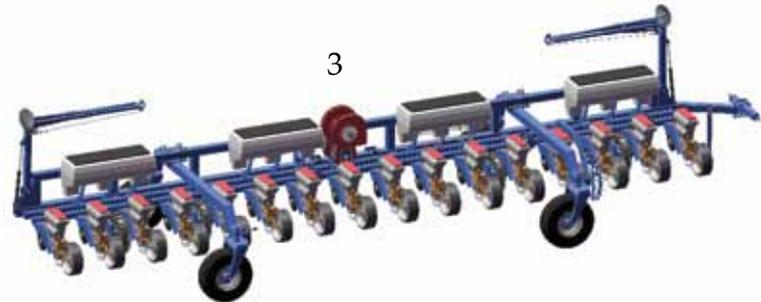
The hydraulic vertical folding [picture 1] is a very simple and quick solution for seeders with working widths up to 9 m. Using this version the outer segments can be folded for transportation into a straight up position. Folding enables using a 12 row seed drill also on 6 or 9 m drill segments.



Parallel folding is possible as well [fig 2]. The seeding elements stay in a horizontal position and allow a faster road speed. The folding process and the operation of track markers are performed directly from the cockpit via a console. Only 1 double-acting valve is required.



Machines with working widths of more than 9 m can be transformed from transportation mode to working mode by using the extension frame with hydraulic wheels. Hydraulic reduction-folding is also available. For details see the separate brochure "Extension Frames". Reduced/partial hydraulic folding is possible for this kind of folding as well.



■ In-row placement widths for UD2000

sprocket on drive wheel	120 cells				90 cells			60 cells				30 cells (standard)				20 cells			18 c
	sprocket on central shaft 17/34 standard (12 cells, 40 cells and 68 cells on demand)																		
# of teeth	12	17	34	40	12	17	34	12	17	34	68	12	17	34	40	12	17	34	17
40		1,2	2,4	2,9	1,1	1,6	3,2	1,7	2,4	4,9	9,7	3,4	4,7	9,7	11,4	5,1	7,3	14,6	8,1
38	0,9							1,8	2,5		10,0					5,5	7,6	15,5	
37		1,3	2,6	3,0	1,2						10,5	3,7	5,3	10,5	12,4		8,0		8,8
35	1,0				1,3	1,9	3,7	2,0	2,8	5,6	11,5	4,0				6,0	8,5	16,5	9,0
32		1,5	3,0	3,6	1,4	2,0	4,0	2,1	3,0	6,0	12,0	4,3	6,1	12,1	14,3	6,5	9,0	18,0	10,0
30	1,1				1,5					6,5		4,5			15,0	7,0			
28	1,2	1,7	3,5	4,1	1,6			2,4	3,5	7,0	13,5			13,5	16,0	7,5	10,5	21,0	11,5
26	1,3				1,8	2,5	5,0			7,5	14,5	5,0	7,5	14,5	17,5	8,0	11,0	22,5	12,5
25		1,9	3,7	4,4	1,9			2,7	3,9	7,8	15,0	5,5	7,8	15,5	18,3		11,5	23,5	13,0
24	1,4				2,1	2,7	5,4	4,0	8,0	16,0				16,0	19,0	8,5	12,0	24,5	13,5
22		2,2	4,4	5,2	2,2					9,0			8,5	17,0	21,0	9,5	13,0	26,5	14,5
21	1,6				2,3			3,3	4,6	9,3	18,5			18,0			13,9		
20	1,7	2,4	4,9	5,7	2,4	3,2	6,5			19,5		6,9	9,5	19,5	23,0	10,3	14,6	29,1	
19	1,8				2,5			5,0	10,0	20,0				20,0	24,0				17,0
18	1,9	2,7	5,4	6,3	2,6	3,6	7,2	3,8	5,4	10,8	21,6	7,6	10,5	21,0	25,0	11,4	16,2	32,4	18,0
17	2,0				2,7					22,5		11,5	22,5	27,0		17,0			19,0
16	2,1				2,9	4,0	8,0	4,3	6,0	12,0	24,0		12,0	24,0	28,0	12,9	18,2	36,4	20,0
15	2,2	3,2	6,5	7,6	3,1	4,3	8,6	4,6	6,5	13,0	26,0	9,1	13,0	26,0	30,0	13,7	19,4	38,9	21,5

■ In-row placement widths for P4000

sprocket on drive wheel # of teeths	22 cells		26 cells		52 cells		60 cells	
	sprocket on central shaft							
	12	24	12	24	12	24	12	24
35	7,8	15,7	6,6	13,3	3,3	6,6	2,9	5,7
32	8,6	17,1	7,3	14,5	3,6	7,3	3,1	6,3
30	9,1	18,3	7,7	15,5	3,9	7,7	3,4	6,7
28	9,8	19,6	8,3	16,6	4,1	8,3	3,6	7,2
26	10,5	21,1	8,9	17,8	4,5	8,9	3,9	7,7
25	11,0	21,9	9,3	18,6	4,6	9,3	4,0	8,0
24	11,4	22,9	9,7	19,3	4,8	9,7	4,2	8,4
22	12,5	24,9	10,5	21,1	5,3	10,5	4,6	9,1
21	13,1	26,1	11	22,1	5,5	11	4,8	9,6
20	13,7	27,4	11,6	23,2	5,8	11,6	5,0	10,1
19	14,4	28,9	12,2	24,4	6,1	12,2	5,3	10,6
18	15,2	30,5	12,9	25,8	6,4	12,9	5,6	11,8
17	16,1	32,3	13,6	27,3	6,8	13,6	5,9	11,8
16	17,1	34,3	14,5	29	7,3	14,5	6,3	12,6
15	18,3	36,6	15,5	30,9	7,7	15,5	6,7	13,4

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