



# Contents

<b>Introduction</b>	<b>4</b>	Why hoeing?
	<b>6</b>	What is truly important?

---

<b>The original</b>	<b>8</b>	The SCHMOTZER hoe
---------------------	----------	-------------------




---

<b>Basic equipment</b>	<b>10</b>	Mounting variations
------------------------	-----------	---------------------



	<b>12</b>	Frame
--	-----------	-------



	<b>14</b>	Parallelograms
--	-----------	----------------



	<b>24</b>	Hoe shares
	<b>26</b>	RAPIDO quick-change system
	<b>28</b>	The SCHMOTZER Vibro system



	<b>30</b>	Finger hoes
	<b>32</b>	Hoe protection discs
	<b>34</b>	Ridging tools



	<b>35</b>	Harrow
--	-----------	--------




---

<b>Special equipment</b>	<b>36</b>	Row guidance systems
--------------------------	-----------	----------------------



	<b>42</b>	Application systems
--	-----------	---------------------




---

<b>A question of setting</b>	<b>44</b>	Perfect results
------------------------------	-----------	-----------------

# Why hoeing?

## Advantages of mechanical weed control



### Crop management

- Water savings in the soils thanks to breaking the capillarity
- Targeted mechanical removal of weeds
- Elimination of problem weeds or volunteer plants, even with resistant weeds and grasses such as slender meadow foxtail, millet or silkybent grass
- Promotes root growth thanks to loosened and moist soil
- Prevents growth stress and foliar damage due to the application of herbicides, e.g. leaf necrosis in turnips
- Control of weather-related late weed growth and residual weed growth
- Ideal desiccation of the weeds at the soil surface



### Soil management

- Breaking up crusts after heavy rainfall promotes aeration and root growth
- Hoeing reduces erosion and leads to better water absorption
- Nutrient mobilisation thanks to higher microorganism activity
- Targeted promotion of mineralization, e.g. for tillering
- Gentle tillage of the soil
- Incorporation of mineral fertiliser and farmyard fertiliser in accordance with the law



### Ecological responsibility

- Elimination of resistant problem weeds or regrowth, e.g. slender meadow foxtail and silkybent grass
- Compliance with state regimentation
- Loss of important herbicides due to resistance and bans
- Ensuring optimal growth by reducing the use of chemicals /active substances
- Climate friendliness
- "Greening" of agriculture
- Reduced use of active substances



### Reduction of crop protection products

- Currently up to 75% product savings in conventional agriculture
- Protection against grass and weed resistance

Weeds and grasses cannot develop resistance against the effects of a hoe share.





# What is truly important?

## Optimum conditions for hoeing



### Technology

- Narrow front edge of the share, since the ridging effect of the hoeing tool should not be too strong, which also enables higher forward speeds
- Exposing of weeds with Vibro effect – these lightly sprung elements enable more shallow and more precise depth control with better crumbling and weed control



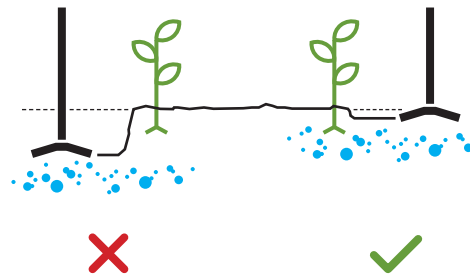
### Weather conditions

- To make sure that uprooted weeds do not start growing again, it is recommended to only hoe when there is no rain in the forecast.



### Use

- With blind hoeing, always pay attention to the placement depth of the seed
- Dormant weed seeds must not be stimulated to germinate
- Shallow and uniform hoeing while remaining gentle on the roots and capillary water
- As deep as necessary, as shallow as possible: 2-3 cm



Water supply to the plant with incorrect and correct working depth

# The SCHMOTZER hoe

Yesterday as today – the original.

Every SCHMOTZER implement is the result of lifeblood, longstanding experience, and precision. Not only have we invented the hoe, we have continuously further developed it.

Based on extensive knowledge and ingenuity, our products has stood for unsurpassable reliability, high flexibility, and utmost precision for decades.

With almost 100 years of experience, the company offers solutions that are suitable for the cultivation of various produce such as cereals, turnips, maize, vegetables, and special crops around the world, under a wide range of soil and climate conditions.

Each product is individually manufactured at our factory in Bad Windsheim, and is given the highest degree of precision and material quality.

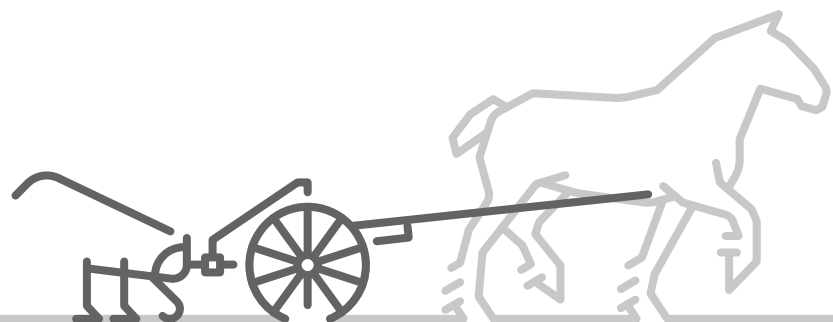
Customised to meet the customer's needs, each implement is one of a kind, and we are proud of that.

## Flexibility, precision and cost savings

Today, a SCHMOTZER hoe is a true all-rounder. Thanks to the modular design of the assembly groups, each new implement can be configured to meet the customer's individual requirements, and thanks to the optimal illumination, our hoes work just as reliably at night as during the day.

Special maintenance-free bearings and plastic sliding bearings with 8 times longer service life as well as lighter components are just a few examples of how we keep subsequent costs to a minimum.

Intelligent solutions await you, which make burying of the crops controllable or precise depth control – thanks to the star parallelogram – a matter of course. If you want, SCHMOTZER implements can even take care of the tracking themselves.



1922



## Technical possibilities



Forwards speeds up to 15 km/h



Row width from 15 to 200 cm



Working widths up to 9 m for high area efficiency



Systems for front mounting, mid mounting and rear mounting



The right solution for any row crop



Hydraulic parallelogram lift-out



Many variation options with a wide range of hoeing tools



Hoeing between the rows with adjustable finger hoes

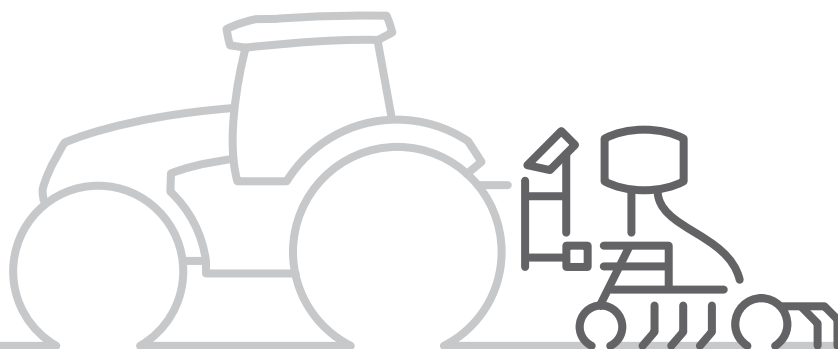


Always the required hoeing depth with Vibro springs and shares



Various tracking systems with parallel sliding frame

And much more ...



Today

# Mounting variations

## The ideal solution for every user

Thanks to reliable controller systems, hoeing machines are increasingly working at the rear. Nonetheless, SCHMOTZER still offers the practical mounting variations for front and mid mounting. In addition to these individual mounting variations, there is also the option of combining front mounting and rear mounting. The implement can therefore be used both at the rear with camera controller and at the front for special requirements. The row width is not crucial in deciding which mounting variation to use; the expected total hectare output plays a much more decisive role.



### Front mounting

Front mounting operation enables a full view of hoeing operations, and can be achieved with different front-mounting carriers and sometimes coupling triangles. There are no restrictions in terms of the additional tools, such as finger hoes. For front mounting operation, parallelograms of type KPP, EKP and EKP-H are best suited. Even with front mounting, the parallelograms are always pulled and not pushed, so that the quality is always ideal.



### Rear mounting

In combination with a camera system, rear mounting provides the optimal conditions for excellent area efficiency. With this mounting area, a wide range of combinations can be achieved. In addition to the camera-controlled row guidance system, the implement can be controlled manually or in combination with front mounting. Moreover, rear mounting also offers the option to install a GreenDrill pack top seed drill for seeding nurse crops or a band sprayer. The rear-mounted implement is equipped with KPP, EKP or EKP-H. To meet the requirements in different crops, the parallelogram types can also be combined and used in perfect synergy.



### Mid mounting

When the technology is available, mounting in the middle of the tractor enables smooth and precise guiding of the hoe. Thanks to a direct view of the crop and tools, the implement can be precisely controlled, even without electronic support. Take advantage of your implement carrier. SCHMOTZER rolling devices make it easy to mount the implement underneath the tractor.

The following coupling parts are used for mid mounting:

- **Type A** for Fendt GT 220-231
- **Type F1** for Fendt GT 250-380 (up to 8 rows)
- **Type F2** and **F3** for Fendt GT 250-380 (with pendulum compensation)





# Frame

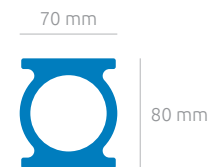


The right solution for any working width

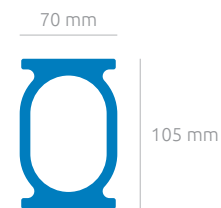
## Frame variations

SCHMOTZER hoes are available in both rigid and folding versions. Hydraulic vertical folding is a simple and quick variation for hoeing machines up to 9 m. Here, the outer segments are folded up vertically. The advantage of this variation is that the hoe elements are still positioned horizontally when they are folded. Folding takes place with a double-acting hydraulic control unit. For mounted variations with a width of 9 m, the hoe can also be used as a 6 m implement, since this working width is equipped with double folding. This offers an optimal solution for e.g. contractors, since the hoeing width must always be adapted to the seeding and placement width.

In addition, tension struts or double slide rails are available as an option. Both options prevent radial movement of the outer segments of the implement slide rail with larger working widths and/or higher speeds. We recommend tension struts above a working width of 6 m. In combination with, e.g. a band sprayer and/or working widths of 9 m, a double slide rail is also recommended to increase the precision to a maximum, even with high area efficiency.



Normal profile



High profile



## Typically SCHMOTZER


Hollow profile frame for maximum strength and flexibility and at the same time, low implement weight

- Easy row adjustment using an implement slide rail with two flange levels
- Known as robust because extruded rail is made of full material
- No signs of fatigue in the implement slide rail
- Additional stability thanks to high profile in the centre part of hydraulically folding implements as well as for rigid slide rails above 5 m working width

# Parallelograms

The right tool guidance on any substrate



 **Typically SCHMOTZER**  
Maintenance-free bearing as standard



## KPP – The all-rounder

Combined parallelogram

- Row spacing from 15 to 200 cm
- Passage clearance up to 80 cm
- Working widths up to 9 m
- 1 to 5 spring-suspended shares
- Maximum tool selection
- Maximum crop diversity
- Wide range of row guidance systems



## EKP / EKP-H – The specialist

Single combined parallelogram

- Row spacing from 15 to 200 cm
- Passage clearance up to 80 cm
- Working widths up to 9 m
- 1 to 5 spring-suspended shares
- Maximum tool selection
- Maximum crop diversity
- Wide range of row guidance systems



## MPP – The proven one

Multi-purpose parallelogram for mid-mounting

- Row widths from 24 to 60 cm
- Passage clearance up to 60 cm
- Working widths up to 9 m
- 1 to 3 shares, choice of rigid or spring-suspended
- Maximum tool selection
- Maximum crop diversity



## EPP – The narrow one

Single parallelogram for mid-mounting

- Row widths from 12 to 30 cm
- Passage clearance up to 60 cm
- Working widths up to 6 m
- 1 share, choice of rigid or spring-suspended
- Narrow row crops



# Combined parallelogram KPP

## The all-rounder

The Combined PP (KPP) is the most versatile and best-selling parallelogram in hoeing technology. It can work with different row widths and numbers of rows. Sugar beets, maize, soy, sunflowers, field beans or pumpkins are just a few of these crops.

The parallelogram is suitable for taller crops that have a passage clearance of approx. 80 cm. Up to 5 shares are possible on the KPP. For example, with a row spacing of 45 cm, three shares with a width of 140 mm are installed. With a row spacing of 75 cm, five shares with a width of 140 mm are installed. The overlap of the shares in the row prevents weeds from slipping through as well as cutting off of clods on the rows. Weeds are cut off across the full area and are deposited on the surface.

Moreover, a wide range of tools can be attached onto the KPP. Operation both with a finger hoe for targeted tillage in the row or also, e.g. a harrow system in the row can be used in combination with hoeing protection discs or separately. The KPP offers the option of implementing row widths of 15 to 200 cm. It is characterised by maintenance-friendly joints, so that grease nipples are not required here.



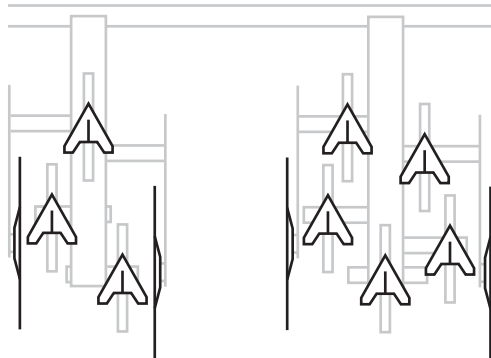
### Typically SCHMOTZER

Special equipment that can be combined with the KPP:

- Various hoe protection discs
- Wide range of shares
- Wide range of trailing elements, e.g. finger hoes and ridgers
- Band sprayer
- Nurse crop seeding systems and fertiliser application systems







Configuration for  
turnips

Configuration for  
maize

### Configuration of the Vibro shares on the KPP

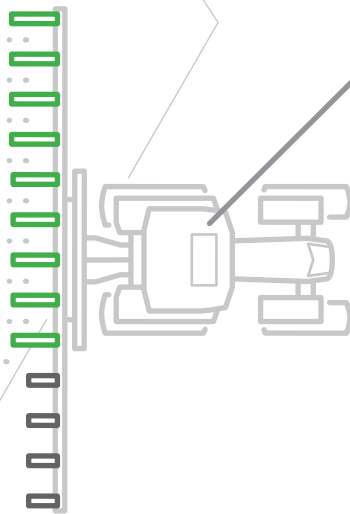
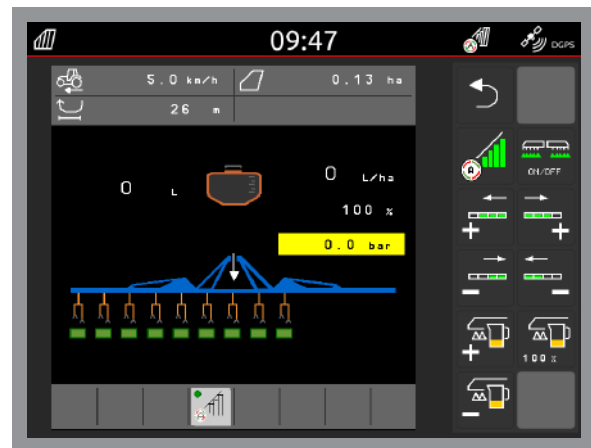
Row width	Number/size of the shares
As of 15 cm	1 x 80 cm
As of 20 cm	1 x 120 up to 180 cm
From 30 cm to 60 cm	1 x 200, 300, 400 mm or 3 x 140, 160 or 180 mm
From 60 to 100 cm	5 x 160, 180 or 200 mm
From 100 cm to 150 cm	6 x 180, 200 or 240 mm
From 150 cm to 200 cm	10 x 140, 160 or 180 mm



### Hydraulic lift-out

With the use of Section Control automatic part-width section control, the hoeing units can be hydraulically individually lifted and lowered. On fields that are tapered at the headlands or on border strips, the parallelograms can be lifted individually, for example. Damage to the crops is thus prevented. They are controlled either manually through the terminal or with GPS. In doing so, the working position is determined and the

recording is stopped at the headlands. Section Control can either be operated using the tractor's own control terminal or the Amatron 4 control terminal. In doing so, part-width section control takes place through the ISOBUS communication. By using Section Control, overlaps and gaps can be minimised. The implement control takes care of documenting the working time and the area. This relieves the driver's workload.



#### AmaTron 4

With the ISOBUS-compatible AmaTron 4, AMAZONE and SCHMOTZER offer a particularly comfortable control terminal for the hoeing machine. The terminal has an 8-inch touch display and is equipped with a serial interface for the GPS receiver, a camera input as well as inputs for the simulated tractor ECU. In addition to the sole implement operation, it controls the GPS switch automatic part-width section control (Section Control). Moreover, the AmaTron 4 can be used for documentation and job management. Data exchange via agrirouter is also possible. All applications are already pre-installed and can be initially tested free of charge for 50 hours.



## Single combined parallelograms EKP / EKP-H

### The specialist

#### EKP

The EKP has an integrated Vibro share guide, whereby the depth of the share is precisely guided and therefore dormant weed and grass seeds (light germinators) are not carried to the surface. On conventionally managed farms, especially the stimulation of resistance grass weeds can be decisive, e.g. slender meadow foxtail.

In addition, double shallow ridgers and the weed and grass harrow can be installed on the EKP. For tractors with little lifting height, the passage clearance of the EKP can be set in three stages. Especially with very narrow rows and/or very high weed pressure on the field, the EKPs can be arranged alternately short and long, to reduce the susceptibility to blockage to a minimum and maximise the crumbling effect. The passage clearance is 60 cm.





### **EKP-H** (high)

The EKP-H is the small combined parallelogram, ideally suited for narrow rows. The shape and passage clearance of the EKP-H is adapted to the big Combined PP, so that the two parallelograms can be combined on a hoeing machine, e.g. KPP in the tramlines, which is why the "H" suffix is added. Here, the passage clearance is 80 cm. Both the smaller EKP and the bigger EKP-H are each equipped with a share, and have integrated depth control with a guide wheel. Depending on the row width, the shares have a different size. Like on the KPP, a wide range of additional tools can be used on the EKP-H.

Wide rows and the tractor track can be hoed with several EKPs per row or hoed across the full area in combination with a Combined PP. One hoe share per parallelogram ensures excellent ground adaptation and uniform hoeing depth.



## Multi-purpose parallelogram MPP

### The proven one

Depending on the soil properties, two or three rigid or spring-suspended tools can be used on the MPP. Due to the low construction height and depth, the MPP is mid-mounted. A Farmflex roller with a diameter of 200 or 280 mm handles depth control. The soil penetration can be adjusted in five stages using a double spring load. The duck-foot share, in conjunction with hoeing rollers, is particularly well-suited for smaller plants.





## Single parallelogram EPP

### The narrow one

Like the EKP, the hoe shares on the single parallelogram are individually parallel-guided. The individual guidance ensures a precise hoeing depth, regardless of the cutting width and number of rows. The EPP is used for very narrow rows and is mid-mounted. The tension spring can be adjusted in stages and ensures good ground adaptation. Like on the EKP, installation with alternating short and long EPPs ensures good crumbling without blockage. The EPP can also be equipped with Vibro springs or can be used in conjunction with the MPP for larger row widths, e.g. mid-mounted for maize on the Fendt F 220 GT.



# Hoe shares

---

## Tools for any requirement



### Duckfoot shares

The duckfoot share is the crucial element for optimal tillage. The flat design ensures deposition and desiccation of the weeds at the surface. With share widths of 80 mm to 380 mm, the right solution is available for any row width. The long flanks minimise the susceptibility to clogging and achieve an intentional overlap of several shares in a row, thus preventing, e.g. weed roots from slipping through. Material hardening and the highest quality reduce wear to a minimum, even on sandy soils.



### Rotavator blade

The optional Rotavator blades represent an alternative to the standard hoe shares directly at the plant. They prevent piles of weeds and grasses at the end of the rows with higher weed densities. The continuous cutting surfaces break up crusted soils optimally. In addition, unwanted clods can be cleared out of the rows. The Rotavator blades can be used independently of the row width.



### Hoeing chisel

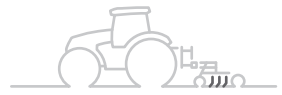
Hoeing chisels are available from SCHMOTZER as an additional option. For narrow row spacings, as is often the case in cereal crops, they can be used to work in the connecting row. Moreover, the hoeing chisels can be used on heavy and/or dry soils to break up the soil.



### Spring tines

The spring tines are a possibility to achieve a mixing effect and incorporation of organic matter into the soil with hoeing technology. In doing so, weed deposition at the surface is limited. The focus is particularly on crumbling. The spring tines can also be used in the rows for seedbed preparation.





# RAPIDO quick-change system

Coulter plate changing in a few minutes

## Solid cooperation

The hoe share must form a unit with the share shaft. A simple bolted connection allows too much play and pushes the hoe share up on hard soils. Weeds that are stuck slip through, similar to with the spring hoe tines. Moreover, it is important that the depth of the share is individually and precisely guided. This is why our shafts are toothed.

## Firmly riveted

As standard, the share blade and shaft are firmly riveted together. The riveted shares have a steeper pitch and therefore result in stronger mixing of the soil.

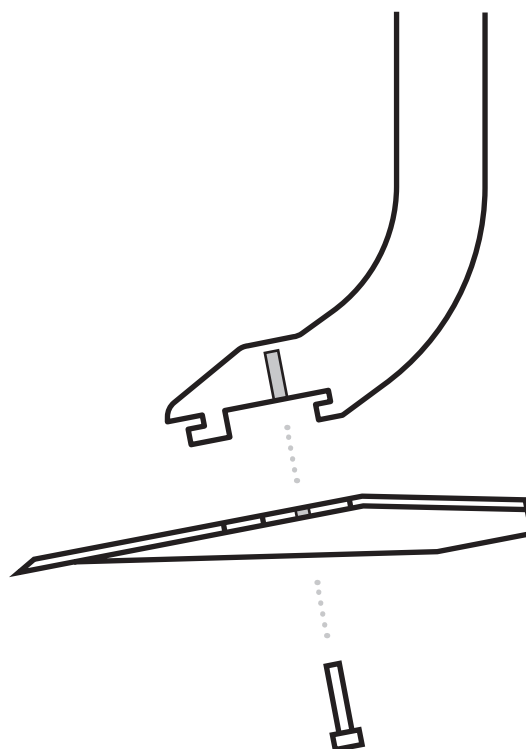
## RAPIDO quick-change system

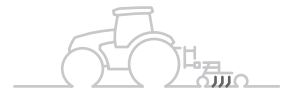
A new quick-change fastener and an improved share plate that surpass all existing systems. The RAPIDO quick-change system enables a complete change of the blade plate within a few minutes. Only one tool is required for this. In addition, this variation enables better penetration and wear behaviour. The very flat design also produces low counter-pressure from the soil. As a result, the working depth is reliably maintained and a burying effect is minimised, particularly for very small and sensitive crops. Thanks to standardised processes and subsequent treatment, maximum quality hardening is achieved.



### Typically SCHMOTZER

- Highly wear-resistant thanks to standardised and uniform processes
- All hoe shares can be combined with the SCHMOTZER Vibro spring, even in different sizes within a hoeing width. In contrast to spring tines, root weeds can also be suitably removed.
- Precision-machined centimetre adjustment notches enable precise hoeing depth.
- The RAPIDO quick-change system reduces the time and monetary costs to a minimum.





# The SCHMOTZER Vibro system

Exposing weeds and grasses with the "Vibro effect"



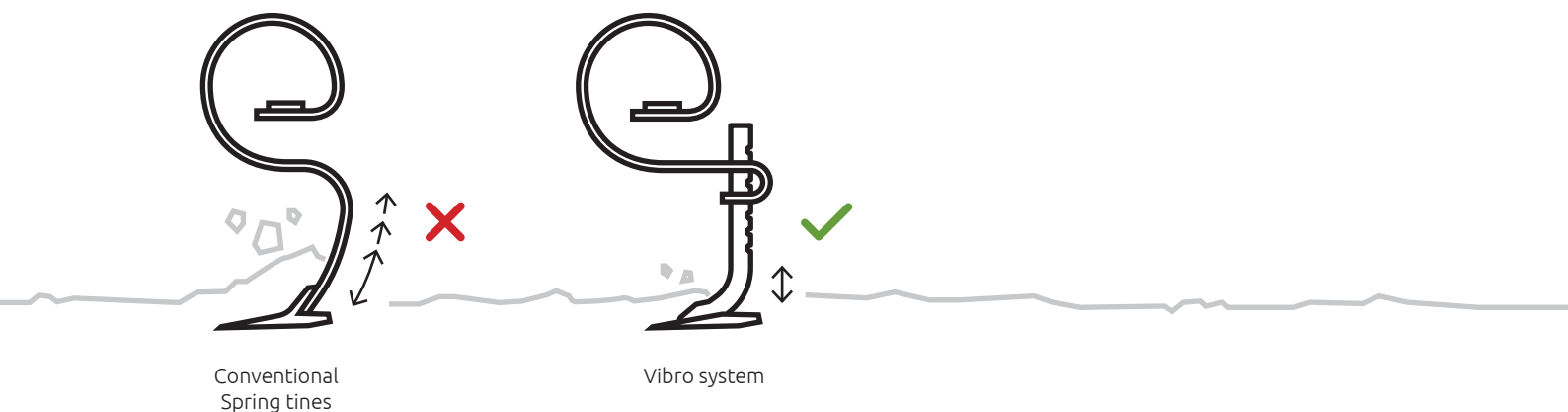


## The Vibro share

The Vibro shares are semi-spring loaded tools, consisting of a spring, the shaft, and the share. Thanks to the "Vibro effect", weeds and grasses are exposed more thoroughly, and more shallow and uniform hoeing is possible while protecting the roots and capillary water. The Vibro shares ensure a precise working depth and blockage-free practical operation. The thickness and shape of the Vibro spring are designed such that the best penetration angle is automatically set when starting off without changing the working depth. There is no springback; the springs only produce uniform vibrations. In the upper position, strong vibrations are achieved for light and loose soils. The middle position produces suitable movement for medium to heavy soils.

## Mode of operation

- The Vibro spring enhances the crumbling effect, pulling up of weeds, and also allows individual tool adjustment, e.g. deeper in erosion channels and higher on the plant row. Centimetre notches on the share shaft help with the adjustment.
- The action of the Vibro shares is more shallow, and is more favourable for capillary water than conventional spring tines. Compared to conventional shares, there is little soil movement. This strongly reduces piling up.
- The Vibro share enables effective crop management while remaining gentle on the roots, even with large plants. The shallow mode of action, particularly during the last hoeing pass, ensures that dormant weed seeds are not pulled up, which can otherwise cause late weed infestations.
- The hoe shaft, available in different thicknesses, stands perpendicular to the ground and shakes itself free of weeds thanks to the vibration of the top spring.
- The right-angled arrangement of the share and shaft ensures that the weeds are optimally carried up to the soil surface to dry out.



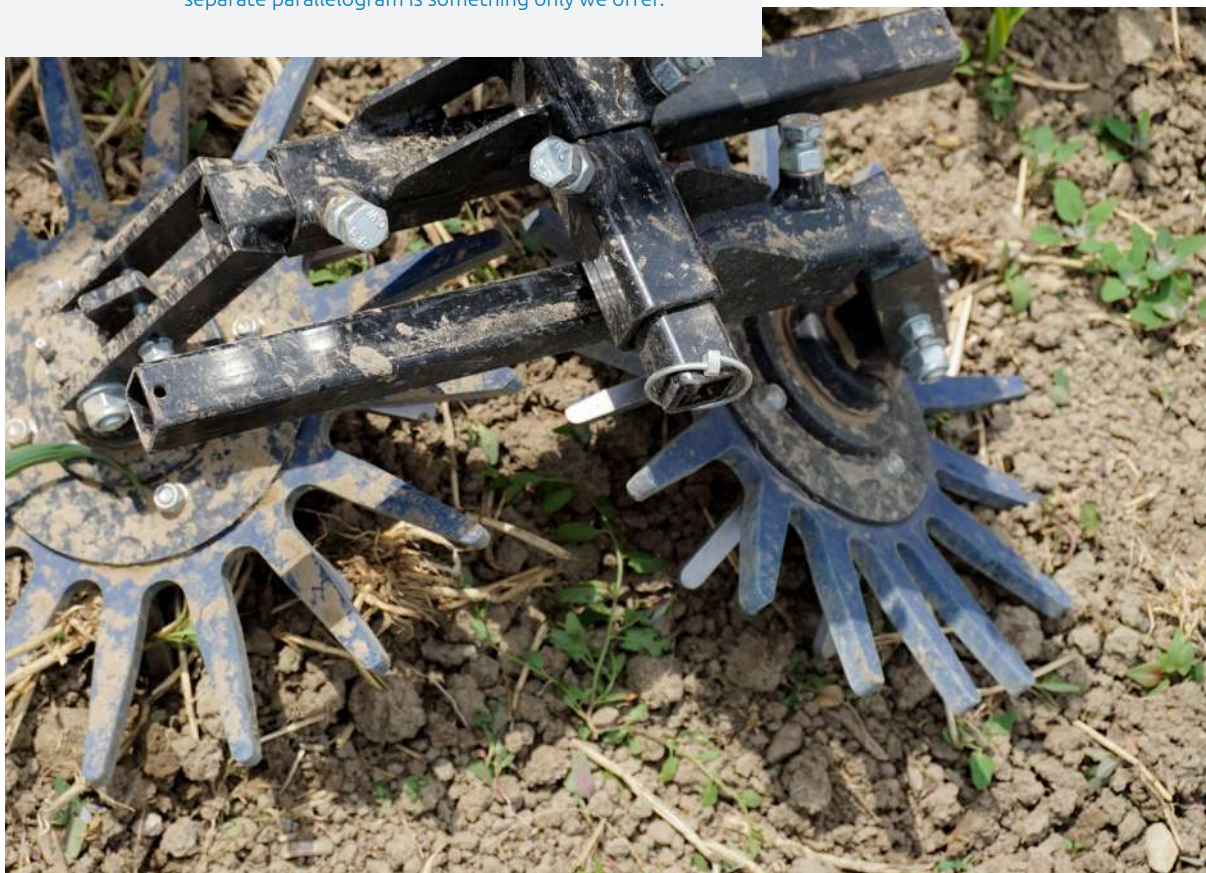
# Finger hoes

Weed control on the rows



Typically SCHMOTZER

Always the right working height –  
Independent depth control of the finger hoes with a  
separate parallelogram is something only we offer.





### The SCHMOTZER finger hoe

Tillage in the plant row represents one of the biggest challenges for mechanical weed control. The solution from SCHMOTZER: finger hoes.

Finger hoes work in the plant row, where the hoe shares can't reach. Two finger hoes made of extra hardened plastic reach through the plant row. Dormant weed seeds are covered up again so that they don't get any light to germinate.

A separate parallelogram ensures precise height guidance of the finger hoe, even when, e.g. hoe parallelograms are impeded by erosion channels or stones. Utmost care and precision is required, especially when working in the rows.

### Mounting on a separate star parallelogram

At SCHMOTZER, the finger hoes are attached to an additional spring-loaded star parallelogram, in contrast to the conventional design. This ensures that the tools adapt better in a horizontal plane. A lever effect is ruled out.

### Adjustable degree of aggressiveness

The inclination of SCHMOTZER finger hoes can be adjusted to adapt the aggressiveness of the finger hoes to the size of the crops. For young and sensitive crops, a setting angle of  $40^\circ$  is recommended for the 1st and 2nd hoeing pass. The clearance force then flows towards the soil and the rotational speed is also lower.

For established, taller crops and high weed populations, a setting angle of  $20^\circ$  is recommended for the 2nd, 3rd and, if applicable, 4th hoeing pass. The clearance force goes towards the plant. In doing so, the weed is pulled out of the row in the first radius, and, in the second radius, soil is banked up. As a result, the roots and any remaining weeds are covered again.



Young or small crops



Large crops



### Typically SCHMOTZER

- Extra hardened and angular-shaped drive fingers and ball bearing mounted drive plates for active continuous operation
- Adjustable aggression angle
- Independent depth control thanks to extra star parallelogram

# Hoe protection discs

## Protection against soil clods and dust

Until closure of the rows, protection discs are required for various crops to protect the plants against soil clods and dust. This also allows for higher working speeds.

To ensure that the plants are not damaged, the SCHMOTZER serrated hoe protection discs or round hoe protection discs can be relieved without tools.

### Other advantages of the hoe protection discs include:

- Self-propelled without cutting effect and damage to the crops
- Soil guidance by their own weight
- No blockage
- Perfect adjustment of the hoe protection disc
- The special contour of the protection disc ensures gentle guidance through the plant row
- Diverse areas of application, e.g. for maize, sugar beets and sunflowers



### Round hoe protection disc

Round hoe protection discs have sharp edges and are particularly suited for intentional cutting of the soil on the left and right beside the crop plants, e.g. for vegetable cultivation.



### Serrated protection disc

The serrated hoe protection discs in particular offer various advantages. This is due to the specifically selected blunt teeth.







## HSZ: For sensitive crops

Serrated hoe protection disc

- 400 mm inner diameter, 500 mm outer diameter
- Suitable for KPP, MPP, EKP and EKP-H
- Mounted on the profile rail or parallelogram



## HSU: For any application

Round hoe protection disc

- 280 mm diameter
- For KPP in cereal crops
- Concave disc can be adjusted vertically and horizontally
- Mounted on the profile rail



## HS 85: For Vibro shares

Round hoe protection disc

- 280 mm diameter
- For EPP long, EKP long and MPP with Vibro share spring
- Mounted on the profile rail



## HS 62: For rigid shares

Round hoe protection disc

- 280 mm diameter
- For EPP short, EKP short and MPP with rigid shares
- Mounted on the profile rail





# Ridging tools

## Light off for grasses and herbs



### Shallow ridger

The SCHMOTZER shallow ridger is fastened on the Vibro share directly beside the plant row. Depending on the number of shares, shallow ridders are available for the right and left plant row. If only one share is used in the parallelogram, a double shallow ridger can be used there. The ridging intensity can be finely adjusted, and therefore it can be perfectly adapted to the operating conditions and objectives. The shallow ridger achieves a very good ridging effect, is gentle on the crops, and can be regulated through the forward speed. Moreover, the quick-change system is also installed here. The quick-change system allows the shallow ridders to slide onto the share shaft like a shoe and be bolted there. However, the share does not need to be removed for this.



### Heaping discs

SCHMOTZER ridging discs adapt to the crop row and the soil conditions. Here, the soil is piled up on the plant row. This takes away the light required by the weeds to grow. For field bean and maize cultivation, soil is piled up near the crop plants and a similar weed control effect is achieved. This method is particularly suitable for stony soils with a high proportion of organic material.



### Share ridders

With the coulter ridders, soil can be precisely heaped up for ridge crops. They represent an alternative to the classic duckfoot share.



SCHMOTZER offers various ridging tools to heap up the soil on the rows. Particularly for legumes, it provides additional warmth and growth stimulus, as they prefer intentional burying. For the cultivation of legumes, the SCHMOTZER ridging discs can even completely bury the row. For example, soya plants are capable of growing free within a short time, while weeds and grasses remain buried.

# Harrow



## Exposure of grasses and roots

By using the tined weeder, grasses and weed roots are exposed and dry more efficiently thanks to the additional distribution.

The tine weeder is a trailing element. It makes it possible to carry the cut-off yet buried weeds to the soil surface and to deposit them there for desiccation. Moreover, the plant row can also be harrowed to have a control option in areas that are not hoed. Another advantage is the additional crumbling effect that is achieved by the harrow tines. Since the height of the harrow can be adjusted, the intensity can be changed and the harrow can therefore be used for any soil type.

The integrated spring allows the harrow to deflect on, e.g. stones without suffering damage, and the susceptibility to blockage can be minimised.

### Roller harrow

The roller harrow behind the hoe unit helps to break up soil crusts in each plant row and significantly improves the water and air balance in the soil. This mobilises additional nutrients and promotes the tillering of the plants. Thanks to the rotating movement, weeds are also uprooted and dry up.



### Typically SCHMOTZER

The harrow systems are available for the single and combined parallelogram (EKP and KPP) up to a row spacing of 75 cm. The harrow can also be mounted behind the finger hoe.



Please note that shallow ridgers and the harrow work against each other.



# Row guidance systems

Comfort for the driver, precision at work

Mechanical weed control in row crops calls for maximum precision. Incorrect adjustment of the implement or carelessness on the part of the driver can cause serious damage to the crops.

Row guidance systems were developed to make it easier on the operator and the implement. They can be manual, mechanical or electronic, and ensure that the implement optimally stays on track.

## When do I need a row guidance system?

Row guidance systems are particularly useful when large areas are being cultivated. When the driver has to be highly concentrated a long time, they tire more rapidly at their work. In this case, a row guidance system provides relief and with electronic control, it fully assumes the steering of the implement in the rows. As a result, not only is the driver considerably relieved and the crop protected, it often even enables higher forward speeds as well, which can increase the area efficiency.

These systems are particularly helpful on sloping fields. Here, too, can driving errors and slopes be automatically compensated by the implement.



### Manual steering

With manual steering, another person can sit at the rear on the implement. Thanks to a steering mechanism, they can concentrate on steering in the row without distractions. This additional person is particularly beneficial in young crops or with strong weed populations.



### Electronic steering

Cameras fully assume the viewing of the crop. They have several ways to distinguish weeds from the crop to achieve optimal results, e.g. based on the size, colour or arrangement, and detect where the hoeing machine must be steered.



### Mechanical stabilisation

In this case, two stabilisation discs are used. They are spring-loaded and are automatically guided in the row, essentially following the tractor and stabilising the course of the hoe. Due to the rigid arrangement, they can optimally compensate for slight steering errors. Physical drift, e.g. on very light and free-flowing soils, is then no longer a problem.



### Sliding frame

Regardless of who or what takes care of the steering, there has to be a unit that takes care of counter-steering. A sliding frame is used for this, which implements the corresponding signals with linear or parallel movement.



## Typically SCHMOTZER

Row guidance system = Control unit + slide unit



## Control unit



### **SCHMOTZER OKIO** camera

The OKIO camera detects the crop by its leaf shape, records it with 30 images per second, and sends the data to the terminal. The terminal then sends signals to the row controller. The row detection is based on state-of-the-art algorithms from industrial image processing and can also detect different colour tones (light/dark). This enables reliable distinction between the crop and weeds. The precise row detection also allows for strong slopes. The optional slope sensor enables safe operation on slopes. With the parallelogram sliding, the implement can be very finely steered

into the rows, without putting side thrust on the tractor and causing it to drift off. The camera has single-row detection. Software updates or problem solving by the service partner take place conveniently via wireless LAN. Remote maintenance enables direct access to the terminal and the updates or troubleshooting can be directly performed.



## SCHMOTZER HORUS camera

The system looks for plants that form a straight line with their arrangement (row spacing, plant width, and plant height). The 3D mode enables the detection of plant rows based on differences in height. Thanks to the colour selection, the system can detect bluish-green, yellowish-green, and red plants in addition to green plants. The measured values are transmitted to the control unit via CAN bus. The speed sensor measures the current speed of the implement and emits an electric signal. The hydraulic valve then automatically shifts the sliding frame hydraulically. All of the parameters are displayed and set on the terminal. The driver can also watch the rows in a video image, and react to deviations. The optional lighting makes it possible to also work at night or in the

early morning. This system enables the recording of up to 5 rows in parallel, and thus achieves maximum operational reliability, even if there are no plants in a row due to lacking emergence or similar. The proportional valve is controlled dynamically, enabling gentle and uniform operation of the sliding frame.

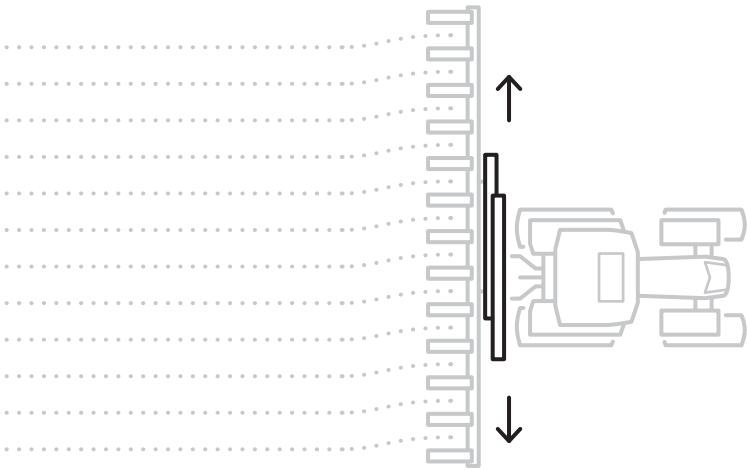


## Manual steering

The steering wheel with oil motor is connected to the hydraulic control circuit. It is very easy for the steering person to keep the hoeing machine on track. They can steer manually all day long while sitting in a comfortable seat. This special equipment is particularly interesting when special crops are to be hoed at a very early growth stage or with strong weed populations.

- Special equipment as a safety back-up
- Use in special crops
- Hoeing with missing crops in the row

# Slide unit



## AV 4

### Linear sliding frame

By sliding on one level, the AV4 is particularly suited for working widths up to 4.5 m and for smaller tractors as well as with manual control.

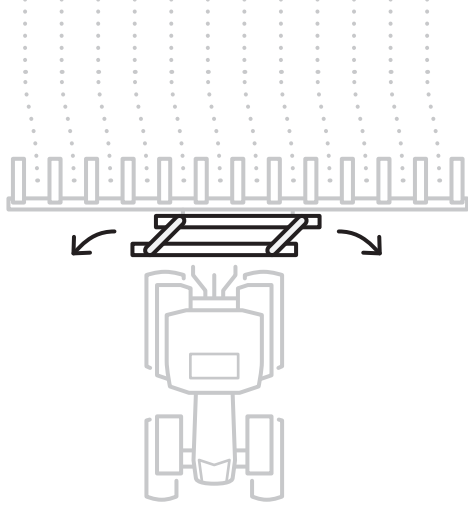
- Linear sliding
- For working widths up to max. 4.5 m
- Sideshift 40 cm (+/- 20 cm)
- Compact frame layout
- Quick changing of implements on the sliding frame thanks to latch couplings and detachable hydraulic connections (optional)
- Camera steering and/or manual steering, individually or combined



**Typically SCHMOTZER**

One of our systems can be used to work in many different crops.





## AV 5

### Parallel sliding frame

With a sliding path of 64 cm (+/- 32 cm), this frame is also suitable for radial field crops. The tractor can be additionally stabilised with coulters when working on slopes. Thanks to the unique design with parallelogram, lateral forces on the tractor rear axle are reduced to a minimum. Therefore, excellent results can be achieved particularly on slopes. The parallelogram helps to achieve very sensitive alignment in the plant row. Only one steering system is required for several hoe sets and row widths. A hydraulic cylinder acts on the centre of the lever arm of the AV5, and thus shifts the hoeing machine. In doing so, the row adaptation is achieved with half the hydraulic force compared to conventional linear sliding. In combination with the control unit, this technique allows very precise hoeing near the crop.

- Sensitive parallel sliding via double frame
- Significant reduction in the physically occurring lateral forces
- For working widths of 3 to 9 m
- Sideshift 64 cm (+/- 32 cm)
- Minimal strain on the tractor
- Slopes of up to 40% are possible with camera steering
- Quick changing of implements on the sliding frame thanks to latch couplings and detachable hydraulic connections (optional)
- Second steering person and/or camera steering

## AV 10

### Shifting with steering wheels

Instead of guide coulters on the hoeing machine, optional steering wheels can be installed. They are hydraulically controlled and are particularly suitable for rigid implement slide rails with large working widths (6-12 m) and in conjunction with the manual steering system. The shifting runs in a parallelogram, with which the geometry of the displacement cylinder runs a lot more smoothly. This results in a dynamic process and gentler shifting.



# Application systems

---

## GreenDrill – Seeding and fertilising technology

The GreenDrill is suitable for spreading nurse crops, fine seeds, and micropellets. The substrate is distributed by baffle plates behind the hoe units. The seed hopper has a volume of 300 l and is easy to access with steps. In the metering area underneath the seed hopper, there is a seeding shaft that is equipped with normal or fine seed metering wheels, depending on the seed type and spread rates. The seeding shaft is driven electrically, and the fan is driven electrically or hydraulically. Control computer 5.2 is available to control the implement. It can be used to switch the seeding shaft and the fan.

A selection menu is also available to support calibration and to display the forward speed, the worked area, and working hours. The seeding shaft speed automatically adapts to the changing forward speeds as soon as the control computer is connected to the 7-pin tractor signal socket.

### **Fan selection**

To select the right fan, the working width as well as the size and the weight of the seed must be determined. The boundary conditions to be expected, such as dust or straw, are just as important.





# Prefect results

---

This is how a SCHMOTZER hoeing machine achieves top performance

**1. Good preliminary work is half the battle**

Homogeneous incorporation of crop residues  
Targeted control of weeds, grasses and volunteer grain

**2. Precise seed placement**

Level and reconsolidated seedbed  
Tolerance-free maintaining of the defines row spacing: seeding width = hoeing width

**3. Minimise sources of error**

The track width must be correct  
Minimise mechanical play on the tractor  
Locking the lower links

**4. Right tools, optimum results**

Tools coordinated with the crop  
Adapted row protection systems

**5. Ready for take-off – Adjusting the implement**

Adjust the working depth  
Align the tilt of the hoe  
Determine the width of the band to be hoed

**6. In coordination with Petrus**

Dry soil conditions in the morning, maximum success in the afternoon

**7. Just in time**

Weeds and grasses that are too strongly established are difficult to eliminate  
Timeliness robs the weeds of time

**8. Keeping an eye on the crop**

Also check the row spacings to the connecting rows  
Ensure sufficient root development of the crops when using additional tools

**9. Keep a sharp eye on the field**

Check for emergence and double seeds  
Adapt the row guidance systems to the size of the crop plants



*Celebrate hoeing success  
and harvest greater yields*







