

WHEN FARMING MEANS BUSINESS

Realising the full potential of farming is about growing and developing your business, not only your crop or livestock, but also your profit. Improve productivity and profitability by focusing on the positives and minimising disadvantageous aspects, through strong, dedicated management.

Success springs from determination and clear targets, from laying down the appropriate strategy and allocating correct investments for the future. Quality results require the right ideas and equipment. When there is work to be done, you need the optimal setup and smart solutions that support you towards an easier, more profitable way of working. You need solutions that make tough and demanding conditions less complicated.





YOUR KVERNELAND INTELLIGENT FARMING SOLUTIONS

Choose the best farming solution for you and your land. Combine the highest possible yields with sustainability. This will start with the correct tillage. The choices you make depend on various factors and should match your specific circumstances, like soil structure, crop rotation, residue management, economic and ecological viabilities.

The choice is yours!

You must consider environmental and legal issues. From conventional methods to conservation tillage: the balance of operations at the right time has to be found to achieve high yields with the best soil condition (air, moisture, biological activity, etc.) with a minimum amount of energy, time and investment. For this, Kverneland offers a full range of intelligent farming solutions.

CONVENTIONAL TILLAGE -

Conventional Tillage

- · Intensive method of cultivation
- Complete soil inversion e.g. by a plough
- Less than 15-30% crop residues left on soil surface
- Seedbed preparation done by an active tool or special seedbed harrow
- High phytosanitary effect by reduced pressure of weed and fungi diseases fewer herbicides and fungicides needed
- Better dry-off and faster increase of soil temperature for better nutrients absorption

CONSERVATION TILLAGE

Mulch Tillage

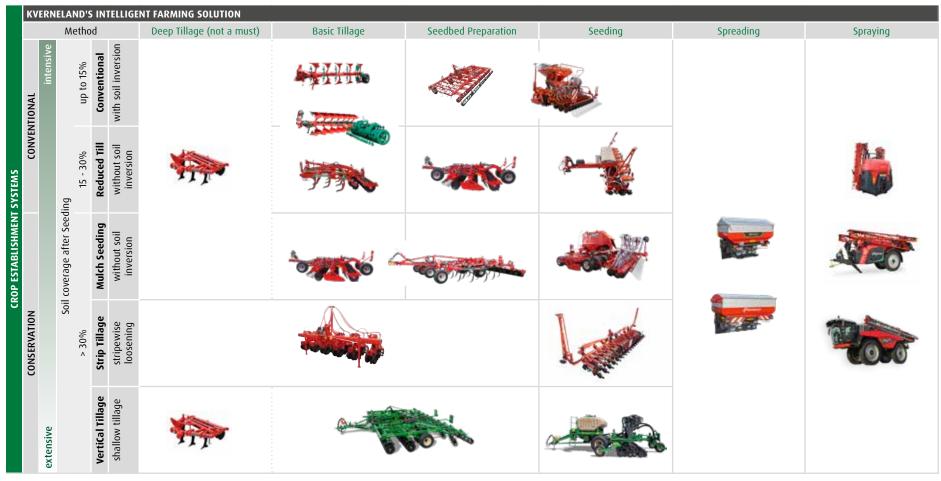
- Reduced intensity in terms of depth and frequency
- More than 30% of residues are left on soil surface
- · Extended repose period of the soil
- Cultivator and/or discs incorporate the crop residues within the top 10cm of soil for stable bearing soil
- Full-width tillage seedbed preparation and seeding in one pass
- Protection against soil erosion; reduce soil loss by run-off and improve water storage capacity.
- · Improvement of soil moisture retention

Strip Tillage

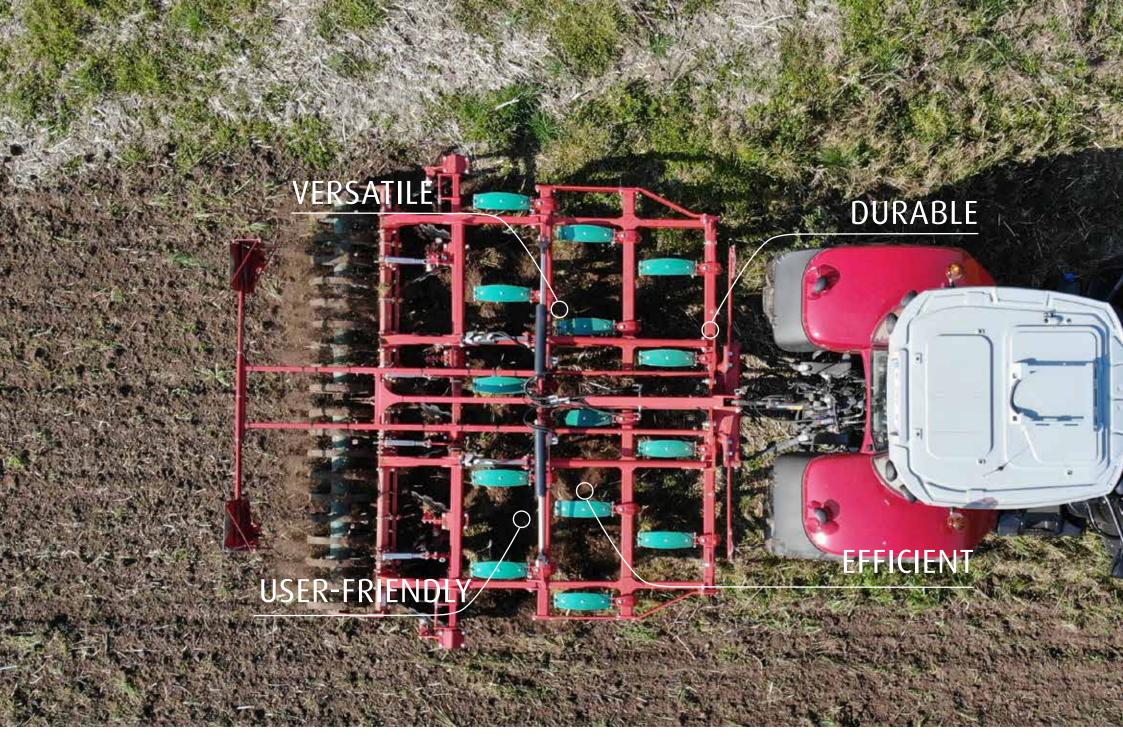
- Zonal strip loosening before or during seeding of up to 1/3 of the row width (Loibl, 2006). Up to 70% of the soil surface remains untouched
- Strip-till combines the soil drying and warming benefits of conventional tillage with the soil-protecting advantages of no-till by disturbing only the area of the soil where the seeds are placed
- Exact fertilising deposit
- Soil protection against erosion and drought

Vertical Tillage / No-Till

- Extensive method
- Working soil vertically avoids additional horizontal layers or density changes
- Increasing water infiltration, root development and nutrient take-up
- Plants' roots dictate the overall health of the plant, as they deliver nutrients and water throughout the season, contributing to a higher yield
- A strong set of roots make plants more resistant to wind and drought.
- Lower energy input required



CLASSIFICATION OF TILLAGE METHODS KVERNELAND (Source: adpated from KTBL)





HIGH PERFORMANCE WHEN THE TIME IS RIGHT FOR YOUR SOIL

Versatile

Weather conditions vary and also crop rotations make it difficult to have just one cultivator to meet all requirements. Depending on the season and conditions, you want to manage high amounts of residues, leave a weatherproof surface or fine seedbed, cultivate shallow or deep. For this you need a high capacity cultivator with a full range of shares that is versatile.

Durable

You want a machine that lasts, that copes with the stress on the material over a long time. Still you don't want extra weight. That's why Kverneland uses hollow tines which are heat-treated to optimise the ratio between reliability and weight. Less stress on the tines means less stress on the frame means long durability.

User-friendly

You want a multi-functional cultivator which is easy to use. To be able to adjust items on the go, like the working depth, to the very specific conditions, but not waste hours by changing the tines. Kverneland cultivators offer the Knock-on system to change the points on your cultivator within seconds.

Efficient

Soil structure is not the same on every field and weather conditions vary. You want the best equipment for your specific conditions. Kverneland offers a large range of accessories to meet your requirements. Benefit from the full range of shares and rollers for the best cracking and crumbling effect.

Perfect soil preparation at lower costs.

STUBBLE CULTIVATION

INCORPORATION, LEVELLING AND CONSOLIDATION

Powerful and efficient performance – that is what the Enduro or Enduro Pro offers. The machine can operate at high forward speeds whilst maintaining a consistent working depth.

With the Enduro or Enduro Pro, Kverneland provides a cultivator which is the right choice for all conditions and for a wide range of applications. The stubble cultivation, especially within a minimum tillage cultivation program, conserves soil structure and moisture and limits erosion. It is an operation which requires great consideration. Stubble cultivation will be the basis of success or failure of the following crops. It is important to ask "WHY" do it? What is the reason?

Stubble cultivation is the basis of success or failure of the next crops.

Interruption of the "green bridge"

If the cropping sequence is repeated within a short period of time, then it is necessary to interrupt the "green bridge" to maintain soil health. The transmission of root diseases or weed problems from one crop to the next needs to be prevented with the aid of managed cultivation. Volunteer plant residue from previous crops should be destroyed to help reduce the need of herbicides and habitat for pests such as slugs.

Volunteers germination and straw decomposition

A shallow first cultivation ensures a quick and even emergence of volunteers. Therefore a complete cut across the entire working width is needed to reduce evaporation and seed banks as well as to destroy weed roots. A deeper second pass cleans the seedbed. Straw decomposition should also be accelerated as many diseases are transferred by straw. Effective residue management is important.

Supporting the soil structure

A deeper second pass cleans the seedbed. A quick cultivation after harvest benefits the stable soil structure. Improved consolidation of the surface and deep incorporation of residue assists in the control of pests such as slugs or mice by restricting their movement in the seedbed to the surface.









FROM SHALLOW TO DEEP ONE CULTIVATOR IN TWO VERSIONS

For today's modern farms the demands for cultivation have changed. Tight time slots have to be balanced with higher machine performance. Restricted crop rotations call for an adaption in technology that accomplishes all requirements of modern crop cultivation. Kverneland proposes different configurations depending on the conditions of use, but also the power ability:

Kverneland offers one cultivator in two versions which are different in their roller attachment and user-comfort. The **Enduro Pro** has a double parallelogram roller linkage where depth settings can be done hydraulically on-the-go. The **Enduro** is the lighter version without parallelograms and with hydraulic depth adjustment spacers.

The Enduro or Enduro Pro has a well-organised tine arrangement over 3 tine rows. The challenge to cope with long residues has been in focus during the design process ensuring optimum mixing and intensive cultivation. The tine spacing is 285mm on rigid and 270mm or 275mm on the fold versions; the tine position has been optimised to ensure a smooth transition of soil flow.

High performance at high speeds.

On Enduro Pro a maximum working depth of 35cm is possible (30cm on Enduro). The 320mm bolted wings, also available with Knock-on option, ensure a complete cutting over the entire working width even when the machine is adjusted for shallow work. The high inter-row clearance of 750mm and the high underbeam clearance of 870mm ensure blockage-free operation in different conditions (maize, sunflower, wheat, oil seed rape stubbles or big intermediate crops).

THE ONE PASS SYSTEM REDUCES COSTS AND LOSS OF MOISTURE

On farms the Enduro or Enduro Pro with parallelogram linkage of the rear roller becomes a reliable implement essential for all operations without making pans! The range of operations is versatile (5-35cm) from shallow to deep stubble cultivation due to the strong tine capacity and high underbeam clearance of 870mm.



High quality soil cultivation.



Cultivate the soil

The Kverneland Enduro or Enduro Pro offers a configuration of 3 rows on a mounted version. In combination with the 270/275/285mm tine distance, it provides nice mixing and finishing without the risk of blockages. The Enduro or Enduro Pro is equipped with Triflex or shear-bolt tines. Both special heat treated hollow tines have the same special angles and can "flex" a certain way around obstacles and erase stress peaks by dispersing it throughout the implement. The Triflex tine with a release force of 700kg is equipped with leaf spring protection. A wide choice of bolted (heat-treated or carbide) or Knock-on shares can be combined with different deflectors to suit varying soil conditions, working depths and soil disturbance.



Levelling the soil

The Kverneland Enduro or Enduro Pro offers the choice between levelling tines and levelling disc systems. All units are spring-or rubber buffer loaded and can be adjusted in working depth. Also the angle to the ground can be adjusted. In combination with special border equipment, perfect levelling is achieved. On the Enduro Pro version a second parallelogram within the levelling equipment ensures a consistent working angle even when the depth settings are changed. The more tines/discs the more levelling!



Consolidating the soil

The last step of perfect stubble cultivation is soil consolidation. A level weatherproof seedbed provides the ideal finish, reducing slug damage, preserving moisture and increasing the weed regrowth. Straw decomposition is also accelerated since a larger quantity of straw gets in contact with the soil bacteria by effective mixing. Therefore, a wide range of rollers are available to meet the various conditions and requirements. Finally, the roller also ensures a constant control of the working depth.

ENDURO PRO





STRENGTH AND DURABILITY ADVANCED TESTING PROGRAM

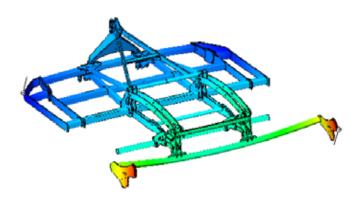
Before the Enduro or Enduro Pro was launched into the market, it had passed a whole series of tests to ensure the impeccable quality of the product.

- Sophisticated technologies are used for each development such as static load test, finite elements method (FEM) and a lifetime shaking test.
- Finally, the machines are tested in the field under different conditions to reconfirm that the requirements to all functions and strength are met. A strict LOR is defined to meet all variations of soil conditions.

Proven Reliability.

The frame is a result of a long study made by **FEM (Finite Element Method)** calculation to optimise the steel over the working width and proposing a strong structure suitable for tractors up to 350hp.

The complete Enduro or Enduro Pro range has been designed to be combined with the heaviest rollers in the range. All the most aggressive scenarios (deep working when turning, headland turns, transport tests, ...) have been considered to make the different frames as strong as possible and thus guaranteeing the proven Kverneland quality.



USER COMFORT IS KEY EASY ADJUSTMENT

Kverneland always focuses on safe operation and user comfort. With all the adjustments being done without the need for tools, a lot of precious time is saved!

Adjusting the Enduro and Enduro Pro is easily done. When setting the working depth of the tines, the parallelogram design allows the correct depth of the levelling discs to be maintained without adjustment in most conditions.

In addition, there is hardly any maintenance to be done apart from changing wearing parts.

The Enduro can simply be connected/disconnected from the tractor due to the easy hitch linkage. And this is even more comfortable with the hydraulic depth adjustment either on-the-go with the Enduro Pro or by spacers on the Enduro.

Simple adjustment from the beginning to the end.

	Enduro	Enduro Pro			
Hydraulic depth adjustment	✓ with spacers	✓ 0n-the-Go			
Parallelogram on depth	X	✓			
Parallelogram on levelling	X	✓			
Max. depth (cm)	30	35			





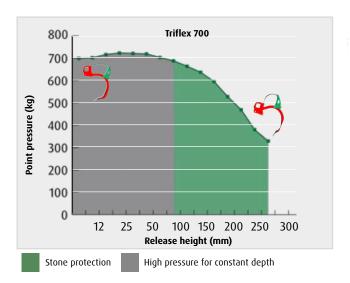


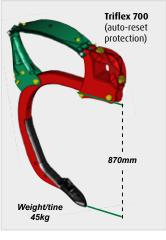
VERSATILE: FOR STONY CONDITIONS AND HIGH PENETRATION TRIFLEX 700 & SHEAR-BOLT TINES: STRONG AND FLEXIBLE

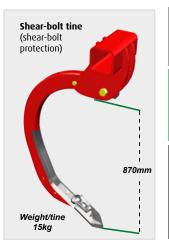
The auto-reset Triflex 700 tine uses the well-known Kverneland leaf spring system to ensure a high point pressure of 700kg in work and a smooth release curve when the tine hits an obstacle. A shear-bolt protection tine is also available. Both hollow, special heat treated tines have a narrow design and special shape which reduce the pulling forces while ensuring a perfect penetration even in heavily compacted soil. It is the perfect choice for deep loosening and working on heavier soil types strewn with stones.

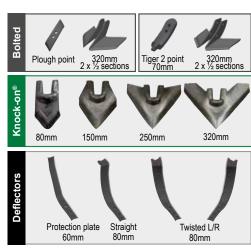
Proven leaf spring and Knock-on® system.

The Triflex 700 and shear-bolt tines can be equipped with different shares to adapt to varying working depths and tasks. Seven options of share design are available with the Knock-on® system. It is the easiest way of changing parts on a cultivator, either to adapt the machine to the job to be done or to change wearing parts.









EFFICIENT RESIDUE MANAGEMENTWITH EFFECT ON THE SOIL STRUCTURE

Trash removal can increase risk of erosion and compaction caused by additional traffic.

Residue left on the surface requires correct consolidation to reduce erosion and assist breakdown for nutrient return. Incorporation must be carried out evenly within the soil profile to avoid restrictive layers for water infiltration, root development and soil workability.

The straw incorporation is very good and well dispersed over the full working width and depth even with wing shares.





- Builds a restrictive layer.
- · Barrier for water, air and nutrients.
- · Residue not easily decomposed.



Residue evenly mixed within soil profile

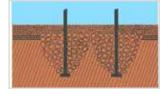
- Allows easy movement of water, air, nutrients and roots through soil fissures.
- Simplifies decomposition of residue to improve organic matter and soil structure.







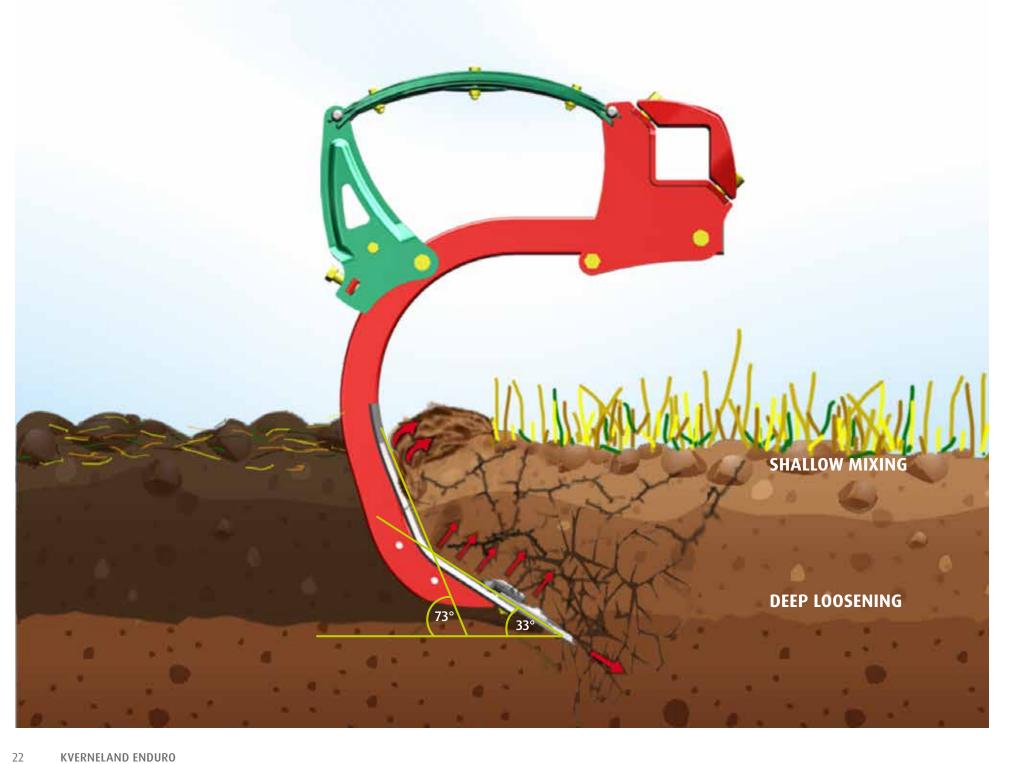
FULL CUTTING SYSTEM (FCS)



Deeper loosening relieves compaction by lifting and rearranging larger aggregates without bringing them to the surface. Narrower point, wing and angle options enable varying depth and aggressiveness.

WORKING WIDTH

WORKING DEPTH

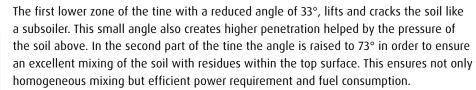


GOOD PENETRATION AND EXCELLENT MIXING SPECIAL ANGLE AND HOLLOW TINE

The first advantage of the Kverneland Triflex tine or of the shear-bolt version is the hollow tine technology with the ability to flex sideways by up to 7cm. The second advantage is the special shape of the tine with two working zones. From the point tip to the first angle is only 33° ensuring good penetration and loosening. The second zone with an angle of 73° provides efficient and homogeneous mixing of the topsoil without bringing clods upwards to the surface.

Efficient soil movement as much as needed.

The flexibility of the hollow tine helps to bypass obstacles below the field surface. Sideway forces are immense especially for standard forged and full material tines and load increased stress to the tine holder and frame structure. To avoid this stress the Kverneland tine made of fine grain steel and the use of proven heat treatment provides enormous strength to a simple piece of tube. Being flexible, this tube can then "flex around" obstacles and erase stress peaks by dispersing it throughout the implement.



The tine holder is bolted to the frame. One of the many advantages of bolted tine carriers is the reduction in frame weakening when welding is required. With the tines being light (45kg) and fitted with two bolts, it is very easy to take them off to adapt the cultivator to the working conditions and the tractor available.



PERFECT LEVELLING

LEAVING AN EVEN SURFACE

In order to create an even surface for a fine seedbed, Kverneland offers two options of levelling tools for the Enduro and Enduro Pro models. The levelling equipment is directly linked to the roller. If the working depth changes via the roller, the levelling equipment will stay at the same optimal levelling position thanks to the parallelogram on the Enduro Pro model.

Levelling tines are a very easy and economic to handle normal straw conditions on light to medium soil types. When it comes to higher amounts of residues and and in heavier soil conditions, the levelling discs are more suitable.

Both versions are overload protected by a spring or an elastic rubber buffer and mounted via a parallelogram (on Enduro Pro) to avoid damage in stony or other difficult conditions. Individual springs ensure the individual release of tines or discs and keep levelling quality even in stony conditions. The working angle of the levelling tines or discs can be adjusted in order to increase or decrease the aggressive position. The centralized levelling adjustment of the complete levelling device is easily done via adjusting handles.

To reduce the transport width on the mounted versions with 3.00m and 3.50m working width, the outer tines or discs can be hydraulically or mechanically folded in.











CONSOLIDATIONFIRM SEEDBED

The roller on a cultivator is an elementary tool with different tasks:

- 1. Consolidation of the soil structure for a weatherproof finish
- 2. Cutting and breakdown of large fissures during the wetting and drying process
- 3. Finalising the levelling and helping retain valuable moisture
- 4. Supporting the depth control

The choice of the right roller depends on the soil type, soil condition and crop rotation. Also the lifting capacity of the tractor needs to be considered when looking for the right combination.

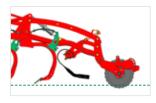
Cracking performance.

Depth control

The rear depth control of the Kverneland Enduro and Enduro Pro is adjusted via the rear roller. The parallelogram linkage roller attachment concept of the Enduro Pro enables the working depth to be easily adjusted hydraulically On-the-Go. The levelling sections are simultaneously adjusted with the roller by the parallel link design, although if necessary they can be fine-tuned mechanically.



The rear roller of the Enduro is not linked via parallelogram and is adjusted hydraulically via spacers.









CONSOLIDATION

ROLLERS FOR ALL TYPES OF SOIL







Actipack Ø 560mm - 205 kg/m

- The Actipack roller displays its superb working qualities especially on medium to heavy soils and also in wet, stony and sticky conditions thanks to the independent skids and knives.
- The cutting discs break the larger clods whilst the adjustable knives cut the remaining clods resulting in optimal clod breakdown and fine seedbed preparation.

Actiring ø 540mm - 160 kg/m

- The Actiring roller is a lighter variant of the Actipack, using the same frame structure and knife system.
- The discs have been replaced by a "V" profile ring, this is saving 60kg/m, which is of critical importance for reducing lifting requirements for mounted equipment.
- Actiring is not recommended in stony conditions.

Actiflex ø 580mm - 160 kg/m

- The Actiflex roller has been made to create an intensive mixing with all types of conditions, even stony ones.
- The rings are made with spring steel to have a high resistance against stress at high speed.
- Actiflex rings are separated by skids to prevent any accumulation inside the roller.
- This roller is the ideal tool to create a nice seedbed and enhance the weeds regrowth after harvesting.



Work done with an Actipack/ Actiring roller: left side skids lifted up (not active), right side skids down in action.







Actipress Twin ø560mm - 220kg/m

(not on fold Enduro or Enduro Pro models)

- U-profile for high carrying /rolling capacity on light soils
- · Clod breaking also in heavy conditions
- Possibility to make different soil profiles by locking the rocking (even or corrogated)
- Self-cleaning effect thanks to the twin u-ring concept
- · High stability thanks to the oscillating frame
- High and homogenous consolidation
- Can also work in stony conditions
- Weight/m when full of soil : 250 kg/m

Cage roller ø 550mm - 90 kg/m

- 10 bars for a good loading capacity and operation in wet conditions
- Effective crumbling action

Double cage roller ø 400mm (tube/flat) -160 kg/m

- · Good crumbling and levelling effect
- Precise depth control
- High carrying capacity
- Operator-friendly due to maintenance-free bearings
- Protection against dust and water with 5 sealing lips
- Extended lifetime: Protection of bearings with an additional steel cover in heavier conditions such as stones, twine, mud etc.

SAFE ON THE ROAD EASY TO CONVERT

Easy conversion from working to transport position. The two-part hydraulic folding gives a transport width of less than 3.00m and ensures smooth running and safe road transport.

To reduce the transport width on the mounted versions with 3.00m and 3.50m working width the outer tines/discs can be hydraulically or mechanically folded in.









Either mounted rigid or fold – both version are very compact for a good centre of gravity and reduced lifting capacity.

KVERNELAND SOIL KIT

MAINTAINING SOIL STRUCTURE



Without checking the soil profile to identify potential areas of resistance it is not possible to determine the correct depth of any compaction or barriers. This is important when planning operations to resolve any problems. You may already be aware of soil compaction but not have the tools to confirm the extent of the problem. For example, unnecessary effort to correct soil compaction by tilling to a deeper depth can be a waste of time and money.

The Kverneland soil kit within a stable case provides the necessary tools to access the soil profile ahead of any cultivation. It includes a Penetrometer which measures the compaction of soil, a knife, folding ruler, brush, shovel and a pair of working gloves. The Kverneland soil brochure included will also provide useful technical information in choosing the correct cultivation practice.

Please ask your local dealer for the Kverneland SOIL KIT to provide you with the correct equipment to improve your soil health, increase yields, save time and reduce fuel costs.









ORIGINAL PARTS & SERVICE ONLY ORIGINAL PARTS WILL KEEP YOUR MACHINE A KVERNELAND



Did you know that Kverneland parts are manufactured to the same high standards and strict specifications as Kverneland machines? Original Parts will always work and fit as intended, and are guaranteed to keep your machine running at maximum performance.

Kverneland has been a symbol of quality since 1879; the experience we have, combined with a constant strive to improve our products, ensures that the best parts are available for your Kverneland machine. Parts and service surround your machine with a safetynet. The quality of the machine ensures optimal usage and the quality of the parts provide a low life-cycle cost and longer wearing time.

Our long term relationship starts at the purchase of your Kverneland machine, and we will continuously stay by your side for support and assistance. We will guide you on the way to make sure you achieve maximum performance, productivity and profit.

Do not compromise quality with cheap solutions, remember that only Original Kverneland parts are the guaranteed solution to achieve what is expected of a Kverneland machine.





YOUR PARTS SPECIALIST

Through our worldwide dealer network you will find your local dealer, whom is always prepared to assist you. Your Kverneland dealer knows every inch of your machine and will gladly provide the expertise needed to ensure that you are operating at maximum potential.

Your parts specialist has got all the parts that you need and will also have the facilities to service your machine. Make sure to visit your Kverneland dealer on a regular basis to be updated on promotions and product news that you will not find elsewhere.



ALWAYS AVAILABLE

Time is money, and we know the importance of receiving the right parts at the right time! Your Kverneland dealer is supported by a massive distribution network to supply you with exactly what you need, when you need it.

Our main distribution centre is located in Metz, France. A strategic location for distributing parts to all corners of the world. With over 70.000 parts in stock and 24/7 service, we are ready to supply you with parts – at any time!



EASY ACCESS TO INFORMATION

Are you looking for a complete overview of parts for your machine? Maybe you are searching for more technical information? Our Online Search Database, *Quest*, provides all information available for your machine.

Various documentation like Parts Manuals, Operation Manuals, Software updates and FAQ's are all there. *Quest* is available in several different languages and can be accessed wherever and whenever.

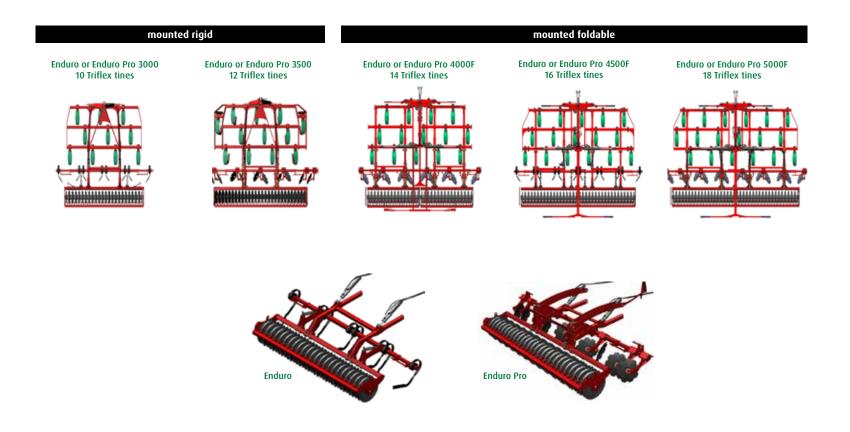
All answers are easy to find – just a few clicks away!

TECHNICAL DATA

Model	Enduro 3000	Enduro Pro 3000	Enduro 3500	Enduro Pro 3500	Enduro 4000F	Enduro Pro 4000F	Enduro 4500F	Enduro Pro 4500F	Enduro 5000F	Enduro Pro 5000F	
Frame	mounted rigid				mounted fold						
Working width (m)	3.00	3.00	3.50	3.50	3.85	3.85	4.40	4.40	4.90	4.90	
Transport width (m)	3.00	3.00	3.50	3.50	2.85 (roller folded)						
Type of tine	Triflex 700 tine with auto-reset leaf spring or tine with shear-bolt protection										
Working depth (cm)	5 - 30	5 - 35	5 - 30	5 - 35	5 - 30	5 - 35	5 - 30	5 - 35	5 - 30	5 - 35	
No. of tine rows	3										
No. of tines	10	10	12	12	14	14	16	16	18	18	
Regular tine spacing (mm)	285				275				270		
Row spacing (mm)	750										
Linkage	Cat. II & Cat. III										
Underbeam clearance (mm)	870										
Levelling device	Levelling tines or Levelling discs										
Adjustment of levelling equipment	Mechanical	Mechanical or hydraulic	Mechanical	Mechanical or hydraulic	Mechanical	Mechanical or hydraulic	Mechanical	Mechanical or hydraulic	Mechanical	Mechanical or hydraulic	
Roller offering	Cage roller (ø 550mm), Double Cage roller (ø 400mm), Actiring (ø 540mm), Actiflex (ø 580mm), Actipack (ø 560mm), Actipress Twin (ø 560mm) (not on fold models)										
Depth adjustment	hydraulic by spacers	hydraulic On-GO	hydraulic by spacers	hydraulic On-GO	hydraulic by spacers	hydraulic On-GO	hydraulic by spacers	hydraulic On-GO	hydraulic by spacers	hydraulic On-GO	
Min/Max HP	90 / 240	90 / 240	110 / 270	110 / 270	130/300	130/300	150 /325	150 /325	170 /350	170 /350	
Total weight with Cage roller (kg)*	1750	1810	2100	2170	2840	3180	2990	3330	3150	3480	
Total weight with hollow disc & Actiflex roller (kg)*	1870	1930	2260	2330	3100	3440	3295	3635	3500	3830	
Total weight with hollow disc & Actipack roller (kg)*	2020	2080	2430	2500	3360	3700	3580	3920	3770	4140	

^{*} Weights are given as an indication.

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