

Kverneland u-drill & u-drill plus

Product Information 2022







Kverneland u-drill & u-drill plus

Seeding combination





u-drill & u-drill plus- USPs





Why

Agricultural challenges

- Spring sowing almost in wet soil conditions, in contrast the autumn season is mostly characterised by dry conditions i.e. shorter time windows;
- 2. A sowing combination must sow equally small seeds such as rape, cereals and legumes in the same quality (lateral and longitudinal distribution);
- Summer or winter cereals, legumes or oilseeds need nutrients at different soil level/depth and stages of growth and development;

How

Technical solutions

- 1. Optimal weight of the seeder, a special packer arrangement and advanced seedbed preparation tools, enable to work in all conditions. An universal coulter design with adjustable coulter pressure and integrated press wheel can place all kind of seeds.
- A precise metering device in combination with an advanced pneumatic is able to applicate all kind of seeds at any working speed.
- 3. Fertiliser placement with the coulter in the same seed furrow or with the short disc harrow as a kind of deposit below the seeds.

What

Kverneland's answer







u-drill & u-drill plus - WHAT



Central following harrow adjustment rows and/or between rows







Economical aspects of sowing

- 20% more sowing capacity thanks to large fertiliser hopper. Save time and fuel by utilising the sowing capacity to the maximum.
- < 2 minutes is virtually all it takes to convert from transport to working position. Optimise output without wasting time.
- 8° angle of double cutting disc for less soil movement, less pressure requirement and better penetration to achieve the sowing depth.
- 3x per row long-life bearings for low maintenance



u-drill

5 steps in one single pass











- 1. Levelling
- 2. Seedbed preparation
- 3. Consolidation before sowing
- 4. Seeding
- 5. Covering



5 steps in one single pass - plus fertiliser application



- 1. Levelling
- 2. Seedbed preparation
 - + fertiliser/seed application
- 3. Recompaction before sowing
- 4. Seeding
 - + fertiliser/seed application
- 5. Covering



u-drill 3001/4001 & u-drill plus 3001/4001

Key data of rigid models

- Hopper capacity 30001
- Hopper division of the u-drill plus:
 60:40, changeable to 50:50
- Length: 8.20m
- Width: 3 or 4m
- Weight empty: 4.6t
- Power requirement: 100 hp





u-drill 4000 fold & u-drill 4000 fold plus Key data

- Hopper capacity 30001
- Hopper division of the u-drill plus:
 60:40, changeable to 50:50
- Length: 8.20m
- Working width: 4m
- Transport width: 3m
- Weight empty (base machine): 5.7t
- Power requirement: 130 hp





u-drill 6001 & u-drill plus 6001 Key data

• Hopper capacity:

u-drill 4350l; u-drill plus 4200l

- Hopper division of the u-drill plus:
 60:40
- Length: 8.37m
- Width: 6m
- Weight empty: 8.3t
- Power requirement: 190hp



u-drill 6001



u-drill plus 6001

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Perfect Seed Placement



ELDOS – electric driven metering device





ELDOS – electric driven metering device

- For all types of seed
- Self-controlled system
- Seed rate from 1-400kg/ha (depending on speed and width) u-drill 3001/4001/6001: 32kg/min/ELDOS u-drill plus 3001/4001: 45kg/min/ELDOS u-drill plus 6001: 65kg/min/ELDOS
- Electric driven e-com (ISOBUS)
- Start of calibration from cab
- Automatic rotor recognition
- Sensor remote control



The button to start the



u-drill & u-drill plus ELDOS – electric driven metering device

- No seeds drop into the hose due to calibration flap with integrated gate
- Penstock
- Remote control for calibration test near to ELDOS
- Emptying flap
- No. of units:
 - u-drill 6001: 2
 - u-drill plus 6001: 2
 - u-drill rigid 3001/4001: 1
 - u-drill fold 4001: 1
 - u-drill plus 3001/4001: 2
 - u-drill plus fold 4001: 2





Grain & Fertiliser version

- Pressurised system on u-drill plus 6001
- Gate flow
- Air to pressurise the hopper is taken from the fan
- Flap to reduce the airstream for e.g. lighter seeds and heavy fertiliser





u-drill - ELDOS

ELDOS – 5 rotors for different sizes and quantities



Rotor 1: high amount of grain and fertiliser

Rotor 2:

for grass

Rotor 3: for rape or mustard

Rotor 4:

low to medium amount of grain and fertiliser

Rotor 5:

for maize, sunflowers and greening seeds



Rate variation across the drill



Seed rate is pretty consistent across the width of the drill, showing maximum errors of 12% (OSR), 7% (wheat) and 7% (grass). Graph: ST.



Coulter bar and CD Coulter



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u-drill & u-drill plus Coulter bar

- 1 central coulter bar box-tube
- 3-point parallelogram-linkage
- Central depth adjustment from cab (ISOBUS terminal)
- Hydraulic coulter pressure
- Distribution head directly on top





Choice of sowing distance

Sowing distance 12.5cm

- Best distribution for high seed rates
- ✔ Rows close quickly
- Reduced weed pressure
- Efficient use of nutrients, water and sun

Sowing distance 16.7cm

- Optimised microclimate reduces fungal infestation
- Less seeds needed per m² with new type of seeds (hybrid)
- ✓ Saving on water resources
- ✓ Reduced pulling force requested
- Better clearance in wet conditions



Seeding distance	u-drill 3.0m	u-drill 4.0m	u-drill 6.0m
12.5cm	24 coulters	32 coulters	48 coulters
16.7cm	18 coulters	24 coulters	36 coulters



u-drill & u-drill plus CD Coulter

- 1 type of coulter (no left or right; no long or short) – less wearing parts
- Robust simple design
- Staggering 200mm for small furrows
- Central coulter pressure adjustment infinitely from 0-100kg
- Row spacing 12.5 or 16,7 cm
- Reliable coulter spring loaded system with constant pressure





u-drill & u-drill plus CD Coulter: Cutting disc

- 2 steel discs Ø380mm
- 8°angle very shallow for less soil movement, easy penetration and low power requirement
- Plastic inner disc scraper
 - Exchange without tools
 - Less wearing
- Integrated bearings for good soil flow
- Maintenance-free bearings
- Changeable front disc guard as bolt-on system





Slim design 8°

- Less soil movement
- Easy penetration
- Low pulling force needed
- Low power requirement

Saving fuel and time

Relation of the seed disc angle to the pressing force needed to deposit the seed at a sowing depth of 4 cm:

> The more narrow the disc angle, we lower the force requirement to place the seed at the sowing depth.





CD Coulter: Press wheel

- Max. 100kg coulter pressure transferred to the press wheel
- Ø380 x 50mm
- Integrated depth-guidance
- Recompaction
- Scraper for sticky soil
- Self-cleaning effect due to flexible rubber





u-drill & u-drill plus Scraper

 Additional scraper available; recommended on sticky soil





CD coulter - grain & fertiliser application in the seed row

- Double entry coulter
- Fertiliser application in the shadow of the seeds
- Same number of fertiliser rows as of seed rows
- Fertiliser application depth according to CD coulter depth setting





Distribution head



PLACEMENT WITH DISC HARROW & CD COULTER (2 DISTRIBUTION HEADS)

The fertiliser is

placed in-between the seed rows, the depth of the fertiliser is determined by the disc harrow

the rape seeds

1ST POSSIBILITY: FERTILISER PLACED BETWEEN THE ROWS



2RD POSSIBILITY: 2 SORTS OF SEEDS AT 2 DIFFERENT SEEDING DEPTHS





Distribution head



PLACEMENT WITH CD DOUBLE-ENTRY COULTER (2 DISTRIBUTION HEADS)

1ST POSSIBILITY: FERTILISER PLACED IN THE SEEDING ROW



With the CD doubleentry coulter the fertiliser is placed in the seeding row.



2ND POSSIBILITY: 2 SORTS OF SEEDS IN THE SEEDING ROW



With the CD doubleentry coulter two sorts of seeds are placed in the same seeding row.



Distribution head



CHOICE OF PLACEMENT EITHER WITH CD DOUBLE-ENTRY COULTER OR DISC HARROW & COULTER (3 DISTRIBUTION HEADS)

1^{SI} POSSIBILITY: 2ND PRODUCT PLACED IN THE SEEDING ROW



2^{NU} POSSIBILITY: 2ND PRODUCT PLACED BETWEEN THE ROWS



The disc harrow outlets place e.g. the beans in-between the rape seeds every 25cm. The depth is determined by the disc harrow





Hydraulic driven Clod board

- Placed between disc harrow unit and rear packer
- Level the soil before final consolidation
- Flexible tines are equipped with a plate to level the soil
- Requires one additional double acting hydraulic valve
- Can be adjusted during the work
- Automatic lifting and lowering on headland due to connection with disc harrow unit via headland management system







Following harrow

- S-tine harrow 10 mm (standard)
- Straight finger harrow 12 mm
- Spring auto reset system
- Manually adjustable in height and angle
- Protection against accidental drill reversal
- Optimum covering even in wheel marks





Track marker

- Notched disc
- Driven by headland management
- Overload protection
- Notched disc with support ring





Pre-emergence marker

- For symmetrical rhythms
- Foldable for transport
- Activated during tramline rhythms



Easy to Pull with High Capacity


Packer and transport





Front wheel packer

- 31x15.50-15 tyres
- Ø800 mm
- 130 mm distance between the tyres
- Larger footprint for reduced pressure onto the soil
- Easy to pull
- 3 wheels per packer unit
- Max. 3 packer units on a 6 m machine
- Mid-mounted or complete front packer
- Hydraulic lifting





Front wheel packer

- Soil consolidation between tractor and wheels
- Wheels keep the level of the u-drill
- Coulter depth stays the same and is not influenced by uneven terrain or varying hopper content
- When the pressure is not needed, the front wheel packer can be hydraulically lifted off
- Wheel valves are protected
- Inflation pressure is shown





Track eradicator tines

- Mounted between each wheel section
- 40 mm width
- 7 depth settings
- Auto-reset leaf spring protection system
- Recommended on ploughed land
- 50 kg pressure
- Can be hydraulically lifted out of work
- Loosens the tractor tracks





Offset wheel packer





Offset wheel packer

- 12 x 420/55-17
- Ø900 mm
- Safe road transport
- Up to 40km/h transport speed
- Easy turning on headlands





Offset wheel packer

- Staggered wheel arrangement to support soil and trash flow
- No bulldozing or blockage effect
- Easy pulling
- Smooth running
- Depth control
- Re-compaction for good seed-tosoil contact and capillary effect
- Large footprint reduces the tractive power requirement
- Low wheel pattern for uniform re-compaction





Brakes for offset wheel packer

- Pneumatic brake system
- Hydraulic brake system
- Complying with national traffic regulations





Ridge Harrow

- After the wheel packer
- Flexible Rubber Harrow
- Recommended on light and sandy soil to avoid resp.to destroy ridges
- The rubber pins distribute the soil to the neighbour area



Profit is Made in the Field not on the Road



Hopper





u-drill

Large hopper capacity

- Large hopper capacity: u-drill rigid 3.0/4.0 m: 3000 litres u-drill fold 4.0 m: 3000 litres u-drill 6.0 m: 4350 litres u-drill 6.0 m plus: 4200 litres
- Good access
 - Loading steps
 - Loader filling, Big Bags
- LED lighting in- and outside
- Tarpaulin cover for u-drill 3m, 4m rigid and fold, and 6 m grain only Steel cover for fertilizer/grain model, u-drill 6001plus
- Optional: Weight cell system
 - Filling auger





U-drill plus (rigid models 3.0/4.0m and folding models 4.0m) Large hopper capacity

- 3000 litres
- Lengthwise divided 60 : 40; changeable to 50 : 50
- Tarpaulin cover
- Max. 45 kg/min/ELDOS
- Maximum output: 3m/4m working width with 15 kph at 45kg/min = 600/450 kg/ha





u-drill plus (6 metre)

Large hopper capacity

- 4200 litres
- Lengthwise divided 60 : 40;
- Pressurised hopper system for higher output quantities per ha
- Sealed steel lids
- Air pressure max. 100 mbar =0,1 bar (working air pressure 65 mbar)
- Max. 65 kg/min/ELDOS
- Maximum output: 6 m working width with 15 kph at 65 kg/min = 430kg/ha





Lighting equipment

Hopper

- LED inside the hopper
- LED outside the hopper to control the coulter bar and metering device

Road transport

Signage for safe road transport





Filling auger





Disc harrow

- 2 rows
- 1 disc per arm bearing is protected
- Ø460 mm
- 90 cm distance first and second disc row
- 235 mm disc spacing
- Conical shape
- Infinite depth setting from 0-13 cm
- Master-slave hydraulic
- Independent depth setting of each disc section
- Four-block rubber mounts





Disc harrow

- 3D auto reset system the arm is able to move sideways like a safety system if stones hit a disc
- The discs always maintain the same cutting angle and can not move sideways
- Strong torque of safety system for large diameter
- No interruption of the soil flow
- Relatively small diameter of the discs ensure quicker rotation speeds for good cutting (and not pressing)





u-drill plus

Fertiliser/seeds application in the disc harrow

- Fertiliser outlets in the second disc row
- Application of fertiliser exactly in between two sowing rows
- 6 m: 24 rows of fertiliser for 48 rows of seed
- All plants have the same distance to the fertiliser
- The depth adjustment of the disc harrow determines the depth of the fertiliser placement





u-drill plus

2 options of fertiliser/seeds application in the disc harrow



FERTILISER PLACED BETWEEN THE ROWS

The fertiliser is placed in-between the seed rows; The depth of the fertiliser is determined by the disc harrow.



2 SORTS OF SEEDS AT 2 DIFFERENT SEEDING DEPTHS

The disc harrow outlets place e.g. the beans in-between the rape seeds



MD disc section

From March 2022 series production





NEW MD disc (<u>M</u>inimum <u>D</u>isturbance disc)

- Zonal cultivation for minimum disturbance and cutting through high amounts of residue.
- Alternative option to the short disc harrow on u-drill.
- Same design as Great Plains "Turbo Coulter" (Ø 430mm) fluted blade to clear residue vertically.
- Each MD disc is in line with CD coulter, creating a mini seedbed of 30-50mm strip of soil.
- Доступно только при междурядьи 16.7ст.





MD disc Advantages

- Reduces the emergence of grass seeds that are yet to germinate.
- Reduces the risk of 'hair-pinning' where the residue is pushed into the seed slot preventing the seed from having good soil contact, resulting in poor germination and establishment.
- improved weed germination control as the soil between each disc is not disturbed.
- Seed bed strip provides each row with equal growing conditions.
- Clearing and cutting of residue provides the ideal environment for it to decompose.





Each MD disc one CD coulter



Sowing distance: 16.7cm



MD disc – Sowing system in 8 Steps











Ability to seed with minimal disturbance in pre-cultivated or ploughed land and with high amounts of residues such as cover crops and no-till systems where soil structure allows.



The MD discs precisely cultivate zonally creating the ideal environment for the double disc CD coulter to place the seeds at the bottom of the furrow. The ground is worked vertically with straight blades and only in a 30-50mm strip of soil.



On u-drill models a full-width wheel packer runs ahead of the CD coulter to firm the soil before the seeds are placed.



MD disc – Sowing system in 8 Steps





Precise placement of the seed by the CD Coulter is assured due to the fluted design of the MD Disc which clears crop residue away from the seeding zone.



The Press Wheel firms the soil around the seed optimising seed to soil contact, creating the ideal situation for germination leading to consistent emergence. The cultivated area is darker and warms faster than the uncultivated area when seeding and allowing the seeds to germinate and emerge.



Rooting into the prepared soil, this creates the ideal conditions for healthy growth and high yields.



MD disc Technical Data

MD disc (u-drill)	
Size of the disc (mm)	430
Disc material	46-52 HRC
No. of waves per disc	20
Angle of waves	36°
Max. penetration depth (mm)	100
Disc per meter working width	6
Disc row spacing (cm)	16.7
Weight reduction compared to short disc harrow section*	270 – 370kg
hp reduction compared to short disc harrow section (estimated)	10-20%

*no side deflector needed



- Each MD disc is protected by a 3D auto-reset system.
- Arm profile prevents sideways movement.
- Cutting angle remains the same.
- Each disc is mounted individually.
- Maintenance-free double ball bearings developed for extreme soil conditions.
- 35mm axle can carry heavy radial and axial loads.
- Cannot be combined with clod board or soil flow harrow option



Disc harrow & MD disc

- Long lifetime -12 time longer than with standard bushes
- Dustproof by 5 sealing lips
- For less maintenance and high performance





Disc harrow & MD disc

- Each disc system is protected by a rubber shock system.
- If the disc hits an obstacle, the arm is able to move and the safety system works as a 3D auto-reset system.
- The profiles of the arms prevents sideways movement in cutting position and ensures optimal penetration, even in stony, heavy soils or residue condition.
- The cutting angle of the disc always stays in the same position.





Side deflector with disc harrow section

- Depth adjustable
- Hydraulic adjustment on fold models and manually adjustable on rigid machines
- Avoids dams
- Keeps the soil in the worked area





Cross-shaft 90°turning

- 90°turning possible
- Easy headland management
- No fixed linkage no reverse leverage. Avoids frame breaks
- Fixed-length drawbar; also available as extended version
- Suitable for tractors with large or twin wheels



Easy Adjustment during Work

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u-drill & u-drill plus Electronics & ISOBUS

- Metering device ELDOS
 - e-com ISOBUS
 - ELDOS standard
 - Speed signal via radar
 - 1 double-acting valve (except fan)
- Machine control
 - Electronic transducer system allows depth control of disc harrow or MD disc and coulter bar via tractor terminal (optional for seeding depth)
 - Headland management: fully automated hydraulic function whilst turning process

User-friendliness



Tractor requirement: 12 V >70 A





u-drill & u-drill plus Hydraulics

- Headland Management
 - Front-wheel-packer
 - Disc harrow or MD disc section
 - Track marker arms
 - Track eradicators
 - Pre-emergence marker
 - Coulter bar depth control
 - Filling auger

All functions require only one double acting valve

- Hydraulic fan drive
 - 1 x single acting valve
 - 1 x pressure less return <10 bar

Tractor requirement: >90 l/min







u-drill & u-drill plus IsoMatch Tellus PRO

- 2 ISOBUS interfaces in one terminal
- 2 screens in one terminal
- Professional way of precision farming





u-drill & u-drill plus IsoMatch Tellus GO+

- ISOBUS terminal
- 1 screen
- First step into Precision Farming
- GEOCONTROL




u-drill & u-drill plus IsoMatch Eye camera

- Full control and overview of the entire machine operation from every side
- With the IsoMatch MultiEye multiple cameras are connected to the IsoMatch Tellus universal terminal
- Possible to switch between the cameras without the need for additional screens in cab





Electrical Half width shut off (only on u-drill plus 6.0m)

- For grain distribution head and fertilizer distribution head
- The half width shut off closes always the left half machine width
- Automatic work, when starting to seed in a 0 tramline rhythm, the half with shut off closes automatically and the ELDOS reduces the seed amount by 50%
- At the next turn on the headland, when tramline switches to rhythm 1, the half with shut off opens again and the ELDOS output is at 100%





u-drill & u-drill plus Weigh cells

- Weigh cells for precise and controlled application
- Weighs hopper content constantly
- Shows weight deviation to calculated output kg/ha
- Not compatible with Isobus system





Technical data

	rigid				fold				
Model	u-drill 3001	u-drill 4001	u-drill plus 3001	u-drill plus 4001	u-drill 4001	u-drill plus 4001	u-drill 6001	u-drill plus 6001	
Working width (m)	3.0	4.0	3.0	4.0	4.0	4.0	6.0	6.0	
Transport width (m)	3.0	4.0	3.0	4.0	4.0	4.0	3.0	3.0	
No. of CD coulters	24	32	24	32	32	32	48	48	
No. of metering devices	1	1	2	2	2	2	2	2	
Hopper capacity (I)	3000	3000	3000	3000	3000	3000	4,350	4,200	
Required oil volume	> 90l/min								
Single-acting hydr. valve + zero-pressure return for fan drive	•	•	•	•	•	•	•	•	
1 x double-acting hydraulic valve for machine control	•	•	•	•	•	•	•	•	
Power requirement 12 V > 70 A	•	•	•	•	•	•	•	•	
CD double disc coulters	•	٠	•	•	•	•	٠	•	
Coulter pressure up to 100kg	•	٠	•	•	•	•	٠	•	
Electro-hydraulic adjustment of the placement depth via ISOBUS terminal	•	•	•	•	•	•		•	
Press wheels (Ø 380 x 50mm)	•	٠	•	•	٠	•	٠	•	
Row spacing (12.5cm)	•	•	•	•	•	•	•	•	
Coulter staggering 17.5cm	•	٠	•	•	٠	•	•	•	
Electronic adjustment of the seed quantity with radar	•	٠	•	•	•	•	٠	•	
Filling level sensors in the seed hopper	•(1)	•(1)	•(2)	•(2)	•(2)	•(2)	•(2)	•(2)	
Fan speed sensor	٠	٠	•	•	•	•	٠	•	
Metering device monitoring	٠	٠	•	•	٠	•	٠	•	
Electronic half-width shut-off	-	-	•	•	•	•	•	•	
Mid-mounted front packer (Ø 800mm)									
Complete front packer (Ø 800mm)	-		-						
Electro-hydraulic adjustment of the disc section working depth via ISOBUS terminal	•	٠	•	•	•	•	•	•	



Technical data

	rigid				fold			
Model	u-drill 3001	u-drill 4001	u-drill plus 3001	u-drill plus 4001	u-drill 4001	u-drill plus 4001	u-drill 6001	u-drill plus 6001
Disc harrow (Ø 460mm) or MD disc (Ø 430mm)	•	٠	•	•	٠	•	٠	•
Offset tyre packer (Ø 900mm)	•	٠	•	٠	٠	•	٠	•
Maintenance platform, road transport lights, in-hopper light	•	•	•	•	•	•	•	•
Hydraulic fan drive	•	٠	•	•	٠	•	•	•
Lower link suspension Cat. 3N (825mm)	•	٠	•	•	٠	•		
Lower link suspension Cat. 3 (965mm)							•	•
Lower link suspension Cat. 4 (965mm)	-	-	-	-	-	-		
S-shaped seed harrow 10mm	•	٠	•	•	٠	•	•	•
Finger harrow 12mm								
Calibration set	•	٠	•	•	٠	•	•	•
Filling auger	-	-	-	-	-	-		-
Hydraulically folding track marker with notched discs								
Track eradicators (2 tines per track)								
Pneumatic brakes								
Hydraulic brakes								
Extended drawbar for tractors with twin tires up to 4.05m								
Pre-emergence marker (centre marking)								
LED work lights								
iM Tellus for non-ISOBUS-capable tractors								
iM Tellus for ISOBUS tractors								
Hopper volume weighing system with separate monitor			-	-		-		
Headland management	•	٠	•	•	٠	•	٠	•
Weight (kg) (with front packer + track eradicators)	4,600	5,400	4,800	5,600	5,600	5,600	8,120	8,400
Min. power requirement (hp)	ç	90	1:	30		150		190

• Standard equipment [] Option

WHEN FARMING MEANS BUSINESS



Technical Features Overview

- Easy access and handling of metering devices, headland management, etc.
- Low pulling force due to large packer + off-set structure.
- Modular frame concept, easy access, less grease points, etc.
- Terminal-guided depth control for disc section and seed depth.
- Well-proven compact disc harrow concept "Qualidisc" or MD disc section from Great Plains – aggressive, long-life bearing, maintenance-free
- Electric-driven metering device ELDOS.
- Central seed depth adjustment.
- CD double disc coulter
 - Extremely slim design less pressure required for penetration.
 - Less pulling force needed due to less soil movement.
 - Integrated depth guidance and press wheel functionality.
 - Maintenance-free, high performance bearings.
 - Only one coulter no left/right nor short/long coulters.
- ISOBUS conform



u-drill

Key TakeAways



- Headland Management



WHEN FARMING MEANS BUSINESS



