
Terre-net

**MACHINE OF THE YEAR 2019**

# KEILER II

AGRITECHNICA 2019 INNOVATION AWARD

DLG 2019 INNOVATIONS COMMISSION

# ROPA

KEILER II

MACHINE
OF THE YEAR 2019



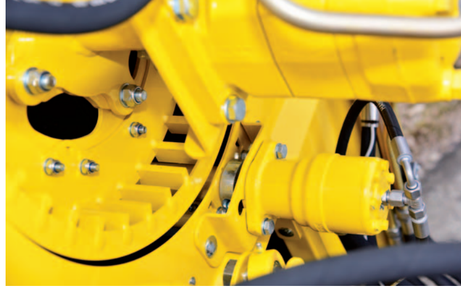


## Fully hydraulic drive

The fully hydraulic drive allows the speed of all cleaning units to be controlled automatically. The load-sensing hydraulics ensure that all cleaning units are supplied with the maximum oil volume from a PTO speed of 650 rpm. In order to adapt to different harvesting conditions the cleaning elements can be controlled individually regardless of the tractor engine speed from minimum to maximum speed - no need to press the accelerator pedal. If the full oil amount is not required, the PTO as well as the engine speed can be reduced further. The resulting fuel consumption efficiency is a major advantage compared to traditional drive concepts. Individually configurable lifting programs that can be saved simplify manual or automatic adjustment for different harvesting conditions for the driver.

## Unique drive concept

- The speed of the sieve conveyors can be adjusted independently of the speed of the leaf chain
- All cleaning units maintain their optimal speed independently of the PTO speed
- The speed of the leaf chain can be reduced to 10 % of the sieve conveyor speed
- A continuous pressure monitor prevents overrunning the lifter
- No mechanical slip clutch necessary – significantly improved power transmission and no wear
- Soft start of all belts and cleaning units
- No chains, belts and tensioners – no adjustment, fewer wear parts, increased operational reliability
- Two articulated shafts, therefore fewer lubrication points
- Significantly reduced noise level, more comfortable working with the machine
- Save fuel with reduced engine speed
- Many settings can be made directly on the terminal at the sorting platform
- Fast and convenient adjustment of the machine for variable harvesting conditions
- Fully hydraulic drive of the complete harvester, thus extremely low vibration and reduced noise



## Pickup control - fully automatic ROPA ridge pressure regulation

- Standard ridge pressure relief and ridge pressure control combined with hydraulic lifting depth adjustment
- Adjustment while driving - conveniently from the tractor cabin
- Depth guide and ridge pressure relief adjustable for every row
- Single row pickup available – particularly useful for primary lifting
- Optional range of different lifter shares (one-blade, two-blade, three-blade, centre-blade)
- Optional different ridge rollers (flat, deep, half)
- Optional stone protection for lifter shares

## Additional disc coulter (optional)

The additional disc coulter cuts through even large amounts of haulm for harvesting without blockages

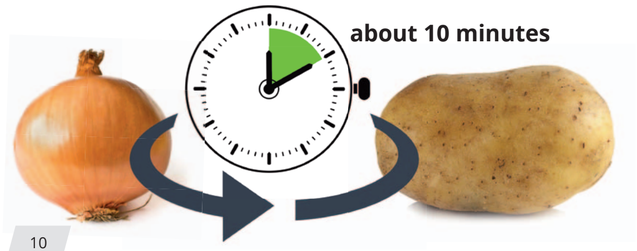
## Hydraulically driven disc coulter right/left (optional)

The hydraulically driven disc coulter guarantees clean and efficient harvesting without blockages.
The speed is controlled manually or automatically depending on the driving speed - optionally synchronously or leading.

# Standard ROPA quick-change system - High efficiency with short setup times

ROPA has designed a practical new quick-change system for switching between row pickup and swath pickup. The Keiler 2 can be switched from potato harvesting to onion harvesting in just a few minutes. The reverse is the same. One person can perform the complete coupling process easily and without requiring special tools. A practical solution for potato farmers who also grow onions and red beets who may need to change their pickup system several times a day.

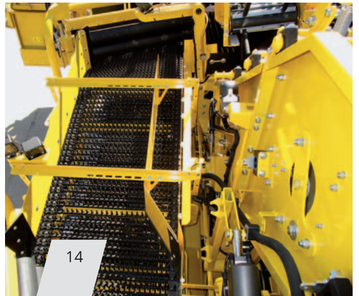
- Faster and easier change of pickup
- The driver can do the change alone without requiring assistance from other persons
- Specialized tools or forklift not required
- Conversion can be done in the field
- Attachment of the pickup offers the best accessibility for fast and easy change of sieve conveyors – switch to different pitch
- Cover belt and sieve conveyor can run synchronously



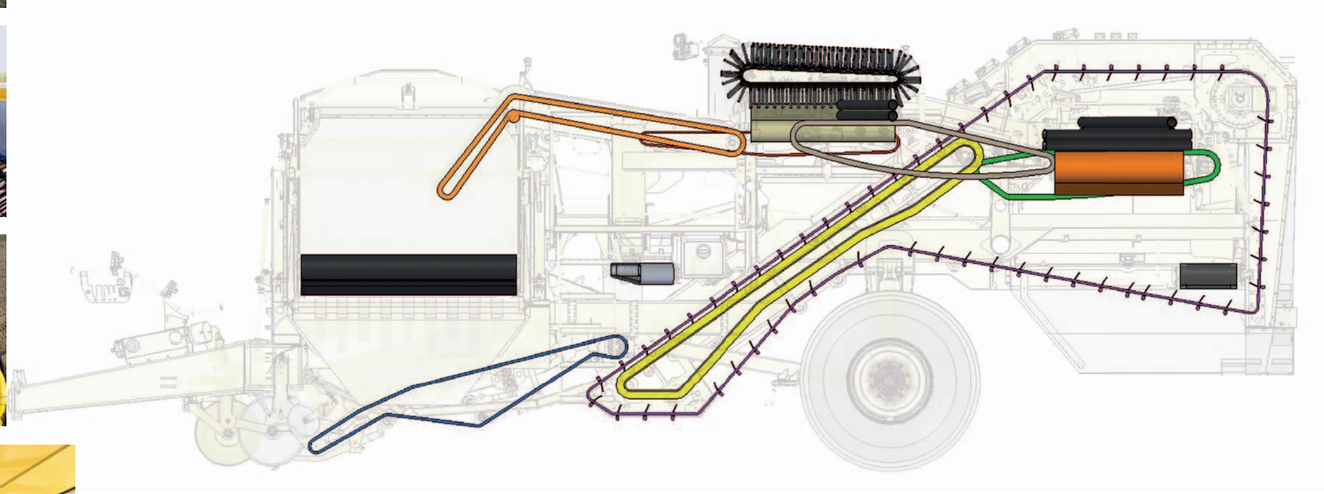

ROPA

## Generously measured cleaning elements, ideally matched

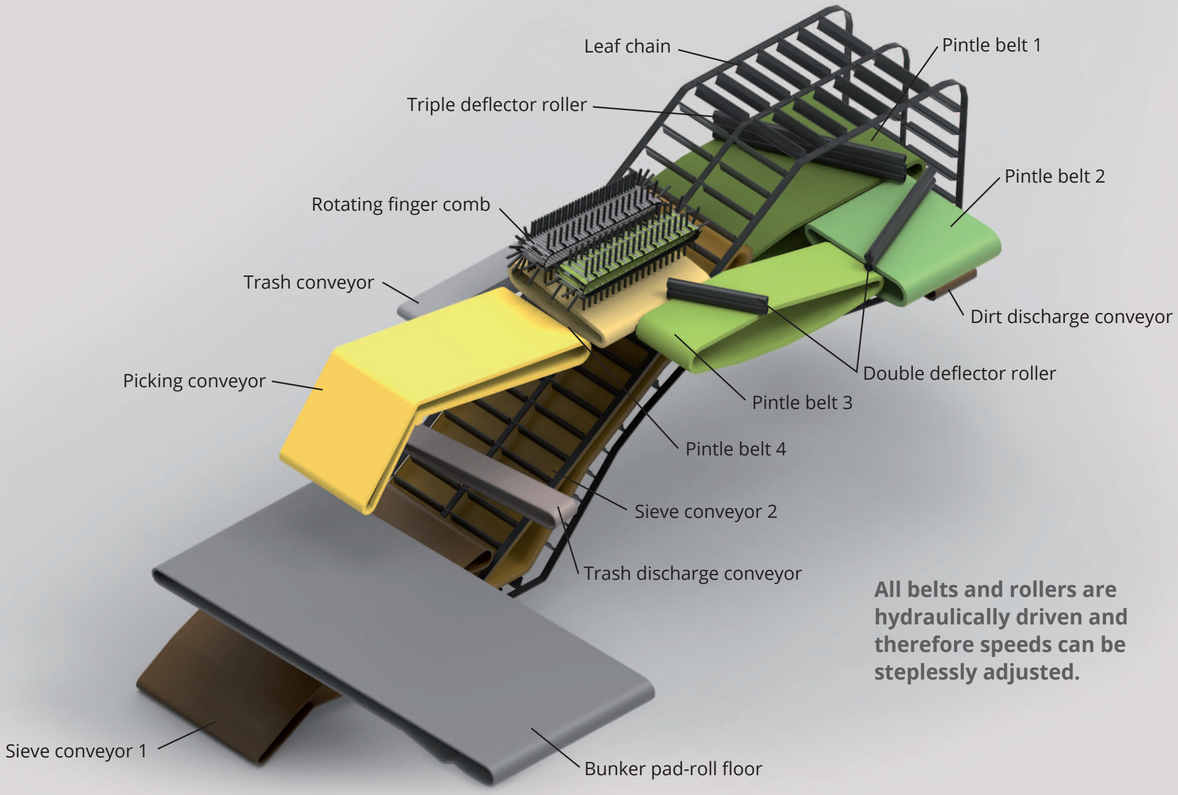
- Large sieve conveyors with variably adjustable shaker (standard)
- Two transfer stages for removal of large amounts of foreign matter
- Integrated sieve conveyor tensioner with optional cleaning roller
- Clod breaker for sieve conveyor 1 and 2 (optional)
- Rotating finger comb (RFC) steplessly adjustable in height and speed on both sides
- Adjustment of the infeed width to the RFC by moving the deflector rollers allows variable cleaning settings
- Speed ratio of leaf chain to sieve conveyor 2 can be adjusted
- Excellent haulm ejection with 7 rows of haulm retainer springs, steplessly adjustable
- Pre-separation with hydraulically driven triple deflector roller or twin deflector roller
- Gentle and efficient cleaning even at high throughput
- All cleaning devices maintain their set speed independently of PTO speed



## Longer cleaning distance for gentle and efficient separation



The ROPA Keiler has large cleaning components with maximum cleaning area for gentle and efficient cleaning. The ROPA Keiler is particularly efficient for harvesting on heavy soils and/or during bad weather.




**All belts and rollers are hydraulically driven and therefore speeds can be steplessly adjusted.**




Keiler 2 L 4 pintle belts without trash conveyor and without sorting platform on the right

Keiler 2 4 pintle belts with deflector rollers

## ROPA Keiler 2 L with overloading bunker - non-stop harvesting

- Optimal filling of the bunker with ultrasound sensors
- Bunker capacity approx. 5.5 t
- Immersion depth 600 mm at 3.5 m board wall height
- Transfer roller with 185 mm diameter made of PU discs for gentle transfer to the unloading conveyor, additional cleaning of loose soil
- Constructive separation of bunker trough and unloading conveyor for time-saving and complete bunker emptying
- Direct drive of the rod conveyor - trouble-free unloading under all conditions
- The sequential discharge of the bunker trough contents onto the unloading conveyor in combination with the extendable axle increases driving stability in the field and makes it easier for the driver
- 3-way foldable unloading conveyor enables flexible unloading


MACHINE
OF THE YEAR 2019



## Root protection

Adjustments that can be individually and easily changed ensure high throughput with increased cleaning performance. The speed ratio of the leaf chain to the sieve conveyor can be adjusted steplessly and conveniently from the driver's seat. The electrically height-adjustable rotating finger comb (RFC) and numerous additional adjustment options form the basis for efficient and gentle cleaning of potatoes.

## Truck loading

The Keiler 2 has a continuously adjustable unloading conveyor speed as standard. A hydraulically operated front bunker articulation part and a tray filler with rubber baffles are optionally available.


## Keiler 2 Silver Edition

with V2A stainless steel bunker walls



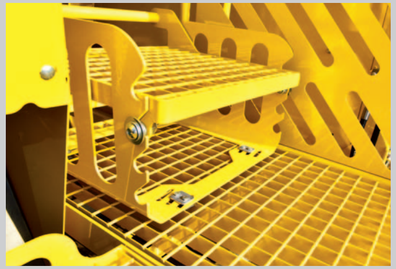
Working platform, 300 mm extendable - immense working area allows freedom of movement

## Ergonomic working on the sorting platform

- Height-adjustable platforms offer greater safety and comfort for sorters, even over long working days
- Free positioning of platforms
- Maximum freedom of movement
- Generously sized chutes
- Rounded edges and covers for user safety

Folding ladder damping for safe access

Clamping protection





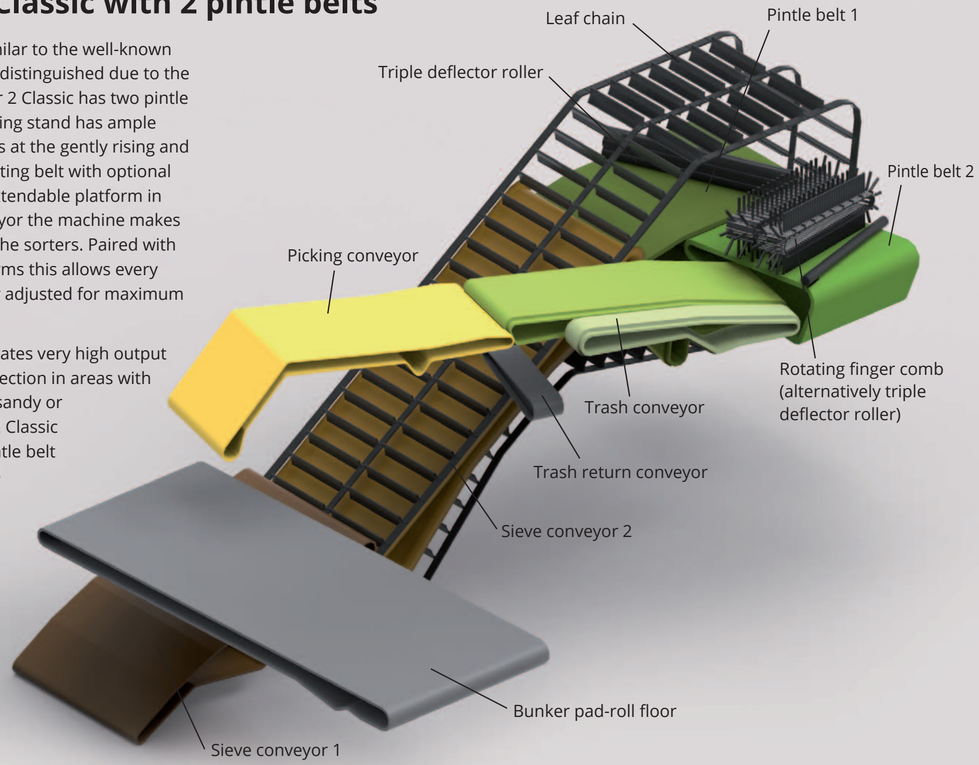

Sorting platform can be swung out for even more space




# ROPA Keiler 2 Classic with 2 pintle belts

The machine is generally similar to the well-known Keiler 2. They mostly can be distinguished due to the separating systems, as Keiler 2 Classic has two pintle belts. The very spacious sorting stand has ample space for up to eight persons at the gently rising and generously dimensioned sorting belt with optional haulm conveyor. With the extendable platform in addition to the haulm conveyor the machine makes a convenient workplace for the sorters. Paired with the height-adjustable platforms this allows every workstation to be separately adjusted for maximum ease of working.

The overall design demonstrates very high output with maximum product protection in areas with low cleaning requirements (sandy or separated soils). The Keiler 2 Classic with the pintle belt 1 and pintle belt 2 cleaning systems is easy to monitor, it is accessible and easy to service.



Keiler 2 Classic with triple deflector rollers

Keiler 2 Classic with RFC, haulm conveyor and grader rollers

## Individual cleaning

Where cleaning requirements are minimal, the rotating finger comb (RFC) can be replaced with triple deflector rollers and the haulm conveyor can be left out. This can save money and weight. These options are available as modules for retrofit if required. The option of conversion is taken into account from the start of the design process.

The same applies for the machine with four pintle belts. This machine can be optionally fitted with deflector rollers instead of the RFC and without haulm and discharge conveyor.



## Keiler 2 Classic with truck loader bunker

The Keiler 2 Classic can also be optionally fitted with drive wheel and truck loader bunker. The capacity of the truck loader bunker on the Keiler 2 Classic can be increased to 6 t.

The quick-change frame for the pickup is also integrated as standard equipment, enabling this machine to be used for harvesting onions and other specialised crops with the reduced cleaning units.


Removable picking table elevation

## Large and simple terminal – intuitive operation

- Clear and simple display with large function keys
- Up to 6 different lifter settings can be easily saved
- Simple and very fast adjustment to changing soil and crop conditions at the push of a button
- Display and adjustment of functions also available at the picking table terminal

**Greater ease of use means greater harvesting quality and performance**

Description of terminal and functions
in the operation manual.
www.ropa-maschinenbau.de

Control element conforms to ISOBUS AUX–N standard, can be assigned as desired

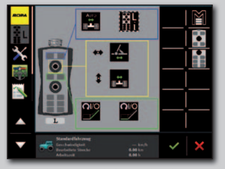
ISO control joystick

## Intuitive operating concept

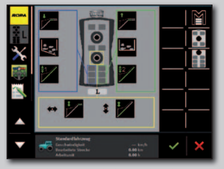
- ROPA Terminal is ergonomically and easily integrated into any tractor cabin
- ISOBUS 8-inch colour terminal with glass touch screen
- Self-explanatory icon display on screen
- Freely configurable user interface
- Ergonomically designed control elements with mini joysticks – orderly and easily understandable layout
- Individually configurable lifting programs that can be saved simplify manual or automatic adjustment for different harvesting conditions for the driver

## Fully ISOBUS-compatible

- Operation with any ISOBUS terminal
- ISOBUS installation of modern tractors fully supported
- ISOBUS retrofit set for tractors without ISOBUS functions (optional)
- ISOBUS-AUX control elements left and right can be programmed individually (optional)
- Own terminal masks for the assignment visualisation

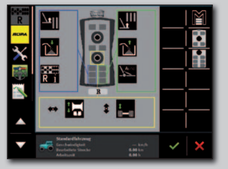


Control element left overloading bunker default assignment 1



Control element left overloading bunker default assignment 2

Control element right default assignment 1



Control element right default assignment 2

## Harvesting programs can be saved

- Six programming buttons for fast saving and calling up various machine settings
- Individually configurable and can be saved with names
- Ideal for repeating harvesting conditions

## Automatic sieve conveyor functions (optional)

- The sieve conveyors and pintle belt 1 can be actuated depending on the speed of travel
- Minimum and maximum speeds of sieve conveyor are preset
- Ratio between sieve conveyor speed and travel speed is adjustable

## Automatic overload and turbo clean

- If a blockage occurs the upstream cleaning units are automatically shut off
- This prevents overrunning or damage due to overloading the harvester
- Turbo Clean program can be activated in the menu

## Steering and depth guide

- Stepless depth adjustment of pickup
- Automatic ridge pressure regulation
- Automatic ridge centring

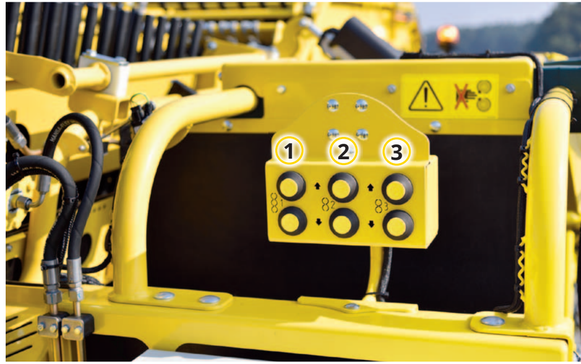
## ROPA video switch (optional)

- Automatic activation of the sieving channel, pintle belt, picking conveyor, bunker articulation and rear view camera

## Operating units on the sorting platform - all functions

## Quick and easy adjustments

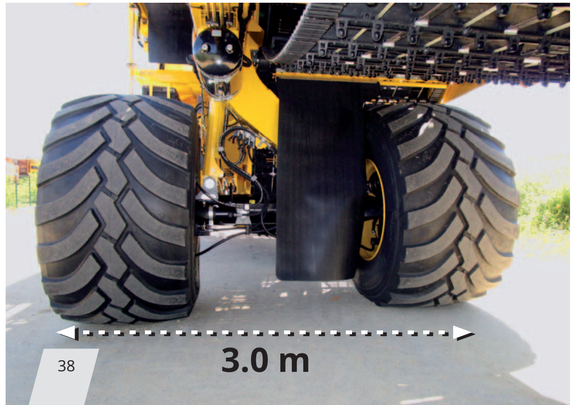
Height and inclination of the separating equipment easily adjustable steplessly, hydraulically and electronically at the press of a button




# Unique chassis design with telescoping axle and high-volume radial tyres

- Standard high-volume radial tyres 850/50 R30.5, sufficient load capacity with less than 2 bar tyre pressure
- Telescopic axle for increased stability
- 3-meter transport width on the road
- 3.5-meter outside width during harvesting
- Lifting through lanes possible
- Optional hydraulically driven axle
- High steering angle, 21 degrees both sides
- Lifter wheel 650/65 R30.5 in left direction of travel (optional)
- Manual/automatic tilt compensation

**Special approval not required - only 3 meters transport width for road drive**






**Lifting on tracks with retracted telescopic axle - does not run over the potato ridge**

**Standard hydraulic slope compensation - optimised cleaning and greater comfort for pickers**




# Drive wheel

## Comfortable and powerful for extreme harvesting conditions

Movement and manoeuvring made easy! The ROPA Keiler 2 can be equipped with a drive wheel for increased traction and soil protection even under extremely difficult harvesting conditions. Even with this optional equipment with high-volume 850/50 R 30.5 tyres the road transport width is just 3.00 metres.
The integrated freewheel of the axle enables a speed of up to 40 km/h when driving on the road.

A maximum torque up to 14,500 Nm can be achieved at the wheel for a thrust of 2 tons. Coupling and uncoupling while driving is possible at any time. The maximum speed with a coupled drive wheel is up to 14 km/h.

The new and practical automatic operation using tractors with ISOBUS is a convenient and elegant solution. The drive wheel is automatically actuated in the applicable direction of travel during start-up and controlled synchronously, then switched off again when stopped. A significant advantage, because it is not necessary to switch, stop or switch the drive wheel to reverse separately while moving or starting.

The maximum power consumption in boost operation is 65 kW.

Despite the large-volume 850/50 R30.5 tyres, the steering angle is identical to the original axle and amounts to +/- 21 degrees.

## Easy maintenance and easily accessible design

- Logical electrical design, with all leads labelled throughout the complete cable length
- Integrated diagnostic system
- Bearings, bolts and components conform to DIN standard
- High-quality hydraulic lines


# ROPA potato squeezer

The **ROPA potato squeezer** is the new sustainable, herbicide-free and resource-saving method for reducing regrowth of potatoes in the successor crop. The potato squeezer squeezes and crushes the tubers sorted out from the discharge chutes and trash conveyor. This promotes rotting and prevents germination of tubers in the following year.

Crushed potatoes have a significantly smaller volume with a much greater surface area, which greatly promotes the decomposition process and prevents germination in the following year. The ROPA potato squeezer prevents growth of potato residues, thereby reducing requirements for chemical and mechanical controls.

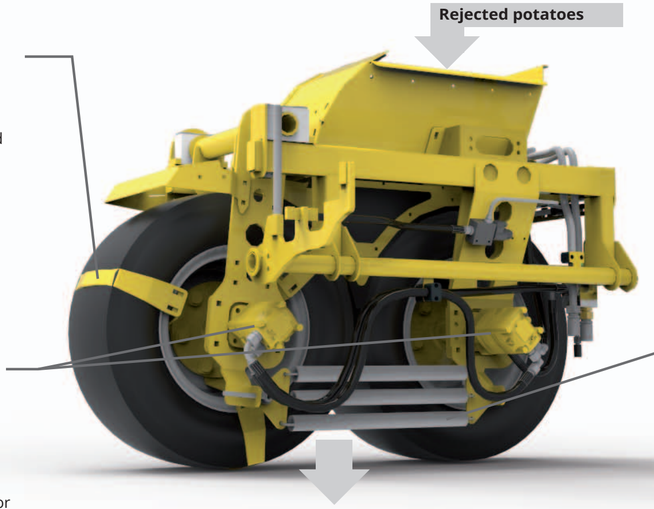


**Shredder blade** of steel on one squeezer wheel

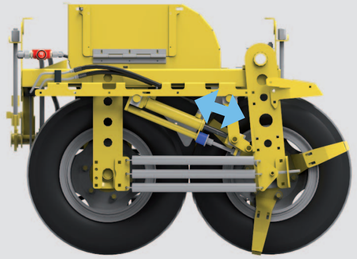
- **Large potatoes are shredded into small fragments**, until they are caught by the squeezer rollers, squeezed and pressed through
- Large tubers are shredded to small pieces, caught and also crushed

**Hydraulic drive** for rubber wheels

- **The friction effect of the different rotational speeds of the wheels reinforces the shredding effect** during squeezing
- The **speed** can be **variably adjusted** by a quantity regulator




**Mechanical stone and foreign body protection** using spiral springs for pre-tension - for **uninterrupted lifting**

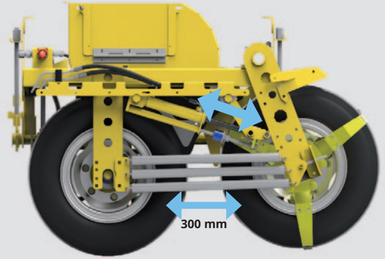


**Hydraulic spreading up to 300 mm for free passage**

- Lifting without squeezer function possible
- Opens to extremely large foreign objects

**Very quiet operation**

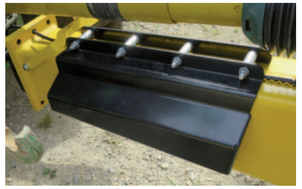
- Squeezer wheels not in direct contact
- The distance between the squeezer rollers can be adjusted by a spindle



# Optional equipment for even more functions


Sunshade canopy, height-adjustable (optional, can be extended with side panels)

Incline adjustment pintle belt 1 + 2



Drawbar buffer

Stone collecting tank

Combined finger comb and brush comb

Side panels, foldable

Additional height-adjustable working platform

Sieve conveyor tensioner with integrated cleaning roller



Additional cameras for sieve conveyor, leaf chain, pintle belt, picking table, bunker and reversing


Keiler 2, Lower Saxony

Potato field day in Greilsberg, Bavaria

Keiler 1 double bunker, Japan

Keiler 2 L swath pickup, France

Keiler 2, Lower Saxony

Keiler 2 L, Lower Saxony

Keiler 2 Classic, North Rhine Westphalia

Keiler 2 L WD, Netherlands



Keiler 2 Silver Edition, North Rhine Westphalia

Keiler 2, Bavaria

Keiler 2 Classic, Rhineland

Keiler 2 WD, Chile

Keiler 2 L, France

Keiler 2 Silver Edition, Lower Saxony

Keiler 2, Bavaria

## Technical Data of ROPA Keiler 2:

**Length:** 11,800 mm
**Width:** 3,000 mm (Classic 3,300 mm)
**Height:** 3,990 mm

**Coupling:**
Ball joint coupling with 80 mm diameter (country-specific achievable).
The length of the drawbar is 2,565 mm.

**Tyres:**
Two high-volume 850/50 R30.5 radial tyres (Classic 650/65R30.5)

**Telescopic axle:**
The stability of the potato harvester is maintained with a telescopic axle, so that the machine's outer track does not exceed 3,000 mm for transportation and lifting through. For lifting the axle can be widened up to 3,500 mm.

**Drive:**
The drive is 100% hydraulic. All sieve conveyors and cleaning units can be adjusted steplessly and independently of the PTO rotational speed. The driving speed or harvester's rotational speed remain constant as long as the tractor PTO shaft provides min. 650 rpm.

**Pickup:**
The pickup unit is equipped with a ROPA quick-change system. The row width can be selected from 750 mm up to 900 mm. The two or four disc coulters (depending on options) are steplessly adjustable to the distance between them. The ridge pickup operates with two ridge rollers, which can be differently configured. Two haulm intake rollers ensure smooth leaf transport. The outer disc coulter in the right direction of travel can be optionally hydraulically driven, an additional disc coulter is optionally available.

**Ridge guide:**
As standard the machine is provided with a ridge centring function. The depth control is hydraulically operated. Automatic ridge pressure relief or a hydraulic ridge pressure control is also available.

**Sieving channel:**
Sieve conveyor 1 width: 1,600 mm
Sieve conveyor 2 width: 1,488 mm
Optionally, V2A stainless steel sheets are available for the sieving channel, as well as a hydraulically driven and continuously variable-speed shaker.

**Leaf separation:**
The leaf separation consists of an electrically adjustable 1,600 mm wide leaf chain and rubberized leaf-separators, situated one after another in 7 rows.

**Trash separation:**
**Pintle belt 1 separating unit:**
1,450 mm wide studded rubber belt and triple deflector roller (Classic 1,450 mm)

**Pintle belt 2 separating unit:**
1,160 mm wide studded rubber belt and twin deflector roller (Classic 1,300 mm triple deflector roller/optional RFC with 4 finger rows)

**Pintle belt 3 separating unit:**
700 mm wide studded rubber belt and twin deflector roller

**Pintle belt 4 separating unit:**
1,300 mm wide studded rubber belt and finger comb (RFC) with four rows of fingers. Speed, height and angle are steplessly adjustable from the tractor seat.

**Trash track:**
350 mm wide including switching flap for trash return (Classic optionally with haulm conveyor, 300 mm wide)

**Picking table:**
Width: 1,100 mm (Classic 1,000 mm)
Length: 1,900 mm (Classic 5,050 mm)
The picking table is designed for 5 persons (Classic up to 8 persons). Generously dimensioned chutes guarantee a blockage-free removal of trash. Two height-adjustable platforms can be adjusted for different body sizes. Foldaway ladders offer an ergonomic and save ascent and descent.

**Operation at harvester:**
All functions of the potato harvester can be controlled from the sorting platform with the control unit, including a warning device. Furthermore the speed of the sorting web can be adjusted stepless by a separate rotary switch.

**Bunker:**
The pad-roll bunker holds around 7.5 t. The width of the bunker is 2,235 mm and the maximum truck loading height is 4,200 mm. The two-stage drive is steplessly adjustable. The automatic filling function ensures optimal bunker filling. The bunker can be supplied by an articulation unit, so the fall height of the trailer can be reduced for gentle trailer filling. A hydraulically foldable tray filler in different outflow sizes is optionally available.

**Control unit:**
The standard control unit uses an ISOBUS touch terminal.

## Equipment with added value – standard with us:

- Fully hydraulic drive of the complete harvester
- Automatic ridge centring
- Pickup with quick-change function
- Hydraulic ridge pressure relief steplessly adjustable from the tractor
- Hydraulic lifting depth adjustment combined with hydraulic ridge pressure control
- Sieve conveyors and haulm conveyor are steplessly adjustable from the tractor
- Shaker is hydraulically driven and speed is steplessly adjustable
- Electric height adjustment of the three deflector roller units
- Rotating finger comb (RFC) with 4 rows, each 2 rows driven separately, adjustable speed (Classic optional)
- RFC electric height adjustment (Classic optional)
- Trash conveyor driven and steplessly adjustable separately from the picking conveyor (Classic optional)
- Trash return with switching flap (Classic optional)
- Automatic fall height adjustment and bunker feed with bunker filling carriage
- 7.5 t bunker with pad-roll floor
- High-volume standard 850/50 R 30.5 tyres, air brake (Classic optional)
- ISOBUS control unit for easy adjustment of functions from the tractor
- ROPA ISOBUS Touch Terminal
- K80 ball-head hitch
- Hydraulic support stand
- Telescopic axle for 3 m road travel and 3.5 m in the field
- Hydraulic tilt compensation for axle, automatically controlled
- Wide-angle universal joint, PTO speed 1,000 rpm
- Automatic overload and turbo clean program for sieve conveyor, leaf chains and pintle belts
- Programming buttons for saving 6 lifter programs



## Some further equipment options:

**Tyres**
- 850/50 R 30.5 (in travel direction right) and 650/65 R 30.5 (in travel direction left)

**Chassis**
- Drive wheel for improved traction automatically actuated in the applicable travel direction

**Pickup / sieving channel**
- Ridge pickup with disc coulter and ridge roller (90 cm)
- Ridge roller, deep model
- Two-blade share wide for ridge distance 90 cm
- Three-blade share
- Stone protection for shares
- Centre share if disc coulter is not used
- Hydraulics ready for hydraulic disc coulter/swath pickup with lifter shaft and cover belt
- Hydraulically driven disc coulter left and right
- Disc coulter right also mechanical
- Swath pickup with lifter shaft, hydraulic cover belt and depth guide wheels
- Share pickup for special crops (e.g. red beet) with depth guide wheels
- Stainless steel plates in sieving channel 1
- Sieve conveyor 1 cleaning roller
- Rubber paddle roller on drive shaft
- Clod breaker for sieve conveyor 1 and 2

**Leaf separation**
- Wide-mesh leaf chain 250 mm, optional 300 mm

**Separation**
- Tilt adjustment for pintle belt 1 and 2, hydraulic, with automatic operation
- Tilt adjustment for pintle belt 4, hydraulic
- Pintle belt pitch 40 mm, 36 mm
- Pintle belt with H-profile on round rod instead of V-profile
- Deflector roller package; bottom roller with spiral design (e.g. for carrots)

**Picking table**
- Collection box with discharge conveyor, hydraulically driven

**Bunker**
- Bunker articulation can be hydraulically lowered
- Tray filler funnel width 900 mm, hydraulically folding
- Tray filler funnel width 1,900 mm, hydraulically folding
- Overloading bunker 5.5 t (Classic 6 t)
- Bunker walls V2A stainless steel (standard bunker)

**Comfort**
- Automatic sieve conveyor controlled by driving speed including automatic pintle belt control
- TASK controller for crop management with ROPA terminal
- ISOBUS retrofit kit for tractor without preparation
- ISOBUS control element with freely assignable AUX function in addition to the right control element
- ROPA video switch

ROPA


**Lighting**
- LED working lights on sieving channel, pintle belt 1 to 2, picking conveyor and bunker discharge
- 1 rotating beacon
- Canopy lights

**Camera and video system**
- Video system consisting of 1 x 7" TFT monitor with wiring kit for 4 additional camera connections
- Additional video system consisting of 1 x 7" TFT monitor with wiring kit for 4 optional camera connections
- Camera position sieving channel 1 to 2
- Camera position pintle belt 1 to 2
- Camera position wheel in direction of travel right
- Camera position picking conveyor
- Camera position dirt discharge conveyor
- Camera position bunker head
- Rear view camera

**Protection from sun and weather**
- Canopy I - sunshade for picking table without side panels, with mounting frame
- Canopy II - weather protection for picking table with side panels, with mounting frame




**ROPA Fahrzeug- und Maschinenbau GmbH**
Sittelsdorf 24 · DE-84097 Herrngiersdorf
Tel. +49 (0) 87 85 / 9 60 10

facebook.com/ROPAmaschinenbau
**ropa-maschinenbau.de**