Translation of the Original Operating Manual

Keiler 2

Generation 1
Edition 2

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ROPA

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ROPA Fahrzeug- und Maschinenbau GmbH

Sittelsdorf 24

D-84097 Herrngiersdorf

Phone: + 49 – 87 85 – 96 01 0

Fax: + 49 – 87 85 – 56 6

Internet *www.ropa-maschinenbau.de*

Email: Dennis.Kruse@ropa-maschinenbau.de

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1 Preface

We congratulate you on the purchase of your new ROPA machine. Please take the time and read thoroughly the operating manual. The operating manual is primarily intended for the machine operator. It contains all information required for safe operation of this machine, informs about safe handling and gives hints on practical use as well as for self-help and servicing. The respective safety information is based on the safety, work and health protection regulations applicable at the time of printing of this operating manual. In case of questions about the machine, on operation of the machine or on ordering of spare parts, please contact the dealer in your vicinity or the manufacturer directly:

ROPA Fahrzeug- und Maschinenbau GmbH

Sittelsdorf 24

D-84097 Herrngiersdorf

Phone Customer Service	+ 49 – 87 85 – 96 01 203
Spare parts telephone	+ 49 – 87 85 – 96 01 202
Fax	+ 49 – 87 85 – 566
Internet	*www.ropa-maschinenbau.de*
E-mail Customer Service	*Kundendienst@ropa-maschinenbau.de*
E-mail Spare Parts	*Lager@ropa-maschinenbau.de*

Important information

- Original ROPA spare parts have been especially developed for your machine. They conform to the high ROPA standards for safety and reliability. We would like to point out that parts and accessories not approved by ROPA may not be used on ROPA machines, otherwise the safety and operability of the machine may be impaired. We cannot assume any responsibility for such installations, additions or reconstructions. In case of unauthorized modifications to the machine, any warranty claim lapses! Furthermore, the Declaration of Conformity (CE Marking) or regulatory approvals can be declared ineffective. This also applies if seals or sealing wax applied by the factory are removed.

WARNING

In rare cases, massive interference of vehicle electronics or malfunctions of the machine may occur due to operation of improperly installed electronic appliances (e.g. radios or other appliances emitting electromagnetic radiation). In case of such interference, the complete machine may suddenly stop operating or execute unwanted functions.

- In such cases, immediately shut off the sources of interference and immediately shut down the machine.
- If needed, notify the company ROPA or the nearest authorised customer service of ROPA.

- We expressly reserve the right to make technical modifications for the purpose of improving our machines or increasing the safety standards – even without specific notification.
- All information about directions given in this operating manual (front, rear, right, left) are in relation to the driving direction forward. Please always state the chassis number of the machine for any orders for spare parts and technical inquiries. You will find the chassis number on the name plate and on the vehicle chassis above the name plate.
- Please have the machine serviced according to regulations. Comply with the information given in this operating manual and have parts subject to wear replaced in due time respectively ensure timely repairs. Have the machine respectively maintained or repaired according to regulations.
- Listen for suddenly occurring, unusual noises and have their cause remedied before the machine is operated further, since otherwise heavy damage or costly repairs to the machine may be caused.
- Generally comply with the respective applicable regulations for road traffic and the applicable regulations on occupational health and safety.
- A copy of this manual must be accessible to authorized personnel any time for the entire lifetime of the machine. Make sure that the manual is supplied with the machine, e.g. in the event of an onward sale.

We expressly point out that any damage caused by the fact that this operating manual is not or not completely followed is not covered by the statutory warranty of ROPA. Even though this operating manual is comprehensive, in your own interest you should completely and carefully read it and slowly familiarize yourself with the machine using this operating manual.

1.1 Name plate and important data

The name plate (**1**) of the machine is on the front bunker upright under the chassis number (**2**).

Please enter the data of your machine in the following image of the name plate. You will need this data for ordering spare parts.

CE

ROPA FAHRZEUG- UND MASCHINENBAU GmbH

Sittelsdorf 24 • D-84097 Herrngiersdorf • Tel. +49 (0) 8785/9601-0 • Fax +49 (0) 8785/566

Fahrz.-Typ		Baujahr	
Leistung	kW	Homologation	
Fabr. Nr.			
Zul. Gesamt-Gewicht	kg	Zul. Achslast 1	kg
Zul. Anhängelast	kg	Zul. Achslast 2	kg
Zul. Stützlast	kg	Zul. Achslast 3	kg
		Zul. Achslast 4	kg

1.2 Declaration of Conformity

The Declaration of Conformity belongs to separately provided documents and is handed over on the delivery of the machine.

The CE marking of the machine is a constituent part of the nameplate.

CE-KONFORMITÄTSERKLÄRUNG

Zur Bestätigung der Übereinstimmung mit der Maschinenrichtlinie
(Richtlinie 2006/42/EG) und den zu ihrer Umsetzung erlassenen Rechtsvorschriften

Die Firma **ROPA Fahrzeug- und Maschinenbau GmbH**
Sittelsdorf 24
84097 Herrngiersdorf
Deutschland
Telefonnummer: 0049-(0)8785/96010
Telefaxnummer: 0049-(0)8785/9601-142
erklärt hiermit als Hersteller, dass die nachfolgend bezeichnete Maschine:

gezogener Kartoffelbunkerroder

Bezeichnung:	ROPA Keiler II
Maschinentyp:	RK21
Fahrgestellnummer:	from 2*0003
Baujahr:	from 2015

aufgrund ihrer Konzipierung und Bauart in der von uns in Verkehr gebrachten Ausführung mit den Bestimmungen der Maschinenrichtlinie (Richtlinie 2006/42/EG) und mit den sie umsetzenden nationalen Rechtsvorschriften übereinstimmt.

Bei jeder Veränderung der Maschine, die nicht unmittelbar mit der ROPA Fahrzeug- und Maschinenbau GmbH abgestimmt ist, wird diese Erklärung ungültig.

Datum: 2015-06-01

Hersteller Unterschrift: Paintner Hermann

Funktion des Unterzeichners: Executive Director

1.3 Extended documentation

Additional documents in addition to this operating manual also apply, e.g.

- Supplier documentation
- Wiring diagrams

1.3.1 Supplier documentation and purchased parts operating manual

The operating manuals for the purchased parts must be followed and they are attached to the technical documentation as separate sections. Optional components are also listed.

Supplier	Component	Description
Müller Elektronik	ROPA standard tractor terminal	BASIC terminal installation and operation manual
Müller Elektronik	ROPA tractor touch terminal	TOUCH800 installation and operation manual
Walterscheid	Drive shafts	Drive shaft operation manual
BEKA-MAX	Central lubricating system	Electric pump operation manual

2 Safety

2.1 General

The machine has been manufactured according to the current state of technology and tested for safety.

The machine is CE compliant and therefore conforms to the respective European regulations for free movement of goods within the European Union respectively the European economic region.

Modifications to this machine may only be performed with the express approval of the manufacturer, since otherwise the manufacturer's warranty lapses. In addition, the road traffic registration may lapse and other registrations of the machine may become invalid. The operating manual supplied must be strictly observed. The manufacturer shall not be liable for damage caused by incorrect handling, inappropriate application or incorrect repairs respectively missing maintenance and service carried out by the customer. The machine may only be operated in a technically perfect condition, for its intended purpose and with due consideration of the risks involved.

2.2 Obligations of the entrepreneur

The entrepreneur employing the machine, respectively his agent, is obliged:

- to observe the applicable European and national work and safety regulations.
- to instruct the machine operators about their special obligation for safe driving of the machine. These instructions must be given anew before the start of each season. Records must be prepared about giving of these instructions, which must be signed by the entrepreneur and the instructed machine operator. These records must be kept for at least one year by the entrepreneur.
- before first use of the machine, to instruct the machine operators about operation respectively about safe handling of the machine.

Forms for these instructions may be found in Chapter 9 of this operating manual (documentation of instructions given to the driver). When needed, please copy these forms before completing them.

2.3 General symbols and instructions

The following symbols are used for safety instructions in this operating manual. They serve as a warning against possible personal injury or material damage, or provide help in facilitating work.

DANGER

This signal word warns of imminent danger of fatal accident or serious injury. This hazard may always occur if the operating or working instructions are not or only imprecisely observed.

WARNING

This signal word warns you of a possibly dangerous situation which may lead to serious injury or to death. This hazard may always occur if the operating or working instructions are not or only imprecisely observed.

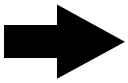
CAUTION

This signal word warns you of a possibly dangerous situation which may lead to serious injury or to death and damage to the machine or other serious property damage. Non-observance of these instructions may lead to loss of warranty. This hazard may always occur if the operating or working instructions are not or only imprecisely observed.

ATTENTION

This signal word warns you of a possible severe damage to the machine or other severe property damage. Non-observance of these instructions may lead to loss of warranty. This hazard may always occur if the operating or working instructions are not or only imprecisely observed.

ADVICE



This symbol draws your attention to some special aspects. This helps to facilitate work.

(**1**) **Item numbers**

The item numbers used in drawings are put in text in parentheses (**1**) and marked in bold.

- **Operational activities**

The defined sequence of operational activities facilitates the correct and safe use of the device.

2.3.1 Safety signs

The safety signs illustrate a danger source.

Warning of a general danger

This warning symbol stands for activities where several causes may lead to hazards.

Warning of dangerous electrical voltage

This warning symbol stands for activities during which the hazards of electrical shocks with possible deadly consequences exist.

Warning against open running belt

This warning symbol stands for activities during which the hazards of open running belt or chains with possible deadly consequences exist.

Warning against hot surfaces/hot liquids

This warning symbol stands for activities during which the hazards of hot surfaces/hot liquids with possible deadly consequences exist.

Warning against explosion hazard, battery area

This warning symbol stands for activities during which the hazards of corrosive liquid and gases exist.

Warning against falling hazard

This warning symbol stands for activities during which the hazards of falling with possible deadly consequences exist.

Warning of electromagnetic fields

This warning symbol stands for activities during which the hazards of electromagnetic fields respectively disorders exist.

Warning against crushing hazard

This warning symbol stands for activities during which the crush hazards with possible deadly consequences exist.

Warning against crushing hazard

This warning symbol stands for activities during which the crush hazards with possible deadly consequences exist.

2.4 Proper use

This machine is exclusively meant for:

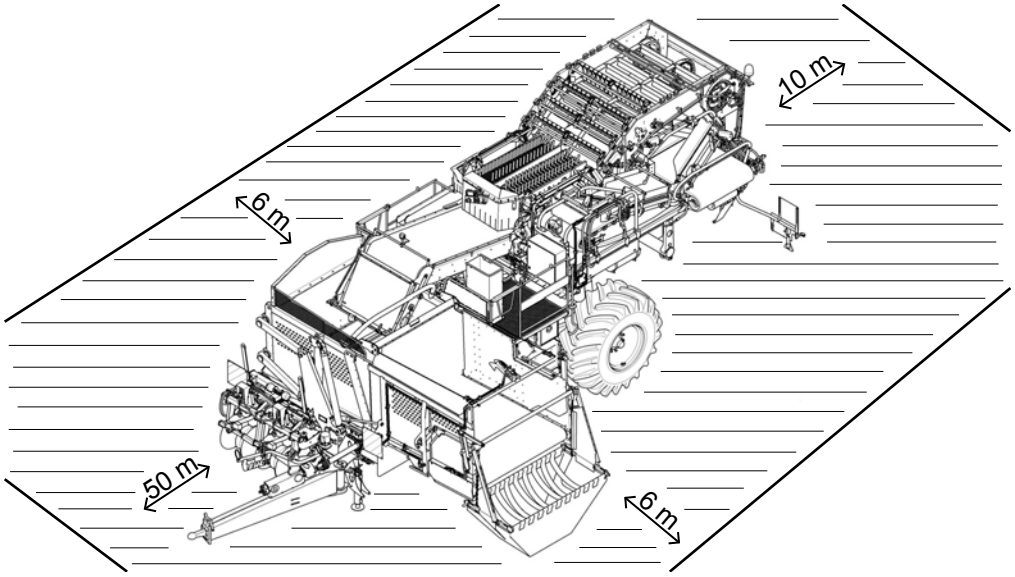
- lifting potatoes and similar crops.
- depositing the lifted crops in a pile immediately on the edge of the field, for unloading of lifted crops to a stationary vehicle for the bunker machine or for unloading of lifted crops to an accompanying vehicle driving alongside for the overloading bunker machine.

Included in proper use is that the machine is driven under compliance with the applicable road traffic regulations on public roads. This includes driving forward and backward. Any other use of the machine is deemed improper and is therefore prohibited.

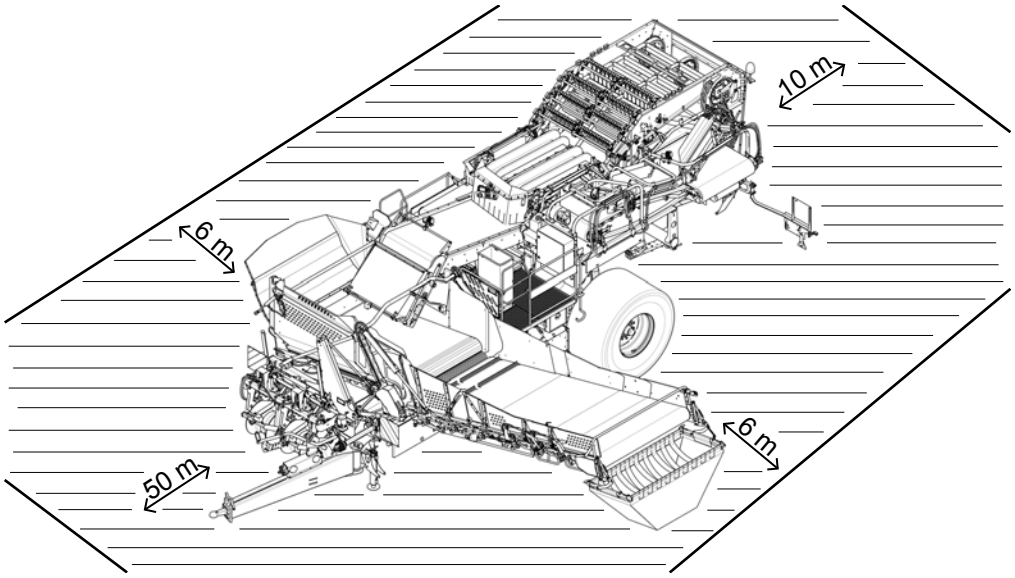
2.4.1 Foreseeable misuse:

We would like expressly to point out that this machine is not be used for transport of persons or for transport of any loads or any goods.

2.5 Hazard zone



Bunker machine hazard zone



Overloading bunker machine hazard zone

Nobody may stay in the hazard zone during operation of the machine. The operator must immediately shut down the machine in case of any threatening hazard and request the people concerned to leave the hazard zone immediately. He may only restart the machine when no people are located in the hazard zone anymore.

People wanting to approach the machine during operation must clearly communicate their intentions to the operator (e.g. by calling or by agreed hand signals) to avoid misunderstanding. During lifting, strips up to 6 m left and right from the outer edge of the machine, 50 metres in front of the machine and 10 metres behind the machine are deemed to be the hazard zone. As soon as a person enters this zone, the machine must be immediately shut down and the person concerned must be requested to leave the hazard zone immediately. The machine may only be restarted when no people are located in the hazard zone anymore.

The persons assigned to sorting the crop must not leave the platform of the sorting stand while the tractor is running. If they wish to leave the machine during opera-

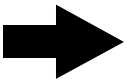
tion they must clearly communicate their intentions to the driver (e.g. by calling or by agreed hand signals) to avoid misunderstanding.

DANGER

There is a risk of serious or even fatal injuries for people in the hazard zone.

- The operator is obliged to immediately shut down the machine with the Emergency Stop Switch as soon as people or animals enter the hazard zone or reach into the hazard zone with objects.
- It is expressly prohibited to place crops that has not been lifted by the machine into the machine manually or using tools, as long as the machine is running.
- The tractor engine must be shut down and the ignition key must be removed before maintenance and repair work.
- In all cases, please read the operating manual and comply with the safety instructions.
- In the past, these activities have lead to severest accidents. Staying under lifted machine parts or within the swivelling perimeter of machine parts is hazardous and therefore prohibited.

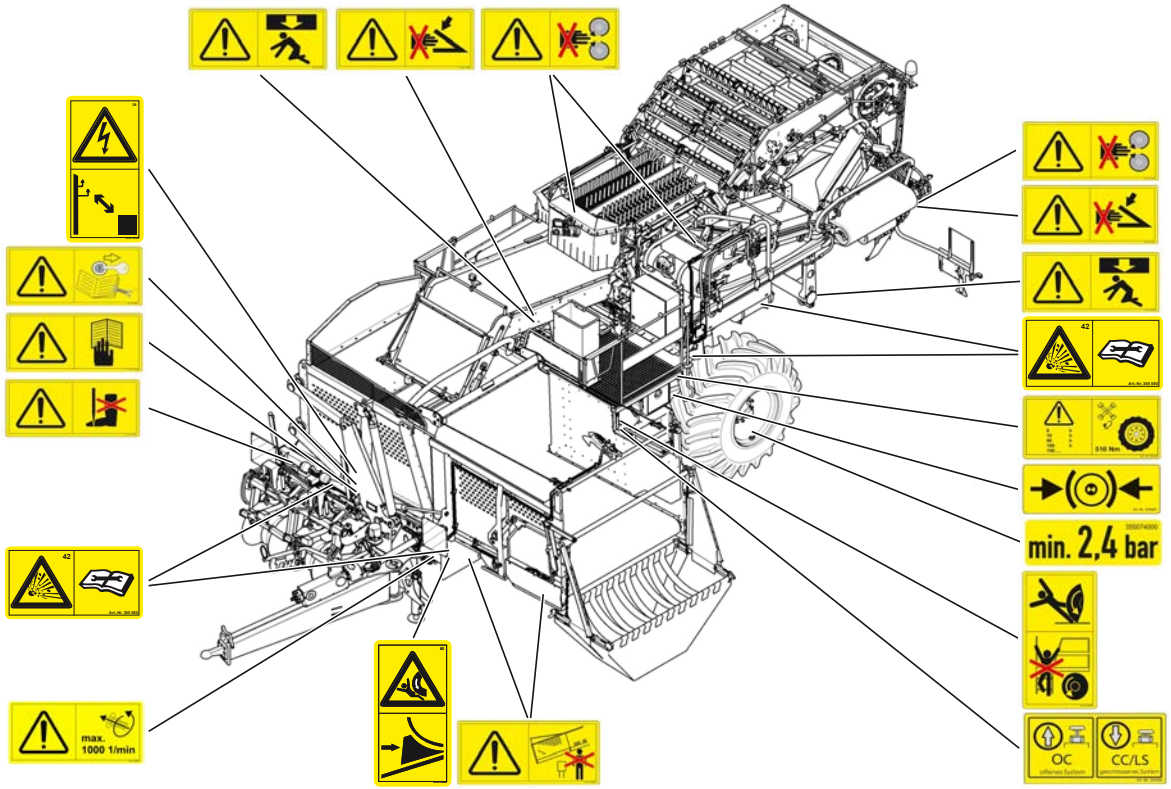
ADVICE



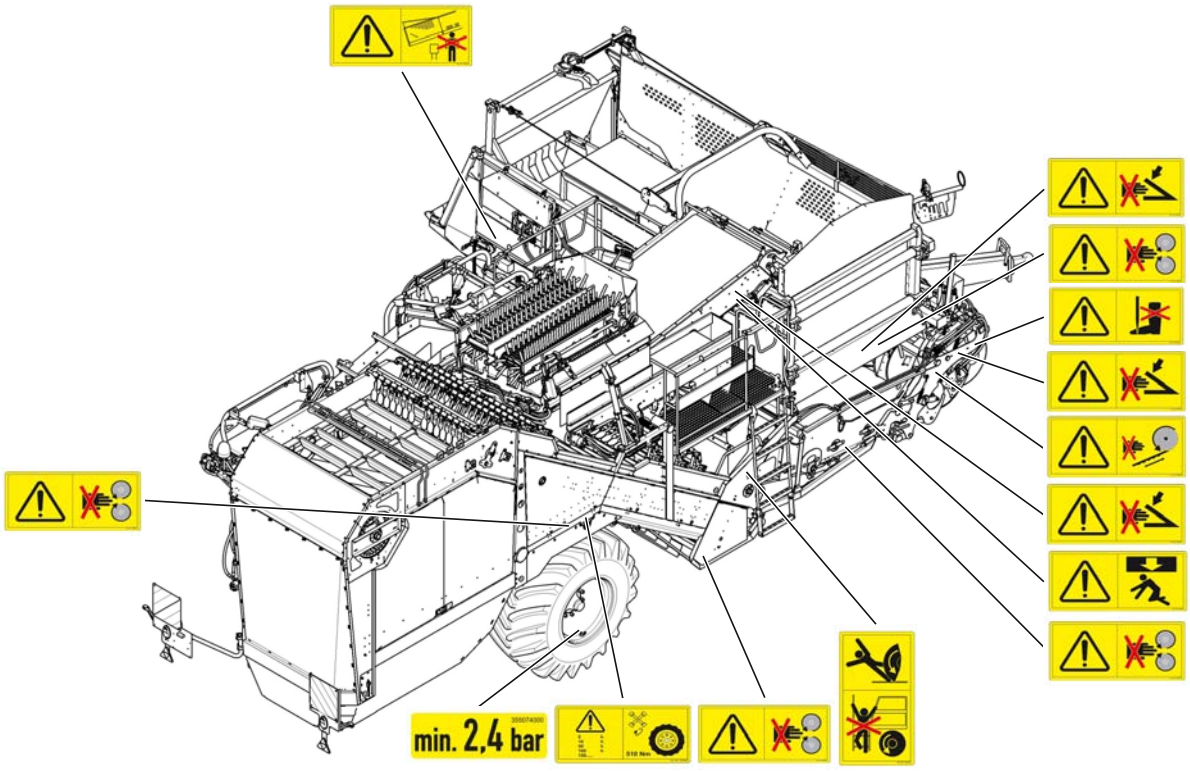
We recommend that the operator of the machine informs all people present during lifting about the possible hazards. You will find an information sheet for this purpose in the appendix. When needed, you should copy this sheet and hand it out to the people concerned. For your own safety and as protection against possible recourse (liability) claims, you should obtain written confirmation about receipt of this sheet in the space provided.

All parts of the machine which may cause specific hazards are additionally marked using warning labels (pictographs). These pictographs point out possible hazards. They form a part of this operating manual. They must always be kept in clean and well legible condition. Damaged or illegible safety stickers must be replaced immediately. The meaning of each individual pictograph is explained below. In addition, a six- or nine-figure number is given for each pictograph. This is the ROPA order number. Stating this number, you may reorder the respective pictograph from ROPA.

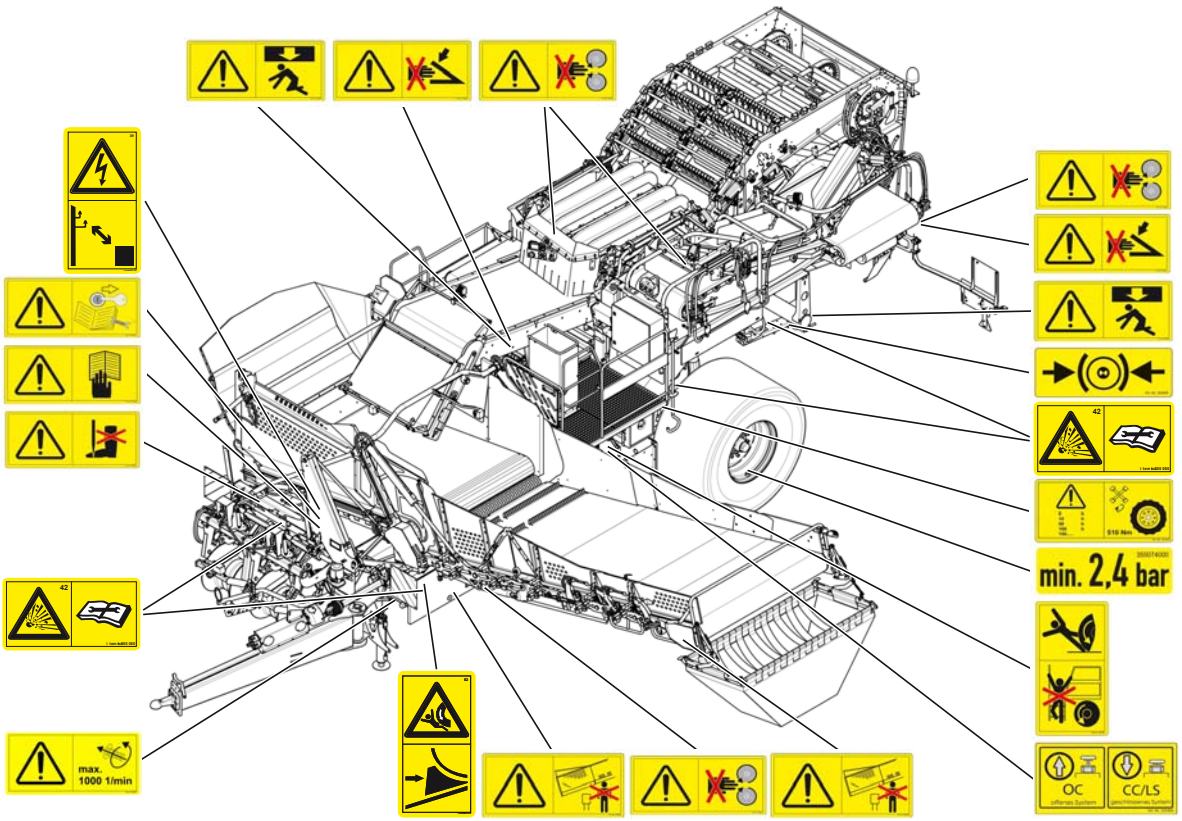
2.6 Safety stickers on the machine



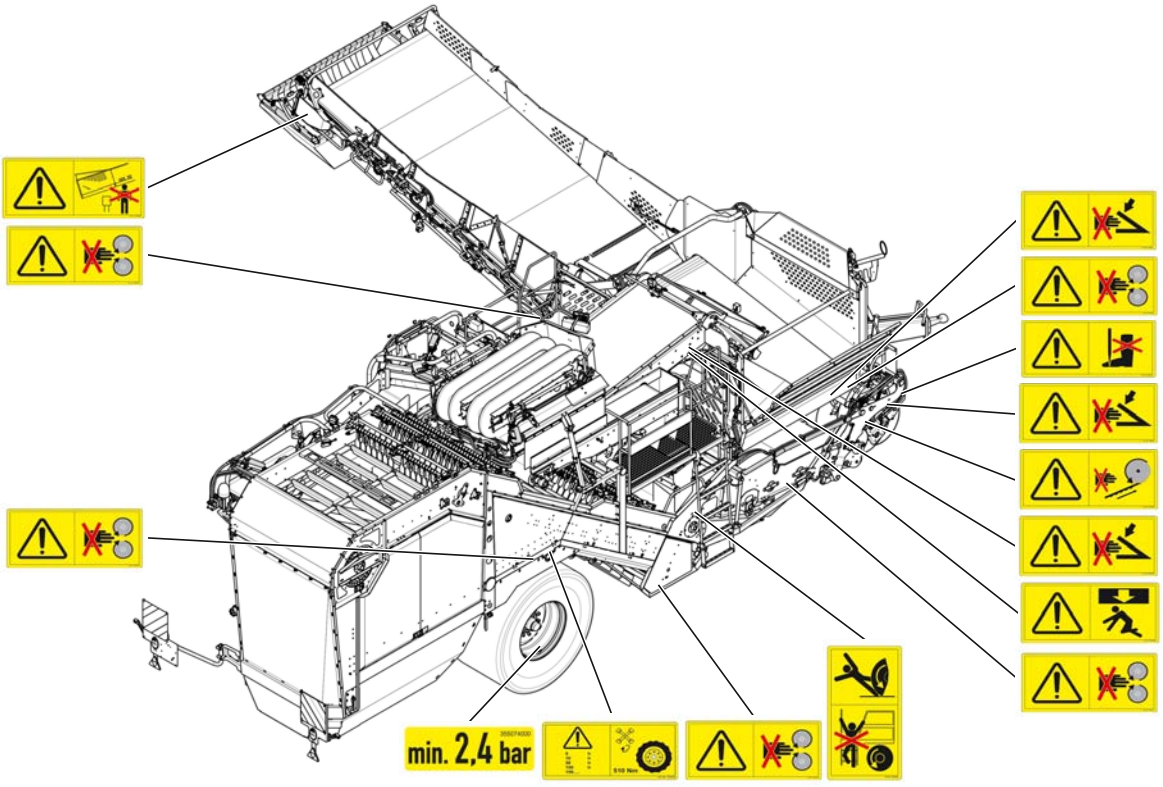
Left front view of the bunker machine



Right rear view of the bunker machine



Left front view of the machine with overloading bunker



Right rear view of the machine with overloading bunker

355044900

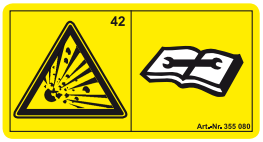
Tighten wheel studs as directed.

355045000

Before starting up, read the operating manual respectively the maintenance manual and observe all remarks on safety.

355045100

Shut down the engine before performing maintenance and repair work and pull out the ignition key. Read the operating manual and comply with remarks on safety.



355008000

Explosion hazard. The pressure reservoir is under very high pressure. Perform removal and repair only following instructions from the manual.

355045300

Hazard from rotating parts. Never reach into operating chains and rollers. Hazard of clothing or body parts being pulled in. Do not open or remove protective equipment during operation.

355045400

Caution! Risk of cuts! Never step in front of or under the disc coulter.

355045600

Caution! Trash roller entrapment zone! Never reach into the trash intake roller while the machine is running. Hazard of clothing or body parts being pulled in.

355056700

Note the approved PTO shaft speed and direction of rotation of the PTO shaft!

355046000

Caution! Crushing hazard! Keep clear! Never stay under this part.

355046100

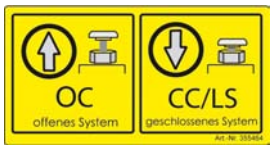
Caution! Crushing hazard! Keep clear! Never reach into the range of moving parts when the machine is running.

355046300

Caution! Do not stand under the bunker unloading conveyor! Hazard due to conveyor folding down. Never step into the hazard zone of raised and unsecured bunkers.

355046900

Set parking brake when parking the machine and release if before driving off.



355046400

Caution! Set adjusting screw on the 7x LVS block correctly! OC position Tractor connection to control unit, CC/LS position Tractor connection via LS.

355074000

Attention, the tyres minimum pressure of 2.4 bar must be maintained.

355006800

Hazard due to electrical current! Observe a sufficiently safe distance to high-voltage power lines.

355045200

Entering or leaving the machine while it is moving is prohibited! Enter and leave the machine in the field only when it is stationary.

355006400

Hazard due to the machine inadvertently rolling away. Secure machine against inadvertently rolling away using a wheel chock before uncoupling or parking it.

2.7 Safety and health protection

The stipulations and regulations listed below must be rigorously observed in order to reduce the risk of personal injury and/or property damage. Furthermore, the regionally applicable regulations and instructions on safety at work and for safe handling of tractor-towed agricultural machines must be observed at all times. For safety reasons, anyone working with the machine must have read and understood the operating instructions. He must also be familiar with the applicable regulations on safety at work and health protection regulations.

For safe operation of the machine, the applicable health protection regulations, the relevant national work safety regulations or equivalently applicable national work safety and health protection regulations of other member states of the European Union or other states which have signed the agreement on the European Economic Area must be rigorously applied.

The operator is obliged to provide the applicable regulations in their current versions free of charge to the machine operator.

- The machine may only be used for its intended purpose and in compliance with these operating instructions.
- The machine must be used and operated in such a manner that its stability is guaranteed at any time.
- The machine may not be operated in enclosed rooms.
- The effectiveness of operating and adjusting components may not be impaired or overridden without approval.

2.8 Requirements for operating and maintenance personnel

The independent operation and maintenance of the machine is restricted exclusively to persons who are of age and:

- must have a required and valid driver's license (when driving on public roads), are physically and mentally suitable,
- are not under the influence of drugs, alcohol or medicine which may impair the reactions of the machine operator in any manner,
- have been instructed about operation and maintenance of the machine and have proven their ability to the entrepreneur,
- have been instructed by the entrepreneur about their specific obligation for safe driving of the machine,
- are familiar with the vicinity and it may be expected that they will reliably discharge the tasks assigned to them,
- are specifically authorised by the entrepreneur.

The operating personnel must thoroughly read and understand the operating instructions of the machine.

All maintenance work which is not specifically the responsibility of the operator may only be carried out by instructed or trained maintenance personnel. Some activities may only be performed by people expressly authorised by ROPA for these activities. In case of doubt, ask the manufacturer whether you may perform a specific activity yourself without any hazard.

ADVICE

Forms for instruction on safety given for operating and maintenance personnel are included in this operating manual. When needed, please copy these forms before completing them.

2.9 Use of the boarding steps

For safety reasons, always face the machine when ascending or descending the boarding steps. When ascending or descending, always use both hands to hold on to both handrails and remember to always grasp the handrails firmly when using the boarding steps.

The safety rail at the upper end of the boarding steps serves as a fall arrester (guardrail). Please bear in mind that this safety rail always closes automatically and cannot be blocked in any way. For safety reasons, this safety rail must not be permanently held open.

2.10 In the event of accidents

In the event of accidents involving personal injury, the machine must be shut down immediately. To the extent required, immediately necessary first aid measures must be initiated, medical assistance called in and the next accessible supervisor should be informed.

2.11 Handling and process materials

- When handling process materials the appropriate protective clothing must always be worn to prevent or reduce skin contact with these materials.
- Defective, dismantled parts shall be sorted according to material type and routed to the proper recycling channel.
- Residues of oil, grease, solvents or cleaning agents must be reliably and environmentally compatible collected in suitable and prescribed containers and stored before being disposed of in an environmentally compatible manner in accordance with the local regulations.

2.12 Residual risks

Residual risks are special hazards involved in the use of the machine which cannot be fully eliminated despite a safety-conscious design. These residual risks are not readily recognizable and may result in injury or damage to health.

In the event such unforeseen residual risks become apparent, the machine must be shut down immediately and the responsible supervisor informed accordingly (if applicable). The supervisor then makes any further decisions and initiates the necessary measures for elimination of the hazard. If required, the machine manufacturer must be informed.

2.13 Hazards caused by mechanical influences

DANGER

During operation of the machine, there is life-threatening danger due to uncovered rotating machine parts (articulated shafts, rollers, conveyor chains and conveyor belts...) and overhanging parts.

Rotating machine parts and breaking attached parts may cause the serious injuries such as contusions, loss of body parts, broken bones. These injuries may be deadly in especially severe cases. During lifting, within range in front of the machine there is the greatest danger to life from stones or other objects possibly flung away (for instance, detaching metal parts).

– You can protect yourself against these hazards by keeping a sufficient safety distance, by constant attention and by wearing suitable protective clothing.

2.14 Hazards caused by electromagnetic influences

WARNING

During operation of the machine there is a danger of undesired movements of the machine which can be a subject of outside electromagnetic impacts.

– Keep the sources of interference, e.g. mobile phones or magnets, far away from the electronics of the machine.
– Never secure the control elements in the tractor cabin with magnets.
– Maintain the safety distances, e.g. to radio masts or to live power lines.

Terminals and control elements used by ROPA are tested for electromagnetic compatibility (EMC) according to DIN EN ISO 14982.

2.15 Hazards caused by electricity

DANGER

Danger of death due to electric voltage.

Cables and components are live, there is a danger of injury with deadly consequences. Clamping points are under voltage also after shut-off.

– All work on the electrical equipment of the machine must always be carried out by qualified electricians.
– Check electrical equipment on a regular basis: refasten loose connections and replace damaged lines and cables immediately.

There is an electrical hazard during work on the machine:

- During direct contact with live parts or parts that have become energized due to fault conditions.
- By electrostatically charged parts.
- During all work on live parts, lines or cables, a second person must be present at all times to disconnect the ISOBUS plug connector to the tractor in case of emergency.
- Never clean electrical equipment with water or similar liquids.
- Do not touch live parts inside and outside the machine.
- Before starting work on the machine, disconnect the ISOBUS plug connection to the tractor, check that there is no voltage and lock to prevent restart.
- Before opening cabinets and devices, discharge all parts that collect electrical charge, and make sure that all components are de-energized.

2.16 Hazards caused by process materials

WARNING

Oil and grease can cause the following damage:

- poisoning by inhalation of fuel vapours.
- allergies due to skin contact with oil or grease.
- fire and explosion hazard due to smoking or the use of fire or naked flame when handling oil or grease.

Protective measures

– When handling oil, smoking or use of open fire or naked flame is strictly prohibited. Oil must be stored in suitable and approved containers only.
– Rags soaked with oil must be kept in suitable, approved containers and disposed of in an environmentally compatible manner.
– Always use a suitable funnel for filling oil.
– Avoid skin contact with oil or grease at all times! In case of need, wear suitable protective gloves.
– Only decant oil in the open air or in well ventilated rooms.

ADVICE

Environmental hazard due to pollution caused by leaking oil!
Hazard of pollution of ground or water bodies.

Prevention

– Always carefully close containers containing oil.
– Dispose of empty containers in accordance with regulations and in an environmentally compatible manner.
– Keep a supply of a suitable binding agent and use immediately as required.

2.17 Hazards caused by noise

WARNING

Noise

Noise can cause loss of hearing (deafness), hearing defects, health disorders such as loss of balance or consciousness disorders, as well as disorders of the heart and circulation. Noise may lead to reduction of the attention of people. In addition, noise may interfere with verbal communications among operating personnel as well as to the outside world. Perception of acoustic warning signals may be impaired or blocked.

Protection

– Wear ear protection (cotton wool, earplugs, capsules or helmets).
– Keep sufficient distance to operating machine.

Possible causes:

Pulse noise (< 0.2 s; > 90 dB(A))

Machine noise in excess of 90 dB (A)

2.18 Hazards caused by the hydraulic system

WARNING

Hydraulic fluid may cause irritation of the skin. Leaking hydraulic fluid may damage the environment. High pressure and partially high temperatures exist within hydraulic systems. Hydraulic fluid emitting at high pressure may enter the body through the skin and cause the most severe tissue damage and scalding. If work on the hydraulic system is carried out incorrectly, tools or machine parts may be flung away with great force and cause severe injuries.

Protection

– Regularly check all hydraulic hoses for their condition and immediately have damaged hoses exchanged by trained specialist personnel.
– The hydraulic hoses must be regularly checked following the recognized rules of technology and the regionally applicable safety regulations, and in case of need, replaced.
– Works on the hydraulic system have to be performed only by specially trained staff.
– When working on the hydraulic system, first make it pressureless! Avoid skin contact with hydraulic oil.

2.19 Hazards caused by pneumatic system

When working on the pneumatic system there is a risk that compressed air may escape suddenly and cause injuries.

– All work on the pneumatic equipment must always be carried out by qualified personnel.
– All pneumatic pressure lines and pressure vessels must be depressurised and vented before maintenance work.
– All equipment must be depressurised before starting repair work.

2.20 Hazards caused by hot substances/surfaces

Burning hazard/hazard of scalding due to

- Hot surfaces (hot machine parts).
- Hot hydraulic oil.

Counteractive measures

– Let machine and operating supplies cool down.
– Wear protective gloves.

2.21 Risks due to drive shafts

- Follow the operating manual of the shaft manufacturer.
- Only shafts that meet the specifications of the manufacturer are to be used.
- Use the specified shaft covers appropriately in road and working settings.
- The PTO shaft guard, the funnel guard and the guard on the articulated shaft must be installed and must be in good condition.
- The articulated shaft must be removed and installed only with the tractor engine shut off, ignition key removed and the machine secured to prevent rolling.
- Make sure that the articulated shaft is correctly and installed and secured.
- Fasten the shaft guard to prevent movement with the shaft by attaching the safety chain or setting the torsion lock.
- When switching on the tractor PTO make sure that the direction of rotation is correct.
- Never exceed the approved maximum speed of the PTO shaft for the machine.
- Before switching on the tractor PTO shaft, make sure that no one is in the danger zone of the machine.

2.22 Personal protective equipment

Wear tight-fitting clothing to prevent accidents. Particularly, do not wear ties, scarves, rings or chains that may be caught by moving machine parts. Wear appropriate headgear for long hair.

Do not carry highly inflammable objects, e.g. matches and lighters in your pockets.

All persons staying within the area of effect of the machine are situationally obliged to wear the following protective equipment:

Always

- Safety shoes with slip-resistant soles.
- Tight-fitting working protective clothing.
- Dust mask if necessary.

Additionally for transport or assembly work

- Protective helmet.

Additionally for maintenance

- Cut-resistant gloves.
- Protective cream (make a skin protection plan).
- Protective goggles.
- Tight-fitting working protective clothing with long sleeves.
- Heat-resistant gloves.
- Oil-resistant protective gloves (when working on oil-containing systems).

Additionally if noise emissions exceed the limit value

- Ear protection.

Additionally on public roads

- Warning vest.

2.23 Leakage

The following measures shall be taken in case of leakage:

– Switch off the effective component and set it pressure-free if possible.
– Place a suitable container underneath.
– Exchange a component/sealing.
– Remove immediately and completely leaked substance.

2.24 Prohibition of unauthorised modifications and alterations

All unauthorised modifications and alterations are expressly prohibited.

Such actions require the express consent of the manufacturer. It is strictly prohibited to modify mechanical, electrical, pneumatic or hydraulic safety and control devices in order to bypass or put them out of operation.

2.25 Safety and protective equipment

Perform a documented function test after work on safety equipment. Perform a regular function check of safety equipment, keep maintenance intervals.

The safety equipment of the machine consists of:

- Emergency stop switch on lifter control unit.
- Emergency stop switch on sorting platform operating console.
- Emergency stop switch at the bunker filling conveyor (country-specific).
- Emergency stop switch at the sorting platform right (country-specific).
- Guards, protective cover.
- Safety circuits.
- Protection bars.

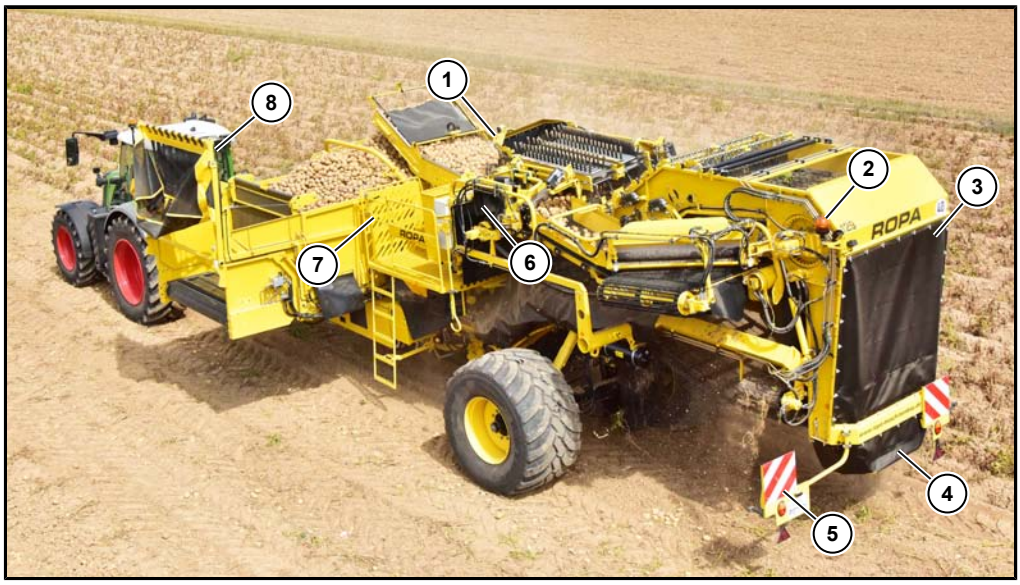
DANGER

Risk of inactive safety devices.

Defect or overridden protective devices can not prevent from severe injuries and hazards.

– After maintenance work and before the restart of the machine, make sure in any case that all protective devices are fully assembled and functional.

Overview

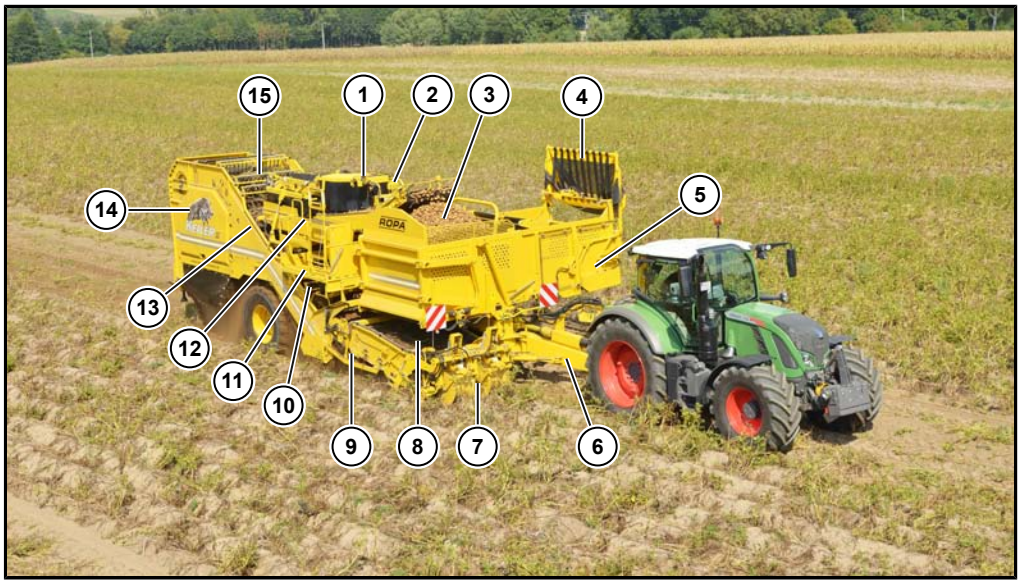


(1) Emergency stop switch on sorting platform operating console
(2) Rotating beacon (option)
(3) Rear tarpaulins
(4) Leaf chain tarpaulins
(5) Danger notice
(6) Protective rubber pintle belt 3
(7) Safety rail at the ladder
(8) Emergency stop switch on lifter control unit

3 General View and Specifications

3.1 General view

This overview is intended to familiarize you with the most important components of your machine.



(1) Control unit above picking conveyer
(2) Control unit above central electrical system
(3) Bunker
(4) Tray filler
(5) Articulated bunker section
(6) Drawbar
(7) Pickup
(8) Sieve conveyor 1
(9) Shaker
(10) Front leaf-scraper
(11) Sorting platform right with access ladder
(12) Trash conveyer
(13) Sieve conveyor 2 with leaf chain
(14) Pintle belt 1 with deflector roller 1
(15) Rear leaf-scraper

(16) Central electrics cabinet
(17) Pintle belt 4 with rotating finger comb
(18) Pintle belt 3 with deflector roller 3
(19) Pintle belt 2 with deflector roller 2
(20) Dirt discharge conveyor
(21) Telescopic axle
(22) Sorting platform left with access ladder
(23) Trash discharge conveyor
(24) Hydraulic oil tank for machine hydraulics
(25) Pump distributor gears
(26) Supporting foot
(27) Drawbar eye
(28) Bunker filling conveyor
(29) Picking conveyer

Machine ready for driving on roads

ROPA

ROPA
40

3.2 Technical data

Designation:	**Bunker machine**		**Overloading bunker machine**
	Axle standard	**Axle with drive wheel**	
Maximum speed:	40 km/h and 25 km/h		
Two-line air brake system operating pressure:	5 - 8 bar		
Hydraulic brake system operating pressure (export):	100 - 150 bar		
Gross weight rating:	13 000 kg	14 500 kg	15 000 kg
Approved axle load:	10 000 kg		
Admissible additional axle load:	without	1 500 kg	1 500 kg
Tyres axle right:	850/50 R 30.5		
Tyres axle left:	850/50 R 30.5 650/65 R 30.5		
Tyres additional axle:	without	235/75 R 17.5	235/75 R 17.5
Length (position driving on roads):	11 937 mm		
Width (position driving on roads):	2 995 mm		3 300 mm
Height (road position) with tray filler:	3 990 mm		
Height (truck loading position) with bunker fully lifted:	approx. 4 100 mm		approx. 4 100 mm
Bunker capacity:	approx. 7 500 kg		approx. 5 500 kg
Maximum noise level for operators on the sorting platform in accordance with Directive 2006/42/EC; DIN EN ISO 11201	73 dBA		
Maximum vibration for operators on the sorting platform in accordance with Directive 2006/42/EC; DIN EN 1032	< 0.5 m/s²		

Requirements for tractor

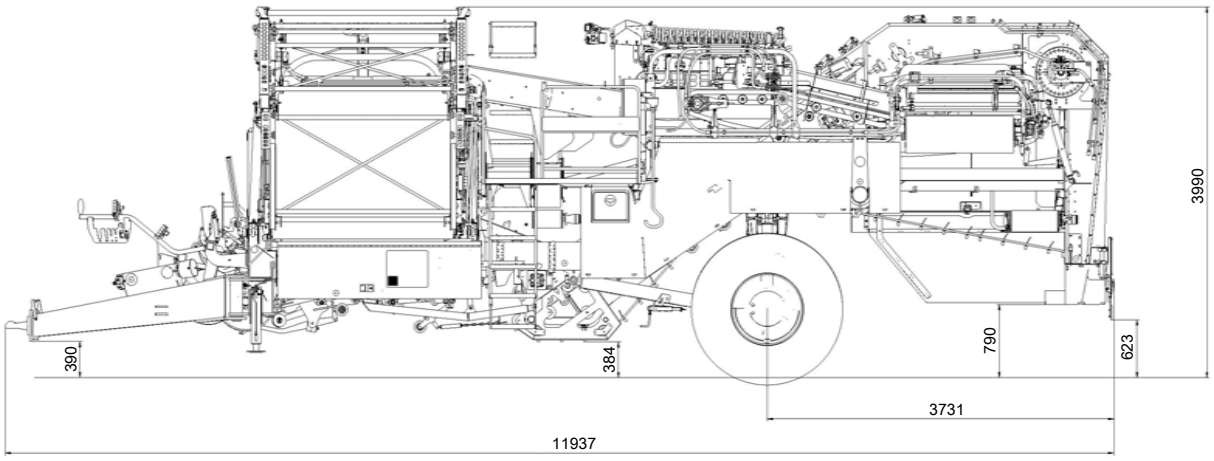
Designation:	Bunker machine	Overloading bunker machine
Approved support load:	minimum 3 000 kg	minimum 3 500 kg
Power:	from 110 kW (150 HP)	
PTO rotational speed:	max. 1 000 rpm	
System voltage:	12 V	
Control valves:	Optimal: Load Sensing System in tractor (max. 5 bar return pressure) Optional: single or double-acting control unit with pressure-free return flow (max. 5 bar return pressure)	Load Sensing System in tractor (max. 5 bar return pressure)
Hydraulic power:	minimum 70 l/min	minimum 110 l/min
Operating pressure	180 - 210 bar	
Supply of hydraulic support stand and additional axle:	Double-acting control unit	

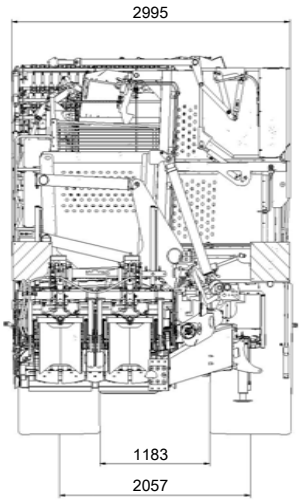
3.3 Tyre pressures

	Tires type	Minimum pressure	Recommendation
		bar / psi	bar / psi
1	Axle 850/50 R 30.5 650/65 R 30.5	 2.4 / 35 2.4 / 35	 2.4 / 35 3.0 / 44
Others		**Recommendation**	
2	Swath pickup	6.25 / 91	
3	Additional axle	8.0 / 116	

The tyre pressures of the axles are designed for a full bunker load.

3.4 Transport draft for low-loader transport of the bunker machine

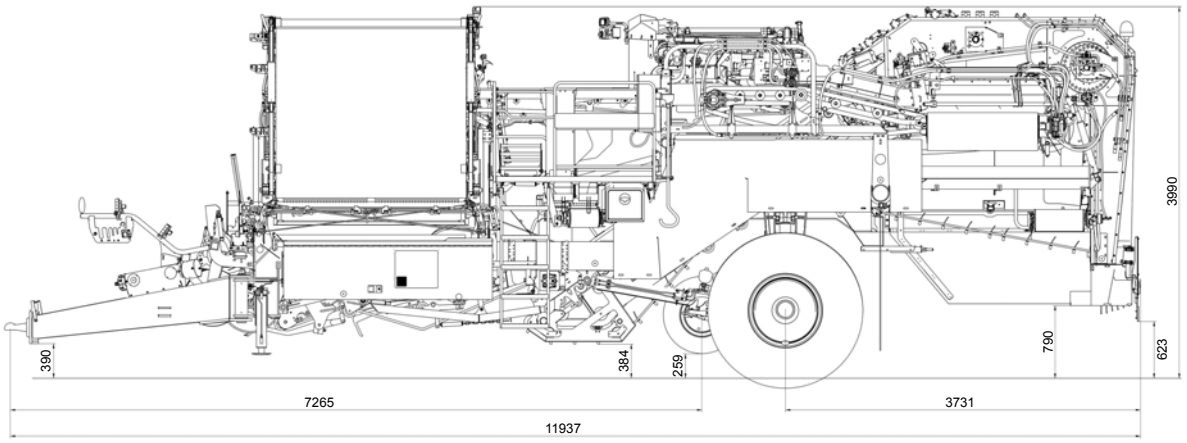




All data in mm.

Tyre sizes:				
Right:	850/50 R 30.5 850/50 R 30.5	Left:	850/50 R 30.5 650/65 R 30.5	shown here optional
Additional axle:	235/75 R 17.5 (optional)			

3.5 Transport draft for low-loader transport of the overloading bunker machine



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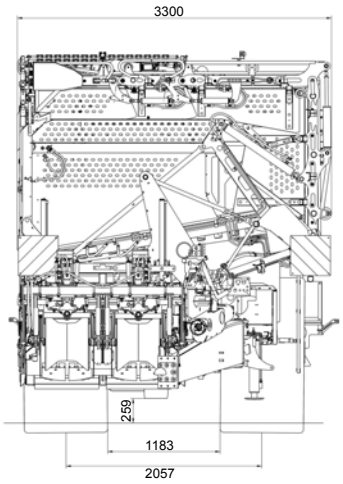


All data in mm.

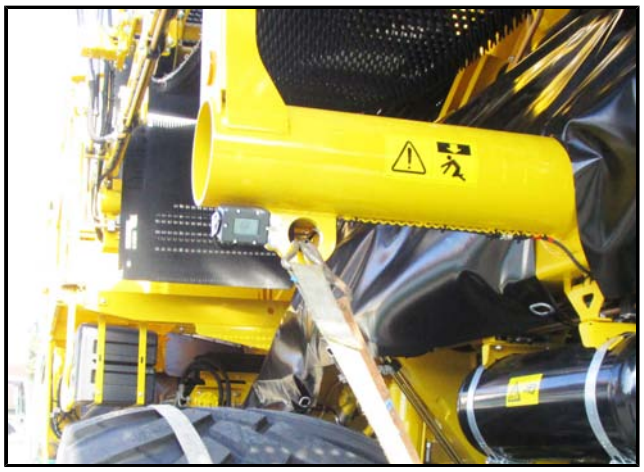
Tyre sizes:					
1	Axle:				
	Right:	850/50 R 30.5 850/50 R 30.5	Left:	850/50 R 30.5 650/65 R 30.5	shown here optional
2	Additional axle:	235/75 R 17.5 (optional)			

3.6 Lashing eyes for transport by low-loader/ship

The machine is fitted with eyelets on the right and left of the main frame behind the axle by which the machine can be tied down to the load platform. Clamping chains etc. must not be stretched over mechanical parts.

All other transport securing devices must be attached to the frame of the machine with belts to prevent damage to parts of the machine. The machine must be adequately secured.

Regular low loader for road transport with minimum transport height



Lashing point on left of machine

Lashing point on right of machine

The machine has no attachment points by which it can be lifted. For hoisting it into a ship for example, special, approved and TÜV-approved lifting devices are necessary.

4 General Description

4.1 Function

The machine is a towed working machine for lifting potatoes. The lifted potatoes are collected in the bunker.
As soon as the bunker of the bunker machine is full, the potatoes can either be loaded onto an accompanying vehicle at a standstill or deposited as a pile.
As soon as the bunker of the overloading-bunker machine is full, the potatoes can be either deposited in a pile or loaded directly onto an accompanying vehicle.

The machine is fitted with a quick-change system for pickup as standard equipment. The quick-change system enables a quick change between ridge pickup, carrot pickup, swath pickup and pickup of other crops.

Rows are picked up with row pickup. The row pickup system includes a guide control (ridge centring) that guides the machine along the centre of the ridge. This minimises the requirement for operator intervention. The adjustable lifting depth prevents potatoes from being cut by the pickup share. The disc coulters on the sides cut off overhanging haulm. The leaf loading rollers ensures clean transport to the sieving channel sides.

The swath pickup with lifter shaft and cover belt picks up deposited swaths (e.g. potato swath or onion swath). A pickup for special crops is also available.

The sieve conveyor 1 transports the crop into the machine with all the trash. The first separation takes place here. If the ridges are not broken, the shaker can be actuated in stages to support the separation. Gentle treatment of the crop is important here.

The sieve conveyor 1 transfers the crop to sieve conveyor 2 with the leaf chain. An additional cleaning effect can be achieved with different speeds of the leaf chain and sieve conveyor 2. Gentle treatment of the crop is also important at this stage. At the same time there are up to 7 rows of leaf scrapers with single leaf springs and 3 pull-off rods above the leaf chain. They ensure that any potatoes still attached to the haulm are not lost.

After the strainer chain 2 is the pintle belt 1 with the deflector roller 1. Next is pintle belt 2 with deflector roller 2 and pintle belt 3 with deflector roller 3. At this stage potatoes are cleaned depending on the distance between the pintle belt and its associated deflector roller.

The deflector roller 3 transfers the crop to pintle belt 4. Above the pintle belt 4 there is either a 4-row rotating finger comb with each 2 rows driven separately, or a 6-row rotating brush comb, with each 3 rows driven separately or a mixture of rotating finger comb and brush comb, which sorts the crop and wipes it on the picking conveyor. Unsorted potatoes are fed to the trash conveyor.

In the sorting process incorrectly directed crop is removed from the trash conveyor and trash is removed from the sorting conveyor. Trash from the trach conveyor can be returned to the crop flow via a changeover flap. Trash, e.g. stones, can also be collected in an optional collection box.

The crop is fed into the bunker by the bunker filling conveyor and stored there temporarily.
On the bunker machine, for unloading the bunker is raised to the required height and the crop is loaded with the movable walking floor onto an accompanying vehicle standing next or deposited as a pile. An optional tray filler and articulated bunker are available for crop protection.
On the overloading bunker machine, for unloading the unload conveyor is raised to the required height and the crop is conveyed with the walking floor to the unload conveyor and from there is either deposited in a pile or loaded onto an accompanying vehicle driving alongside.

All computers are networked via ISOBUS and supply all information to the driver on the tractor terminal. Most functions of the machine are controlled and monitored by the tractor driver. Some functions can be controlled form the sorting platform. The machine can also be monitored from the tractor with the optional video system.

4.2 Bunker machine scope of delivery

The scope of delivery of the machine includes:

- 1 ISOBUS touch screen tractor terminal with attachment fittings.
- 1 lifting control with integrated emergency stop switch with attachment fittings.
- 1 bunker control with attachment fittings.
- Various cables for connecting the controls.
- 2 wheel chocks.
- 1 key for central electrics box.
- 1 Keiler 2 Original Operating Manual.
- 1 Keiler 2 original Spare Parts List.
- 1 dirt catcher.
- 1 dirt scraper.
- 2 tool box keys.
- 2 keys for side cover panels.
- 1 bunker support.

Optional equipment for the machine includes:

- 1 ISOBUS tractor retrofit set.
- up to 2 video monitors for display of up to 8 cameras with attachment fittings.
- Various cables for connecting the ISOBUS joystick and video monitor.

4.3 Overloading bunker machine scope of delivery

The scope of delivery of the machine includes:

- 1 ISOBUS touch screen tractor terminal with attachment fittings.
- 1 lifting control element with integrated emergency stop switch with attachment fittings.
- 1 freely assignable control element with attachment fittings.
- Various cables for connecting the control elements.
- 2 wheel chocks.
- 1 key for central electrics box.
- 1 Keiler 2 original Operating Manual.
- 1 Keiler 2 original Spare Parts List.
- 1 dirt catcher.
- 1 dirt scraper.
- 2 tool box keys.
- 2 keys for side cover panels.

Optional equipment for the machine includes:

- 1 ISOBUS tractor retrofit set.
- Up to 2 video monitors for display of up to 8 cameras with attachment fittings.
- Various cables for connecting the ISOBUS joystick and video monitor.

5 Operating Components

5.1 Ladders

DANGER

– Only persons appointed to sort the crop are permitted on the platforms to the left and right of the sorting platform during operation of the machine.
– Ascend ladders to the sorting platform only when the machine is stationary.
– Maximally two persons are allowed on the left sorting platform and maximally three persons are allowed on the right sorting platform.
– Persons are not permitted on the sorting platform while travelling on public roads.

Use ladders. (*See Page 34*)

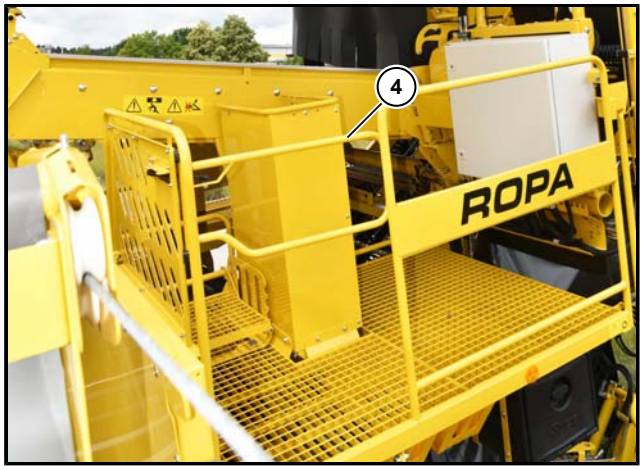
5.1.1 Left ladder

(1) Left ladder in road position
(2) Left ladder in operating position

The lock for the left ladder to the sorting platform must be in position (**1**) for travel on public roads. This ensures that the machine width is three metres for road travel. The lock for the left ladder to the sorting platform must be in position (**2**) in the field. This makes it easy to access or leave the platform. To change the position push the release lever up and pull or push the ladder to lock it in the required position.

(3) Safety rail at the ladder left (till year of construction 2017)

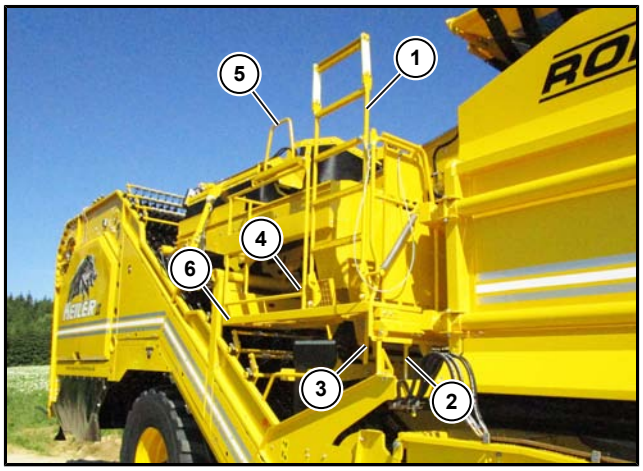
The safety rail at the ladder (**3**) must be closed after ascending or descending and kept closed.

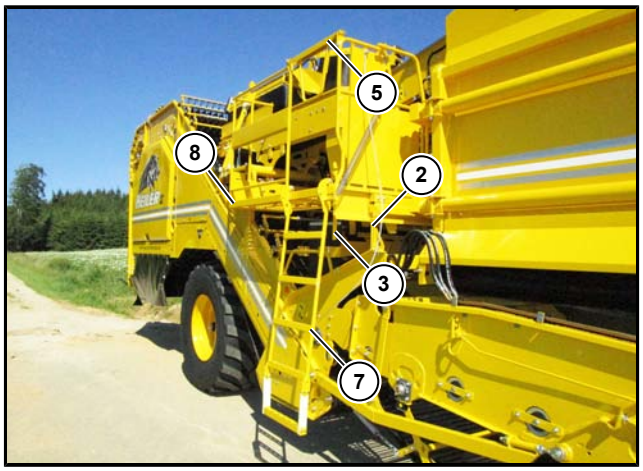


(4) Safety rail at the ladder left (from year of construction 2018)

The safety rail at the ladder (**4**) from year of construction 2018 locks itself by means of the built-in gas spring.

5.1.2 Right ladder





(1) Right ladder in road position
(2) Release lever on right sorting platform
(3) Release lever on right ladder
(4) Sorting platform flap
(5) Safety rail at the ladder right (till year of construction 2017)
(6) Sorting platform right in road position
(7) Right ladder in working position
(8) Sorting platform right in working position

The right sorting stand must be in position (**6**) for travel on public roads. This ensures that the machine width is three metres for road travel.

The right sorting stand must be in position (**8**) in the field. This makes it easy to work on the right sorting stand and enables easy access to or exit from the platform.

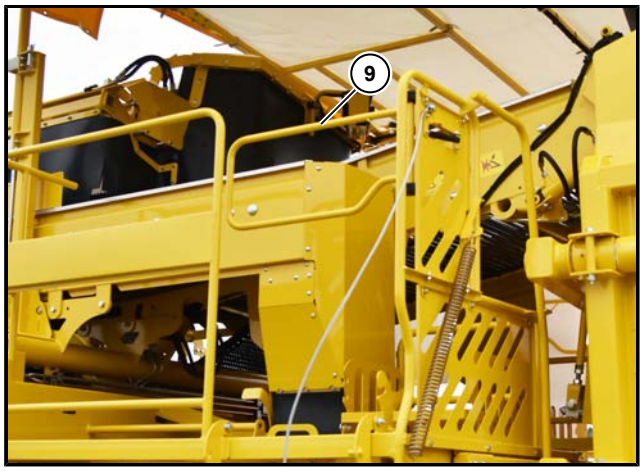
Sequence for unfolding the right sorting platform:

– Release right sorting platform lever (**2**). Pull right sorting platform out until the right sorting platform release lever locks.
– Release right ladder lever (**3**) and unfold the ladder using the rope.
– Close sorting platform flap (**4**).
– Close safety rail at the right ladder (**5**).

Sequence for folding the right sorting platform:

– Open safety rail at the right ladder (**5**).
– Open sorting platform flap (**4**).
– Fold in right sorting platform ladder quickly so it locks.
– Release right sorting platform lever (**2**). Push right sorting platform in until the right sorting platform release lever locks.

The safety rail at the ladder (**5**) must closed after ascending or descending and kept closed.



(9) Safety rail at the ladder right (from year of construction 2018)

The safety rail at the ladder (**9**) from year of construction 2018 locks itself by means of the built-in gas spring.

5.2 Overview of tractor controls

Overview of Keiler 2 tractor controls

(1) Tractor touch screen terminal
(2) Bunker control panel
(3) Lifter control panel with emergency stop switch
(4) Video monitor

For a detailed description see Chapter 6 "Operation" (*See Page 77*).

The hardware of the Keiler 1 and Keiler 2 control elements is identical. The tractor control elements for the Keiler 2 with the optional touch screen tractor terminal (**1**), bunker control element (**2**), lifter control element with emergency stop switch (**3**) and the optional video monitor (**4**) are shown here.

The lifter and bunker control panels are the most important machine controls. They combined the essential functions of the machine in two ergonomically designed control panels.

5.2.1 Tractor terminal

(1) ROPA ISOBUS standard tractor terminal
(2) ROPA ISOBUS tractor touch screen terminal

The standard terminal (**1**), which was available from ROPA till year of construction 2016, can be used for a wide range of settings by pressing the soft keys and turning and pressing the rotary wheel.

From year of construction 2017, ROPA offers a touch screen terminal (**2**) as standard. Settings can be made by touching (tapping) the screen. Since it is a capacitive touch screen (PCAP), the screen also reacts to touches with stylus or gloves.

The ROPA touch screen tractor terminal (**2**) is described here. Since the machine's control system operates on ISOBUS, other ISOBUS-compatible terminals can also be used.

5.2.2 Lifter control panel

WARNING

During operation of the machine there is a danger of undesired movements of the machine which can be a subject of outside electromagnetic impacts.

– Keep the sources of interference, e.g. mobile phones or magnets, far away from the electronics of the machine.
– Never secure the control elements in the tractor cabin with magnets.
– Maintain the safety distances, e.g. to radio masts or to live power lines.

Terminals and control elements used by ROPA are tested for electromagnetic compatibility (EMC) according to DIN EN ISO 14982.

The lifter control panel combines the most important functions for control of lifting.

(1) Automatic axle steering centring:

Sets the automatic axle steering centring to "Activated" status and vice versa. The automatic axle steering centring is active if the LED is on. (*See Page 174*)

(2) ridge centring:

Sets the ridge centring to "Activated" status and vice versa. Ridge centring is active when the LED is on. (*See Page 190*)

(3) automatic depth control:

Sets the preselected automatic depth control from "Preselected" status to "Activated" status and vice versa. Automatic depth control is active when the LED is on.

Ridge pressure regulation. (*See Page 199*)

Ridge pressure relief. (*See Page 216*)

(4) automatic slope compensation:

Sets the automatic slope compensation to "Activated" status and vice versa. Automatic slope compensation is active when the LED is on. (*See Page 177*)

(5) beginning of field:

When this key is pressed, the pickup is lowered, preselected automatics are activated. Chains and belts switch on in the specified sequence.

(6) end of field:

When this key is pressed, the pickup is raised, preselected active automatic systems are reset to the "Preselected" status. Chains and belts switch off in the specified sequence. The drawbar automatically traverse to the bunker unloading position.

(7) lift bunker filling conveyor:

Press and hold the key to lift the bunker filling conveyor manually. When the bunker is folded it is lifted within the allowable range, e.g. for maintenance work. When the bunker is in working position and the bunker filling conveyor reaches the top end position, the walking floor starts until the end switches on the walking floor are tripped. (*See Page 310*)

(8) lower bunker filling conveyor:

Press and hold the key to lower the bunker filling conveyor manually. The bunker is lowered first when it is working position. (*See Page 310*)

(9) automatic drawbar position:

When the key is briefly pressed the drawbar traverses to the specified position and the position can be reset by pressing and holding the key for more than 5 seconds. The automatic drawbar position is active when the LED is on. (*See Page 172*)

(10) STOP key:

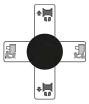
Key for software stop of the machine. After acknowledging the STOP key the machine can be restarted and normal operation can be continued.

(11) axle position correction:

Correct axle steering when axle steering centring is activated. (*See Page 174*)

(12) mini joystick left:

Top	=	Axle to right (*See Page 174*)		
Bottom	=	Axle to left		
Left	=	Drawbar to right	=	Machine to left (*See Page 172*)
Right	=	Drawbar to left	=	Machine to right



(13) mini joystick right:

Top	=	Raise pickup (*See Page 188*)
Bottom	=	Lower pickup
Left	=	Machine inclines to left (*See Page 177*)
Right	=	Machine inclines to right

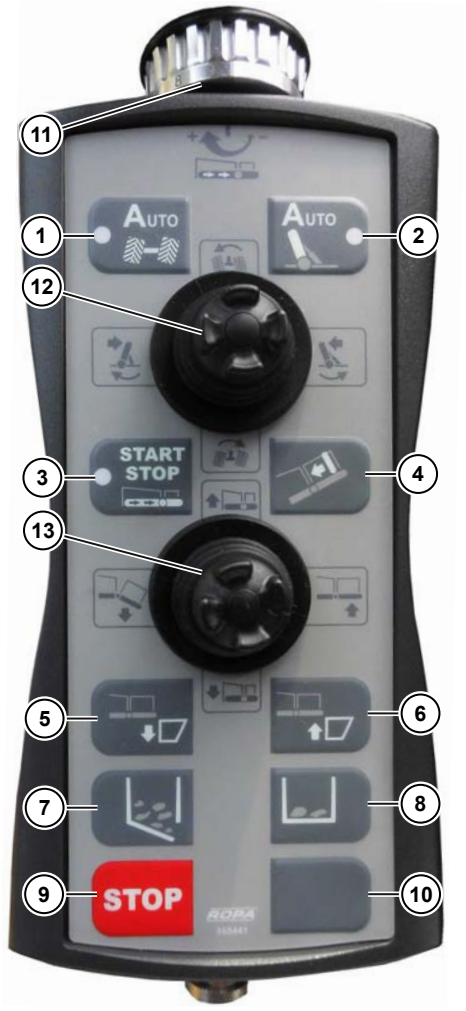
5.2.3 Bunker control element (bunker machine)

WARNING

During operation of the machine there is a danger of undesired movements of the machine which can be a subject of outside electromagnetic impacts.

– Keep the sources of interference, e.g. mobile phones or magnets, far away from the electronics of the machine.
– Never secure the control elements in the tractor cabin with magnets.
– Maintain the safety distances, e.g. to radio masts or to live power lines.

Terminals and control elements used by ROPA are tested for electromagnetic compatibility (EMC) according to DIN EN ISO 14982.



The bunker control element combines the most important functions for bunker control of the bunker machine.

(1) Automatic axle steering centring:

Sets the automatic axle steering centring to "Activated" status and vice versa. The automatic axle steering centring is active if the LED is on. (*See Page 174*)

(2) automatic drawbar position:

When the key is briefly pressed the drawbar traverses to the specified position and the position can be reset by pressing and holding the key for more than 5 seconds. The automatic drawbar position is active when the LED is on. (*See Page 172*)

(3) START/STOP bunker walking floor:

Activates the bunker walking floor for manual operation with an initial key press (**START**) and deactivates it with a second key press (**STOP**). The bunker walking floor is active when the LED is on.

Bunker walking floor. (*See Page 309*)

Bunker unloading. (*See Page 314*)

(4) reset bunker floor:

Resets the bunker floor. (*See Page 317*)

(5) move tray filler forward:

Swivels the tray filler to working position. (*See Page 316*)

(6) move tray filler back:

Swivels the tray filler to transport position. (*See Page 316*)

(7) open collection box:

Opens collection box. (*See Page 303*)

(8) close collection box:

Closes collection box. (*See Page 303*)

(9) STOP key:

Key for software stop of the machine. After acknowledging the STOP key the machine can be restarted and normal operation can be continued.

(10) Empty key (not used).

(11) speed of bunker walking floor:

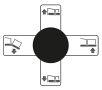
Regulates the speed of the bunker walking floor.

Bunker walking floor. (*See Page 309*)

Bunker unloading. (*See Page 314*)

(12) mini joystick up:

Top	=	Axle to left (*See Page 174*)		
Bottom	=	Axle to right		
Left	=	Drawbar to right	=	Machine to left (*See Page 172*)
Right	=	Drawbar to left	=	Machine to right



(13) mini joystick down:

Top	=	Lift bunker (*See Page 308*)
Bottom	=	Lower bunker
Left	=	Lower articulated bunker section (*See Page 315*)
Right	=	Lift articulated bunker section

5.2.4 Freely assignable control element

WARNING

During operation of the machine there is a danger of undesired movements of the machine which can be a subject of outside electromagnetic impacts.

– Keep the sources of interference, e.g. mobile phones or magnets, far away from the electronics of the machine.
– Never secure the control elements in the tractor cabin with magnets.
– Maintain the safety distances, e.g. to radio masts or to live power lines.

Terminals and control elements used by ROPA are tested for electromagnetic compatibility (EMC) according to DIN EN ISO 14982.

Freely assignable control element

Freely assignable control element only works with terminals that comply with AUX-N - Auxiliary Control (new) standard (*See Page 90*).

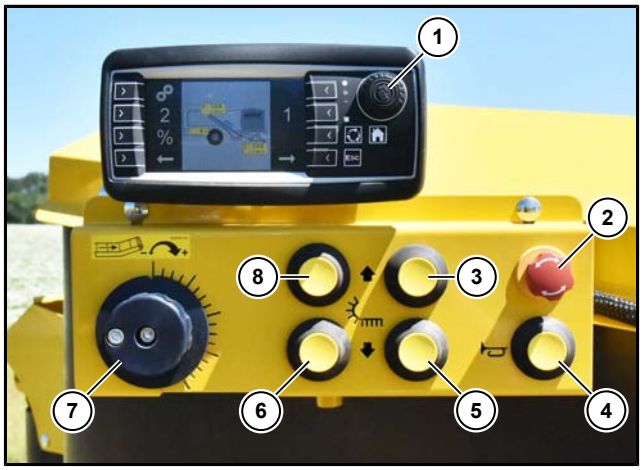
Freely assignable control element is a left control element on the overloading bunker machine series. Optionally, the freely assignable control element can substitute the lifting and bunker control elements (bunker machine) or supplement them as an additional control element.

Each freely assignable control element has a factory setting for the assignment (*See Page 150*). This factory setting can be freely changed (*See Page 90*) and saved (*See Page 150*) depending on the machine type.

The freely assignable control element is available in the version left (A40) and the version right (A30). The function of the manual rotary wheel is determined by the different versions which can be set via the Service Manager by the Ropa service partner. The function of the control element left (A40) is determined as speed control for the unload conveyor or walking floor. The function of the control element right (A30) is determined as central position for the axle steering.

5.3 Overview of machine controls

5.3.1 Control unit above picking conveyer

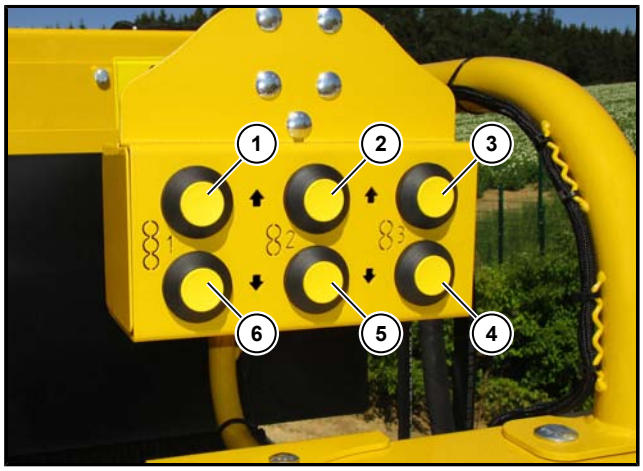


(1) Sorting platform terminal
(2) Emergency stop sorting platform switch
(3) Lift UFK 1 (*See Page 281*)
(4) Tractor terminal horn
(5) Lower UFK 1
(6) Lower UFK 2
(7) Picking conveyor speed (*See Page 295*)
(8) Lift UFK 2 (*See Page 281*)

ADVICE

The emergency stop switch shuts off the software and hardware of all computer outlets. This means that all electric actuators on the machine are no longer operational. The emergency stop switch never shuts off the tractor and the pump distributor gears. The machine can only be switched on again after acknowledgement via the standard switch-on sequence.

5.3.2 Control unit above central electrical system

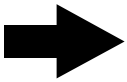


(1) Lift deflector roller 1 (*See Page 256*)
(2) Lift deflector roller 2 (*See Page 263*)
(3) Lift deflector roller 3 (*See Page 274*)
(4) Lower deflector roller 3
(5) Lower deflector roller 2
(6) Lower deflector roller 1

6 Operation

This chapter provides all information for operation of the machine. For most work in an agricultural area, the mode of working and the work results are under the influence of many individual and different factors. The scope of this operating manual would be exceeded if we have considered all conceivable situations (ground condition, potato varieties, weather, individual growing conditions, etc.). This operating manual cannot be an instruction manual for lifting potatoes or nor can it replace driver training for driving on the road. Preconditions for operation of this machine and for optimum harvest results are, besides driver training offered by the manufacturer, solid basic agricultural knowledge and some experience with growing potatoes and the associated work processes. This chapter provides information about processes of operation and interactions during operation of the machine. You will find an exact description of adjusting work for the individual functional components in the respective chapters. The required maintenance work is described in chapter 7, "Maintenance and Services".

ADVICE

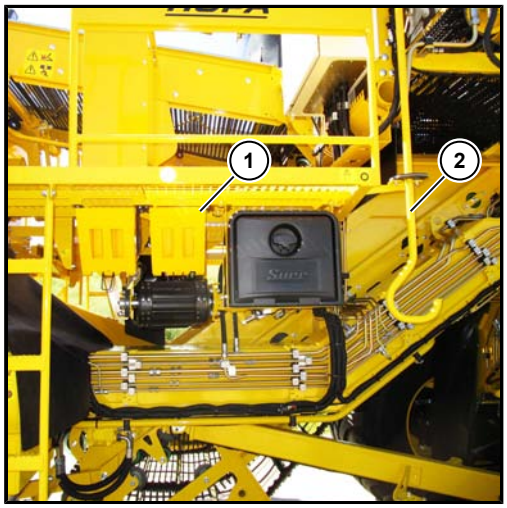


Obtain comprehensive information about the safety measures for operation of this machine before each operation of the machine. Should any people be present, who are not informed about the applicable hazard zones and safety distances, then inform these people about safety distances and hazard zones. Indispensably inform these people that you will immediately shut down the machine as soon as anyone unauthorized comes close to the hazard zones.

6.1 First startup

For safety reasons check all oil levels. Otherwise, the same work and actions are required for first startup as for the daily startup.

All bolted connections must be checked for tightness after the first 10 operating hours and retightened in case of need. In addition, the complete hydraulic system must be checked for leaks. Any leaks must be repaired immediately.

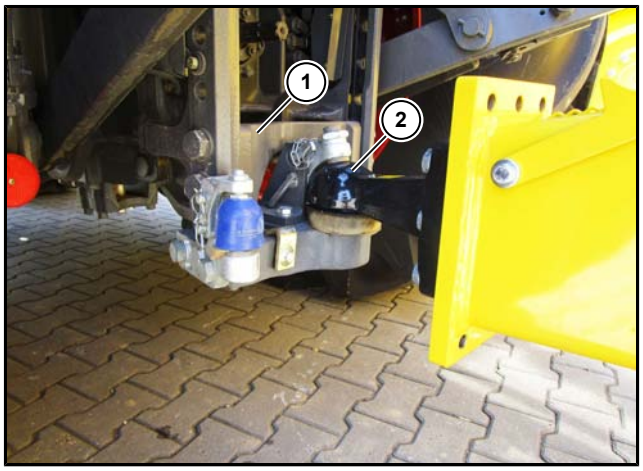


Stow the supplied accessories such as wheel chocks (**1**), dirt scraper (**2**) and dirt catcher in compartments or brackets provided for them.

ADVICE

All hydraulic oil circuits on the machine (support stand, tractor hydraulics and machine hydraulics) are filled at the factory with **HVLP 46 hydraulic oil** (ISO-VG 46 in accordance with DIN 51524 Part 3).

6.1.1 Adjusting the drawbar eye



(1) Coupling screwed on
(2) Drawbar eye ball secured

When the machine is coupled, the main frame must always be horizontal to the ground or sloping slightly up to the tractor. The drawbar eye (**2**) can be screwed on the drawbar in three different positions to adjust the main frame to the tractor.

The machine has two different drawbar eyes, the ball drawbar eye and for export the hitch drawbar eye.

DANGER

Hazard of extreme damage to the machine and danger of death.

Most removable ball couplings and hitch couplings (for skid) are not permitted due to the support load being too low. There is a risk of the coupling tearing off in this case. Which may cause major damage to the machine and serious or even fatal injury to persons.

6.1.1.1 Drawbar eye ball

At the bunker machine the ball coupling on the tractor must be approved for a support load of 3,000 kg.

At the overloading bunker machine the ball coupling on the tractor must be approved for a support load of 3,500 kg.

Drawbar eye ball

Proceed as follows to adjust the height of the drawbar eye ball:

– Extend the support stand until the machine is horizontal.
– Loosen screws.
– Move the drawbar eye ball to the height of the tractor ball.
– Tighten the screws to a torque of 610 Nm.
– Specified screws: hexagon screw **M20*65 DIN 931, steel 10.9 ZN**.

6.1.1.2 Drawbar eye hitch (export)

At the bunker machine the hitch coupling on the tractor must be approved for a support load of 3,000 kg.

Drawbar eye hitch

Proceed as follows to adjust the height of the drawbar eye hitch:

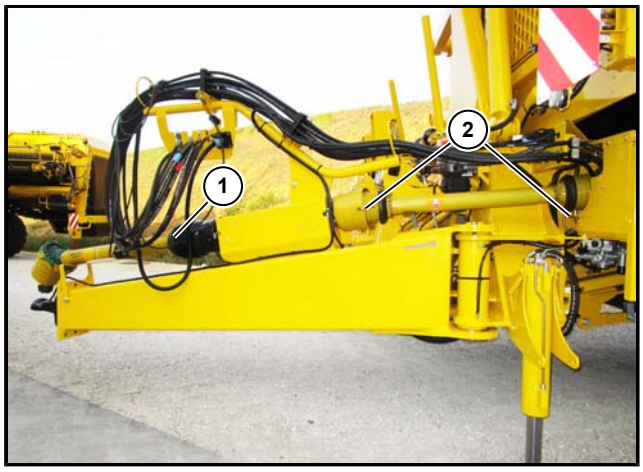
– Extend the support stand until the machine is horizontal.
– Loosen screws (**2**).
– Move the drawbar eye hitch (**1**) to the height of the tractor coupling.
– Tighten the screws to a torque of 610 Nm.
– Specified screws: hexagon screw **M20*65 DIN 931, steel 10.9 ZN**.

DANGER

There is a hazard of severest or even deadly injuries for people staying in the hazard zone.
The drawbar eye hitch is not approved for the overloading bunker machine because the permissible support load of 3,000 kg is too low!

6.1.2 Adjusting the articulated shaft

The length of the articulated shaft between the tractor and the machine must be adjusted when first installed. When different tractors are used with the same machine the length of the shaft must be checked. An operation manual supplied by the manufacturer of the wide-angle articulated shaft (**1**) is included with the machine on delivery. Follow the instructions to adjust the length of the articulated shaft.



(1) Wide-angle articulated shaft torsion lock fixed
(2) Attach shaft guard chain

The shaft guard must always be locked to prevent it from rotating with the shaft. Depending on the shaft model lock the torsion lock (**1**) or attach the chains (**2**).

6.1.3 Adjusting the hydraulic system

WARNING

Risk of burns when working on the hot hydraulic system!

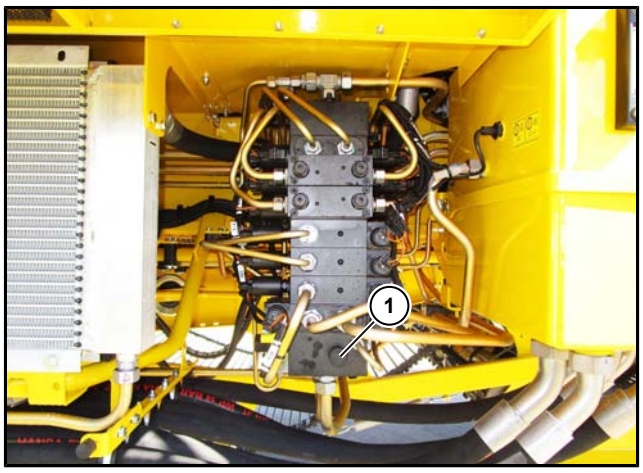
Allow the hydraulic system to cool before starting work on it. Wear gloves when working on the hydraulic system.

WARNING

The hydraulic system is under high pressure.

Hot hydraulic fluid may emit from leaks and cause severe injuries! The prestress of the pressure reservoirs is present even when the remaining hydraulic system is already pressureless. When dirt, even only in the smallest quantities, enters the hydraulic system, this may lead to serious damage to the complete hydraulic system.

- Work on pressure reservoirs of the machine may only be performed by trained personnel.
- When working on the pressure reservoirs, the machine must first be rendered completely pressureless.
- The pressure reservoirs themselves may in no case be damaged or opened, because substantial injuries to people can occur due to the constant prestress.
- During all work on the hydraulic system, ensure extreme cleanliness.



(1) Adjusting screw on the 7x LVS block

The hydraulic system on the machine must be adjusted for the tractor hydraulic system. See the tractor manual for the required operating mode for the machine.

– Turn the adjusting screw (**1**) on the 7x LVS block in to the stop to adjust the load sensing system for the machine. This is necessary if the machine is connected to the tractor via load sensing. Dynamic pressure must not build up when the machine is reversed.
– Turn the adjusting screw (**1**) on the 7x LVS block out to the stop to adjust the machine for the constant flow hydraulic system. This is necessary if the machine is connected to the tractor via a single-acting or double-acting control unit. Dynamic pressure must not build up when the machine is reversed.

ADVICE

We recommend operating the machine with a load sensing system. This will prevent unnecessary heating of the hydraulic oil.

The overloading bunker machine must be operated with a load sensing system only.

6.2 Safety regulations for operation of the machine

- Before starting work, familiarize yourself with the machine and the operating components. In case of need, obtain instructions from a person already having sufficient experience in handling the machine.
- Before each startup, check the machine for driving and operating safety.
- Instruct all people staying in the vicinity of the machine about the hazard zones and the applicable safety regulations for handling of the machine. Strictly prohibit all people to enter the hazard zones while the machine is running. The appendix to this operating manual contains a drawing showing the hazard zones of the machine. In case of need, copy this sheet and possibly hand it out to all people present during operation of the machine. Obtain confirmation of receipt of this sheet from each person by their signature.
- Persons are not permitted to ride on the sorting platform when driving on roads. If a person is required to accompany the machine, this person must use the tractor emergency seat exclusively as soon as the tractor engine is started or while the machine is moving. If this regulation is deviated from for training purposes, then this is done at your own risk and under the responsibility of each of those participating.
- Only persons who have been trained and have reached the legal minimum age are permitted on the sorting platform in the field. A maximum of three persons is permitted on the right sorting platform and a maximum of two persons on the left sorting stand in the field.
- The effectiveness of operating or adjusting components must not be impaired or bypassed in any way. Safety installations may neither be circumvented nor bridged or otherwise be rendered ineffective.
- When working with and on the machine, always wear tightly fitting and suitable protective clothing respectively approved personal protective equipment. Depending on the activities, the following personal protective equipment is required: warning vest, protective helmet, safety boots, hand protection, ear protection, face protection.
- The bunker and all other parts of the machine apart from the sorting platform must not be accessed while the tractor engine is running.
- Persons must not enter or leave the sorting platform unless the machine is stationary.
- Always give a short signal with the horn before starting the machine. This draws the attention of all people in the vicinity to the need of exiting the hazard zones. Convince yourself that no people are located in the hazard zones when the machine is started.
- Make sure of sufficient fire protection by keeping the machine free of dirt, grease residue and other combustible objects. Clean up spilt fuel or oils immediately using suitable binding agents.
- Do not run the machine in enclosed spaces. There is a risk of poisoning due to poisonous tractor engine exhaust gases. If the machine is to be operated in an enclosed area for maintenance or adjustment, then the exhaust gases of the tractor must be routed outside using suitable equipment (suction fan, exhaust hoses, exhaust pipe extensions etc.).
- When driving on public roads and paths, in your own interest, comply with the applicable laws and regulations.
- Safe operation of the machine requires the full concentration and attention of the driver. Do not wear headphones for listening to the radio or for monitoring radios, etc.
- While driving, do not use radios, mobile phones etc. Should it be necessary, for operational reasons, to use such devices while driving, then always use a suitable hands-free device for this purpose.
- Before starting the tractor, set the exterior rearview mirrors so that you can monitor and see the complete driving and working area of the machine.

- Before driving off, always check if there are people present in the immediate vicinity of the machine. Inform these people about your plans and instruct these people to keep a safe distance.
- The individual vehicle handling of the machine always depends on the road condition respectively the ground. Always adjust your driving to the current environmental and ground conditions.
- Never leave the driver's seat of the tractor with the engine running.
- When working in slopes and on hillsides, always make sure of sufficient stability of the machine.
- Be aware of the various fill levels of the bunker and the consequent weight distribution of the machine. This will change the behaviour of the machine potentially tipping, e.g. the machine is more likely to ip at the pickup if the bunker is half full.
- Always extend the telescopic axle as much as possible before starting work in the field. An extended telescopic axle significantly increases the stability of the machine.
- Do not lift the bunker until just before unloading it into a trailer. A raised bunker moves the centre of gravity of the machine significantly upwards. This increases the danger of tipping the machine. Drive at moderate speed with the bunker raised.
- Drive at moderate speed when turning the machine in the field. Always set the drawbar to the "straight-ahead position". This will reduce the danger of tipping the machine.
- Adjust the optional sunroof or weather protection only if there are no persons on the sorting platform.

6.2.1 Working in the vicinity of overhead power lines

DANGER

Hazard to life due to electrical current!

Due to the dimensions of the machine, the landscape and the construction of power lines, the prescribed safety distance may be violated when working in the vicinity of or under power lines. This involves the risk of death by electrocution for the driver, sorting personnel and bystanders.

- When working in the vicinity of power lines, indispensably comply with the applicable minimum distances. These minimum distances between the outside edge of the machine and the power line may amount to up to 8.5m. The size of this minimum distance always depends on the voltage of the power line. The greater the voltage, the greater the prescribed minimum distance. Obtain information from the power company responsible about the technical situation in due time before starting harvesting work. In case of need, agree on temporary shutdown of the power line for the time, during which you are performing harvesting work.
- Strictly abide with the agreements made between the power company and you about possible shutdown of power. Only begin your work after you have ensured yourself that shutdown has actually happened, for instance by calling the power company and enquiring about this.
- Especially when performing work at night or in vision-impairing weather, inform yourself exactly about the routing of power lines. In case of need, have warning or safety marshals set up, which will warn you using suitable signalling equipment (visible or audible indications) about hazardous proximity to power lines.
- While lifting, make sure that you do not violate the prescribed minimum distances.
- When installing antennas or other auxiliary devices, always make sure that the total height of the machine in no case exceeds a dimension of 4m.

Well memorize the following behavioural rules when you are working in the vicinity of power lines. Exact compliance with these rules may save your life.

6.2.2 Behaviour during or after contact to the power lines

- Immediately try to interrupt contact to the power line by backing up.
- Try to lower the bunker of the bunker machine if it is raised and comes into contact with the power line.
- Try to lower the unload conveyor of the overloading bunker machine, if it is raised and contacts the power line.
- Try to lift the pickup if it is lowered.
- Stay seated in the driver's seat of the tractor – no matter what happens around you!
- Do not walk around in the tractor cabin.
- In case of electrical shock or after contact to a power line, in no case leave the driver‘s cabin of the tractor. You are in danger of death outside the tractor cabin.
- Sorting personnel on he sorting platform should stand still and not move nor touch anything with their hands. Do not leave the sorting platform under any circumstances. Personnel are in danger of death if they leave the sorting platform.
- Wait until help arrives.
- In no case use a cell phone or a radio connected to an external antenna.
- Warn any people approaching the machine of the danger with hand signals and loud shouting.
- Only leave the driver‘s cabin of the tractor and the sorting platform after you have been instructed to do so by rescue personnel.

6.3 Operating concept with ISOBUS

The machine is always ISOBUS-compatible.

The tractor terminal is the information and command centre of the machine. This is where you monitor the entire machine, obtain information about operating status and performance data and make settings for parts of the machine.

Before starting work, you must familiarise yourself with operation using ISOBUS and with the various warning and status displays to ensure that you can operate the machine safely and efficiently.

The ROPA touch screen tractor terminal is described here. Because the machine operates with ISOBUS, different tractor terminals may vary from this description.

6.3.1 Tractor terminal

(1) Tractor touch screen terminal

The operation of the machine is divided into two basic sections, operation on the tractor and operation on the machine.

A user-friendly tractor terminal (**1**) with the ISOBUS operating concept is installed on the tractor. It has the lifter and bunker control elements.

You navigate through the menus by touching the screen on the tractor terminal. Depending on the type of touch terminal you may need to press once or twice to select some function.

The ROPA touch screen tractor terminal (**1**) is described here. Since the machine's control system operates on ISOBUS, other ISOBUS-compatible terminals can also be used.

6.3.1.1 AUX-N – Auxiliary Control (new)

The machine and the tractor terminal available from ROPA conform to the AUX-N requirements defined by the ISOBUS standard. External controls, e.g. joysticks that conform to AUX-N of the ISOBUS standard, can be connected to the machine and operated from the tractor terminal.

There is an "old" AUX-O standard and a "new" AUX-N standard. They are not compatible with each other. This means that devices and functions that are certified in accordance with AUX-N cannot be operated with input devices certified in accordance with AUX-O and vice versa.

See the operating manual of the terminal manufacturer for details of how to connect external AUX-N control elements. Supported AUX-N functions of the machine are listed.

AUX-N functions for assignment of digital inputs, e.g. keys, are displayed on the AUX-N devices with a single green arrow, with two green arrows pointing to each other or without any green arrows.

AUX-N functions for assignment of analogue inputs, e.g. mini joysticks, are displayed on the AUX-N devices with two joined or separated green arrows, turned away from each other.

6.3.1.1.1 Generally supported AUX-N functions of the machine

Information assignment of ROPA control element left.
The assignment is displayed as long as the function is activated. Pressing the key for the first time displays the upper area and pressing the key for the second time displays the lower area.

Information assignment of ROPA control element right.
The assignment is displayed as long as the function is activated. Pressing the key for the first time displays the upper area and pressing the key for the second time displays the lower area.

Drawbar steering to left, machine to right.
The drawbar moves as long as the function is activated.

Drawbar steering to right, machine to left.
The drawbar moves as long as the function is activated.

Analogue drawbar steering.
The drawbar moves as long as the function is activated.

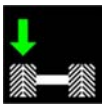
Automatic drawbar steering.
When the function is briefly actuated, the drawbar moves to the saved position. Press for longer than 3 seconds to save the current position of the drawbar.

Axle steering to left.
The wheels turn as long as the function is activated.

Axle steering to right.
The wheels turn as long as the function is activated.

Analogue axle steering.
The wheels turn as long as the function is activated.

Automatic axle centring
Actuation of the function activates the automatic axle centring. Repeated actuation deactivates the automatic axle centring function.



Tilt machine to left.
The machine tilts as long as the function is activated.

Tilt machine to right.
The machine tilts as long as the function is activated.

Machine tilt analogue.
The machine tilts as long as the function is activated.

Automatic slope compensation.
Actuating the function activates the automatic slope compensation. Repeated actuation deactivates the automatic slope compensation.

Start of field.
Activates functions for start of field.

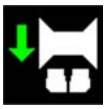
End of field.
Activates functions for end of field.

Lifting depth flatter.
As long as the function is activated, the lifting depth is adjusted on both sides.

Lifting depth lower.
As long as the function is activated, the lifting depth is adjusted on both sides.

Raise / lower pickup analogue.
The pickup moves as long as the function is activated.

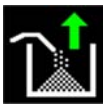
Raise pickup.
The pickup moves as long as the function is activated.



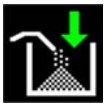
Lower pickup.
The pickup moves as long as the function is activated.

Preselected/automatic depth control ridge pressure regulation or ridge pressure relief.
Activates and deactivates selected automatic depth control.

Automatic ridge centring.
Activates and deactivates selected automatic ridge centring.



Raise bunker filling conveyor.
The picking conveyor moves as long as the function is activated.

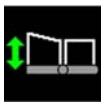


Lower bunker filling conveyor.
The picking conveyor moves as long as the function is activated. The bunker on the bunker machine is lowered beforehand if it is not in its lowest end position.

Open collection box.
Actuating the function opens the collection box. Simultaneous actuating of the functions "Open collection box" and "Close collection box" sets the discharge conveyor of the collection box to continuous operation.

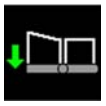
Close collection box.
Actuating the function closes the collection box. Simultaneous actuating of the functions "Open collection box" and "Close collection box" sets the discharge conveyor of the collection box to continuous operation.

6.3.1.1.2 Supported AUX-N functions of the bunker machine



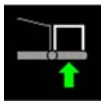
Raise / lower bunker analogue.
The bunker moves as long as the function is activated. If the bunker is in its lowest position, the picking conveyor is lowered.

Raise bunker.
The bunker moves as long as the function is activated.

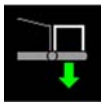


Lower bunker.
The bunker moves as long as the function is activated. If the bunker is in its lowest position, the picking conveyor is lowered.

Raise / lower bunker articulation analogue.
The bunker articulation moves as long as the function is activated.

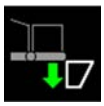


Raise bunker articulation.
The bunker articulation moves as long as the function is activated.



Lower bunker articulation.
The bunker articulation moves as long as the function is activated.

Raise tray filler.
The tray filler moves as long as the function is activated.



Lower tray filler.
The tray filler moves as long as the function is activated.

Walking floor on/off.
Actuating the function activates and deactivates the walking floor. The walking floor runs at the set speed of the speed sensor on the control element left.

Walking floor stage 1.
As long as the function is activated, the walking floor runs at the walking floor speed 1 AUX set in the main menu → basic settings → bunker.

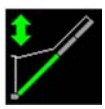
Walking floor stage 2.
As long as the function is activated, the walking floor runs at its maximum speed.

Reset bunker filling soft floor.
Actuating the function resets the bunker filling cloth floor.

6.3.1.1.3 Supported AUX-N functions of the overloading bunker machine

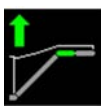
Raise unload conveyor.
The unload conveyor moves as long as the function is activated.

Lower unload conveyor.
The unload conveyor moves as long as the function is activated.

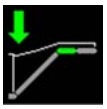


Raise / lower unload conveyor analogue.
The unload conveyor moves as long as the function is activated.

Raise / lower unload conveyor articulation 1 analogue.
The unload conveyor articulation 1 moves as long as the function is activated.



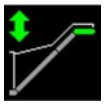
Raise unload conveyor articulation 1.
The unload conveyor articulation 1 moves as long as the function is activated.



Lower unload conveyor articulation 1.
The unload conveyor articulation 1 moves as long as the function is activated.

Raise unload conveyor articulation 2.
The unload conveyor articulation 2 moves as long as the function is activated.

Lower unload conveyor articulation 2.
The unload conveyor articulation 2 moves as long as the function is activated.



Raise / lower unload conveyor articulation 2 analogue.
The unload conveyor articulation 2 moves as long as the function is activated.

Unload conveyor on/off.
Actuating the function activates and deactivates the unload conveyor and the walking floor. The unload conveyor runs at the set speed of the speed sensor on the control element left.

Walking floor on/off.
Actuating the function activates and deactivates the walking floor with the unload conveyor switched on.

Unload conveyor stage 1.
As long as the function is activated, the unload conveyor and the walking floor run at the walking floor speed 1 AUX set in the main menu → basic settings → bunker. If the function is actuated twice in short succession, the unload conveyor and the walking floor run in continuous operation at the set walking floor speed 1 AUX.

Unload conveyor stage 2.
As long as the function is activated, the unload conveyor and the walking floor run at the maximum speed. If the function is actuated twice in short succession, the unload conveyor and the walking floor run in continuous operation at the maximum speed.

Unload conveyor height 1.
When pressing shortly this key, the unload conveyor automatically moves to the height currently saved for this key. When the unload conveyor moves to the saved height, LED in the key flashes. When the saved unload conveyor height is reached, the LED lights constantly.
Saving the unload conveyor height:
set height manually. Additionally press "Raise/lower unload conveyor", "Raise/lower unload conveyor articulation 1" or "Raise/lower unload conveyor articulation 2", till the unload conveyor reaches the desired height level. You can save the current unload conveyor height on the key by pressing and holding (about 5 sec.) the key for unload conveyor height 1. A successful save is confirmed by a beep sound. Thus, the current unload conveyor height is permanently saved on this key until you save a new unload conveyor height on it.

Unload conveyor height 2.
When pressing shortly this key, the unload conveyor automatically moves to the height currently saved for this key. When the unload conveyor moves to the saved height, LED in the key flashes. When the saved unload conveyor height is reached, the LED lights constantly.
Saving the unload conveyor height corresponds to the description of the unload conveyor height 1.

6.3.1.2 Task Controller basic (option)

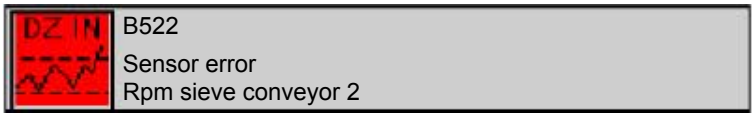
The Task Controller records the total values. It records the area (ha), the distance (km) and the time (h) of the machine. Data are exchanged between the field file and the Task Controller in the ISO-XML data format. Orders can be conveniently imported into the Task Controller and the complete documentation can be exported on completion of the work.

See the terminal manufacturer's operating manual for setting up the Task Controller on your tractor terminal. To be able to use the Task Controller a release for the terminal must be purchased.

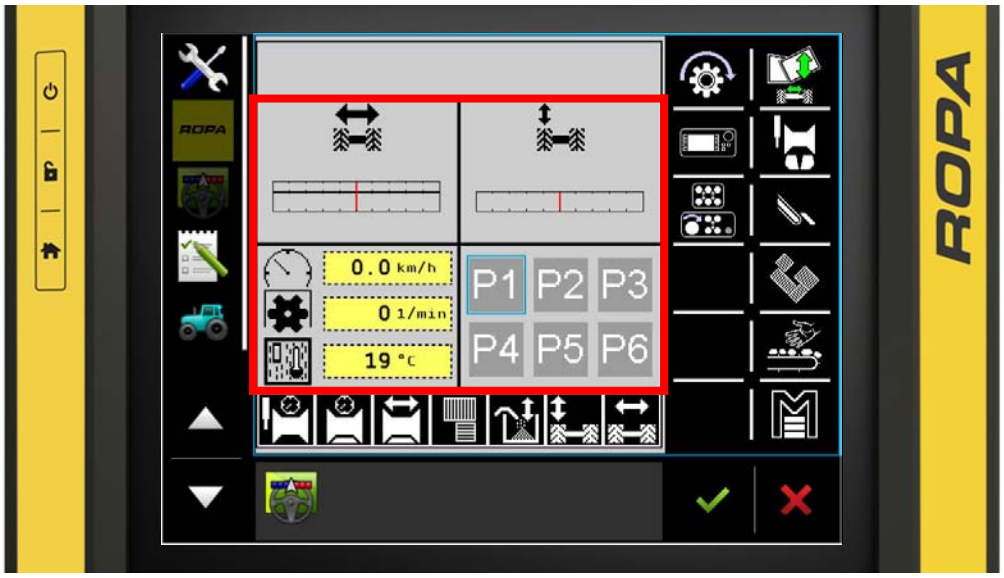
6.3.1.3 Tractor terminal display areas

(A) Warning indicator display area
(B) Working screen display area
(C) Automatic functions display area
(ENG) Display area soft key
(E) Touch800 terminal display area
(F) On/Off switch

[A] Warning indicator display area (*See Page 140*)

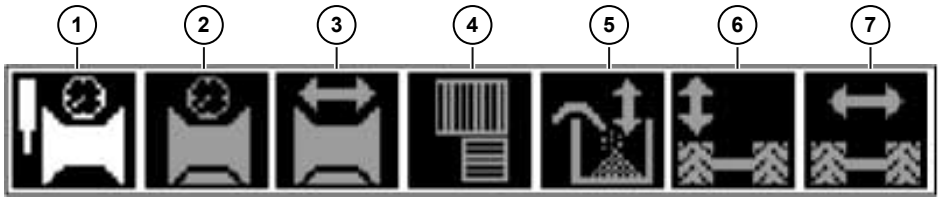


[B] Working screen display area



The working screen display area shows all machine states and all electrically actuated valves can be adjusted in this area. The various working screen are accessed with soft keys.

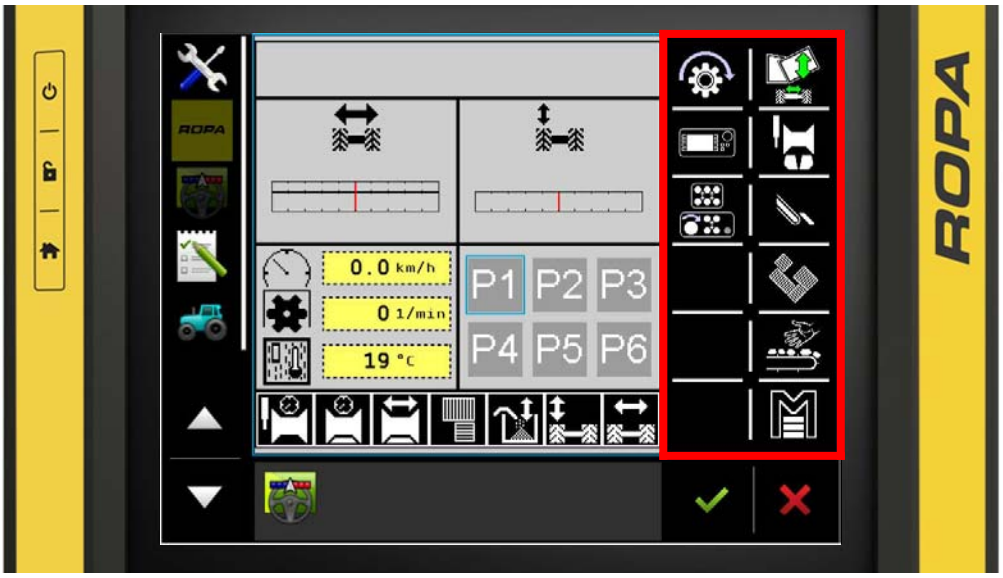
[C] Automatic functions display area



(1) Ridge pressure relief (*See Page 216*)
(2) Ridge pressure regulation (*See Page 199*)
(3) Ridge centring (*See Page 190*)
(4) Automatic pintle (*See Page 267*)
(5) Automatic filling (*See Page 311*)
(6) Slope compensation (*See Page 176*)
(7) Wheel steering (*See Page 174*)

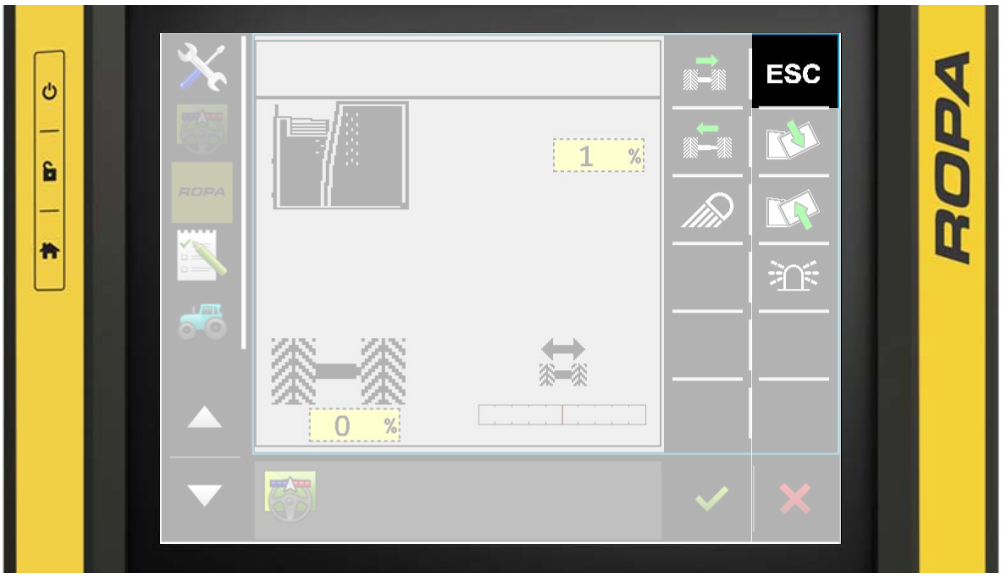
The automatic functions display area shows all states of the automatic functions.
White = Deactivated.
Grey = Preselected.
Green = Activated.
The automatic functions are only displayed in the Field operation, Pickup, Sieving channel, Separation and Belt cleaning menus.

[D] Display area soft keys



The display of the soft keys on the tractor terminal depends on the model of the ISOBUS terminal. In this manual you can see the view of the right soft keys on the screen of ROPA twelve-key ISOBUS terminal. The option of more or fewer keys on other ISOBUS terminals may change the soft key positions of the various functions.

6.3.1.3.1 ESC key



The ESC key is available in almost all levels of the working screens and in the main menu with its submenus of the tractor terminal. Pressing the ESC key allows the operator to move one level higher in succession in the working levels or in the main menu with its submenus.

6.3.1.3.2 Road mode

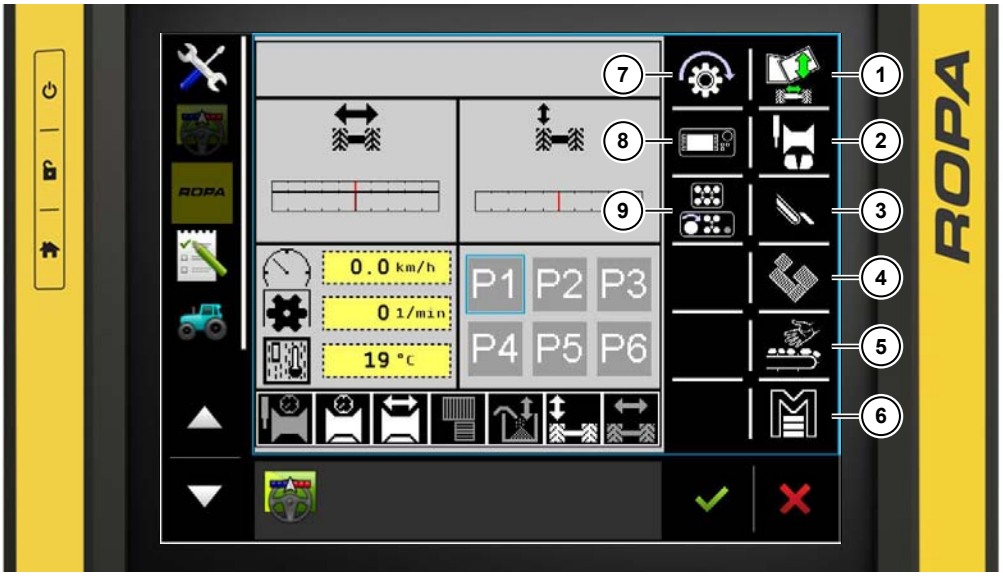
The machine must be in road mode only for travel on public roads (*See Page 163*). This is the only way to ensure that the machine is folded and that no computer outputs are under power. This makes unwanted steering movements impossible.

The operator can move from the road mode screen to the main working screen by selecting the ESC soft key.

ADVICE

If the machine is not in road mode, the emergency stop switch is not pressed and the bunker is folded in, the warning message "Press tractor emergency stop" is displayed at a speed above 8 km/h.

6.3.1.3.3 Field operation menu



Field operation menu without drive wheel option and ROPA video switch

Field operation menu with drive wheel option and ROPA video switch

(1) Dropdown menu soft key
(2) Pickup soft key
(3) Sieving channel soft key
(4) Separation soft key
(5) Picking table soft key
(6) Main menu soft key
(7) Machine manual On/Off soft key
(8) Sorting platform terminal soft key
(9) Sorting platform quick adjustment soft key
(10) Soft key drive wheel
(11) Soft key ROPA video switch

The folding mode menu (**1**) contains the functions (*See Page 102*) for moving the bunker and telescopic axle from road position to working position and vice versa.

The pickup menu (**2**) contains the functions (*See Page 106*):

- Ridge pressure relief.
- Ridge pressure regulation.
- Lifting depth.
- Hydraulic disc coulter.
- Swath pickup.
- Single row pickup.

The sieving channel menu (**3**) contains the functions (*See Page 111*):

- Conveyor pressure threshold adjustment.
- Sieve conveyors, leaf chain.
- Shaker.
- Leaf scraper.
- Conveyors manually.

The separation menu (**4**) contains the functions (*See Page 116*):

- Conveyor pressure threshold adjustment.
- Pintle belt speeds.
- Deflector roller height.
- Pintle belt 1/2 and pintle belt 4 inclination.
- Rotating finger comb.

The picking table menu (**5**) contains the functions (*See Page 120*):

- Picking conveyor speed.
- Trash conveyer speed.

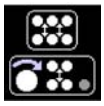
With the drive axle option installed, the soft key for picking table menu is shifted from the field operation menu to the separation menu.

Main menu (**6**) (*See Page 124*):

The machine manual On/Off soft key (**7**) switches the machine drive On or Off manually if the PTO is engaged and it displays the status of the machine:

- machine is shut off if the tractor PTO is disengaged .
- machine is switched on if the tractor PTO is engaged .
- machine is switched on with the tractor PTO disengaged (green/white flashing).

The soft key (**8**) releases or locks the sorting platform terminal for operation. If the sorting platform terminal is enabled the soft key is green.



The sorting platform quick adjustment soft key (**9**) releases and locks the electrical adjustment functions on the sorting platform:

- sorting platform quick adjustment locked .
- picking table speed adjustment on sorting platform enabled and locked at tractor terminal .
- The deflector roller 1, deflector roller 2, deflector roller 3, rotating finger comb 1 and rotating finger comb 2 height adjustment enabled at sorting platform and at tractor terminal .
- sorting platform adjustments completely enabled, locked on tractor terminal and heights enabled .

The drive wheel menu (**10**) contains the functions (*See Page 123*):

- Drive wheel forward.
- Drive wheel backward.
- Drive wheel automatic function.

The optional ROPA video switch can be activated and deactivated with the soft key ROPA video switch (**11**) (*See Page 342*):

- ROPA video switch is deactivated .
- ROPA video switch is activated .

6.3.1.3.4 Folding mode menu

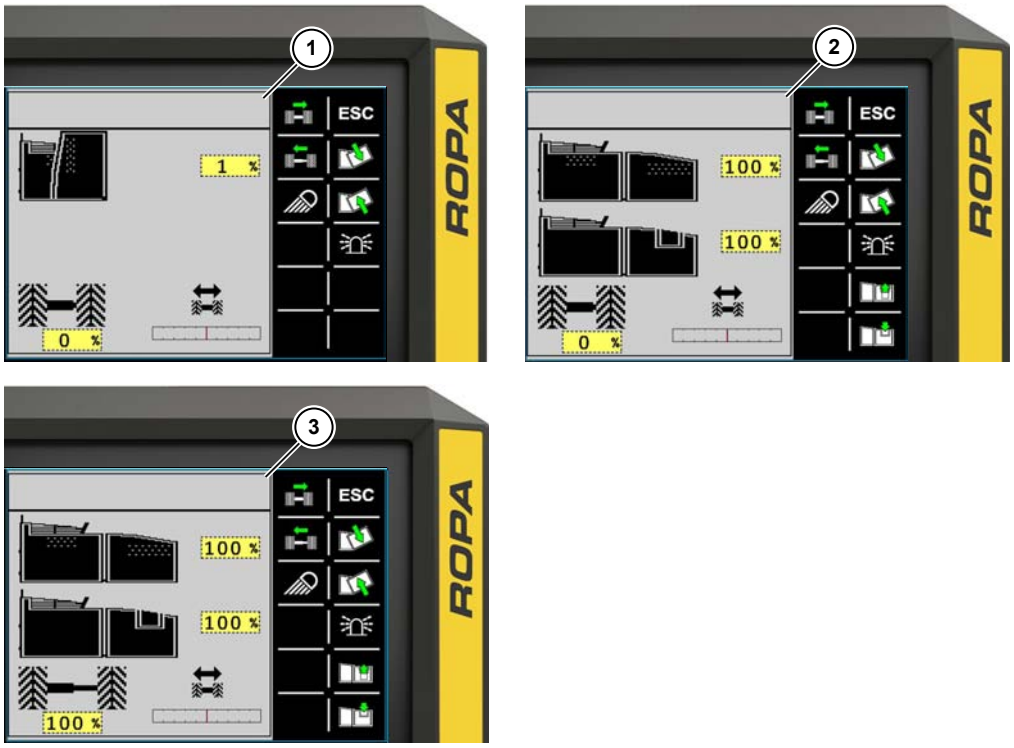
WARNING

Hazard of extremely severe injuries.

– Make sure that there are no persons in the danger zone.

The folding mode menu can be accessed from the field operation menu with the soft key. The field operation menu can be accessed from the folding mode menu with the ESC soft key.

Bunker machine folding mode:



(1) Dropdown menu road position
(2) Dropdown menu lifting through position
(3) Dropdown menu lifting position/bunker unloading position

The folding mode menu controls the adjustment of bunker and the telescopic axle from road position to field operation for work or from field operation to road position for road travel (**1**). In field operation the telescopic axle can be left retracted in lift through position (**2**), e.g. for spray lanes. The telescopic axles must be extended for bunker unloading and for normal lifting operation to place the machine in lifting or bunker unloading position (**3**).

Press the soft key to move the bunker into working position. Press and hold the soft key for this operation.

Press the soft key to move the bunker into road position. Press and hold the soft key for this operation.

Press the soft key to switch the optional flashing beacons on and off. The soft key is green when the beacons are switched on.

Press the soft key to close the bunker flap. Press and hold the soft key for this operation.

Press the soft key to open the bunker flap. Press and hold the soft key for this operation.

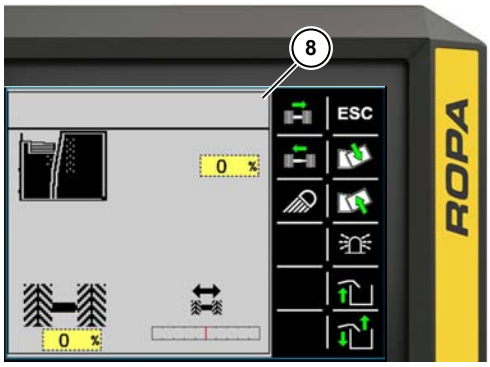
Press the soft key to extend the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

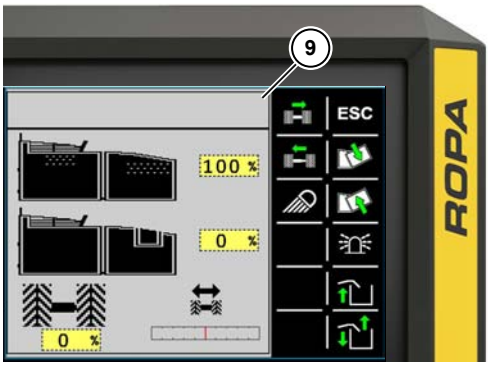
Press the soft key to retract the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

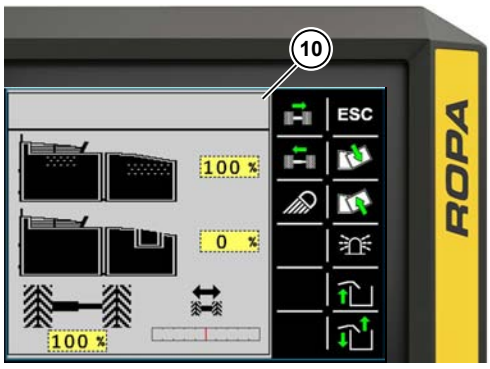
Press the soft key to switch the optional LED working floodlights on and off. When the LED working floodlights are switched on the soft key is green.

Warning display on the display notify the operator if conditions for folding the bunker have not been met. The actual position of the axles steering is also displayed.

Overloading bunker machine folding mode:







(8) Dropdown menu road position
(9) Dropdown menu lifting through position
(10) Dropdown menu lifting position/overloading position

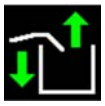
The folding mode menu controls the adjustment of overloading bunker and the telescopic axle from road position to field operation for work or from field operation to road position for road travel (**8**). In field operation the telescopic axle can be left retracted in lift through position (**9**), e.g. for spray lanes. The telescopic axles must be extended for overloading and for normal lifting operation to place the machine in lifting or overloading position (**10**).

Press the soft key to move the overloading bunker into working position. Press and hold the soft key for this operation.

Press the soft key to move the overloading bunker into road position. Press and hold the soft key for this operation.

Press the soft key to switch the optional flashing beacons on and off. The soft key is green when the beacon is switched on.

The picking conveyor can be raised with the soft key . Press and hold the soft key for this operation.



The picking conveyor can be lowered with the soft key . Press and hold the soft key for this operation.

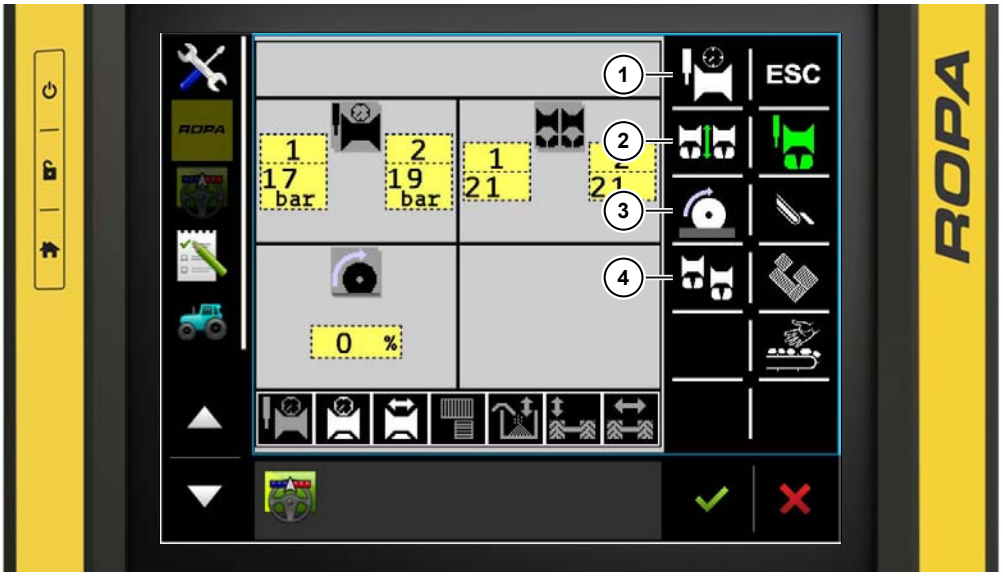
Press the soft key to extend the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

Press the soft key to retract the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

Press the soft key to switch the optional LED working floodlights on and off. When the LED working floodlights are switched on the soft key is green.

Warning indicators in the display area notify the operator if the conditions for folding of the overloading bunker have not been met. The actual position of the axles steering is also displayed here.

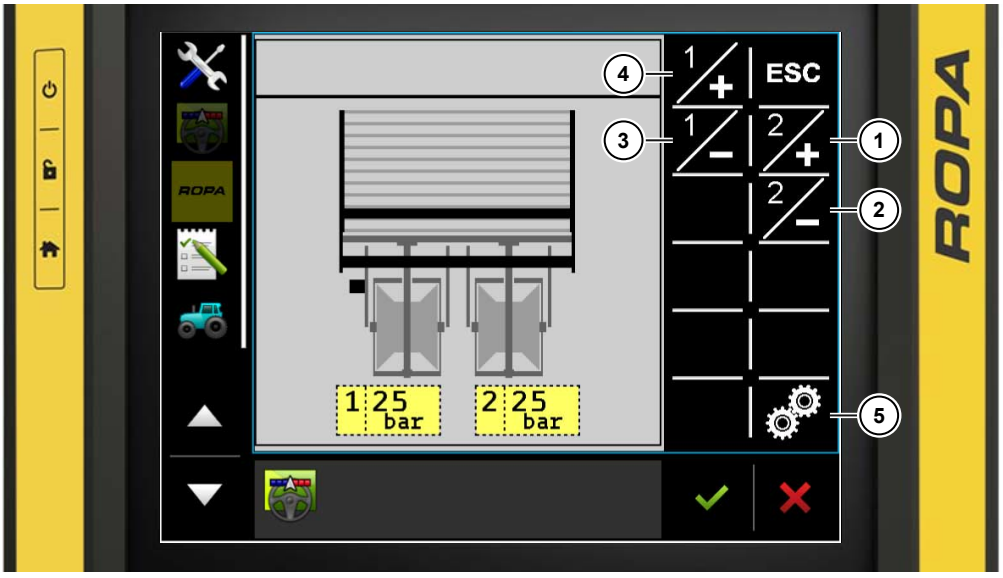
6.3.1.3.5 Pickup menu



(1) Soft key preselected or activated automatic depth control
(2) Lifting depth soft key
(3) Swath pickup soft key or hydraulic disc coulter
(4) Single row pickup soft key

The pickup menu is opened when the soft key for the pickup is shown in green. The pickup menu contains the settings for ridge pressure relief or ridge pressure regulation, lifting depth, swath pickup or the hydraulic disc coulter and single-row lifting. Selecting the submenus opens the adjustment options.

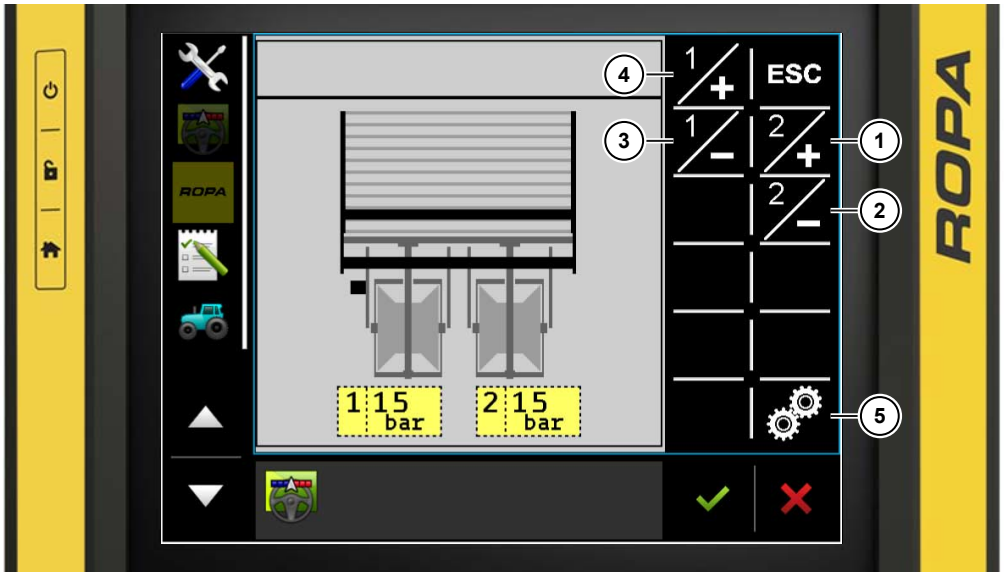
Ridge pressure relief (*See Page 216*)



(1) Soft key increase ridge pressure relief left
(2) Soft key reduce ridge pressure relief left
(3) Soft key reduce ridge pressure relief right
(4) Soft key increase ridge pressure relief right
(5) Soft key ridge pressure relief synchronous adjustment

The pressure for the ridge pressure relief is opened with the soft key and each side of the pickup can be adjusted within a range of 0 bar to 50 bar. In this case 0 bar is floating position and 20 bar minimal relief pressure, e.g. for dry or sandy soil to enable easier pickup of the ridge. The maximum relief pressure is 50 bar, e.g. for wet conditions or heavy soil. The increase ridge relief left (**1**) and increase ridge relief right (**4**) soft key increases the value, the reduce ridge relief left (**2**) and reduce ridge pressure right (**3**) soft key reduces the value. The synchronous ridge pressure relief adjustment (**5**) soft key can be selected for separate row adjustment, soft key white, and synchronous adjustment, soft key green.

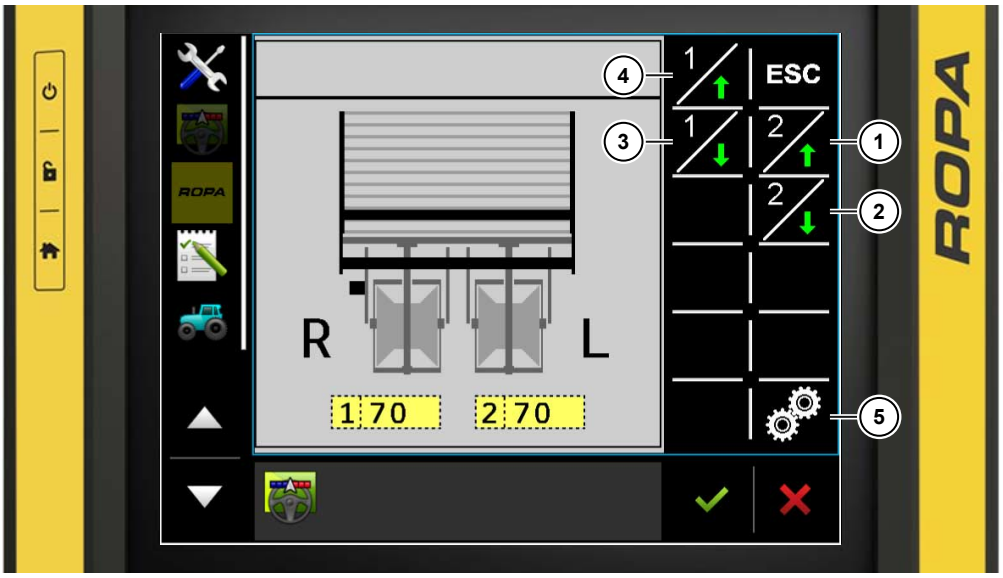
Ridge pressure regulation (*See Page 199*)



(1) Soft key increase ridge pressure regulation left
(2) Soft key reduce ridge pressure regulation left
(3) Soft key reduce ridge pressure regulation right
(4) Soft key increase ridge pressure regulation right
(5) Soft key increase ridge pressure regulation synchronous adjustment

The pressure for the ridge pressure regulation is opened with the soft key and each side of the pickup can be adjusted within a range of 5 bar to 35 bar. At 5 bar the pressure is minimal, e.g. for wet conditions or heavy soil. At 35 bar the pressure is maximum, e.g. dry or sandy soil to allow the ridge to be picked up. The increase ridge pressure left (**1**) and increase ridge pressure right (**4**) soft keys increase the value, the reduce ridge pressure left (**2**) and reduce ridge pressure right (**3**) soft keys reduce the value. The synchronous ridge pressure regulation adjustment (**5**) soft key can be selected for separate row adjustment, soft key white, and synchronous adjustment, soft key green.

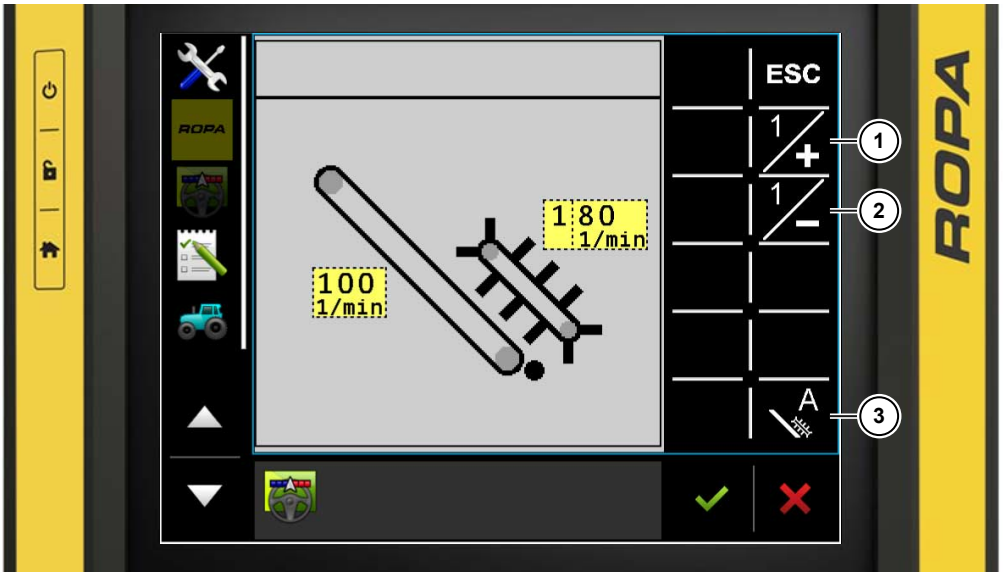
Lifting depth (*See Page 194*)



(1) Soft key lifting depth left flatter
(2) Soft key lifting depth left deeper
(3) Soft key lifting depth right deeper
(4) Soft key lifting depth right flatter
(5) Soft key lifting depth synchronous adjustment

The lifting depth adjustment is opened with the soft key and can be adjusted separately for each side. The lifting depth is adjusted in a maximum of 100 stages, where 0 is a completely flat lifting depth and 99 is very deep lifting depth. The lifting depth left flatter (**1**) and lifting depth right flatter (**4**) soft keys reduce the value. The lifting depth left deeper (**2**) and lifting depth right deeper (**3**) soft keys increase the value. The synchronous lifting depth adjustment (**5**) soft key can be selected for separate row adjustment, soft key white, and synchronous adjustment, soft key green.

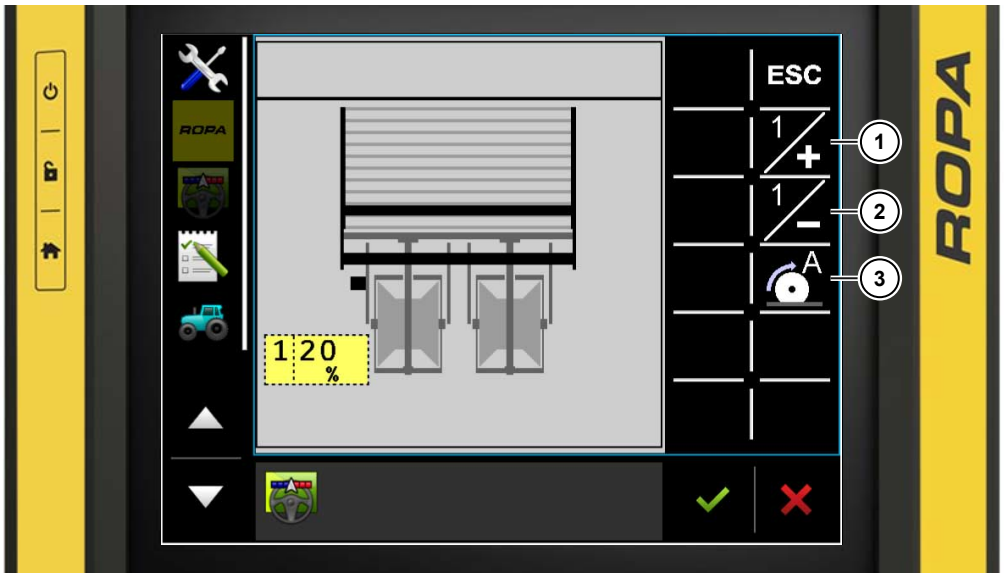
Swath pickup (*See Page 211*)



(1) Soft key increase swath pickup speed
(2) Soft key reduce swath pickup speed
(3) Soft key automatic swath pickup speed

The speed adjustment of the swath pickup is opened with the soft key. The speed of the swath pickup is infinitely adjustable. The increase swath pickup speed soft key (**1**) increases the speed, the reduce swath pickup speed soft key (**2**) reduces the speed. The automatic swath pickup speed soft key (**3**) can be used to select manual control of swath pickup rotating speed, soft key is white, and automatic rotating speed adjustment of sieve conveyor 1, soft key is green. The variation of the swath pickup speed in automatic mode to sieve conveyor 1 can be adjusted as a percentage.

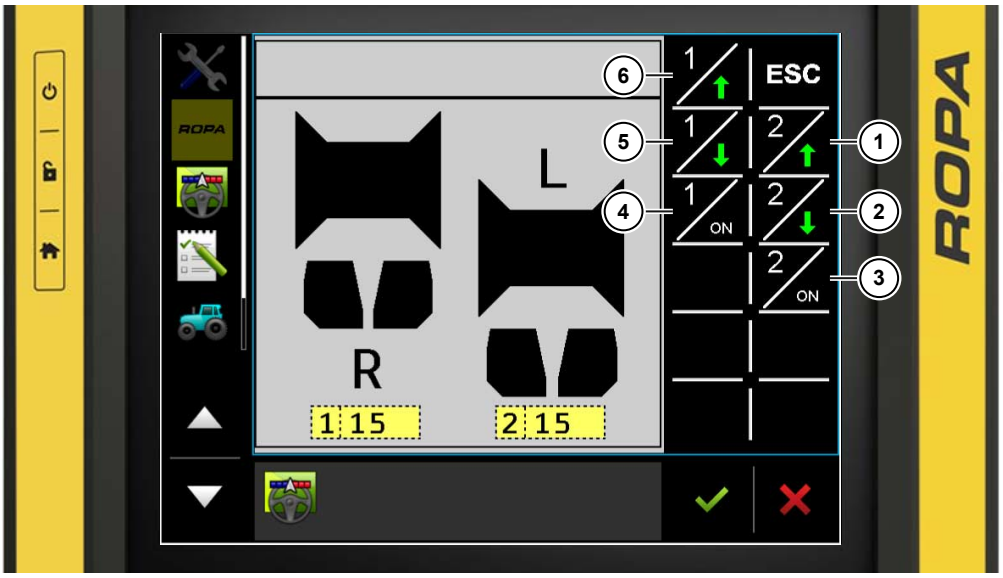
Hydraulic disc coulter (*See Page 204*)



(1) Soft key increase disc coulter rpm
(2) Soft key reduce disc coulter rpm
(3) Soft key automatic disc coulter speed

The speed adjustment of the hydraulic disc coulter is opened with the soft key. The hydraulic disc coulter is adjusted steplessly. The soft key "Increase disc coulter speed" (**1**) increases the speed in percent, and the soft key "Reduce disc coulter speed" (**2**) reduces the speed in percent. The automatic disc coulter speed soft key (**3**) can be used to select manual control of disc coulter rotating speed, soft key is white, and automatic rotating speed adjustment of machine driving speed, soft key is green. The variation of the hydraulic disc coulter speed in automatic mode to driving speed can be adjusted in percent.

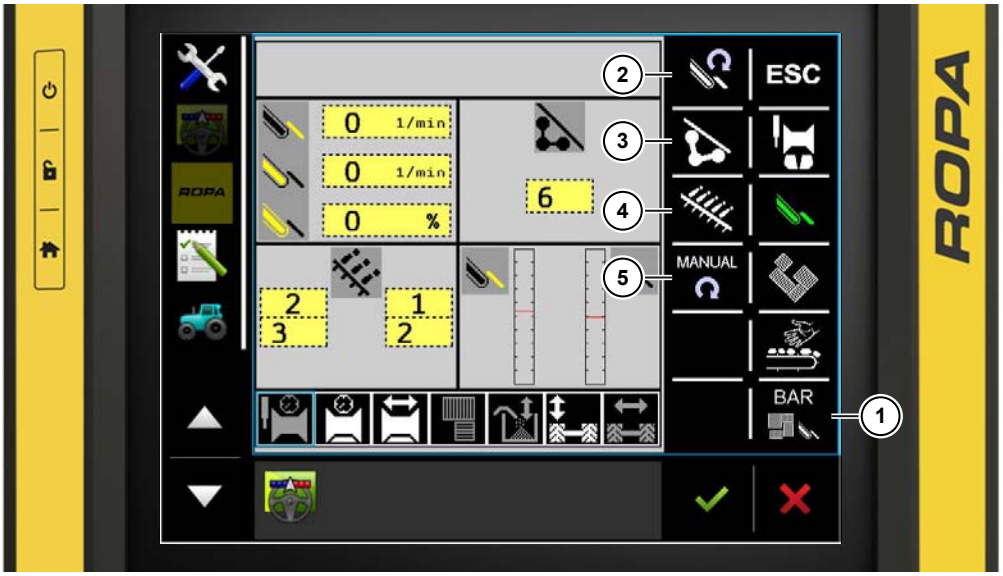
Single row pickup (*See Page 208*)



(1) Soft key lifting depth left flatter
(2) Soft key lifting depth left deeper
(3) Soft key single row pickup left active
(4) Soft key single row pickup right active
(5) Soft key lifting depth right deeper
(6) Soft key lifting depth right flatter

The single row pickup is opened with the soft key. Activated single row pickup is indicated with or green. The lifting depth of the active single row pickup is adjusted with arrow keys. The lifting depth on the active side must be selected so the lifting shares move as close to the ground as possible. The height of each side of the pickup can be adjusted.

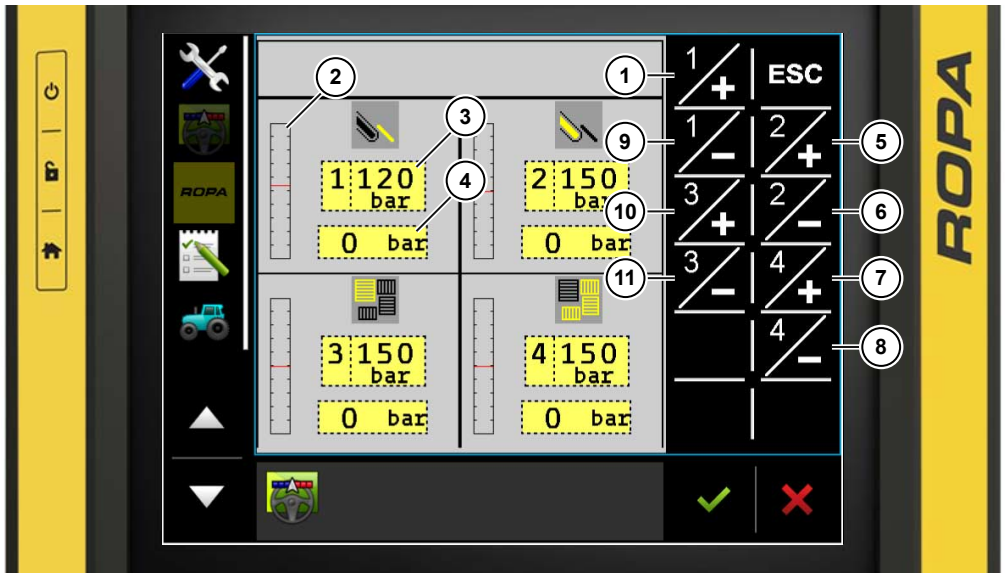
6.3.1.3.6 Sieving channel menu



(1) Conveyor pressure threshold adjustment soft key
(2) Sieving channel speed soft key
(3) Shaker soft key
(4) Leaf scraper soft key
(5) Soft key conveyors manually

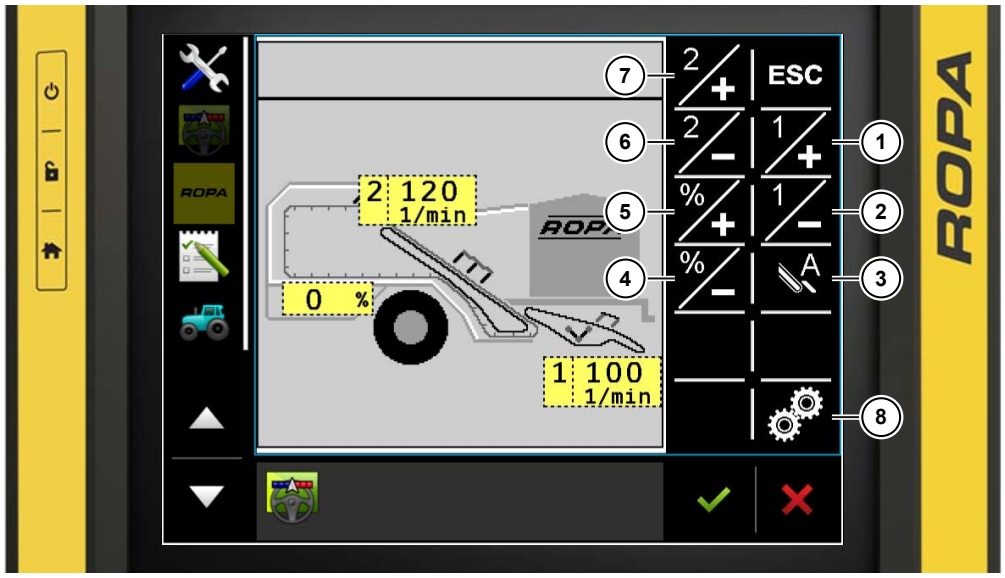
The sieving channel menu is opened when the soft key for the sieving channel is shown in green. The settings for conveyor pressure threshold adjustment, sieving channel speed, shaker, leaf scraper and conveyors manually menu can be adjusted in the sieving channel menu. Selecting the submenus opens the adjustment options.

Conveyor pressure threshold adjustment (*See Page 138*)

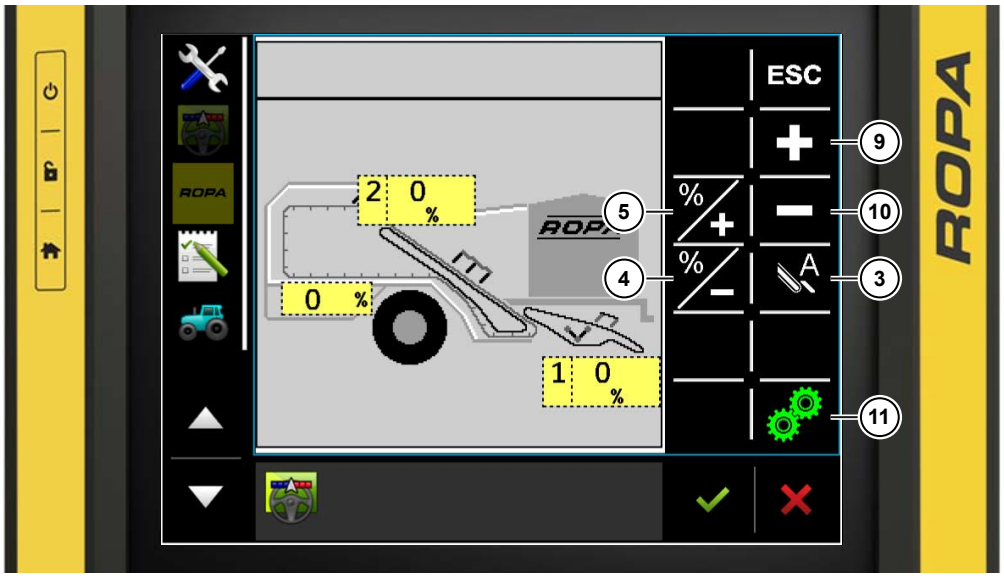


(1) Soft key increase sieve conveyor 1 pressure threshold
(2) Actual pressure/threshold display
(3) Warning threshold
(4) Actual pressure
(5) Soft key increase sieve conveyor 2 pressure threshold
(6) Soft key reduce sieve conveyor 2 pressure threshold
(7) Soft key increase pintle belt 2, 3, 4 pressure threshold
(8) Soft key reduce pintle belt 2, 3, 4 pressure threshold
(9) Soft key reduce sieve conveyor 1 pressure threshold
(10) Soft key increase pintle belt 1 pressure threshold
(11) Soft key reduce pintle belt 1 pressure threshold

Sieve conveyors, leaf chain speed



Individual sieve conveyor adjustment



Sieve conveyors synchronous adjustment

(1) Soft key increase sieve conveyor 1 speed
(2) Soft key reduce sieve conveyor 1 speed
(3) Soft key automatic sieve conveyor speed
(4) Soft key reduce leaf chain speed
(5) Soft key increase leaf chain speed
(6) Soft key reduce sieve conveyor 2 speed
(7) Soft key increase sieve conveyor 2 speed
(8) Soft key synchronous sieve conveyors speed deactivated
(9) Soft key increase sieve conveyors speed
(10) Soft key reduce sieve conveyors speed
(11) Soft key synchronous sieve conveyors speed activated

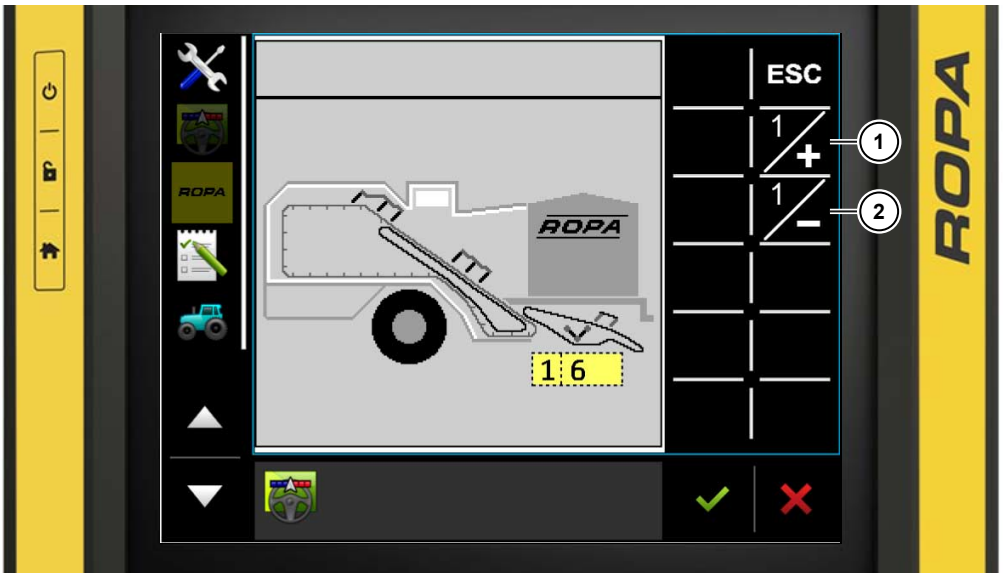
The speed of the sieve conveyors and leaf chain is opened with the soft key. The speeds of sieve conveyor 1 (*See Page 221*), sieve conveyor 2 (*See Page 230*) and the leaf chain (*See Page 243*) are adjusted here. The speed of the sieve conveyors is adjusted in rpm. The speed of the leaf chain can be braked as a percentage of the speed of sieve conveyor 2.

The speed of the sieve conveyors can be adjusted separately and also together (*See Page 235*) if the synchronous sieve conveyor speed soft key is activated (**11**), green in colour. When the speed of sieve conveyor 2 is adjusted, the speed of the leaf chain is adjusted simultaneously and the defined percentage difference remains the same.

The minimum speed of the sieve conveyors is 50 rpm, the maximum speed of the sieve conveyors is 200 rpm. The speed of the leaf chain can be braked in relation to sieve conveyor 2 in the range of 0% to -20%.

The automatic sieve conveyor speed soft key (**3**) is used to adjust the speeds of the sieve conveyors and the leaf chain automatically to the drive speed of the machine.

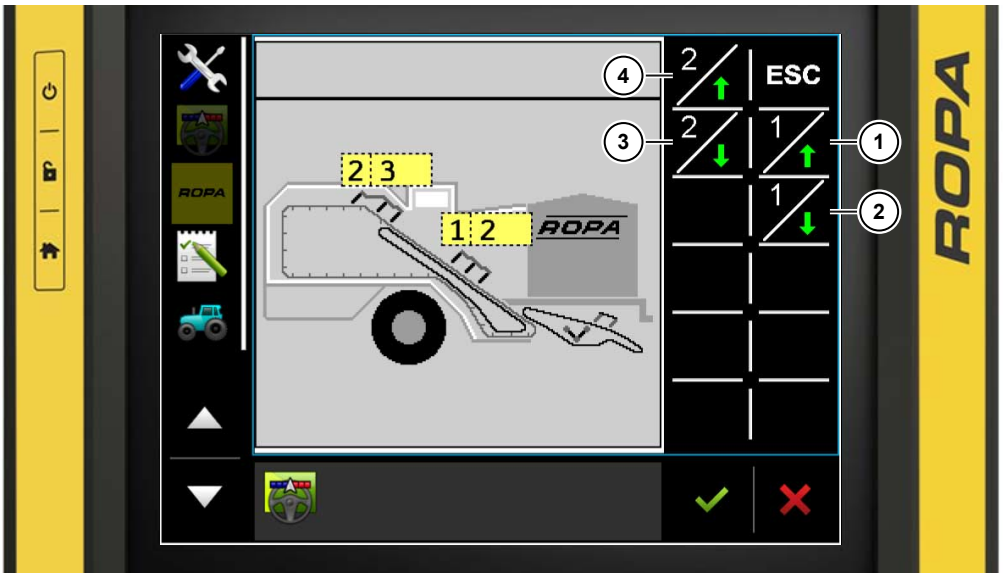
Shaker (*See Page 227*)



(1) Soft key increase shaker speed
(2) Soft key reduce shaker speed

The shaker is opened with the soft key. The speed of the shaker is adjusted in steps from 0 to 20, where 0 means that the shaker is shut off and 20 is the maximum speed of the shaker. The increase shaker speed soft key (**1**) increases the value and the reduce shaker speed soft key (**2**) reduce the value.

Leaf scraper (*See Page 247*)



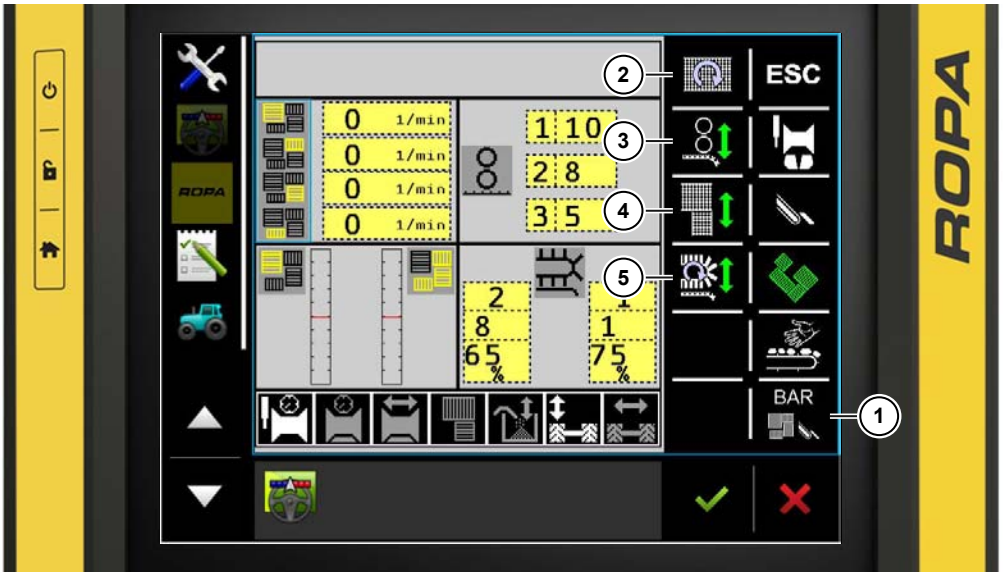
(1) Soft key raise front leaf scraper
(2) Soft key lower front leaf scraper
(3) Soft key lower rear leaf scraper
(4) Soft key raise rear leaf scraper

The leaf scraper is opened with the soft key. The leaf scraper is divided into two segments, front leaf scraper and rear leaf scraper. The leaf scraper is adjusted in steps from 0 to 20. The two leaf scraper segments can be adjusted independently of each other.

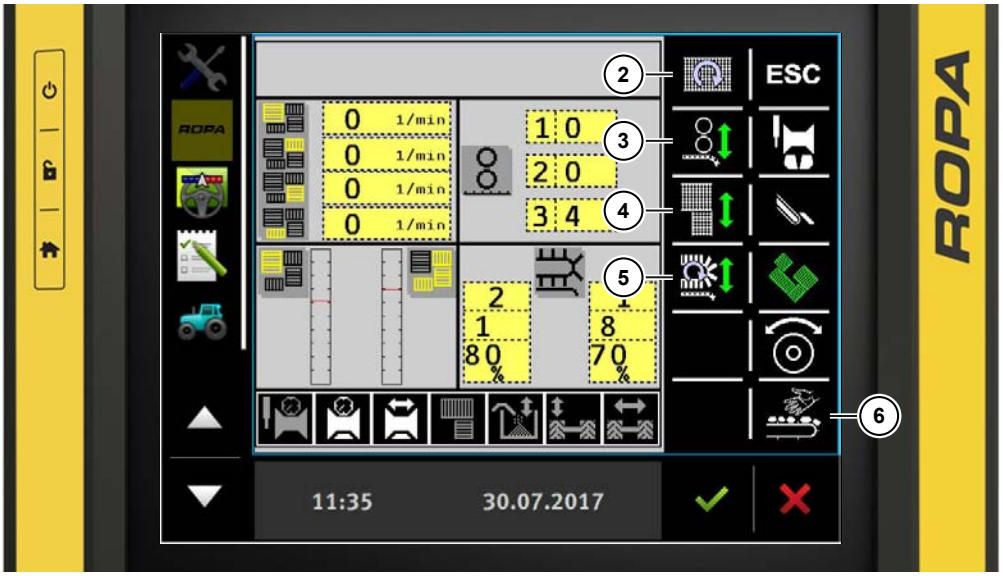
The manual conveyors menu (**5**) contains the functions (*See Page 121*):

- Minimal actuation of chains and conveyors.
- Maximal actuation of chains and conveyors.
- Selecting which conveyors and chains are to be actuated.

6.3.1.3.7 Separation menu



Separation menu without drive wheel option

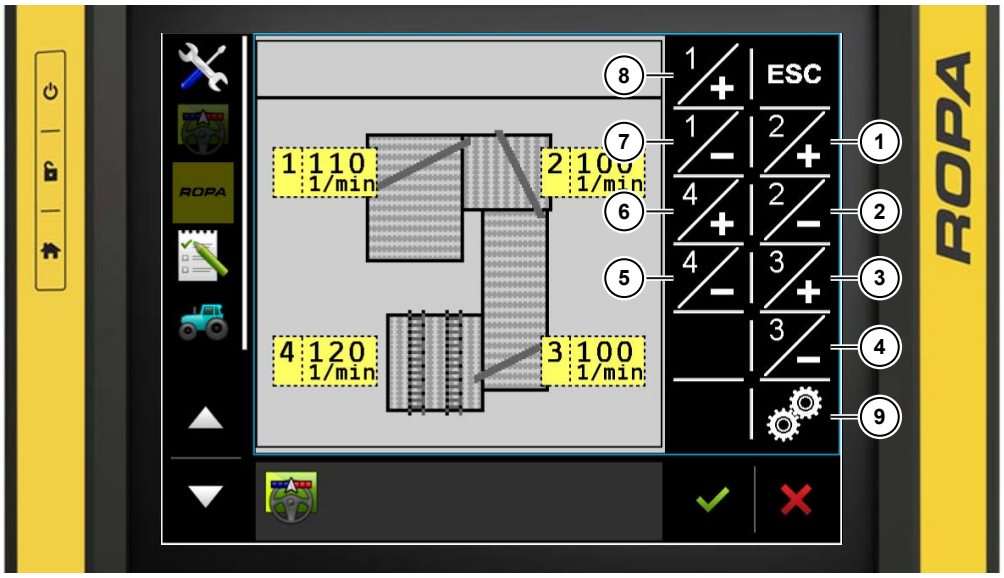


Separation menu with drive wheel option

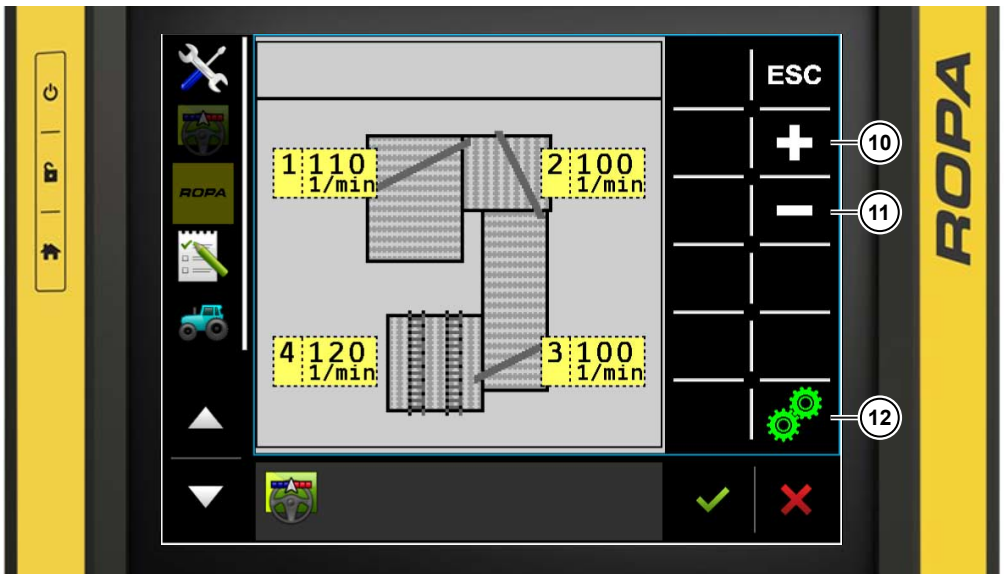
(1) Conveyor pressure threshold adjustment soft key (*See Page 138*)
(2) Soft key pintle belt speeds
(3) Soft key deflector roller height
(4) Soft key pintle belt height
(5) Soft key rotating finger comb
(6) Soft key picking table (*See Page 120*)

The separation menu is opened when the separation soft key is shown in green. The settings for the conveyor pressure threshold adjustment, speed of pintle belts, height of deflector rollers, height of pintle belts and rotating finger comb can be made in the separation menu. Selecting the submenus opens the adjustment options.
With the drive wheel option installed, the soft key for picking table menu is shifted from the field operation menu to the separation menu.

Pintle belt speeds



Individual pintle belt adjustment



Pintle belt synchronous adjustment

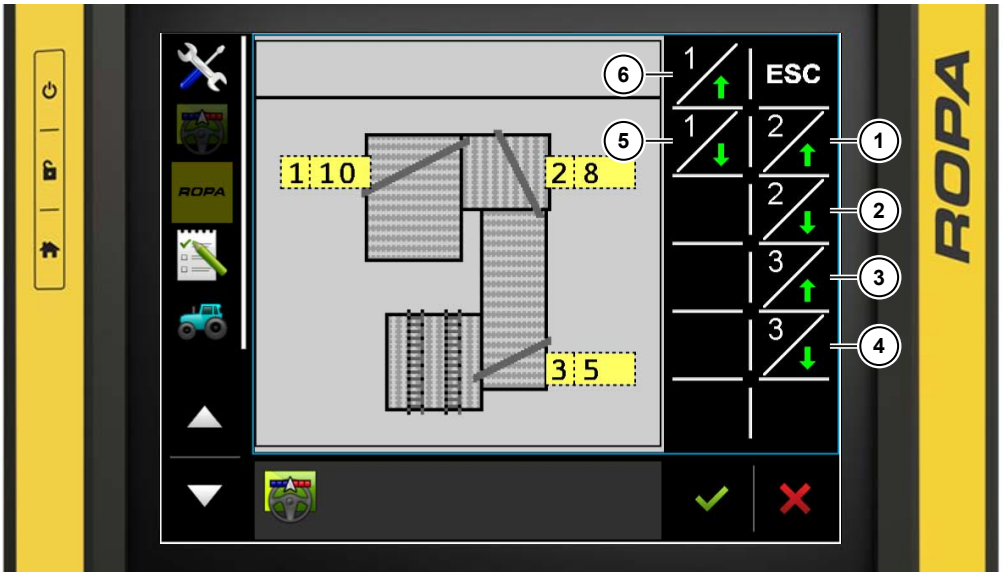
(1) Soft key increase pintle belt 2 speed
(2) Soft key reduce pintle belt 2 speed
(3) Soft key increase pintle belt 3 speed
(4) Soft key reduce pintle belt 3 speed
(5) Soft key reduce pintle belt 4 speed
(6) Soft key increase pintle belt 4 speed
(7) Soft key reduce pintle belt 1 speed
(8) Soft key increase pintle belt 1 speed
(9) Soft key synchronous pintle belt speed deactivated
(10) Soft key increase pintle belt speed
(11) Soft key reduce pintle belt speed
(12) Soft key synchronous pintle belt speed activated

The speed of the pintle belts is opened with the soft key. The speeds of pintle belt 1 (*See Page 252*), pintle belt 2 (*See Page 259*), pintle belt 3 (*See Page 270*) and pintle belt 4 (*See Page 277*) are adjusted here. The speed of the pintle belts is adjusted in rpm.

The speeds of the pintle belts can be adjusted separately and also together if the synchronous pintle belt speed soft key is activated (**12**), green in colour.

The minimum speed of the pintle belts is 50 rpm, the maximum speeds of the pintle belts is 250 rpm^{-1}.

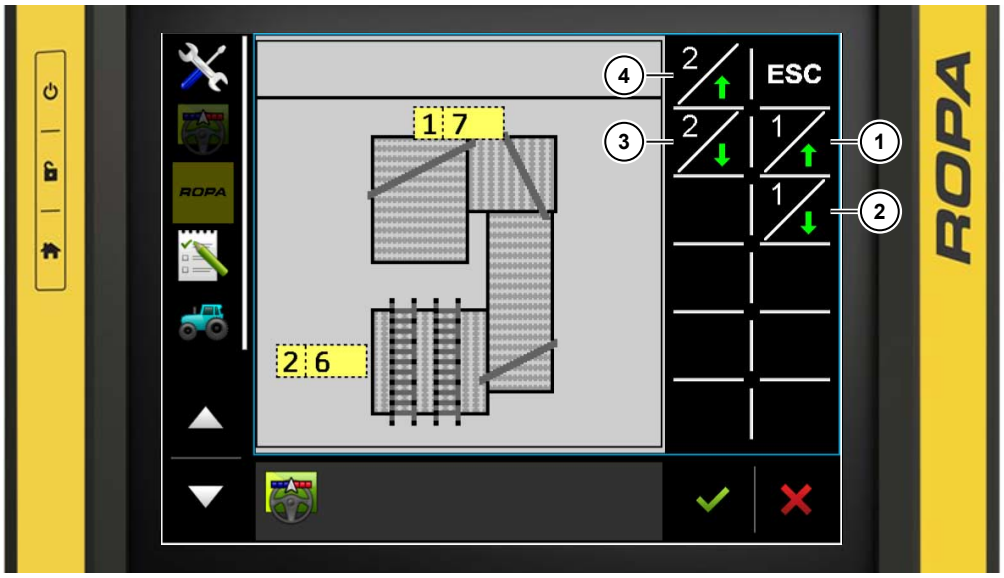
Deflector roller height



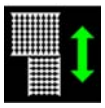
(1) Soft key height of deflector roller 2 higher
(2) Soft key height of deflector roller 2 lower
(3) Soft key height of deflector roller 3 higher
(4) Soft key height of deflector roller 3 lower
(5) Soft key height of deflector roller 1 lower
(6) Soft key height of deflector roller 1 higher

The height of deflector rollers is opened with the soft key. The heights of deflector roller 1 (*See Page 256*), deflector roller 2 (*See Page 263*) and deflector roller 3 (*See Page 274*) on the machine are electrically adjusted from stage 0 to 20. Stage 0 is the minimum height of the deflector roller above the pintle belt and stage 20 is the maximum height of the deflector roller above the pintle belt.

Pintle belt height (optional)

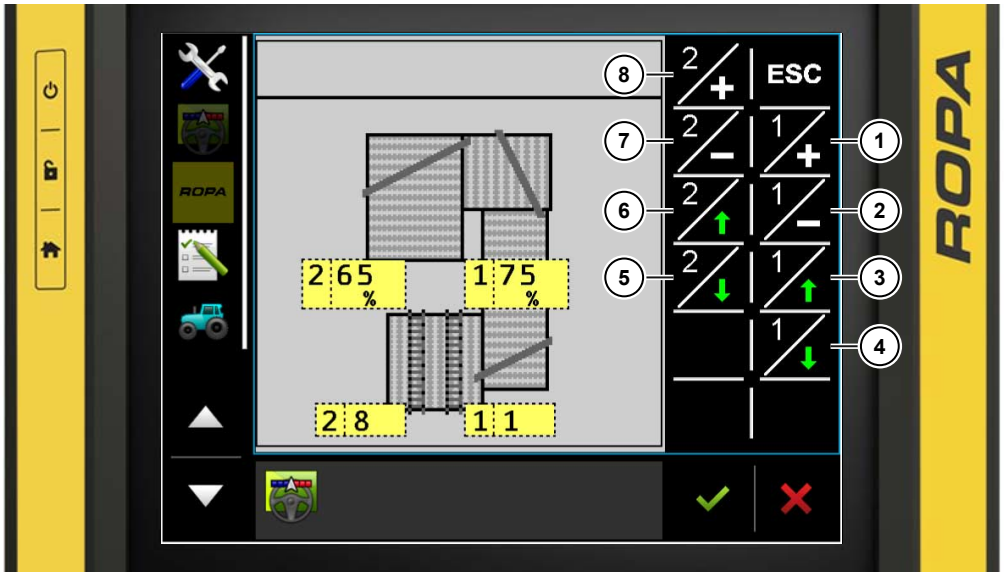


(1) Soft key pintle belt 1/2 higher
(2) Soft key pintle belt 1/2 lower
(3) Soft key pintle belt 4 lower
(4) Soft key pintle belt 4 higher



The height of pintle belts is opened with the soft key. The inclination of pintle belt 1/2 (*See Page 267*) and pintle belt 4 (*See Page 286*) can be optionally adjusted from stage 0 to 20. Stage 0 is the minimum inclination of the pintle belts and stage 20 is the maximum inclination of the pintle belts.

Rotating finger comb (UFK)



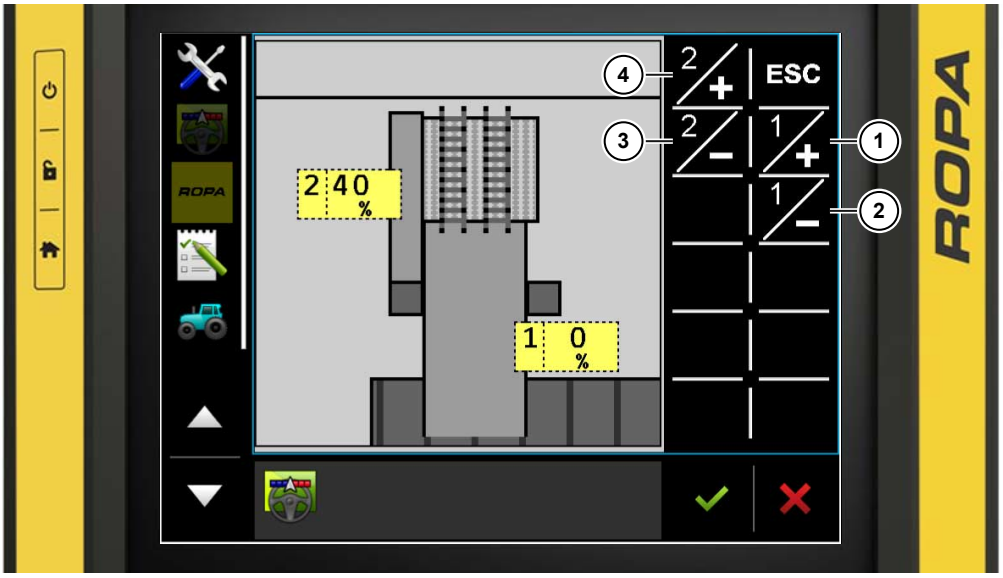
(1) Soft key increase UFK 1 speed
(2) Soft key reduce UFK 1 speed
(3) Soft key UFK 1 higher
(4) Soft key UFK 1 lower
(5) Soft key UFK 2 lower
(6) Soft key UFK 2 higher
(7) Soft key reduce UFK 2 speed
(8) Soft key increase UFK 2 speed

The rotating finger comb (*See Page 281*) is opened with the soft key. The speed of rotating finger comb 1 (UFK 1), the speed of rotating finger comb 2 (UFK 2), the height of UFK 1 and the height of UFK 2 are adjusted here.

The speeds are adjusted in the range from 20% to 100%. 20% is the minimum speed of the UFK and 100% is the maximum speed of the UFK.

The heights are adjusted from stage 0 to 20. Stage 0 is the minimum height of the UFK above pintle belt 4 and stage 20 is the maximum height of the UFK above pintle belt 4.

6.3.1.3.8 Picking table menu



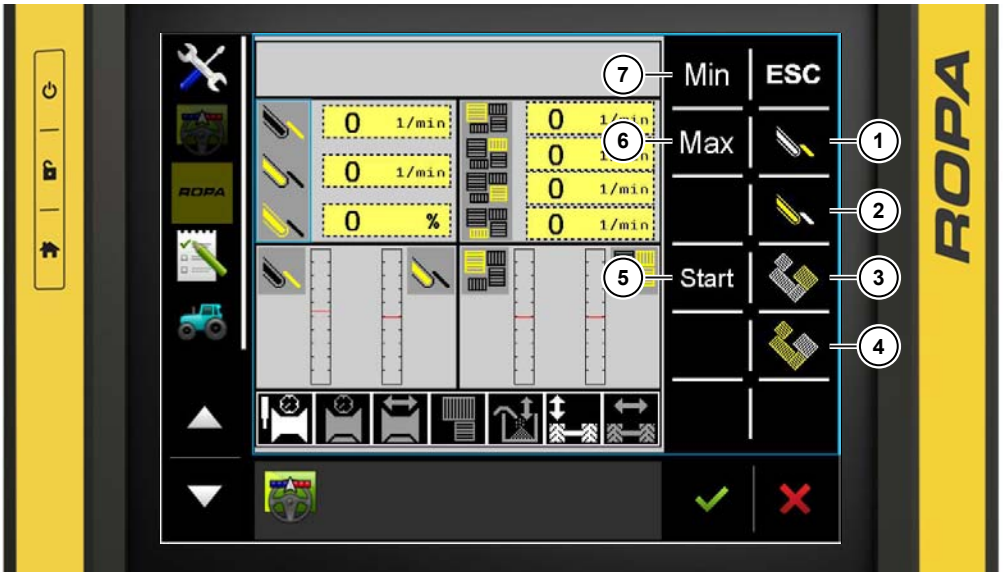
(1) Soft key increase picking conveyor speed
(2) Soft key reduce picking conveyor speed
(3) Soft key reduce trash conveyor speed
(4) Soft key increase trash conveyor speed

The picking table menu is opened with the soft key. The speed of the picking conveyor (*See Page 295*) is adjusted from 0% to 100% and the speed of the trash conveyor (*See Page 299*) from 20% to 100% in the picking table menu. The picking conveyor speed soft key (**1**) and the trash conveyor speed soft key (**4**) increase the speed and the reduce picking conveyor speed soft key (**2**) and the reduce trash conveyor soft key (**3**) reduce the speed.

If the quick adjustment at the sorting platform is enabled, it is only possible to detect how fast the speed of the picking conveyor is set. The speed of the picking conveyor cannot be adjusted from the tractor. The speed can only be adjusted at the sorting platform.

The trash conveyor can be adjusted from both the tractor terminal and the machine terminal if the sorting platform adjustment is enabled.

6.3.1.3.9 Manual conveyors menu



(1) Soft key sieve conveyor 1
(2) Soft key sieve conveyor 2, leaf chain
(3) Soft key pintle belt 1
(4) Soft key pintle belts 2, 3, 4
(5) Start soft key
(6) Maximum speed soft key
(7) Minimum speed soft key

The manual conveyors menu is opened with the MANUAL soft key. In this menu all chains and conveyors can be individually manually actuated with the machine hydraulic system. Slow movement, e.g. to move a rod to an exact position for replacement, and fast movement for cleaning are both possible.

Press the soft key to preselect sieve conveyor 1. After selection the soft key is green.

Press the soft key to preselect sieve conveyor 2 and the leaf chain. After selection the soft key is green.

Press the soft key to preselect pintle belt 1. After selection the soft key is green.

Press the soft key to preselect pintle belts 2, 3, 4. After selection the soft key is green. The rotating finger comb, the picking conveyor and the trash conveyor are automatically actuated simultaneously at the set speeds.

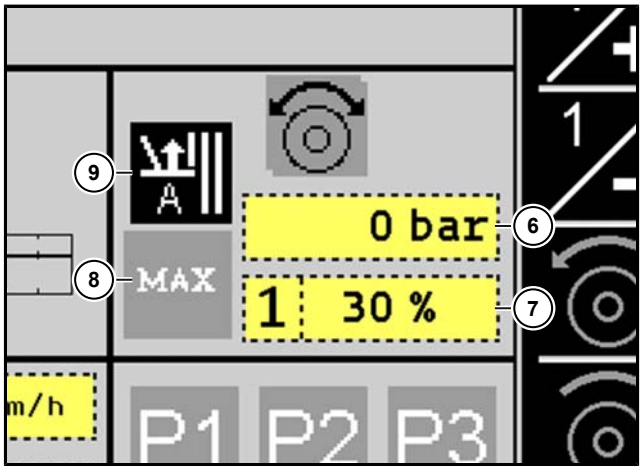
Press the Min soft key to select the minimum conveyor speed for the preselected chains and conveyors. After selection the Min soft key is green. The Min and Max soft keys can never be selected simultaneously.

Press the Max soft key to select the maximum conveyor speed for the preselected chains and conveyors. After selection the Max soft key is green. The Min and Max soft keys can never be selected simultaneously.

While the Start is pressed and held the preselected chains and conveyors are actuated and run at the selected conveyor speed Min or Max. When the Start soft keys are released all chains and conveyors stop immediately.

6.3.1.3.10 Menu Drive wheel

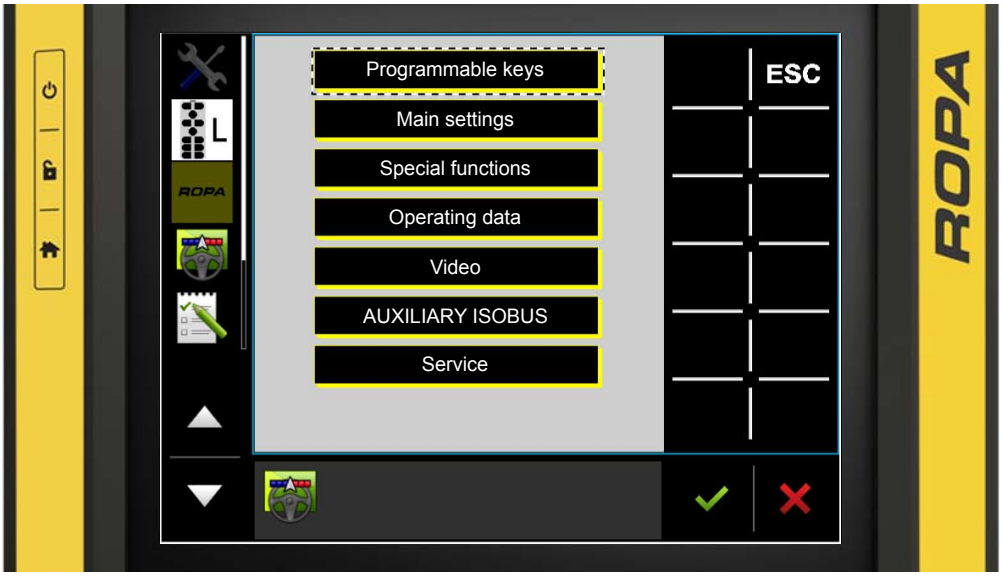
(1) Soft key drive wheel automatic function
(2) Soft key increase drive wheel speed
(3) Soft key reduce drive wheel speed
(4) Soft key drive wheel forward
(5) Soft key drive wheel backward



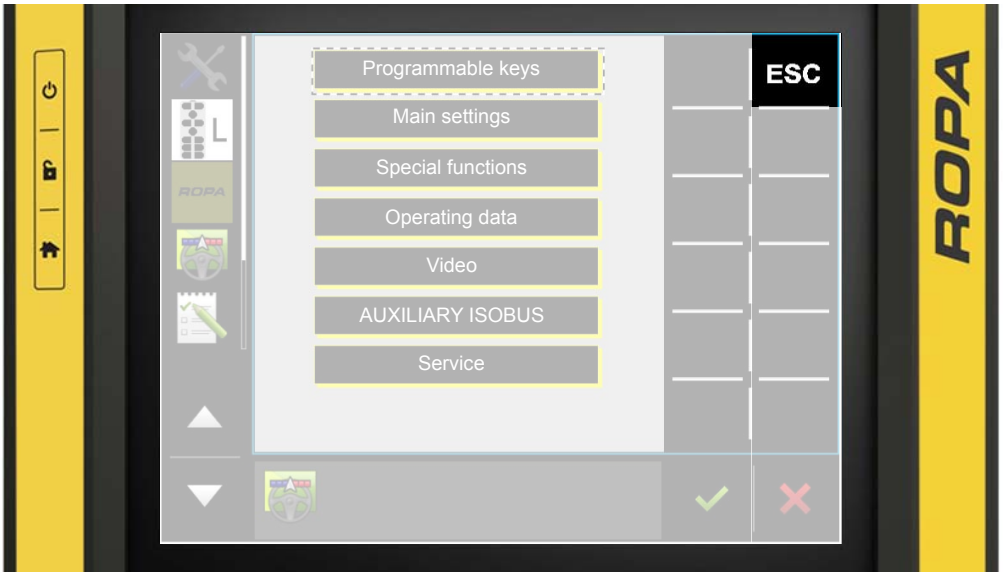
(6) Drive wheel actual pressure display
(7) Drive wheel set speed display
(8) Drive wheel maximum speed quick adjustment
(9) Drive wheel automatic function start of field/end of field

The drive wheel menu is opened when the drive wheel soft key is shown in green. The settings for drive wheel automatic function, speed and direction of motion can be made in the drive wheel menu (*See Page 179*). The functions can be activated and deactivated with a selection of soft keys.

6.3.1.4 Main menu



All submenus of the main menu can be selected by touching them on the tractor terminal. Greyed-out menu items cannot be selected.



ADVICE

The ESC key is almost always available on the soft keypad. Pressing the ESC key takes you back to the main screen step by step. On screens where the ESC key is not available a different cancellation procedure is available, e.g. when saving settings.

The Reset reset soft key resets the selected function in the main menu to the factory settings.

6.3.1.4.1 Programmable keys menu

ADVICE

The described functions are available only in the operating mode "Field".

(1) Programmable key P1
(2) Programmable key P2
(3) Programmable key P3
(4) Programmable key P4
(5) Programmable key P5
(6) Programmable key P6

Pressing one of six programmable keys enables you to activate one of six different machine settings. It enables you to call up the optimum settings for specific - recurrent - lifting conditions or ground types by pressing just one key.

After pressing the P1, P2, P3, P4, P5 or P6 programmable key and then confirming the selection the activated key is shown with a green background on the tractor terminal. This prevents an accidental activation.

When the automatic pintle belt 1/2 is selected, the stored value for pintle belt 1/2 height is not called.

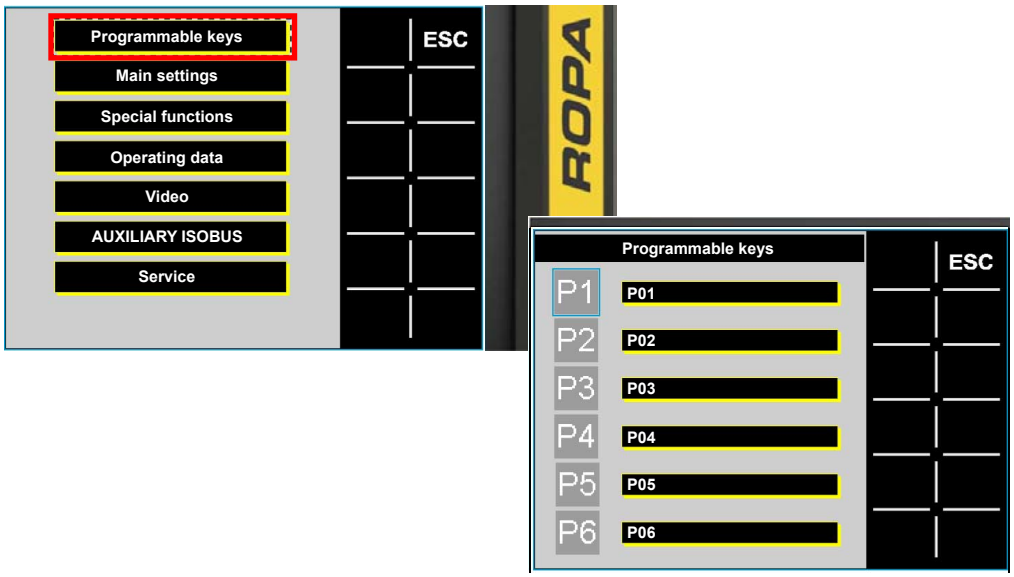
When quick adjustment of the picking conveyor speed is activated, the stored value is not called.

As soon as you change a set value with the programmable key, for example the "P1" icon on the tractor terminal has a white background.

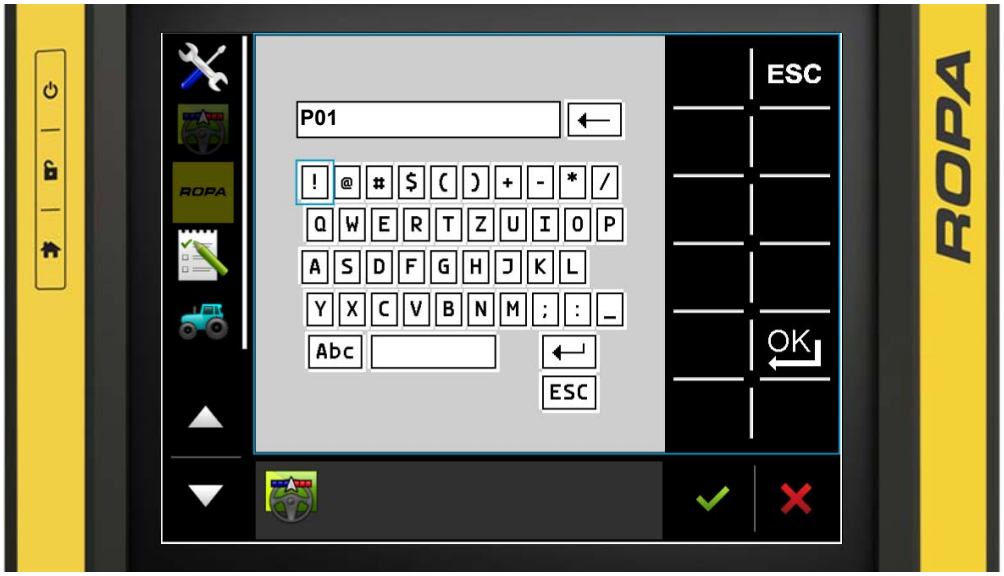
Save machine settings

Press and hold the key for longer than 3 seconds to save a machine setting for each of the six programmable keys. The current thresholds, current speeds and current heights are automatically saved. A security prompt asks whether you really want to save the settings.

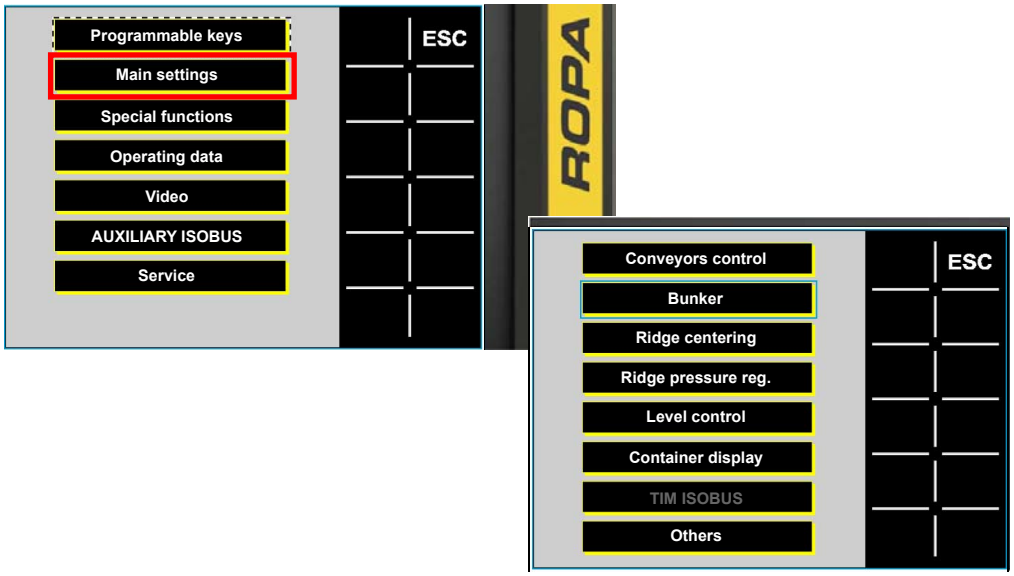
You are prompted to enter a name for the program when a setting for a programmable key is saved for the first time.



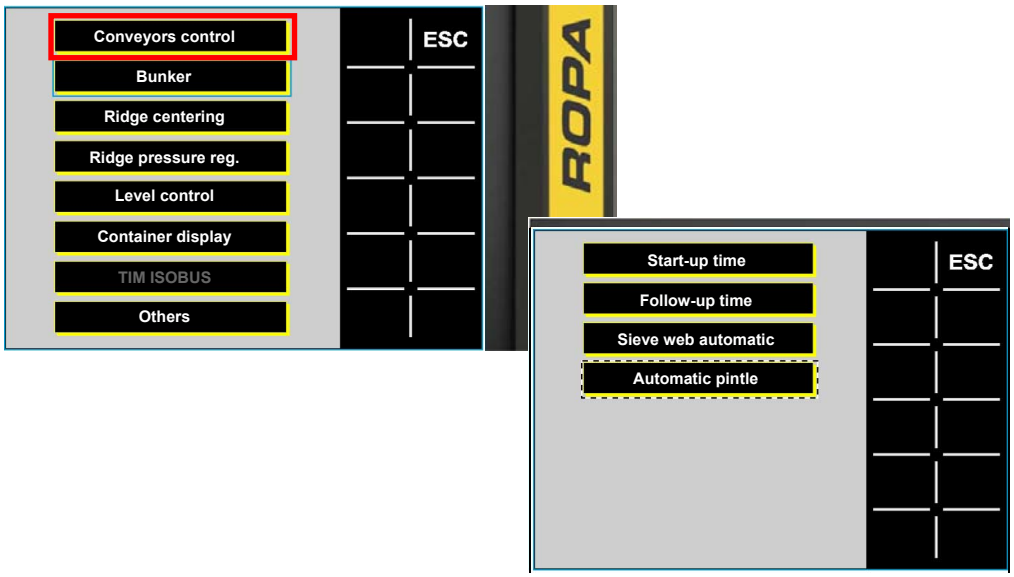
You can change the program name at any time. Select the program name to be changed by touching it. You will see the input form. Enter the new program name and save it or cancel it.



6.3.1.4.2 Menu Main settings



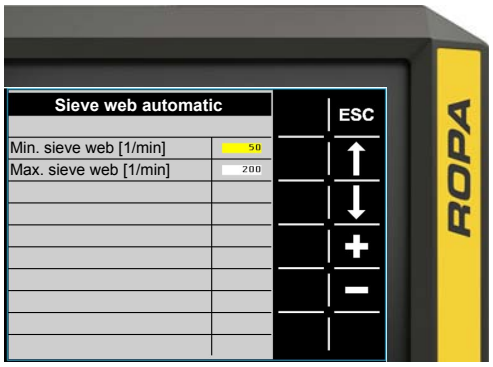
Conveyors control submenu



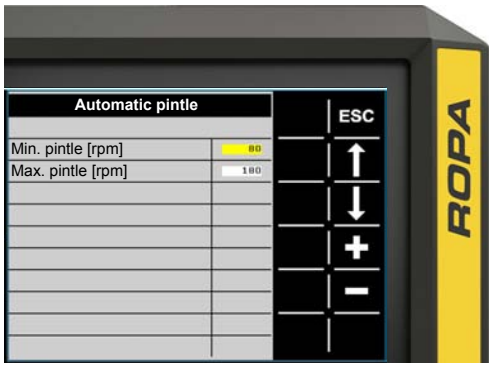
In the conveyors control submenu the start-up time and stopping time can be set for all electrically actuated chains and conveyors. The times must be set in the flow direction of the machine for shutdown and against the flow direction of the machine for start-up. This will prevent the machine from overrunning during start-up and shutdown.

The minimum and maximum speeds of the sieve conveyors with automatic sieve conveyor control are also set here.

The start-up time and stopping time for conveyors control are set in seconds. The start-up time and stopping time for the disc coulter/swath pickup, sieve conveyor 1, shaker, sieve conveyor 2/leaf chain, pintle belt 1, pintle belt 2/3/4 and UFK 1/2 can be adjusted. The timer for the start-up time is started when the pickup is lowered with the row start key or the machine is manually started. The timer for the stopping time is started when the pickup is raised with the row end key or the machine is manually shut down.

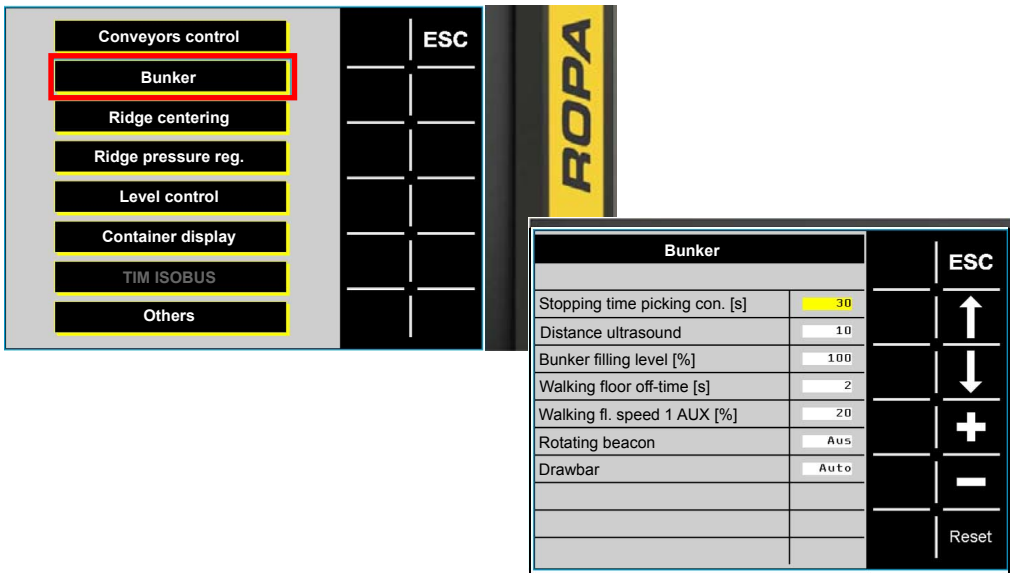


The minimum and maximum speed for the automatic control are set in the automatic sieve conveyor control.



The minimum and maximum speed for the automatic control of pintle belts are set in the automatic function of pintle belts (automatic pintle).

Submenu Bunker



Stopping time picking conveyor. (*See Page 295*)

Distance ultrasound. (*See Page 311*, *See Page 324*)

Bunker filling level. (*See Page 311*, *See Page 324*)

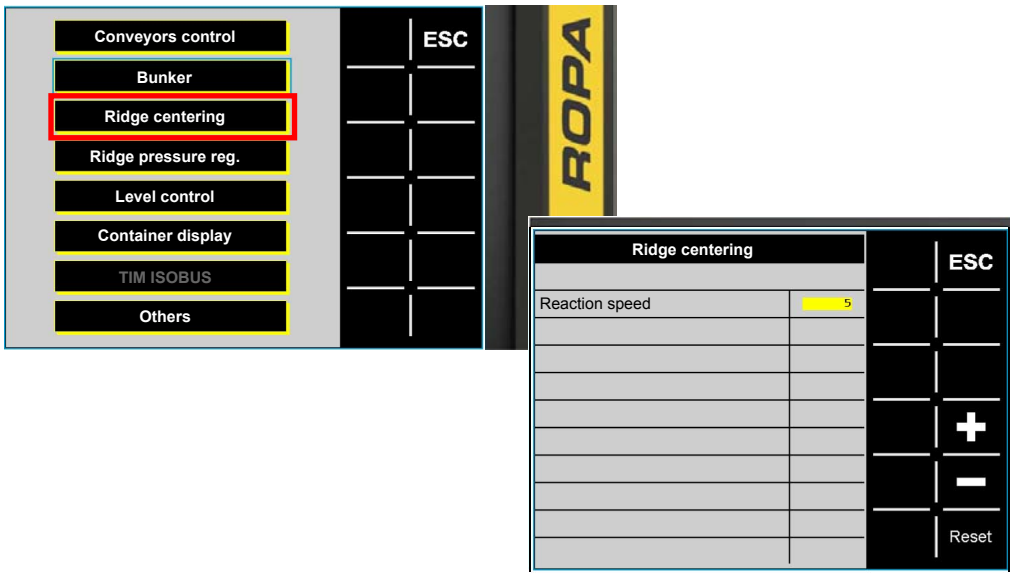
Walking floor off-time. (*See Page 311*, *See Page 324*)

Walking floor speed 1 AUX. (*See Page 311*, *See Page 324*)

Rotating beacon. (*See Page 324*)

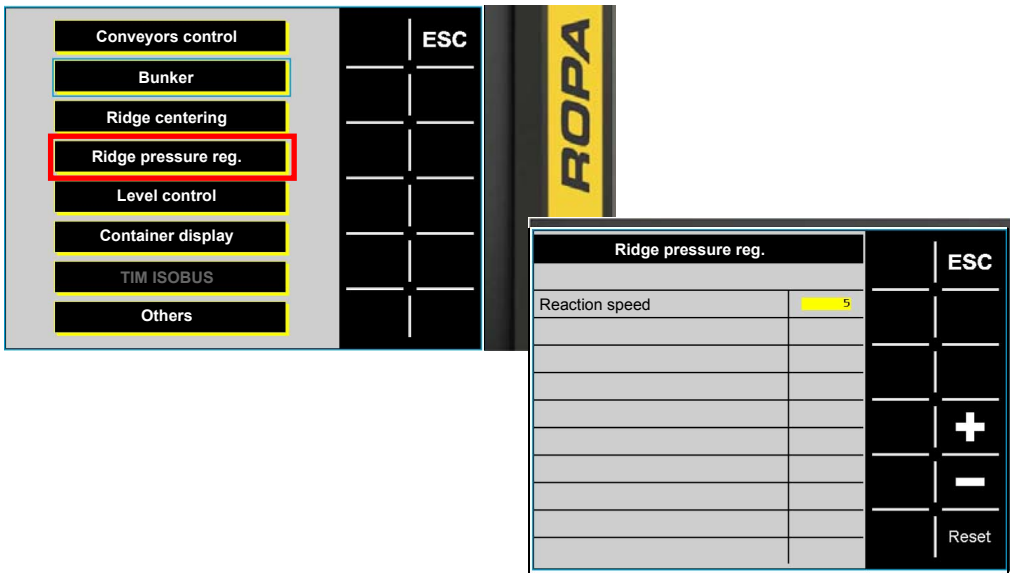
Drawbar. (*See Page 327*)

Ridge centring submenu



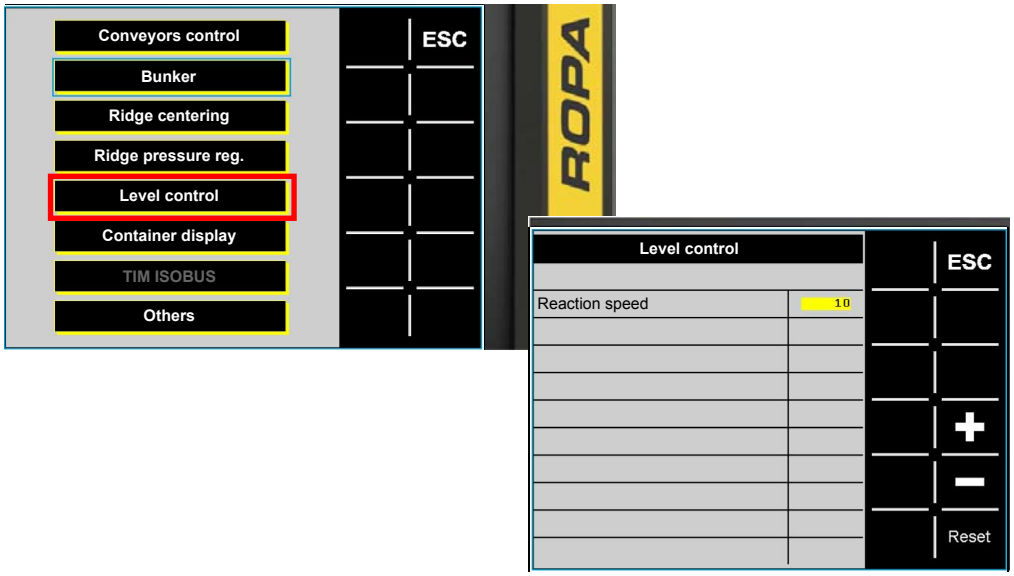
Ridge centring. (*See Page 190*)

Ridge pressure regulation submenu



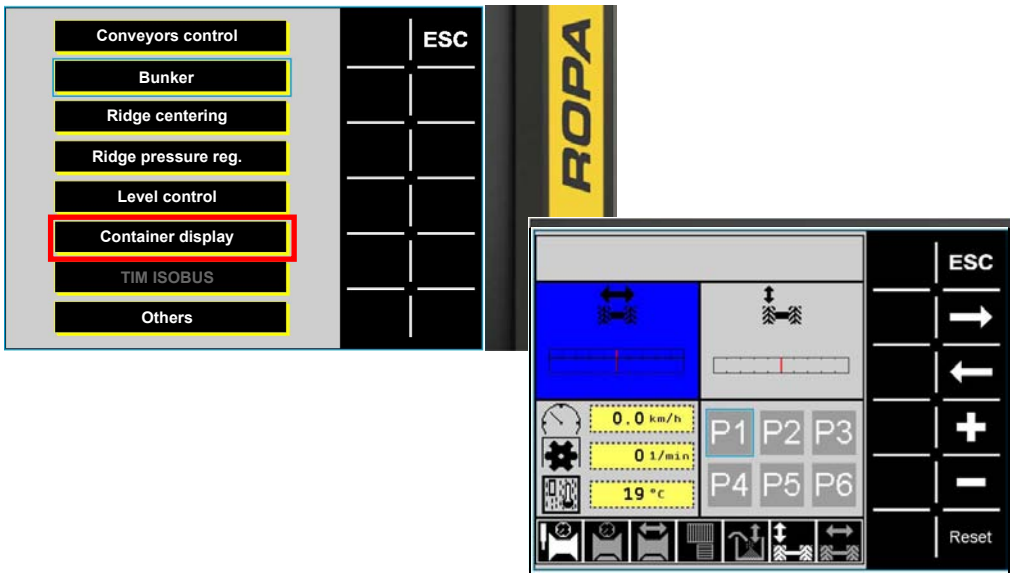
Ridge pressure regulation. (*See Page 199*)

Submenu Level control



Level control. (*See Page 177*)

Container display submenu



In the container display submenu, 4 displayed containers can be defined in the field operation menu. Use the key Reset to return to the factory setting. Use the keys ← and → to select which displayed container is to be changed. Use the keys + and − to select what must be displayed. You can cancel or save with the key ESC.

Submenu Others

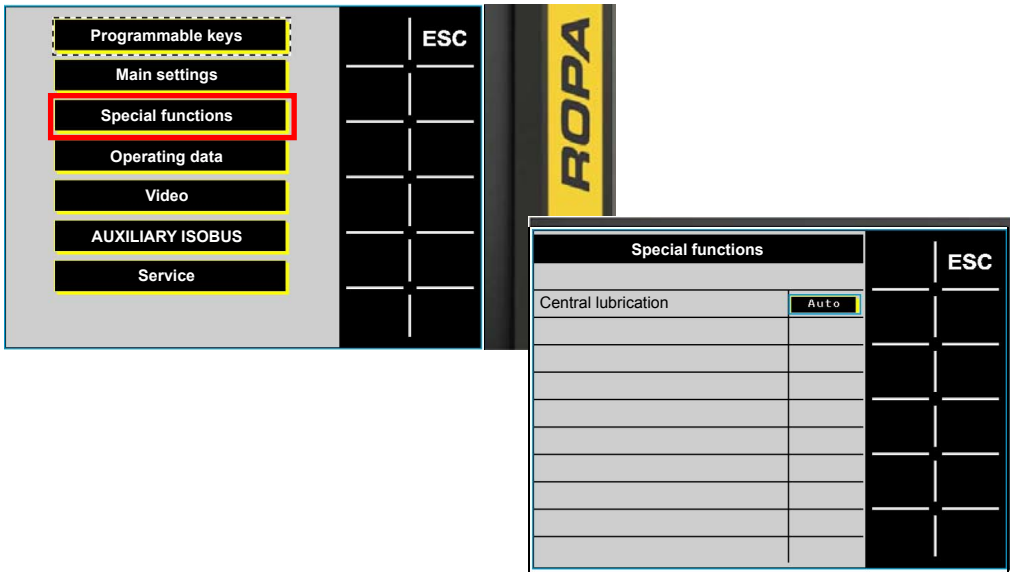
Greasing time [min]. (*See Page 336*)

In the submenu Others you can define from where the machine receives the driving speed signal. In standard the setting is on the sensor B47 which is located on the left wheel of the machine.
On tractors equipped with ISOBUS the setting can be changed to TECU. Here the driving speed signal is taken from the tractor. If TECU signal is lost, the signal is automatically taken from the sensor B47.

Row distance [mm]. (*See Page 210*)

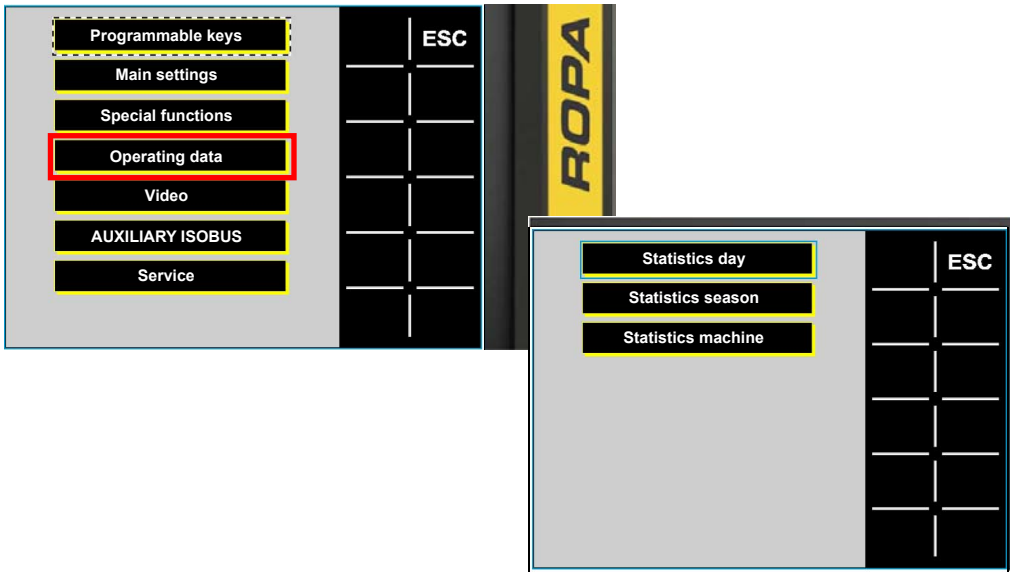
Bed width [mm]. (*See Page 211*), (*See Page 214*) and (*See Page 215*)

6.3.1.4.3 Menu Special functions

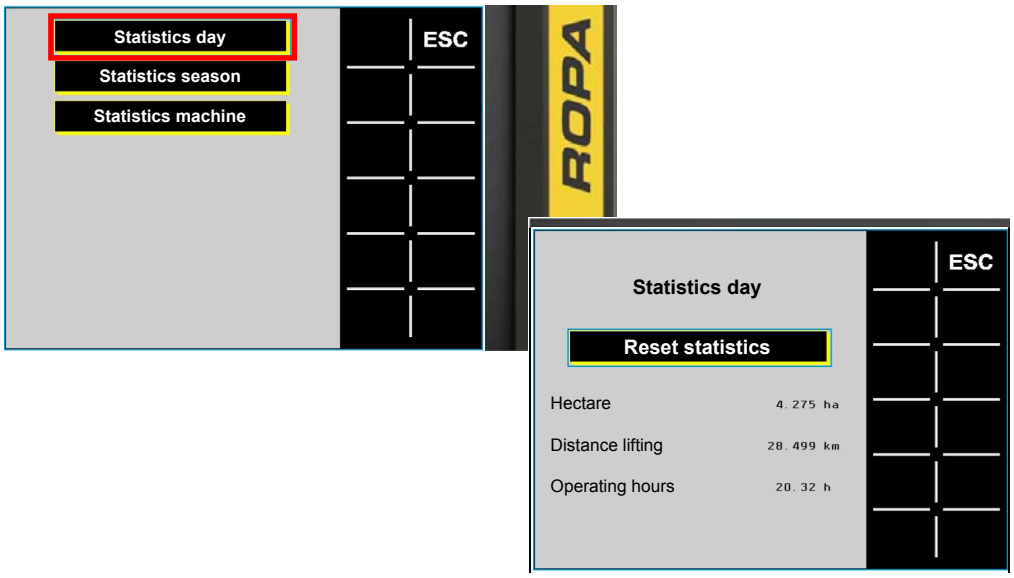


Central lubrication. (*See Page 336*)

6.3.1.4.4 Menu Operating data

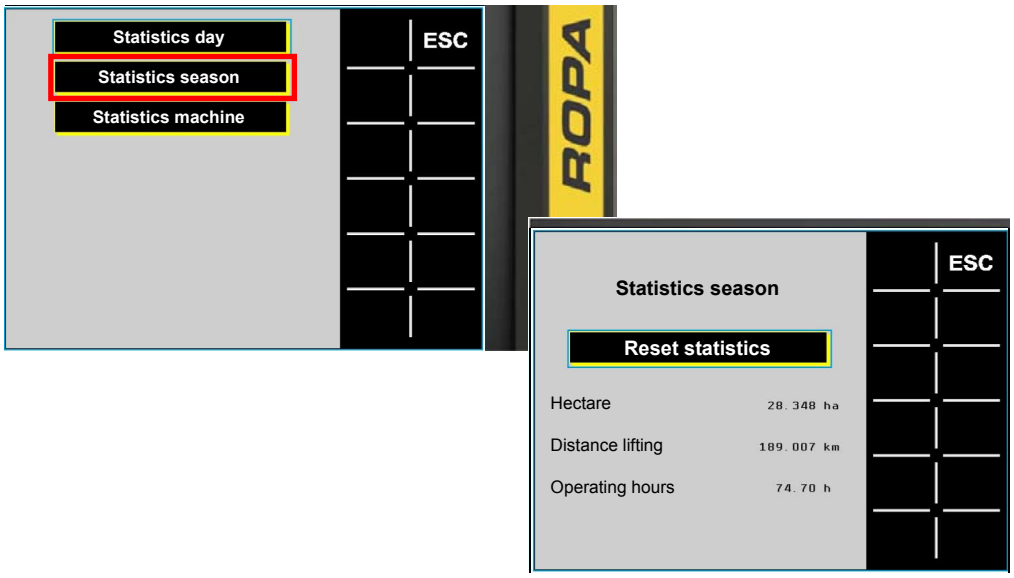


Statistics day submenu



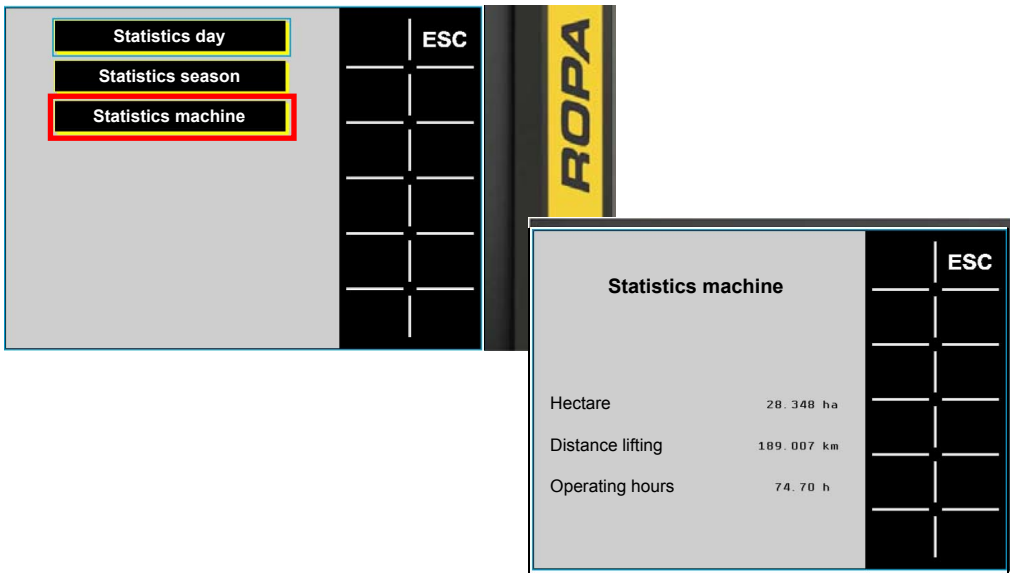
"Statistics day" can only be deleted by confirming the deletion again after pressing the delete key. This avoids inadvertent deleting.

Submenu Season statistics



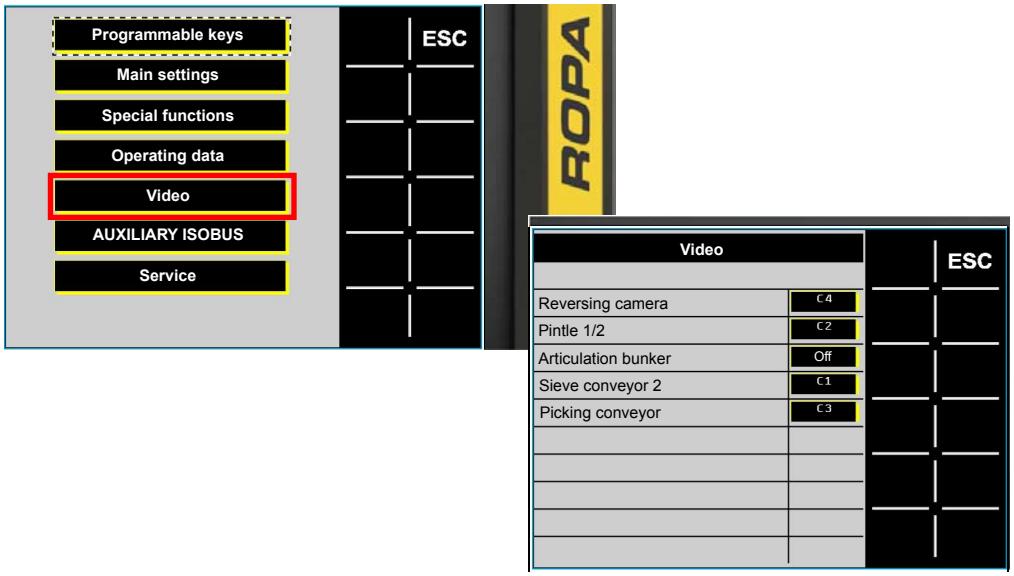
"Statistics season" can only be deleted by confirming the deletion again after pressing the delete key. This avoids inadvertent deleting.

Submenu Machine statistics



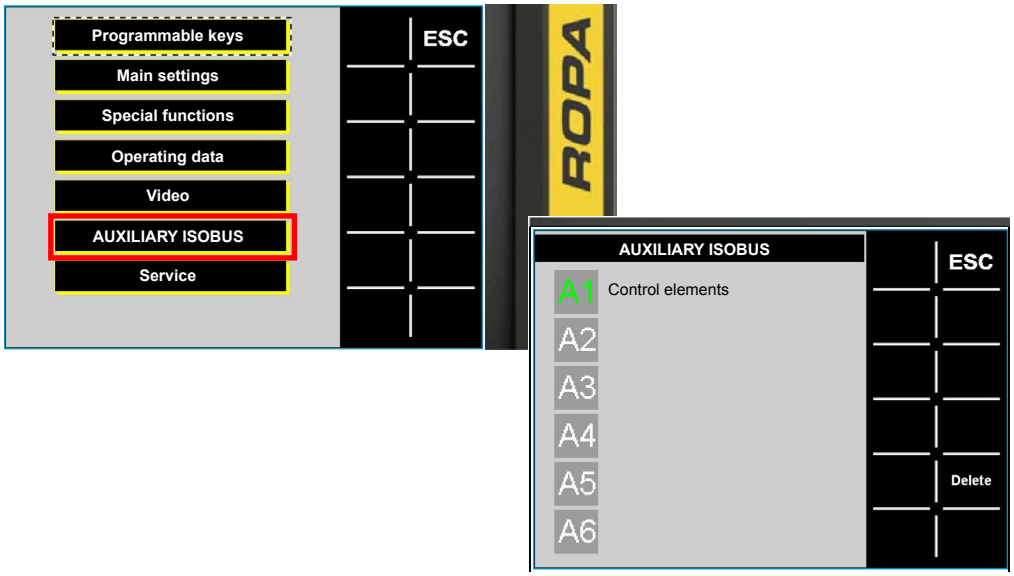
Data cannot be input, deleted or modified in the "Machine statistics".

6.3.1.4.5 Menu Video



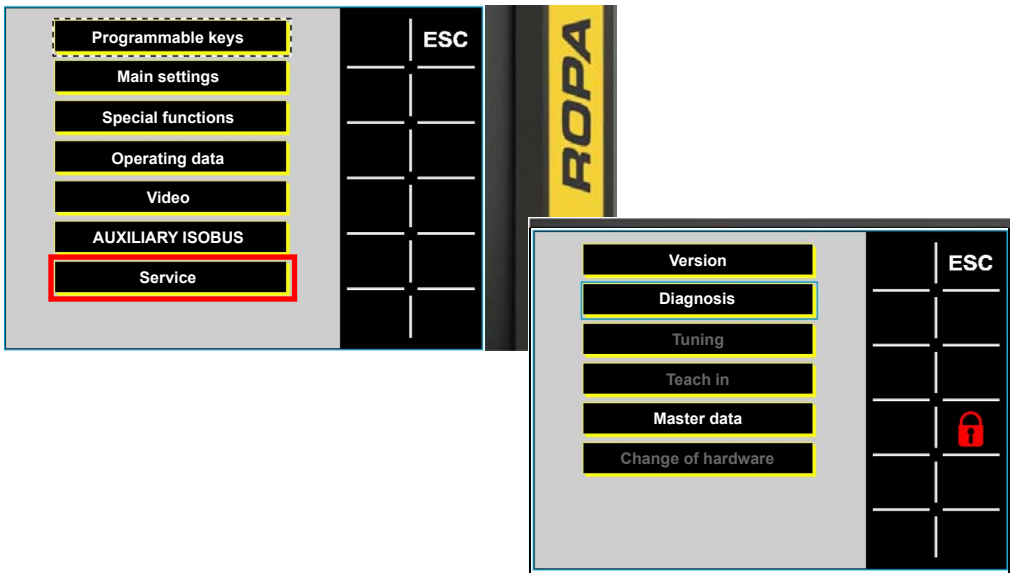
If the ROPA Video Switch option is installed, the assignment of the cameras is set in the video menu (*See Page 342*).

6.3.1.4.6 Menu AUXILIARY ISOBUS



In the AUXILIARY ISOBUS menu you can save the assignments to "freely assignable control elements" and call up the factory settings (*See Page 150*).

6.3.1.4.7 Menu Service



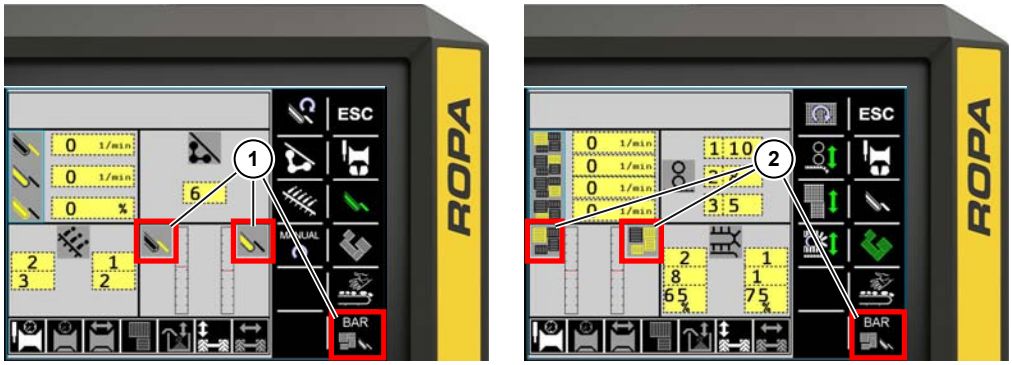
Submenu Version

For the operator, only the submenus "Version" and "Diagnostics" (see chapter "Malfunction and Remedies", *See Page 409*) are of importance in the service menu. The submenus: “Tuning” and “TeachIn” are only accessible after input of a service code.

DANGER

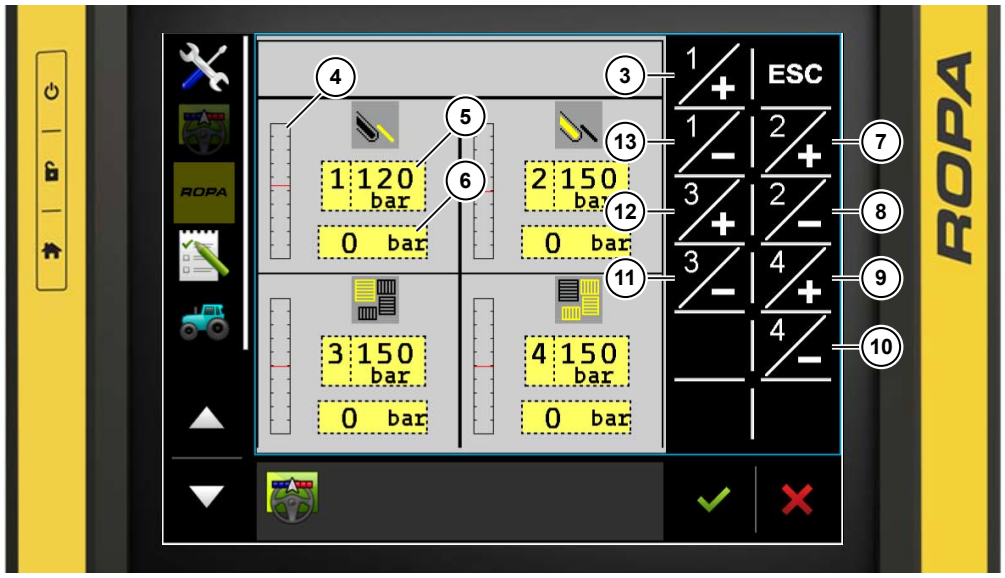
Access to these menus is locked by a specific code for safety reasons. If wrong settings are made in these menus or the applicable safety regulations are not or not sufficiently observed, then this may lead to extreme accidents with deadly injuries. In many cases, severe damage may be caused to the machine, with the consequence of expensive repairs or long periods of standstill. Access to these menus is therefore authorised only with direct contact to the manufacturer by telephone or to people expressly authorised for this purpose by the manufacturer.

6.3.1.5 Readjusting thresholds



(1) Sieving channel pressure threshold menu
(2) Separation pressure threshold menu

The pressure monitoring can be selected directly in the sieving channel menu (**1**) by selecting the grey key or the soft key or in the separation menu (**2**) by selecting the grey key or the soft key in the tractor terminal. If the drive wheel option is installed, there is no soft key for selection in the separation menu.



(3) Soft key increase sieve conveyor 1 pressure threshold
(4) Actual pressure/threshold display
(5) Warning threshold
(6) Actual pressure
(7) Soft key increase sieve conveyor 2 pressure threshold
(8) Soft key reduce sieve conveyor 2 pressure threshold
(9) Soft key increase pintle belt 2, 3, 4 pressure threshold
(10) Soft key reduce pintle belt 2, 3, 4 pressure threshold
(11) Soft key reduce pintle belt 1 pressure threshold
(12) Soft key increase pintle belt 1 pressure threshold
(13) Soft key reduce sieve conveyor 1 pressure threshold

The conveyors pressure threshold is opened with the BAR soft key. The current actual pressure (**6**) in bar, the threshold that can be selected with soft keys (**5**) in bar and the combination of actual pressure and threshold (**4**) are graphically displayed.

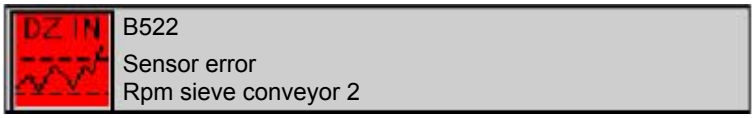
The sieve conveyor 1 increase threshold soft key (**3**) increases the threshold for sieve conveyor 1. The sieve conveyor 1 reduce threshold soft key (**13**) reduces the threshold for sieve conveyor 1.

The sieve conveyor 2 increase threshold soft key (**7**) increases the threshold for sieve conveyor 2. The sieve conveyor 2 reduce threshold soft key (**8**) reduces the threshold for sieve conveyor 2.

The pintle belt 1 increase threshold soft key (**12**) increases the threshold for pintle belt 1. The pintle belt 1 reduce threshold soft key (**11**) reduces the threshold for pintle belt 1.

The pintle belt 2, 3, 4 increase threshold soft key (**9**) increases the threshold for pintle belt 2, 3, 4. The pintle belt 2, 3, 4 reduce threshold soft key (**10**) reduces the threshold for pintle belt 2, 3, 4.

6.3.1.6 Warning and status indications on the tractor terminal



The tractor terminal shows error messages in case of malfunctions. An entry is logged in the fault memory at the same time. If red warning notifications appear, the machine must be shut down immediately to avoid damage to the machine. The machine can be restarted at your own risk, e.g. to park the machine safely.

Red warning indicators

	Hydraulic oil level too low		Tractor battery voltage too low or too high (less than 12 V or over 16 V)
	Hydraulic fluid too hot		Emergency stop switch pressed
	Tractor return pressure too high	STOP	STOP key operating sections
max	PTO speed too high		Danger for person and machine
1≠2	Axle swing angle Check both sensors		STOP: insuff. feed pressure Call for service

Red note indication on electronic problems

DZ IN	Rpm signal out of range	DATA ERROR	Error data backup
ANAIN	Analogue signal out of range	CONF ERROR	Incorrect machine configuration
	Line break or short circuit found	COM CPU	Communication problem with control device
EPROM	Internal EEPROM memory fault		Lifting spindle drive error

Additional warning indications and notifications on operation

	Drawbar not on road drive Swing drawbar to right		Axle is not in central position Move axle to central position
	PTO speed too low Increase PRO speed		Emergency stop not activated Activate tractor emergency stop
	Bunker must be folded in Lower filling web		Unload conv. should fold in Lower picking conv.
	Unload conv. should fold in Raise unload conv. art. 1/2		Picking conv. is lowered Raise picking conv.
	Adjust speed Drive slower		Bunker is full
	Sorting platform horn pressed		Bunker must be raised Extend axle
	Bunker must be raised Swing drawbar to the right		Bunker must be raised Swing drawbar to the left
	Bunker must be folded in Open bunker flap		Bunker flap is open Close bunker flap
	Warning limit reached PS sieve conveyor 1		Blockage Rpm sieve conveyor 1
	Warning limit reached PS sieve conveyor 2		Blockage Rpm sieve conveyor 2
	Warning limit reached PS pintle belt 1		Blockage Rpm pintle belt 1
	Warning limit reached PS pintle belt 2		Blockage Rpm pintle belt 2, 3, 4
	Axle extended Retract axle		Axle retracted Extend axle
	Run zeroing		Warning limit reached PS gear pump
	Adjust speed Drive slower		Add. axle in road position Raise additional axle

Status indicators of automatic systems

	Ridge pressure relief Off		Ridge pressure relief On
	Ridge pressure relief preselected		
	Ridge pressure regulation Off		Ridge pressure regulation On
	Ridge pressure regulation preselected		
	Ridge centring Off		Ridge centring On
	Ridge centring preselected		
	Pintle belt 1/2 automatic Off		Pintle belt 1/2 automatic On
	Pintle belt 1/2 automatic preselected		
	Automatic filling Off		Automatic filling On
	Automatic filling preselected		
	Slope compensation On		Slope compensation On
	Slope compensation preselected		
	Wheel steering Off		Wheel steering On
	Wheel steering preselected		
	Automatic drive wheel off		Automatic drive wheel on
	Automatic drive wheel preselected		

6.3.2 Machine terminal

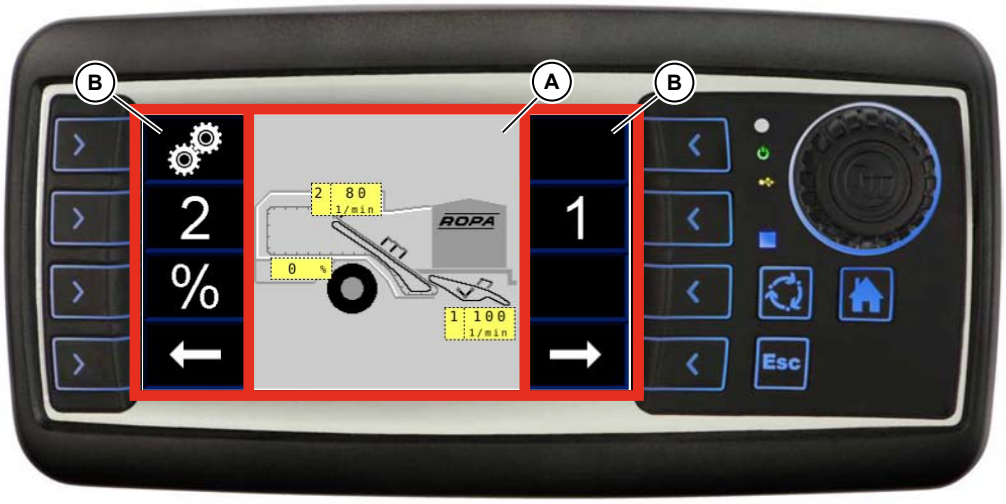
(1) Machine terminal

The operation of the machine is divided into two basic sections, operation on the tractor and operation on the machine.

A user-friendly machine terminal (**1**) with ISOBUS operation and additional electrical adjustment options with keys is installed on the machine.

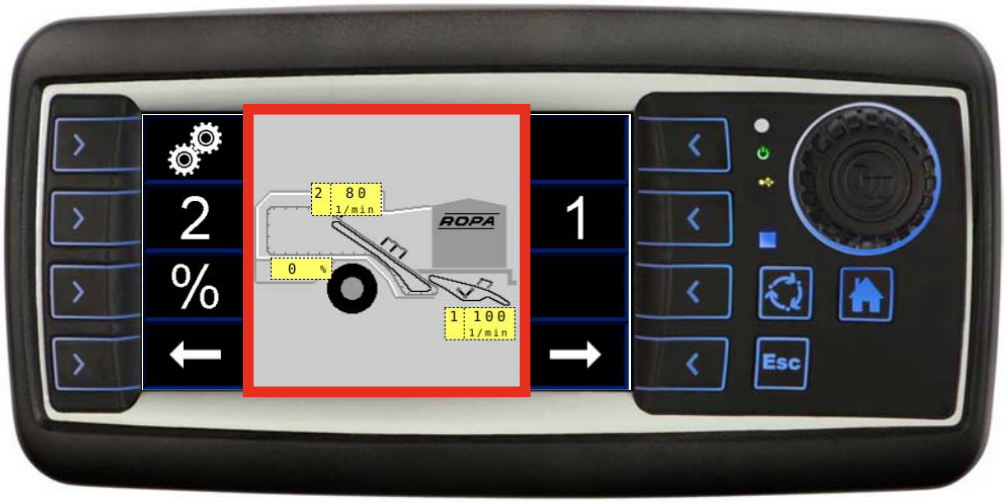
Press the soft keys on the machine terminal to navigate through the menus.

6.3.2.1 Machine terminal display areas



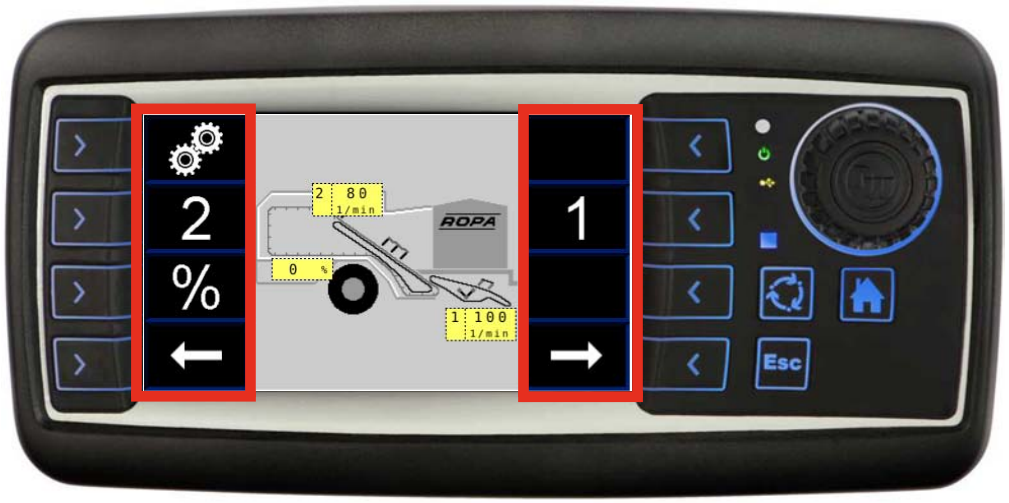
(A) Working screen display area
(B) Display area soft key

[A] Working screen display area



The working screen display area shows the machine states that can be adjusted from the sorting platform.

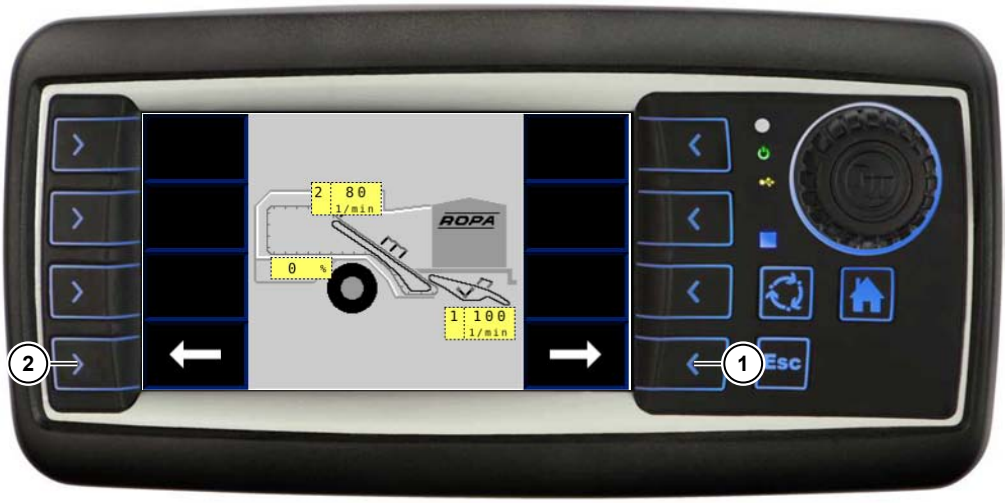
[B] Soft key display area



The soft keys are shown to the left and right of the working screen display area.

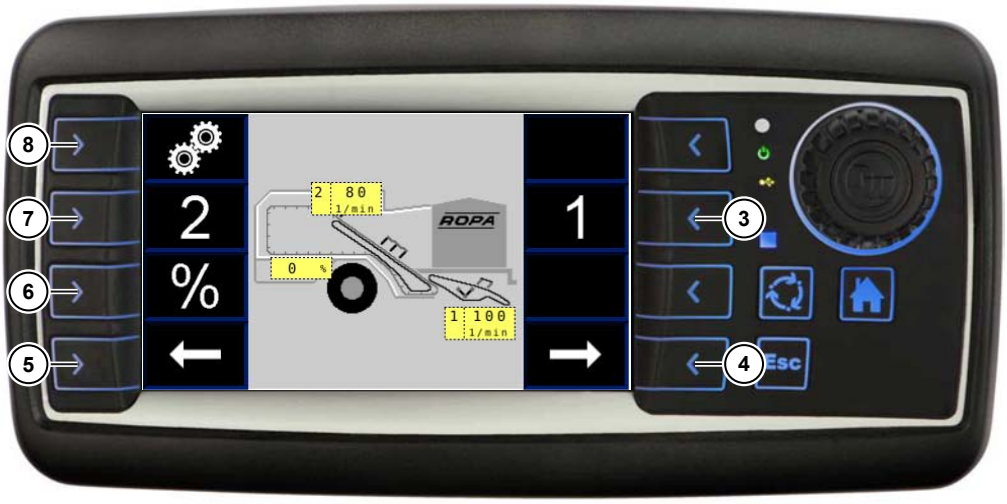
6.3.2.1.1 Sorting platform menu 1

Sorting platform menu 1 terminal locked



(1) Scroll screen right soft key
(2) Scroll screen left soft key

Sorting platform menu 1 terminal released



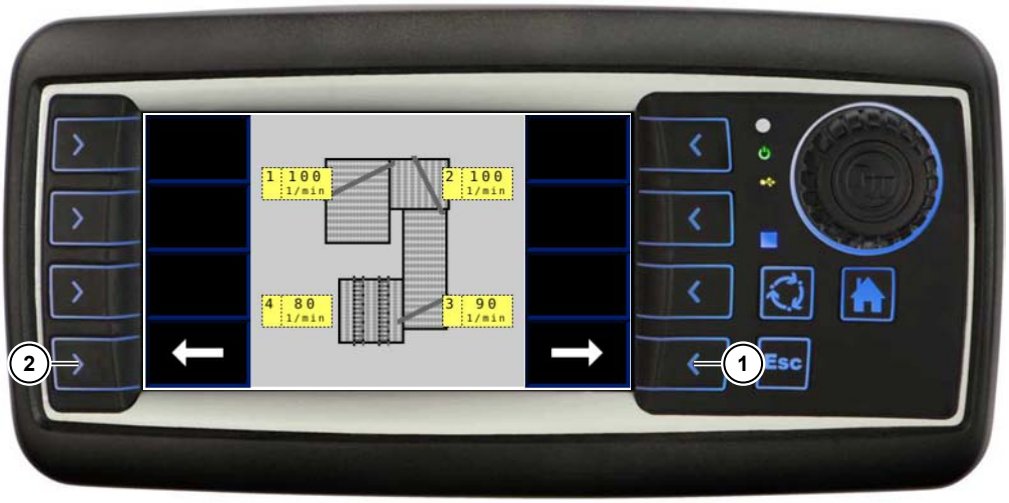
(3) Soft key sieve conveyor 1 speed
(4) Scroll screen right soft key
(5) Scroll screen left soft key
(6) Soft key leaf chain speed
(7) Soft key sieve conveyor 2 speed
(8) Soft key synchronous sieve conveyors speed

In sorting platform menu 1, after release at the tractor terminal, the speeds of sieve conveyor 1 (**3**) (*See Page 221*), sieve conveyor 2 (**7**) (*See Page 230*) and the leaf chain (*See Page 243*) (**6**) can be adjusted. The sieve conveyors can also be synchronously (**8**) (*See Page 235*) adjusted in this menu. The speed of the sieve conveyors is adjusted in rpm. The speed of the leaf chain can be braked as a percentage of the speed of sieve conveyor 2.

The minimum speed of the sieve conveyors is 50 rpm, the maximum speed of the sieve conveyors is 200 rpm. The speed of the leaf chain can be braked in relation to sieve conveyor 2 in the range of 0% to -20%.

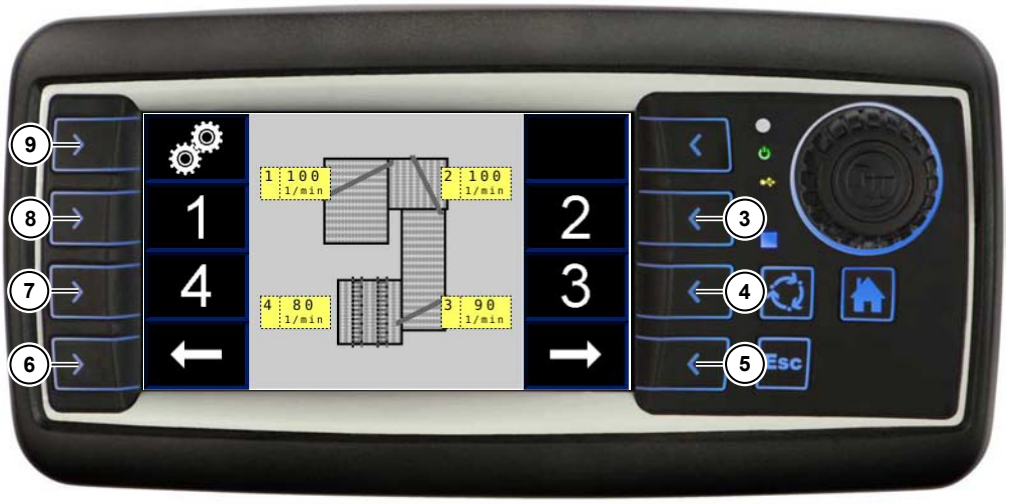
6.3.2.1.2 Sorting platform menu 2

Sorting platform menu 2 terminal locked



(1) Scroll screen right soft key
(2) Scroll screen left soft key

Sorting platform menu 2 terminal released



(3) Soft key pintle belt 2 speed
(4) Soft key pintle belt 3 speed
(5) Scroll screen right soft key
(6) Scroll screen left soft key
(7) Soft key pintle belt 4 speed
(8) Soft key pintle belt 1 speed
(9) Soft key synchronous pintle belt speed

In sorting stand menu 2, after release at the tractor terminal, the speeds of pintle belt 1 (**8**) (*See Page 252*), pintle belt 2 (**3**) (*See Page 259*), pintle belt 3 (**4**) (*See Page 270*) and pintle belt 4 (**7**) (*See Page 277*) can be adjusted. The pintle belts can also be synchronously (**9**) (*See Page 290*) adjusted in this menu. The speed of the pintle belts is adjusted in rpm.

The minimum speed of the pintle belts is 50 rpm, the maximum speeds of the pintle belts is 250 rpm^{-1}.

6.3.2.1.3 Sorting platform menu 3

Sorting platform menu 3 terminal locked

(1) Scroll screen right soft key
(2) Scroll screen left soft key

Sorting platform menu 3 terminal released

(3) Shaker soft key
(4) Soft key UFK 1 speed
(5) Working floodlights soft key
(6) Scroll screen right soft key
(7) Scroll screen left soft key
(8) Soft key UFK 2 speed
(9) Soft key trash conveyor speed

In sorting platform menu 3, after release at the tractor terminal, the speeds of the trash conveyor (**9**) (*See Page 299*), UFK 1 (**4**) (*See Page 281*) and UFK 2 (**8**) (*See Page 281*) can be adjusted. The optional working floodlights (**5**) can be switched on and off. The intensity of the shaker (**3**) (*See Page 227*) can be adjusted.

6.3.2.1.4 Sorting platform menu 4

Sorting platform menu 4 terminal locked

(1) Scroll screen right soft key
(2) Scroll screen left soft key

Sorting platform menu 4 terminal released

(3) Soft key pintle belt 1/2 inclination
(4) Front leaf scraper soft key
(5) Lifting depth left soft key
(6) Scroll screen right soft key
(7) Scroll screen left soft key
(8) Lifting depth right soft key
(9) Rear leaf scraper soft key
(10) Soft key pintle belt 4 inclination

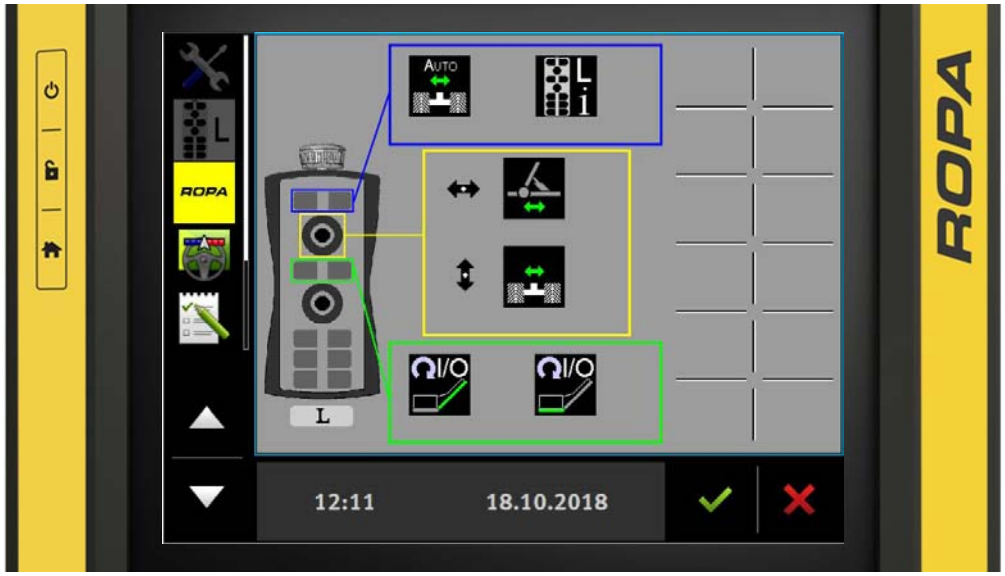
In sorting platform menu 4, after release at the tractor terminal, the heights of pintle belt 1/2 (**3**) (*See Page 267*), pintle belt 4 (**10**) (*See Page 286*), the front leaf scraper (**4**) (*See Page 247*), the rear leaf scraper (**9**) (*See Page 247*), lifting depth left (**5**) (*See Page 194*) and lifting depth right (**8**) (*See Page 194*) can be adjusted.

6.3.3 Freely assignable control element

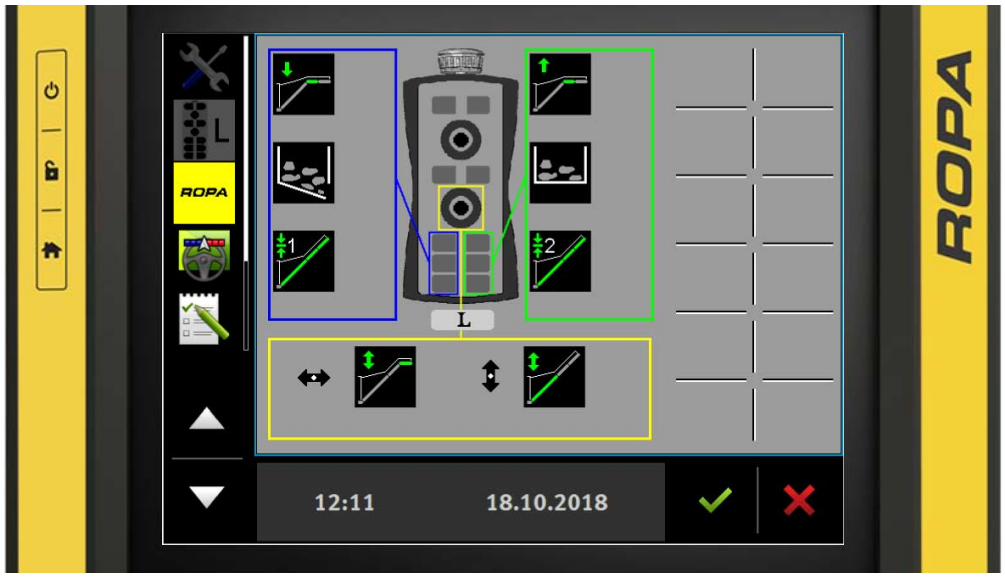
The keys "Info assignment control element left" and "Info assignment control element right" on the respective left or right control element display the assignments of the control elements.

The display remains on as long as the key is pressed. Pressing the key for the first time displays the assignment area of the control element and pressing the key for the second time displays the lower area of the control element.

Display of factory settings left at the overloading bunker machine

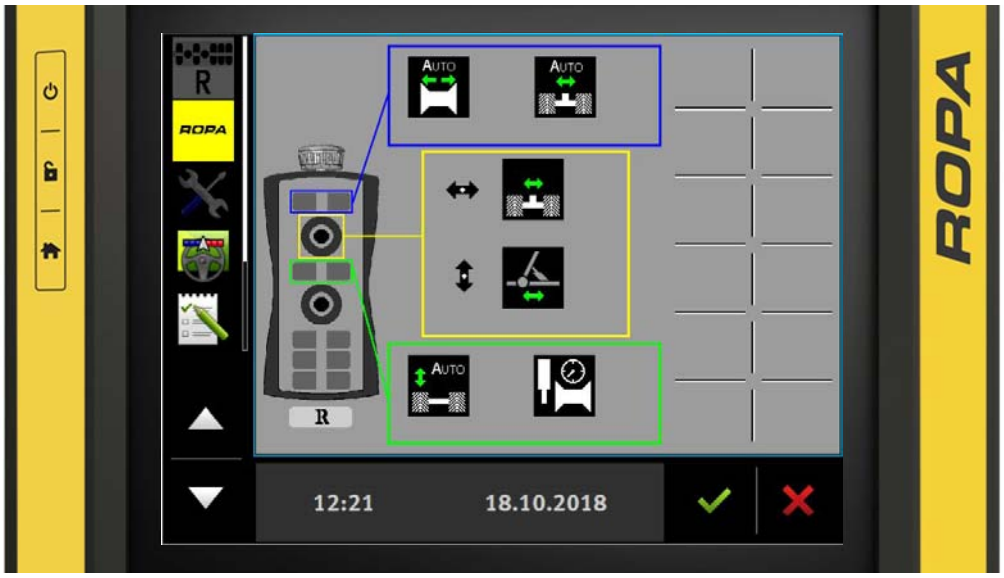


Display at the top

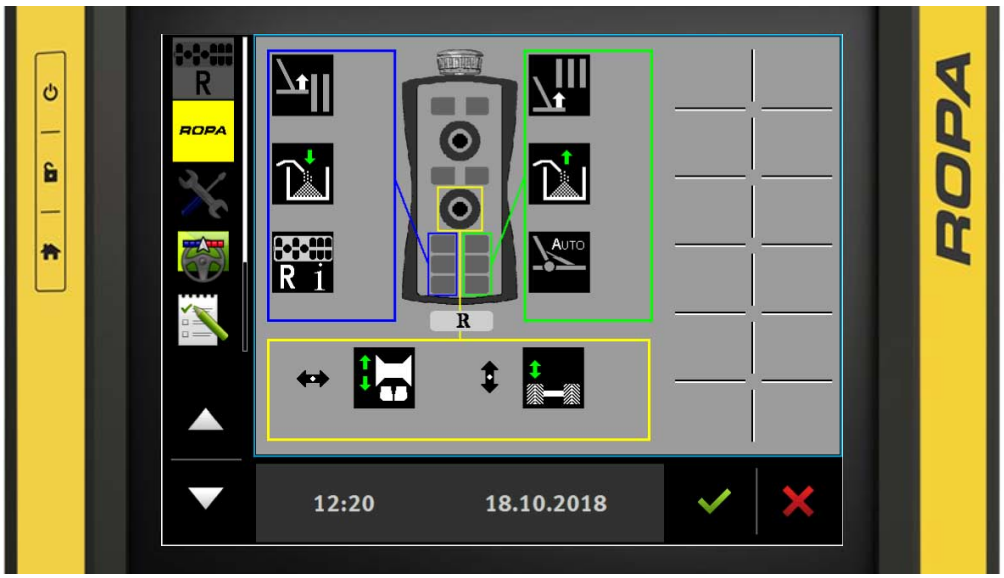


Display at the bottom

Display of factory settings right

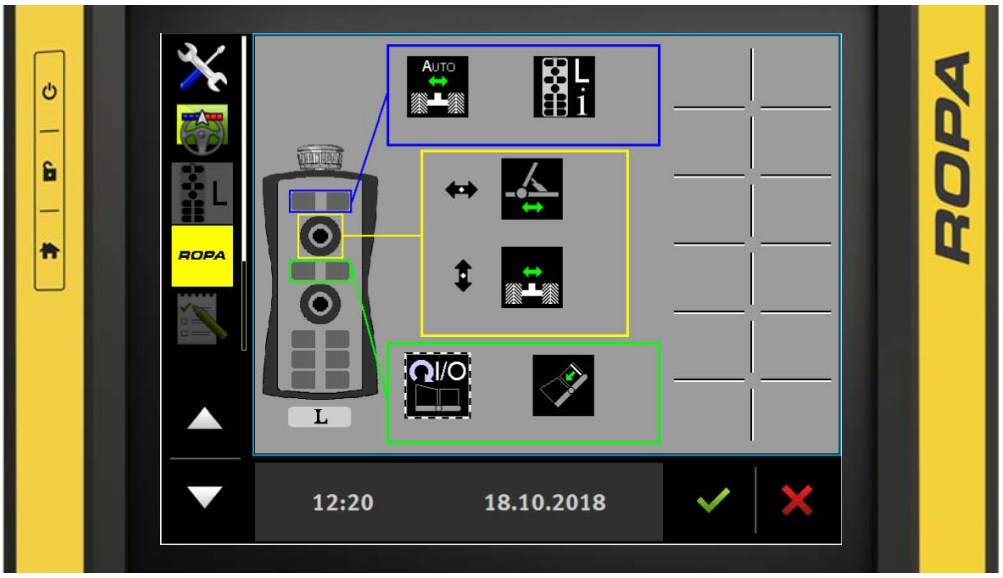


Display at the top

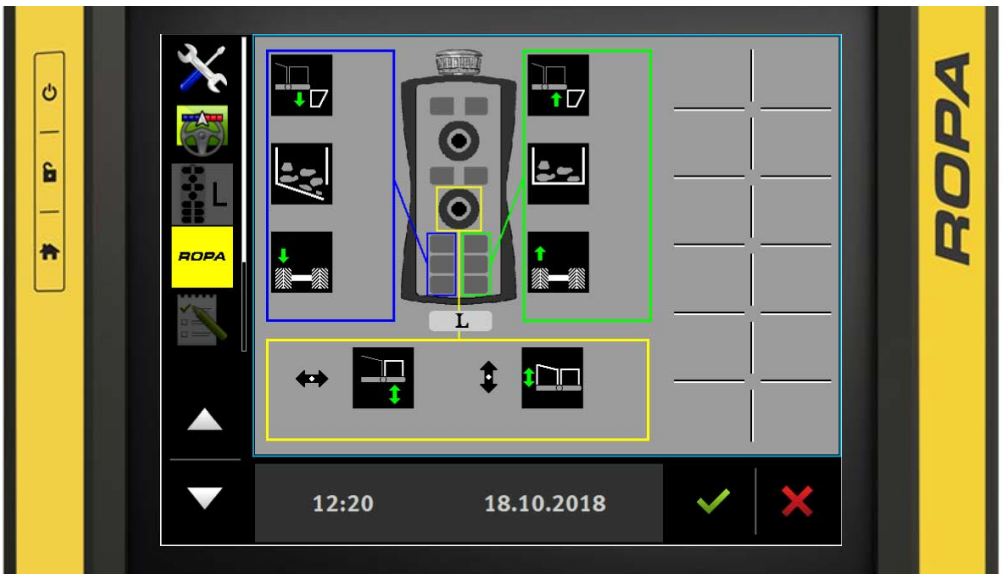


Display at the bottom

Display of factory settings left at the bunker machine



Display at the top



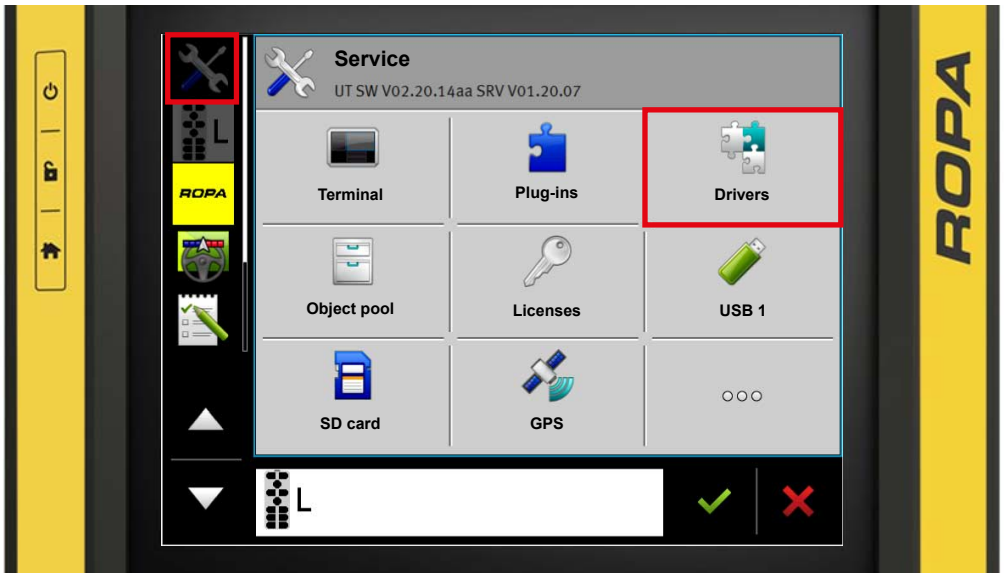
Display at the bottom

Shifting of freely assignable control element

The freely assignable control element can be used as left or right control element. It can be used for each side simultaneously. The control can recognize correctly which control element to use only if the correct ID has been assigned to the freely assignable control element by the Ropa service partner via the Service Manager and if it has been correctly defined as left or right control element for assigning the AUX-N functions.

The Ropa service partner can set the function of the analogue rotary wheel on the control element via the Service Manager. With different ID assignment, it is possible to assign the rotary wheel as speed sensor for the unload conveyor in the function of left control element or also to assign the rotary wheel as axle centring for the wheel steering in the function of right control element. Ask you local ROPA service partner for more information.

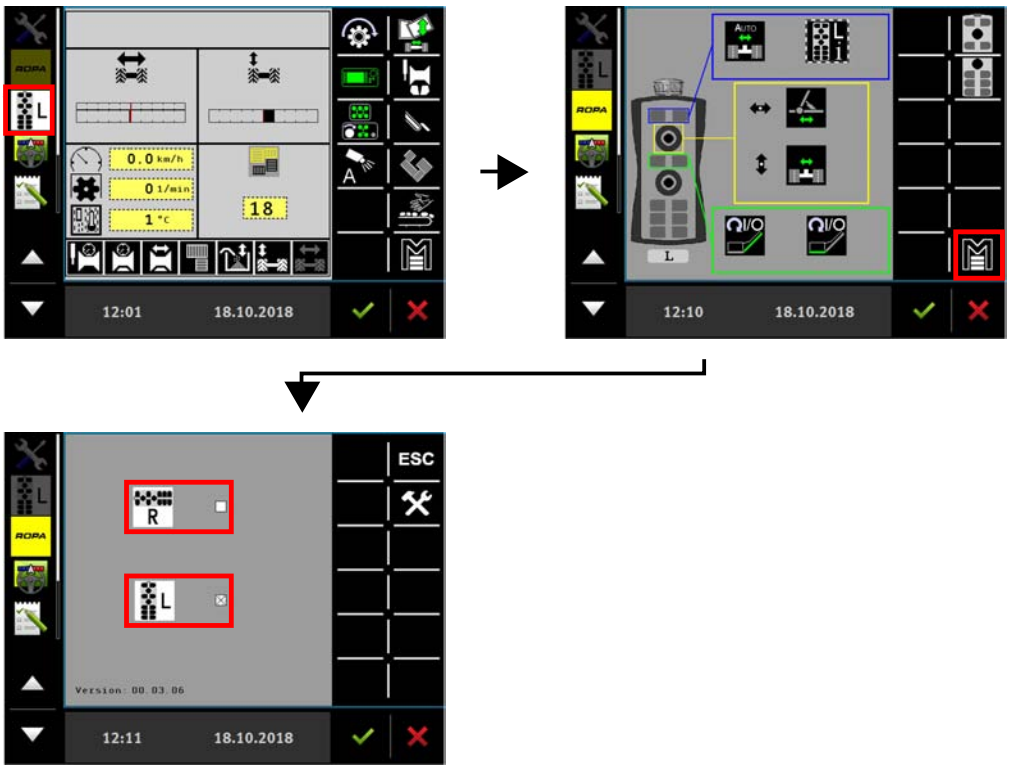
In order for the freely assignable control element to be recognised by the ISOBUS circuit and to function, Auxiliary Control (new) / Auxiliary 2 must be set in the service menu item → drivers submenu on the tractor terminal.



If the freely assignable control element is recognized as the left control element, the display of AUX-N function "Freely assignable control element" left is shown on the left side.

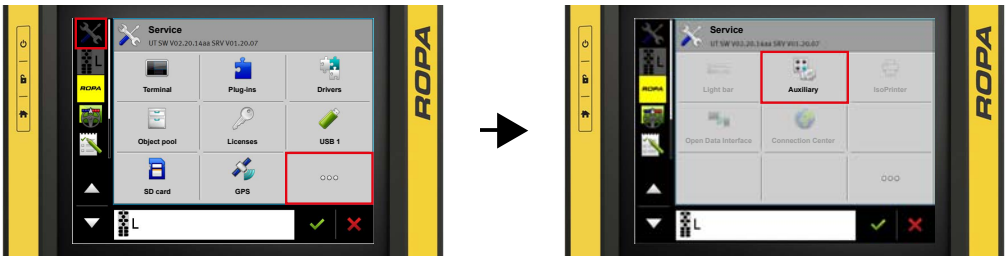
If the freely assignable control element is recognized as the right control element, the display of AUX-N function "Freely assignable control element" right is shown on the left side.

In order to move the freely assignable control element from one side to the other, the displayed AUX-N function of the freely assignable control element must be selected on the left side. After that select the soft key . On the following page the freely assignable control element can be defined as left or right control element. Restart the ISOBUS after selection.

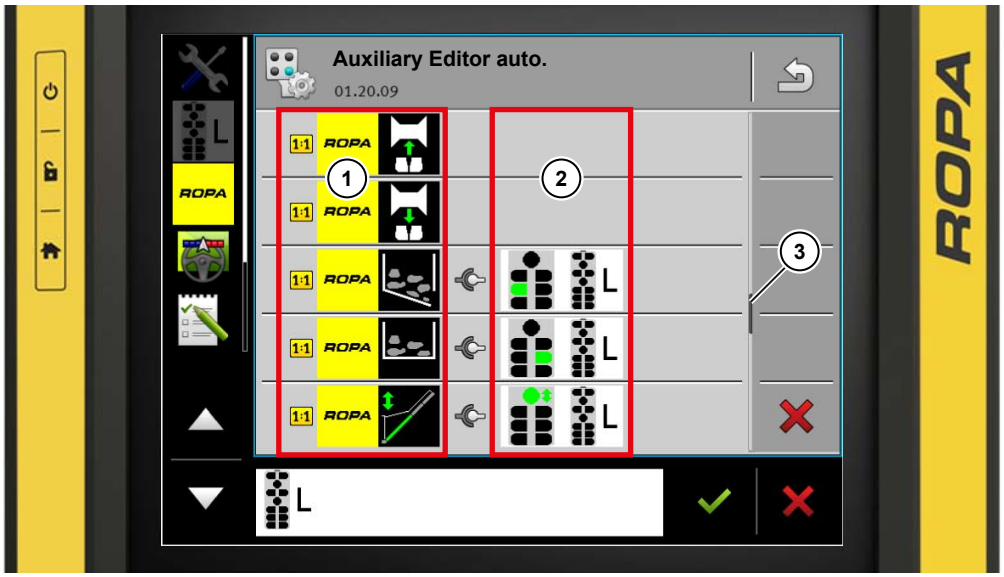


Changing assignment of the freely assignable control element

In order to change the assignment of the freely assignable control element call up Auxiliary submenu in the Service menu.

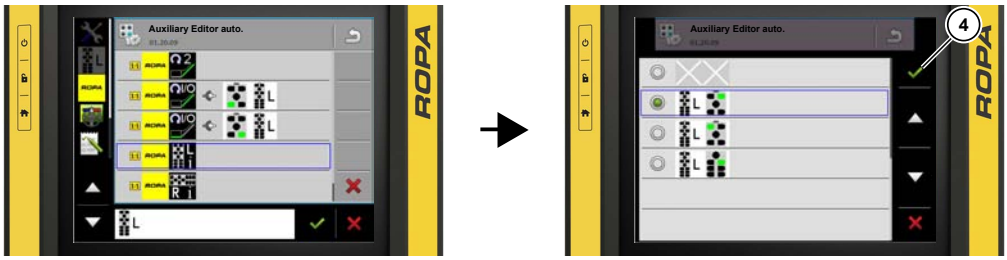


In Auxiliary Editor (**1**) you can see the assigned functions on the left side and at which position of the control element a function is assigned on the right side (**2**).



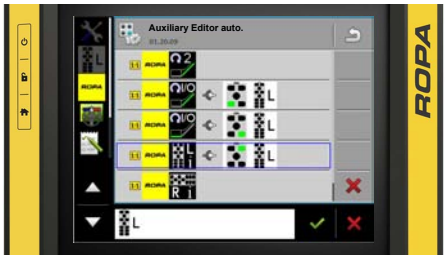
(1) Display of assignable functions
(2) Assignment to control element
(3) Scroll bar

If you want to assign a new function to the control element, select an assignable function and confirm it with the second touch. You will see the overview of all possible AUX-N keys for digital functions or mini joysticks for analogue functions matching the function.
Select the desired key / mini joystick and confirm it with the checkmark (**4**).



(4) Check for confirmation

The new assignment is displayed after that.

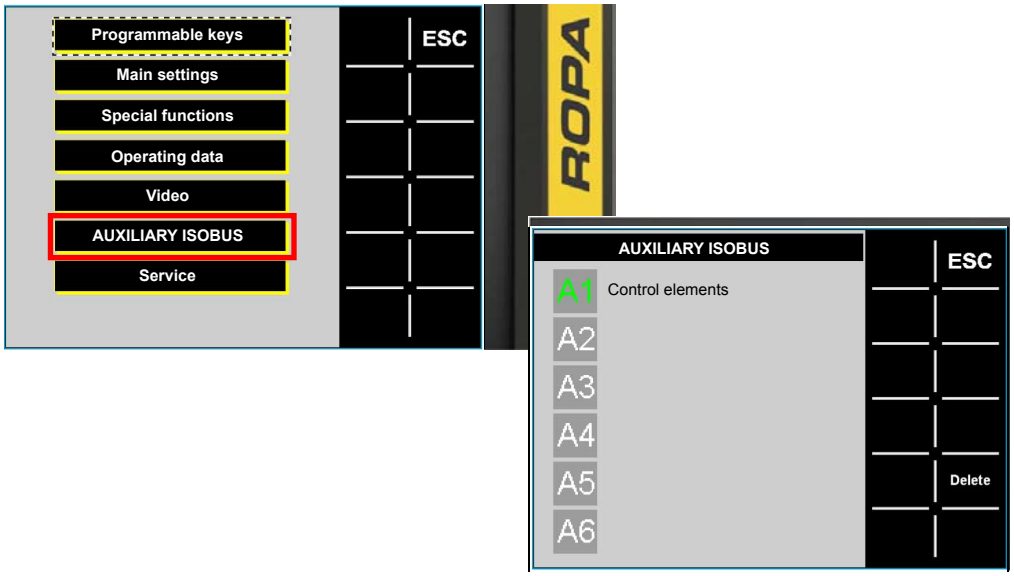


If a key or mini joystick has already been assigned, the previously assigned function of this element must be deleted. To do this, select the assignment to be given differently. Then deselect the function and confirm it.

Now the assignment is free again and can be re-assigned.

Load and save settings

In order to load and save settings, call up AUXILIARY ISOBUS menu in the main menu .

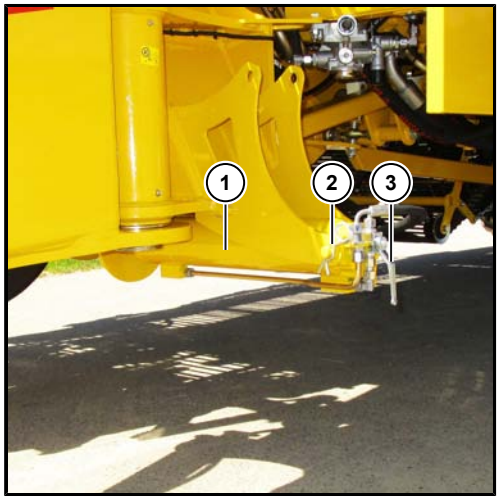


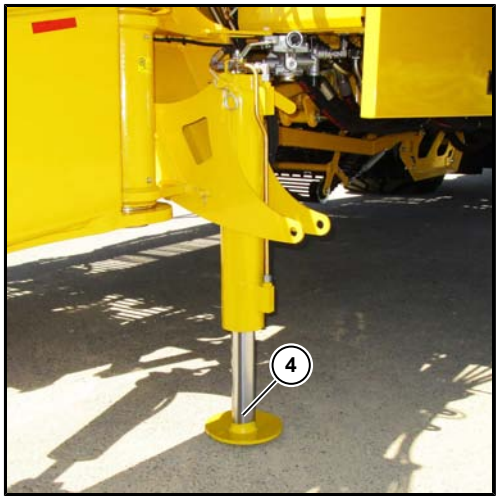
The factory settings are saved in the memory A1. They can be only called up but not overwritten. If the memory A1 is displayed in green, then the factory settings are loaded.

You can save your own assignments of the freely assignable control element under the memories from A2 to A6. To do this hold the memory pressed for longer than three seconds and then confirm it.

To call up the setting, press the memory to be called up shortly. The actively loaded memory is displayed in green.

6.4 Support stand





(1) Machine support stand operating position
(2) Support stand safety bolt with circlip
(3) Support stand stopcock
(4) Machine support stand park position

The machine is fitted with a hydraulic support stand. It is designed for safe parking of the machine.

The stopcock (**3**) must be kept in the closed position at all times unless the support stand is to be moved. After closing the stopcock the double-acting tractor control unit must be released.

The support stand must be moved to the machine working position (**1**) immediately after coupling the machine to the tractor. Only in this position will this part of the machine have sufficient ground clearance. The support stand locking pin with circlip (**2**) must always be used.

The machine must not be parked on the support stand (**4**) until is has been secured to prevent movement.

ATTENTION

Danger of machine damage.

If the support stand is fully extended and exposed to the sun, the seals may be damaged due to expansion of the oil in the support stand.

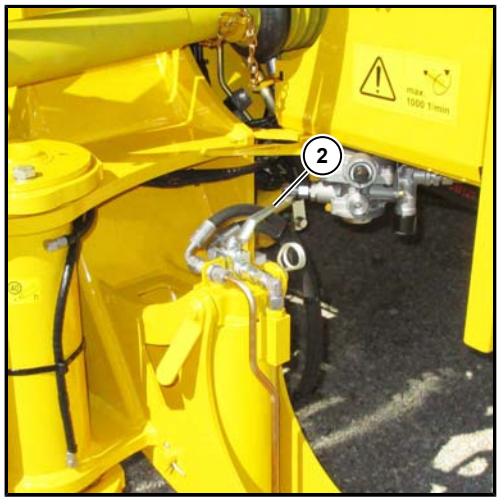
– Never fully extend the support stand.
– If it is necessary to extend the support stand completely in order to couple the machine, retract it by 10 mm immediately after coupling.

6.5 Coupling and uncoupling the machine

6.5.1 Coupling machine

Proceed as follows to couple the machine to a suitable tractor:

– Reverse the tractor to the coupling point of the machine and stop shortly before it.
– Connect the two hydraulic hoses of the support stand to a suitable tractor control unit. The control unit must not be set to floating position.

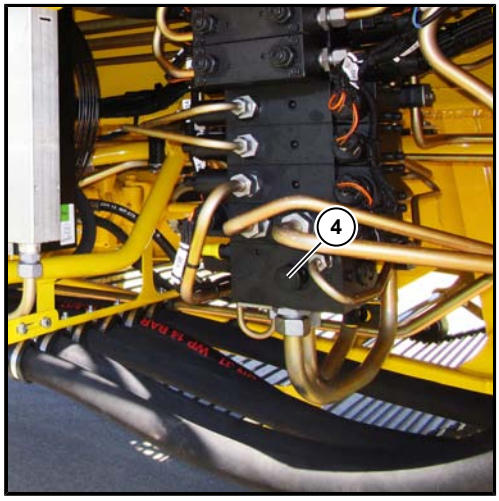


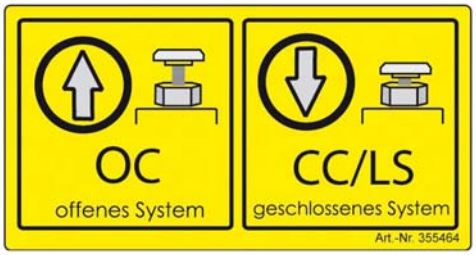
(1) Support stand stopcock opened
(2) Support stand stopcock closed

– Open the support stand stopcock and move the support stand to the correct height for coupling the machine.
– Reverse the tractor carefully until the couplings can be securely locked, then set the tractor parking brake.
– Retract the support stand completely, lock the stopcock and depressurize the hydraulic hoses.
– Switch off the tractor and lock the connection between the tractor and the machine.
– Fold up the support stand and lock it with the locking pin with circlip to ensure sufficient ground clearance.
– With the tractor shut off and secured to prevent movement connect the machine brake hoses to the tractor.

(3) Articulated shaft secured

– With the tractor shut off insert the wide-angle articulated shaft (**3**) until it locks and make sure that the torsion lock / chain lock on the shaft guard is installed.





(4) LS screw 7x LVS block

– Connect the tractor hydraulic hoses to the machine. When using the tractor LS screw the LS screw (**4**) on the 7x LVS block fully in. If you are using a control unit on the tractor, screw the LS screw on the 7x LVS block fully out.
– Connect the ISOBUS plug and the plug for the vehicle lights to the tractor.
– In the tractor cabin connect the emergency stop switch and the optional video monitor of the optional video system.
– Check the vehicle lights, remove the wheel chocks and release the machine parking brake.
– Do not start moving until the brake system has built up sufficient pressure.

ATTENTION

Hazard of damage to the hydraulic system!

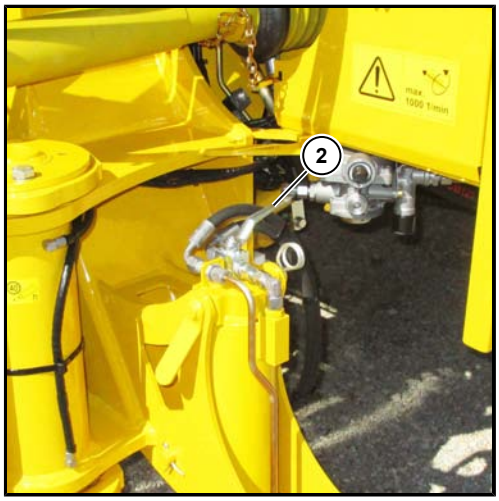
If the LS screw is incorrectly adjusted at the input plate of the 7x LVS block, the hydraulic system of the machine may be seriously damaged. The LS screw must always be set to one of the two stops and must never be adjusted while the tractor is running.

– The LS screw at the input plate of the control block must be screwed in to the stop on tractors with the closed hydraulic system CC/LS (closed centre).
– The LS screw at the input plate of the control block must be screwed out to the stop on tractors with the open hydraulic system OC (open centre).

6.5.2 Uncoupling machine

Proceed as follows to uncouple the machine from a tractor:

- Park the machine on level ground.
- Raise the optional additional axle to the stop and close the additional axle stopcock.
- Switch off the tractor and secure it to prevent movement.
- Position the two wheel chocks under the wheels of the machine and set the machine parking brake.
- Unplug the machine electrical connections, ISOBUS plug and vehicle plug from the tractor outlets.
- Disconnect the wiring of the tractor emergency stop and the optional video system.
- Disconnect the wide-angle articulated shaft of the machine from the tractor.
- Disconnect the hydraulic hoses from the machine, except for the two hydraulic hoses for the support foot.
- Couple the flow hose and the return hose of the tractor hydraulics together.
- Fold up the support stand and lock it with the locking pin with circlip.
- Open the support stand stopcock and then open the lock of the connection between the tractor and the machine.
- Start the tractor and extend the support stand to the height for uncoupling the machine, move the tractor forward slightly until the coupling position is completely free.
- If the support stand is fully extended, retract it 10 mm.



(1) Support stand stopcock opened
(2) Support stand stopcock closed

- Close the support stand stopcock (**2**), depressurise the two hydraulic hoses of the support stand and disconnect the two support stand hydraulic hoses from the tractor.

ADVICE

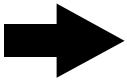
Always couple the flow hose and the return hose of the tractor hydraulics together after uncoupling the machine!
A check valve is installed in the return hose for safety reasons. Sunlight causes pressure accumulation in the return hose between the coupling and the check valve and coupling to the tractor becomes no longer possible. It can be prevented by coupling the return hose and the flow hose together.

6.6 Road travel

6.6.1 General

The machine is classified as a towed agricultural machine within the territory of the European Union. This type of vehicle is subject to very specific regulations and conditions which may differ between countries. Differences are also possible within a country in the individual conditions established by the respective competent road traffic authorities. In any case, the operator must make sure that the machine is furnished with the regionally required safety equipment and devices, e.g. warning triangle, warning lights on the tractor etc. and that these devices are always carried in functional condition.

ADVICE



ROPA expressly wants to point out that the driver and owner of the machine are always solely responsible for compliance with the regulations and conditions of the competent road traffic authorities.

Generally applicable for the Federal Republic of Germany:

Before driving on public roads:

- the bunker must be emptied.
- the telescopic axle must be fully retracted.
- the bunker must be folded in transport position.

  To do this:

  - completely lower bunker of the bunker machine.
  - completely lower bunker filling conveyor of the bunker machine of bunker filling conveyor with picking conveyor of the overloading bunker machine.
  - move optional tray filler of the bunker machine back completely or remove optional tray filler of the overloading bunker machine.
  - move optional articulated bunker of the bunker machine back completely.
  - open bunker flap of the bunker machine completely.
  - Fold in bunker folding section of the bunker machine or unload conveyor with unload conveyor articulation 1 and 2 of the overloading bunker machine in transport position.

- the rear leaf scrapers must be fully lowered.
- pintle belt 4 must be fully lowered.
- the pickup must be fully raised and secured with the wire ropes (from XOM 2016).
- the optional sun and weather-protection roof must be completely lowered and the right side of it folded.
- the access ladder on the right sorting platform must be fully raised and locked.
- the right sorting platform must be pushed in fully and locked.
- the access ladder on the left sorting platform must be folded and locked.
- the machine must be coupled to a towing vehicle registered for travel on public roads.
- the support stand must be moved to working position, locked and the support stand stopcock must be closed.
- the rear wheel steering must be set to the 0° position.
- the drawbar must be moved completely in.
- the optional additional axle must be completely lowered (*See Page 182*).
- check the operating and traffic safety of the machine.
- the machine must be sufficiently cleaned.
- the incline system of the machine must be set to the neutral position.
- pressure line P on the tractor must be disconnected.
- all working lights must be switched off.
- switch on the optional rotating beacon.
- engage "Road" operating mode at the tractor terminal (press the emergency stop switch on the lifter control element).

Further requirements for operating the machine:

Before driving on public roads and paths, the machine must be cleaned so far that:

- the gross weight rating is not exceeded,
- all warning signs are visible,
- all direction indicators and lighting fixtures are clean and functional,
- stones, earth, vegetation or crop residues cannot fall off the machine and affect other traffic.

As a towed agricultural machine with a maximum speed of 40 km/h or 25 km/h the machine must be registered and carry registration plates. Furthermore, the machine must be insured against damage from vehicle owners‘ third-party liability according to the locally applicable regulations.

The following conditions must always be fulfilled:

- A guide giving the directions required for safe driving of the vehicle to the driver must always be used, if otherwise safe driving of the vehicle (for instance at intersections and road junctions, when backing up, or in case of unfavourable weather conditions) cannot be ensured.
- Only persons familiar with the vicinity, experienced and reliable may be used as driver and accompanying personnel (guide).
- The vehicle may only be moved on public roads and tracks by drivers having the required and valid driver's license. Besides the valid driver's licence, the driver must also carry originals of the general type approval of the machine and if available the existing and valid exemption permit.
- Safety vests, first aid kit and warning triangle must be be carried in the tractor.
- No persons are permitted to ride on the sorting platforms.
- The vehicle owner or his representative have to instruct each driver before beginning a working period about his special obligation for safe driving of the vehicle. The instructions given must be acknowledged by the drivers with their signature. The vehicle owner must keep these acknowledgements for at least one year. A form for these instructions is included in Chapter 9 (*See Page 454*). ROPA recommends copying this form before completing it.
- As already mentioned, the regionally competent road traffic authorities may establish additional conditions or conditions deviating from the regulations listed. It is the sole responsibility of the vehicle owner and the driver to gain knowledge of these regulations and to comply with them.
- If parts or functions of the vehicle whose condition or sequence is required are subsequently modified, then the "general type approval" lapses and a new "general type approval" must be applied for with the local authorities.

6.7 Braking system

The braking system of the standard machine is a dual-circuit air brake system as the service brake. Machines exported to some countries are fitted with hydraulic brakes and a spindle emergency brake as the parking brake.

The service brake is actuated by the brake pedal on the cabin floor of the tractor. The parting brake on the machine is actuated by the spindle emergency brake.

DANGER

Hazard to life in case of faulty brakes.

- Before each drive, check functioning of the brakes!
- The braking systems must regularly be thoroughly checked!
- Setting and repair work on the brakes may only be performed by trained specialist personnel.

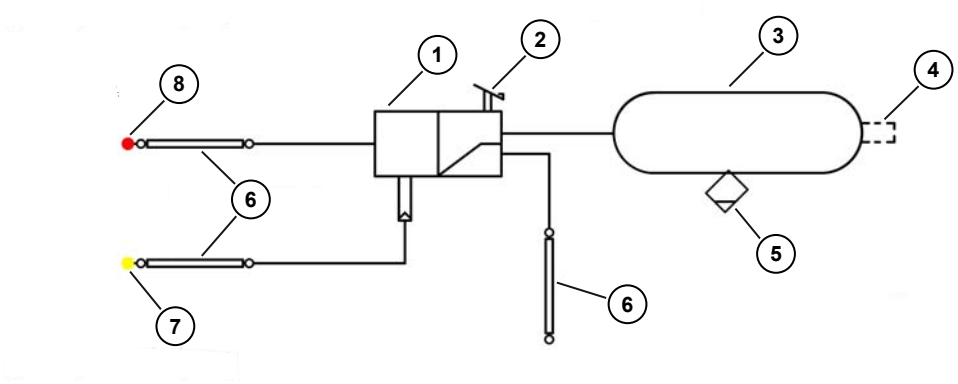
6.7.1 Air brake

The air brake is actuated by the brake pedal on the cabin floor of the tractor. It is applied on the tractor axles and the axle of the machine. It works on the machine only if there is sufficient pressure in the air brake system. If the service brake is not sufficiently functional (e.g. air pressure too low), the brake system must be checked without delay.

DANGER

If a warning icon is displayed on the tractor display indicating problems with the braking system or if problems with the braking system are found, then there is very serious danger of death for the driver and bystanders as well as other road users.

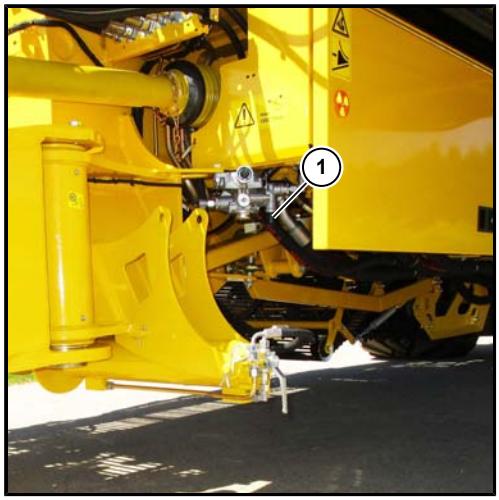
- Operation of the machine must be stopped immediately.
- The machine must be parked in such a manner that nobody is endangered or damaged.
- Additionally, the machine must be secured against rolling using wheel chocks and by engaging the parking brake.
- The machine must not be be moved again until the cause for the brake fault has been repaired by specialist personnel and the machine has been approved for operation by specialist personnel.



(1) Trailer brake valve
(2) Brake release valve
(3) Air reservoir
(4) Check valve
(5) Drainage valve
(6) Brake hose
(7) Yellow coupling head (line filter integrated)
(8) Red coupling head (line filter integrated)

The braking system is connected to the dual-circuit braking system of the towing vehicle by a supply line (red coupling head) and a brake line (yellow coupling head). The supply line sends compressed air to the reservoir on the machine (8 bar). The pressure in the brake line actuates the trailer brake valve and fills the membrane cylinder with compressed air from the reservoir.

The membrane cylinder transmits the braking force to the wheel brakes through the transmission equipment. The braking force is precisely and accurately controlled by the pressure in the brake line. An "advance" is set at the trailer brake valve, i.e. the machine brakes earlier and more strongly than the towing vehicle and the tension is maintained in the towing gear. If the brake line from the towing vehicle is cut, the machine automatically brakes (shear braking).



(1) Trailer brake valve with brake release valve
(2) Outlet valve/drainage valve

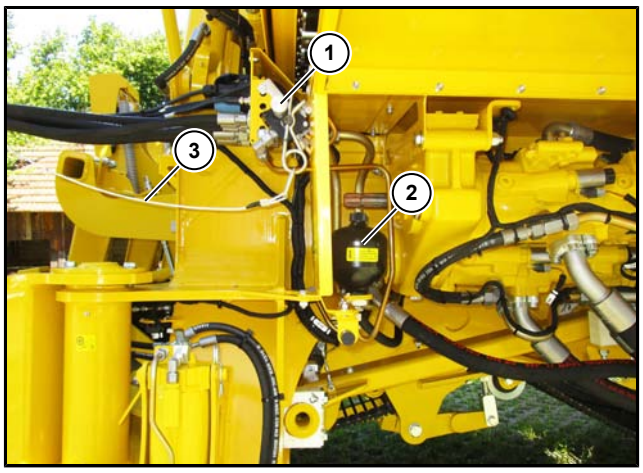
Clean the sealing rings of the coupling heads before connecting the braking system to the towing vehicle. After uncoupling, the coupling heads must be attached to the brackets on the drawbar.

Do not start driving until the pressure gauge in the towing vehicle shows a pressure of 5.0 bar.

After uncoupling the machine is automatically braked (trailer breakaway system). The brake can be released by pulling the brake release valve (**1**) when the machine is uncoupled. The pressure in the reservoir must still be at least 4.5 bar. If the pressure is lower, the brake can only be released by venting the reservoir through the drainage valve (**2**). The braking system cannot be used after this because the reservoir is empty.

6.7.2 Hydraulic service brake

The hydraulic service brake is actuated by the brake pedal on the cabin floor of the tractor. It is applied on the tractor axles and the axle of the machine. And it works only if enough pressure has built up in the hydraulic system. If the service brake is not sufficiently functional (e.g. air pressure too low), the brake system must be checked without delay.



(1) Trailer brake valve
(2) Hydraulic accumulator
(3) Breakaway line

DANGER

If a warning icon is displayed on the tractor display indicating a problem with the braking system, then there is very serious danger of death for the driver and bystanders as well as other road users.

- Operation of the machine must be stopped immediately.
- The machine must be parked in such a manner that nobody is endangered or damaged.
- Additionally, the machine must be secured against rolling using wheel chocks and by engaging the parking brake.
- It may only be moved again, after the cause for the brake fault has been repaired by specialist personnel and the machine has been released for operation by corresponding specialist personnel.

Clean the coupling head before connecting the braking system to the towing vehicle. After uncoupling, the coupling head must be attached to the brackets on the drawbar.

6.7.3 Emergency brake

(1) Spindle emergency brake

The emergency brake (**1**) is installed in the centre under the main frame of the machine behind the axle to prevent the harvester from movement when it is parked.

Noe the following items for parking or coupling the machine when using the emergency brake.

When parking the machine:

– Always park the machine on level ground.
– Always set the brake on the towing vehicle. Switch off the engine and lock the towing vehicle to prevent accidental movement (remove ignition key) before leaving the driver's cabin to go under the machine to set the emergency brake.
– Turn the emergency brake crank (**1**) clockwise until the brake is fully set.
– Do not uncouple the tractor until the emergency brake on the machine has been set and chocks are placed under the wheels to prevent unwanted movement.

Coupling the machine:

– Couple the tractor.
– Always set the brake on the towing vehicle. Switch off the engine and lock the towing vehicle to prevent accidental movement (remove ignition key) before leaving the driver's cabin to go under the machine to release the emergency brake.
– Turn the emergency brake crank (**1**) anticlockwise until the brake is fully released.
– Do not start the tractor until the emergency brake on the machine has been fully released, the wheel chocks have been stored at the storage location of the machine, the service brake has been connected and tested for correct operation.

6.8 Steering

6.8.1 Steering in "Road" operating mode

DANGER

Risk of fatal injuries if the "Road" operating mode is incorrectly used.

"Road" operating mode must always be engaged for travel on public roads. Otherwise unexpected steering movements of the machine may seriously endanger or cause fatal injuries in traffic.

– the machine must be prepared for road travel.
– engage "road" operating mode at the tractor terminal.

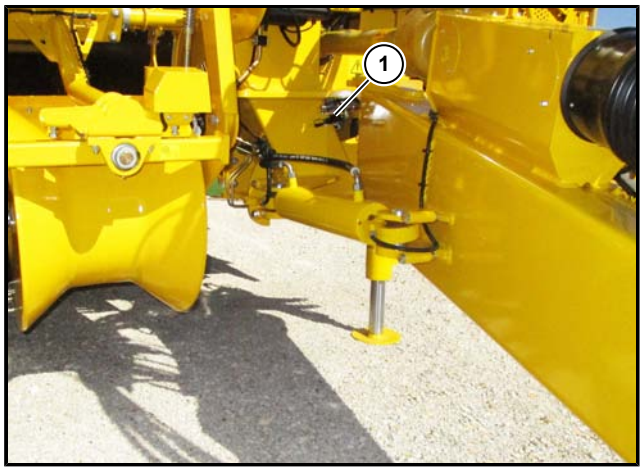
Before driving on public roads and tracks, the machine must be prepared, as described in the chapter on "Road traffic" (*See Page 163*).

The power at all outputs of all computers is shut off by software and hardware. "Road" operating mode is not engaged until the emergency stop switch on the tractor has been pressed. This ensures that the machine will not make any unexpected steering movements on public roads because the drawbar and axle steering are not enabled.

6.8.2 Steering in "Field" operating mode

I "Field" operating mode drawbar steering and axle steering are enabled on the machine as manual functions and also as automatic functions.

6.8.2.1 Drawbar steering



(1) Drawbar steering sensor

Bunker machine:

The position of the drawbar steering is monitored by a sensor (**1**). The drawbar steering has 3 basic positions.

In the road travel position the drawbar is fully swung in and cannot be moved when "Road" operating mode is engaged.

In the lifting position the drawbar is swung out far enough so the sieving channel can run beside the tractor to pick up the ridge or the swath. The drawbar position can be adjusted by the ridge centring function or manually.

In the bunker position the drawbar must be aligned in virtually a straight line with the main frame. This is required to raise and lower the bunker to ensure that the machine remains stable even if the bunker is in the fully raised position.

Overloading bunker machine:

The position of the drawbar steering is monitored by a sensor (**1**). The drawbar steering has 4 basic positions.

In the road travel position the drawbar is swung in so that it is situated in the middle of the track of the machine and cannot be moved when "Road" operating mode is engaged. To control position, fold in the overloading bunker and then swing in the drawbar away from the centre with the mini joystick on the control element or AUX-N functions on the freely assignable control element.

In the headland position the drawbar must be aligned almost straight with the main frame. The position is controlled by pressing the start of field key.

The drawbar is completely swung in the lifting through position.

In the lifting position the drawbar is swung out far enough so the sieving channel can run beside the tractor to pick up the ridge or the swath. The drawbar position can be adjusted by the ridge centring function or manually.

Drawbar automatic function

The automatic drawbar function key on the lifter control element and the bunker control element or on the freely assignable control element moves the drawbar to a previously saved position. The automatic drawbar function key must be pressed and held for 3 seconds to set this position again.

The drawbar can be moved manually with the left mini joystick on the lifter control and the top mini joystick on the bunker control. If the mini joystick is moved to the left the drawbar is moved to the right and the machine is steered to the left, and if the mini joystick is moved to the right the drawbar is moved to the left and the machine is steered to the right.

The drawbar can be moved manually using the AUX-N functions on the freely assignable control element.

6.8.2.2 Axle steering

(1) Axle position sensor

The position of the axle is monitored by both sensors axle position (**1**) and axle position safety. The axle steering has two basic positions.

In the road travel position the telescopic axle must be retracted and the axle moved to the "straight-ahead position". When "Road" mode is engaged at the tractor terminal the axle steering cannot be moved.

In the "Field" position the axle steering can be moved manually with the mini joysticks on the lifter control and the bunker control. When automatic wheel steering is activated, the axle steering is set to the preset value of the rotary wheel on the lifter control. The position or correction of the axle position can be adjusted with the rotary wheel.

Press the automatic axle centring key on the lifter control element or the bunker control element to activate automatic wheel steering. The automatic wheel steering can be activated from the deactivated status and from the preselected status. The automatic wheel steering is active when the LED is on. Manual steering or pressing the key again returns the automatic wheel steering to the status prior to activation.

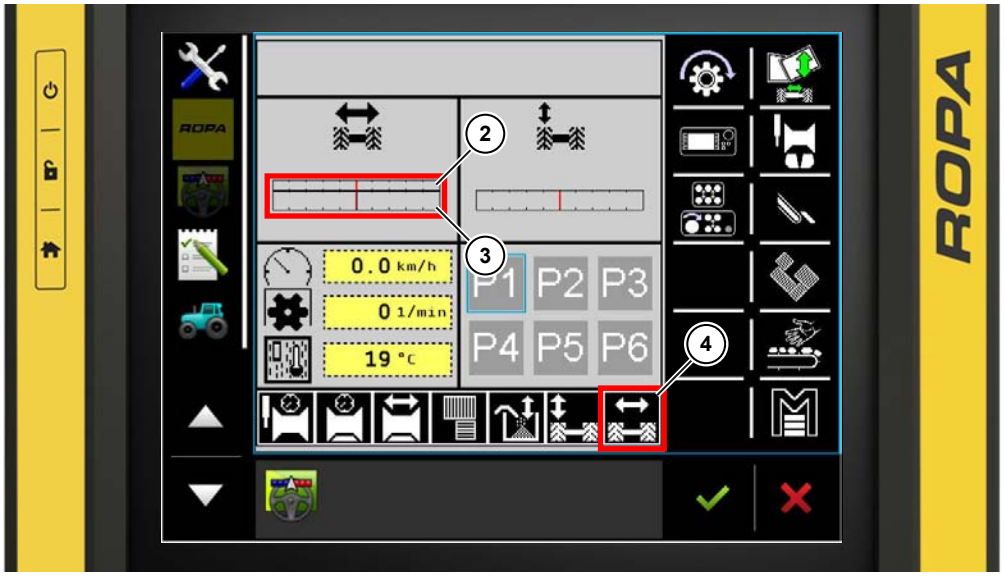
Press the beginning of field key on the lifter control to activate the preselected automatic wheel steering. Manual steering or pressing the field end key returns the automatic wheel steering to the status "Preselected".

The axle position correction rotary wheel on the lifter control can be used to steer the axle steering in the field with automatic wheel steering activated or to preset the target position of the axle steering. The centre of the automatic axle function is adjusted to the left or right. When the bunker is folded in the axle position rotary wheel is deactivated. The two LEDs, one above the icon and one below the icon indicate the direction in which the axle steering is being steered. In this direction the LED is on. In the centre position both LEDs are off.

The axle can be steered manually with the left mini joystick on the lifter control. The axle is steered to the right with the mini joystick up and steered to the left with the mini joystick down.

The axle can be steered manually with the mini joystick on the bunker control up. The axle is steered to the left with the mini joystick up and steered to the right with the mini joystick down.

Axle steering display field



(2) Axle position correction display
(3) Axle steering position indicator
(4) Wheel steering automatic function

The current position of the axle steering (**3**) is displayed in the field operation menu. The axle position (**2**) with automatic wheel steering activated is corrected with the axle steering position indicator (**3**). The status of the automatic wheel steering (**4**) is displayed in the automatic field.

Automatic wheel steering is shut off. The machine can be steered manually with the mini joysticks on the lifter control and the bunker control.

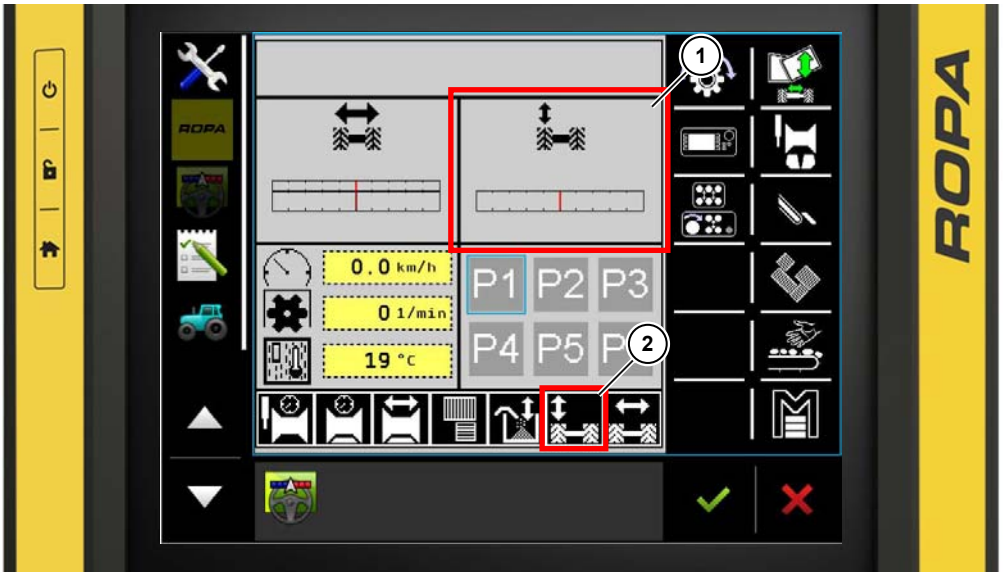
Automatic wheel steering is preselected. Automatic wheel steering is activated with the start of field key on the lifter control.

Automatic wheel steering is switched on. Automatic wheel steering is reset to the status "Preselected" with the end of field key on the lifter control element. The automatic axle centring key on the lifter control or the bunker control resets the automatic wheel steering to its status before activation. If the machine is manually steered to the left or right, the automatic wheel steering is reset to the status "Preselected".

6.9 Chassis

6.9.1 Slope compensation display field on the tractor terminal

The machine can only be inclined off public roads. The machine must always be vertically above the swing axle on public roads.



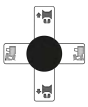
(1) Machine inclination display field
(2) Automatic slope compensation display field

Automatic slope compensation is shut off. The machine is above the swing axle and does not actively incline according to the ground profile. The machine can be manually inclined.

Automatic slope compensation is preselected. Automatic slope compensation is activated with the start of field key on the lifter control.

Automatic slope compensation is switched on. The machine automatically inclines on the swing axle to maintain a horizontal position regardless of the ground profile. If the machine is manually inclined to the left or right, the automatic function is reset to the status "Preselected". Automatic slope compensation is reset to "Preselected" with the end of field key on the lifter control element. Automatic slope compensation is reset to the status prior to activation with the automatic slope compensation key on the lifter control element.

6.9.2 Hydraulic slope compensation including automatic function



Manual slope compensation:

The machine can be manually inclined to the left and right with the right mini joystick on the lifter control element. If it is inclined manually while automatic slope compensation is activated, automatic slope compensation is reset to the status "Preselected". It can be reactivated with the key on the lifter control element to realign the machine to a horizontal position.

Automatic slope compensation Off/On

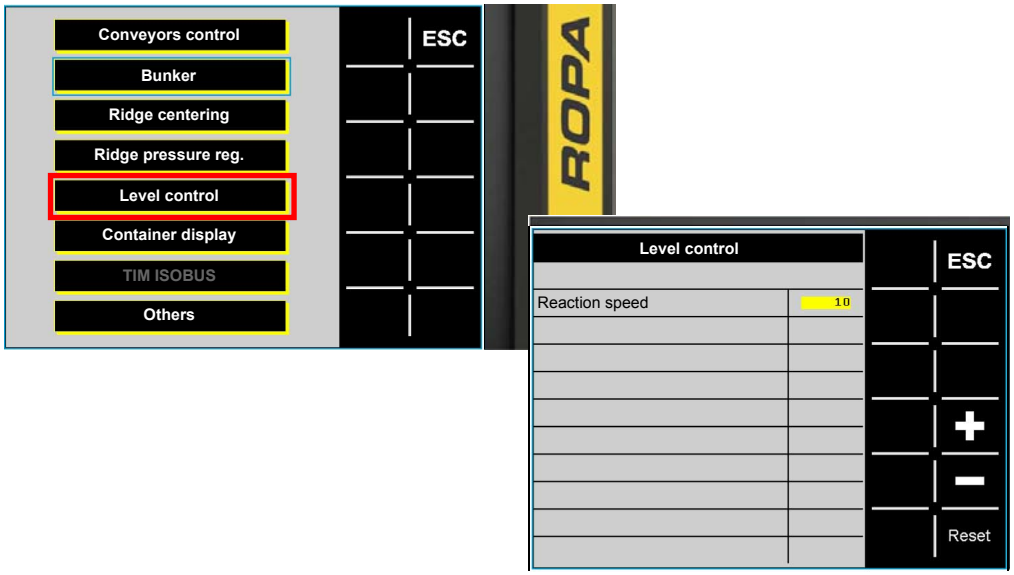
If this key on the lifter control is pressed in "field" operating mode, the automatic inclination system is set to ON (LED on). The machine automatically inclines to a horizontal position on the axle. The chassis can be inclined to the right or left on the axle by a maximum of 4%. If you press this key again, the automatic inclination system is OFF (LED off). It can be activated from the off status and the preselected status of the automatic slope compensation with the key. Automatic slope compensation is reset to the status prior to activation with the key.

The machine must be aligned vertically above the axle before selecting "Road" operating mode. The inclination system is automatically switched OFF when "Road" operating mode is selected.

Setting level control in the software

The reaction speed of the level control can be adjusted between 1 to 10 in the software, the default setting is 5. Where 1 = inert, for slow reaction speed at high lifting speed, and 10 = fast, for fast reaction speed at low lifting speed.

The reaction speed can be adjusted at the tractor terminal in the Main settings menu, Level control submenu.



6.9.3 Telescopic axle

(1) Telescopic axle retracted
(2) Telescopic axle extended

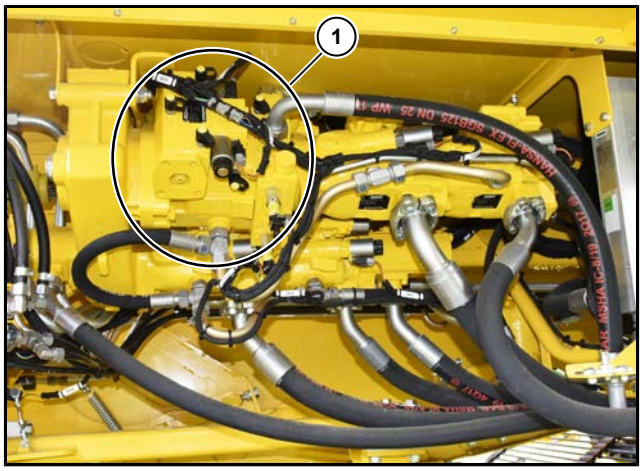
The telescopic axle must be fully retracted for road travel and in primary lifting position. The telescopic axle must be fully extended in lifting position and for bunker unloading.

Open the folding mode menu with the soft key. The telescopic axle can be retracted and extended in this menu if the bunker is in working position.

Press the soft key to extend the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

Press the soft key to retract the telescopic axle. Press and hold the soft key for this operation. The machine must be moving slowly during this process.

6.9.4 Drive wheel (option)



(1) Pump for drive wheel

An additional pump (**1**) is installed on the pump distributor gears if the drive wheel option is integrated. This pump is responsible for control of the drive wheel direction of travel forwards and backwards.

(2) Drive wheel display field
(3) Drive wheel actual pressure display
(4) Drive wheel set speed display
(5) Soft key drive wheel menu
(6) Drive wheel maximum speed quick adjustment
(7) Drive wheel automatic function start of field/end of field

The drive wheel menu is opened when the soft key drive wheel menu is shown in green. The settings for drive wheel automatic function, speed and direction of motion can be made in the drive wheel menu. The functions can be activated and deactivated with a selection of soft keys.

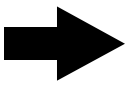
(8) Soft key drive wheel menu selected
(9) Soft key drive wheel automatic function
(10) Soft key drive wheel backward
(11) Soft key drive wheel forward
(12) Soft key reduce drive wheel speed
(13) Soft key increase drive wheel speed

If the drive wheel forward soft key is white (**11**), the drive wheel forward is deactivated with the tractor PTO speed switched on. If the soft key is grey, the tractor PTO speed is deactivated. If the soft key is green, the drive wheel forward is activated manually with the tractor PTO speed switched on.

If the drive wheel backward soft key is white (**10**), the drive wheel backward is deactivated with the tractor PTO speed switched on. If the soft key is grey, the tractor PTO speed is deactivated. If the soft key is green, the drive wheel backward is activated manually with the tractor PTO speed switched on.

If the soft key for drive wheel automatic function is white (**9**), automatic function of the drive wheel is deactivated. If the soft key is grey, the driving speed signal via ISO-message from the tractor is missing. If the soft key is green, the drive wheel automatic function is activated and receives the signal for control via ISO-message from the tractor.

ADVICE



The drive wheel automatic function works only, if the tractor is equipped with ISOBUS and the driving speed signal of the tractor is provided via the ISO-message.

The soft key functions drive wheel forward, drive wheel backward and drive wheel automatic function can not be activated simultaneously. Only one of these three soft key functions can be active at a time. If you activate another function, the function which is already activated is reset to the status "Deactivated".

Press the soft key (**13**) to increase the drive wheel speed. The maximum speed of the drive wheel is 100%. You can select between the values of 10%, 20%, 30%, 40%, 50%, and 100% when pressing and holding for some time. The maximum speed of 100% can be applied for max. 3 minutes if the tractor PTO shaft is switched on. After that the speed is reset to the previous value. The set target speed of the drive wheel (**4**) can be seen in the drive wheel display field (**2**).

Press the soft key (**12**) to reduce the drive wheel speed. The minimum speed of the drive wheel is 10%. You can select between the values of 10%, 20%, 30%, 40%, 50% and 100%. The set target speed of the drive wheel (**4**) can be seen in the drive wheel display field (**2**).

The drive wheel automatic function start of field/end of field (**7**) is deactivated. The automatic switching on of the drive wheel automatic function with the start of field key is not possible. By touching the symbol of drive wheel automatic function start of field/end of field, provided the driving speed signal via the ISO-message from the tractor is available and the bunker or unload conveyor is in working position, the automatic drive wheel is set to the status "Preselected", when the PTO shaft of the tractor is deactivated, and to the status "Activated", when the PTO shaft of the tractor is activated.

The drive wheel automatic function start of field/end of field (**7**) is preselected. The automatic switching on of the drive wheel automatic function can be made with the start of field key . The drive wheel automatic function start of field/end of field can only be "Preselected", if the driving speed signal via the ISO-message from the tractor is available and the bunker or unload conveyor are in working position.

The drive wheel automatic function start of field/end of field (**7**) is activated. The automatic switching off of the drive wheel automatic function in the status "Preselected" can be made with the start of field key or via switching off the tractor PTO shaft. If the driving speed signal via tractor ISO-message is not transmitted the drive wheel automatic function switches to the status "Deactivated".

The drive wheel speed can be set directly to 100% with the drive wheel maximum speed quick adjustment Max. If the speed is on maximum, the symbol Max is displayed in green color. The speed automatically resets after 3 minutes, with the PTO shaft of the tractor switched on, to the value which had been set before switching on the maximum speed.

6.9.5 Additional axle (option)

(1) Additional axle in road position
(2) Additional axle in off-road position
(3) Additional axle stopcock open position
(4) Additional axle stopcock closed position

An additional axle (**1**) must be lowered for driving on public roads and streets. Always ensure that there is no one in the area of the additional axle BEFORE lowering the additional axle.
The additional axle (**2**) may not be used for driving off roads, and therefore must be lifted up for driving off roads.
The additional axle is hydraulically loaded with two pressure accumulators.

The warning message "Additional axle in road position, Raise additional axle" appears, if the additional axle is not completely raised and the axle control must be steered or the telescopic axle must be extended.
Raise the additional axle to the stop.

Preparation of the additional axle for road drive:

– Close the support foot stopcock.
– Open the additional axle stopcock (**3**).
– Completely lower the additional axle using the control unit of tractor hydraulics (**1**).
– Then set the control unit of tractor hydraulics to floating position.
– Leave the additional axle stopcock open (**3**) for road drive.

Preparation of the additional axle for off-road drive / uncoupling machine from the tractor:

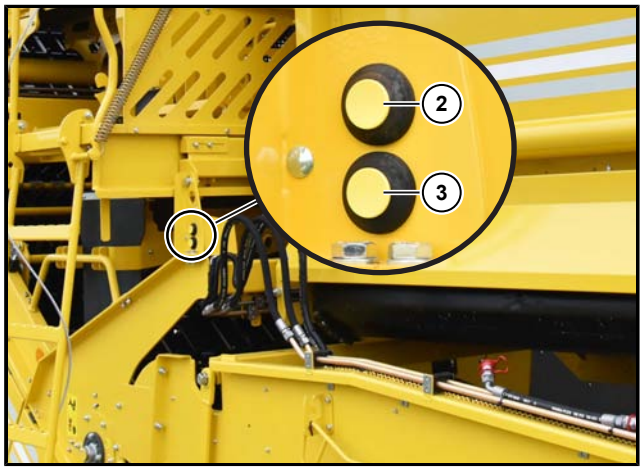
– Close the support foot stopcock.
– Open the additional axle stopcock (**3**).
– Raise the additional axle to the stop (**2**).
– Close the additional axle stopcock (**4**).

ADVICE

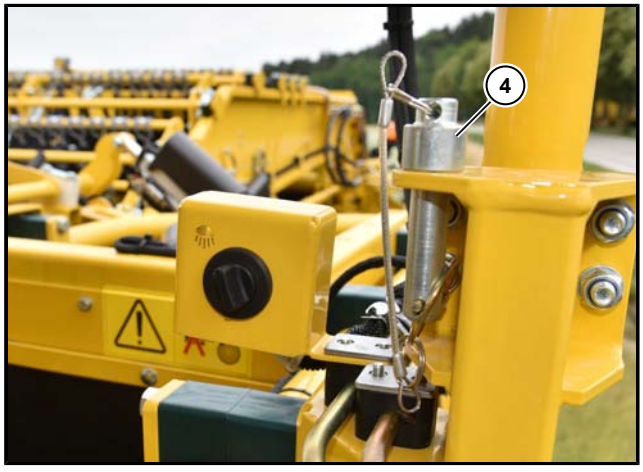
If the support foot has to be moved, first close the additional axle stopcock. If the additional axle has to be moved, first close the support foot stopcock.

6.10 Sunshade/weather protection roof (optional)

(1) Sunroof in working position



(2) Key for lifting sorting platform roof tarpaulin
(3) Key for lowering sorting platform roof tarpaulin



(4) Sunroof safety bolt rear left in parking position

The sorting platform roof tarpaulin is available as a sunroof (**1**) and a weather protection roof with side sections.
The key for lifting the sorting platform tarpaulin (**2**) on the right sorting platform access ladder hydraulically lifts the weather protection roof to working position (**1**). The key for lowering the sorting platform tarpaulin (**3**) on the right sorting platform access ladder hydraulically lowers the weather protection roof to road position. The weather protection roof must always be fully raised or fully lowered.
Secure the raised roof against accidental lowering with two safety bolts left (**4**) and right.
The roof frame of the protection roof must be folded out on the right side to the working position and folded in to the road position.

ADVICE

The sorting platform tarpaulins must always be fully lowered and folded in on the right side for travel on public roads and through underpasses. This is the only way to maintain a machine height under 4 metres and width of 3 metres or 3.30 metres depending on machine type.
The sunroof or weather protection tarpaulin and side sections must be removed completely for transport on a low loader. The frame of the sorting platform roof must be fully lowered and folded in.

6.10.1 Protection roof lighting (option)

(1) Protection roof lighting switch
(2) Protection roof lighting working floodlights

Optional working floodlights can be installed on the sunroof or weather protection roof from year of construction 2018. They can be controlled directly with a switch (**1**).

6.11 Lifting

6.11.1 Preparation for lifting

Familiarise yourself with the local ground and landscape before starting to work.

Get an overview of the potato field that is to be lifted.

Instruct the people present before starting to work about the most important safety regulations, especially the required safety distances. In any case, instruct all people that you are obliged to immediately stop the machine and to immediately cease work if any one enters the hazard zones.

– Raise the optional additional axle completely (*See Page 182*).
– Fold out the bunker on the bunker machine.
– Close the bunker flap on the bunker machine.
– Fold out the unload conveyor and unload conveyor articulation parts on the overloading bunker machine.
– Raise completely the picking conveyor on the overloading bunker machine.
– Extend and lock the right sorting platform.
– Unfold the right sorting platform access ladder.
– Close the right sorting platform flap.
– Fully extend the optional sunroof or weather protection roof, secure and fold out the right side of the roof.
– Close safety rail at the right ladder.
– Unfold and lock the left sorting platform access ladder.
– Close safety rail at the left ladder.
– Check the bunker floor on the bunker machine to ensure that it is correctly positioned.
– Move telescopic axle to lifting position.
– Set drawbar in "Straight-ahead position" and move it to lifting position shortly before starting a row.
– Check the maximum PTO speed of 1000 rpm set on the tractor.

6.11.2 Lifting process

- Drive into the field slowly and carefully so the ridge rollers are aligned with the two potato ridges after setting the drawbar to lifting position.
- Switch on machine drive.
- Adjust the sieving channel lifting speed (sieve conveyor 1, sieve conveyor 2, leaf chain) and shaker intensity at the tractor terminal or the sorting platform terminal.
- Set the basic speed settings for the separation cleaning elements (pintle belt 1, pintle belt 2, pintle belt 3, pintle belt 4, rotating finger comb 1 (UFK 1), rotating finger comb 2 (UFK 2)) at the tractor terminal or the sorting platform terminal.
- Set all height adjustments (lifting depth, leaf scraper 1, leaf scraper 2, deflector roller 1, deflector roller 2, deflector roller 3, rotating finger comb 1 (UFK 1), rotating finger comb 2 (UFK 2), inclination pintle belt 1/2, inclination pintle belt 4) at the tractor terminal or sorting platform terminal.
- Adjust speed of picking conveyor and trash conveyor.
- Select the automatic depth control according to the outside conditions. The ridge pressure relief lifts cylinders of the pickup by the set pressure value. The ridge pressure regulation indicates the pressure on the lifting depth cylinders with which the ridge rollers press against the ridge.
- Lower ridge pickup and drive into the crop.
- Adjust lifting depth to the conditions immediately for each side. Make sure that the shares are not cutting the potatoes but are also not too deep in the ground.
- Check the lifting depth manually after a few metres by reversing the machine slightly, shutting it off and securing it to prevent movement, then dig into the area between the machine pickup and the untouched ridges to check whether lifting is deep enough, and repeat until the lifting depth is correct.
- Adjust sieving channel cleaning and separation, ideally some soil should be present up to the last pintle belt, then the potatoes are sorted clean through the rotating finger comb (UFK) onto the picking conveyor, with the potatoes treated gently on a cushion of soil.
- Check the pickup regularly to ensure that the ridge rollers are running along the ridges correctly. If this is not the case, adjust the drawbar so the ridge roller are always moving along the centre of the ridges so far as possible; switch on ridge centring. Adjust the axle steering so the tyres run alongside the nearest ridge in the direction of travel.

Normally, the headland is lifted first to establish space for transport equipment. Then the lanes are lifted through to establish enough space for manoeuvring. The exact procedure depends, as already mentioned several times, on the local conditions. In this case, the expert knowledge and skills of the driver alone influence the lifting results.

During lifting the potatoes are temporarily stored in the bunker. An ultrasonic sensor on the bunker filling conveyor registers the fill level of the bunker and lifts the conveyor as required. Once the bunker filling conveyor has reached its maximum height, the walking floor moves slowly forward to ensure that the bunker is filled as evenly as possible.

When the bunker of the bunker machine is full, the potatoes must be unloaded either onto a transport vehicle stationary alongside, or deposited in a suitable place in the form of a pile. At the overloading bunker machine the bunker can be unloaded directly onto the driving alongside transport vehicle during lifting.

6.12 Pickup

DANGER

Injury hazard! Hazard to life due to moving parts!

When working on the raised pickup, there is a risk that the pickup may lower without warning. People in this area may be seriously injured as a result. Before starting work, the pickup must be completely raised and secured with locking ropes. If securing with the locking ropes is impossible, the pickup must be securely supported with material of sufficient load bearing capacity. Observe the applicable regulations on safety and health protection at work under raised loads.

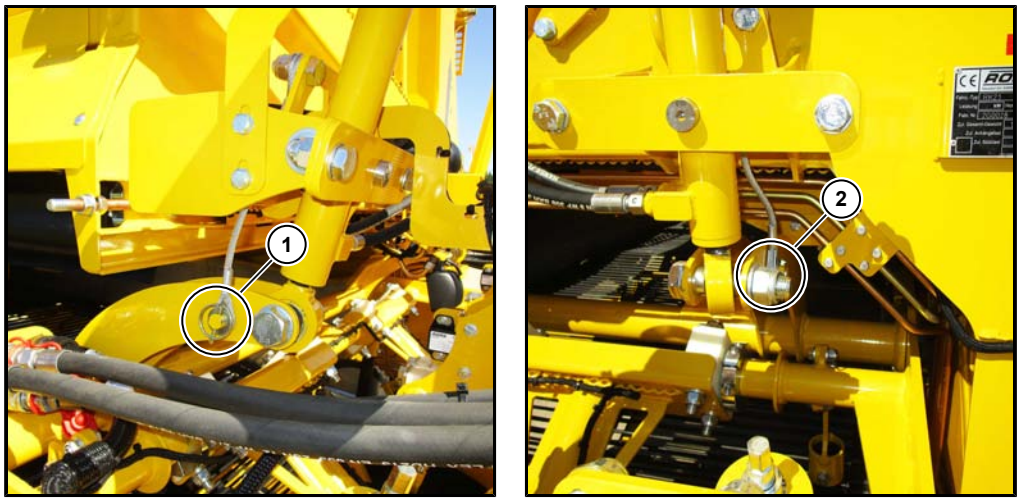
The machine is fitted with a quick-change system for the various types of pickup as standard equipment. The machine is available in the various models "ridge pickup", "swath pickup with lifting shaft and cover belt", "swath pickup with shares" and "pickup for carrots". The various models can also be combined in various ways. It takes less than 15 minutes to change a pickup.

The pickup of the machine can be raised and lowered manually with the right mini joystick on the lifter control. The joystick up raises the pickup and the joystick down lowers it. The mini joystick must not be actuated unless the ropes securing the pickup have been released.

Pressing the start of field key on the lifter control automatically lowers the machine pickup at the press of the key. The start of field key must not be pressed unless the ropes securing the pickup have been released.

Pressing the end of field key on the lifter control automatically raises the machine pickup at the press of the key.

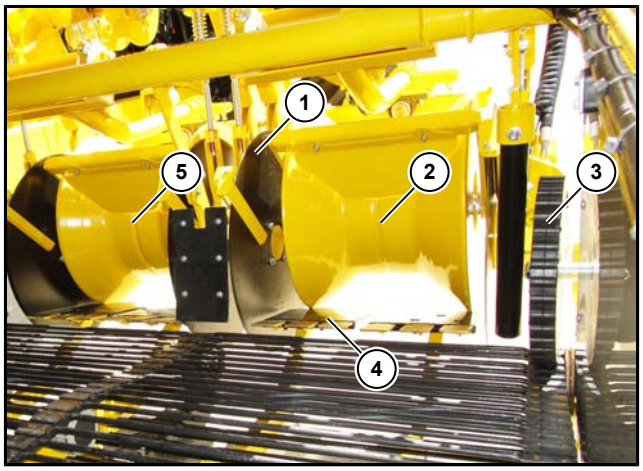
Pickup lock (from YOM 2016)



(1) Attaching right pickup locking rope
(2) Attaching left pickup locking rope

– Disconnect the two locking ropes before lowering the pickup.
– Attach and lock the two ropes before travel on public roads and paths.
– Attach and lock the two ropes before working on the raised pickup.

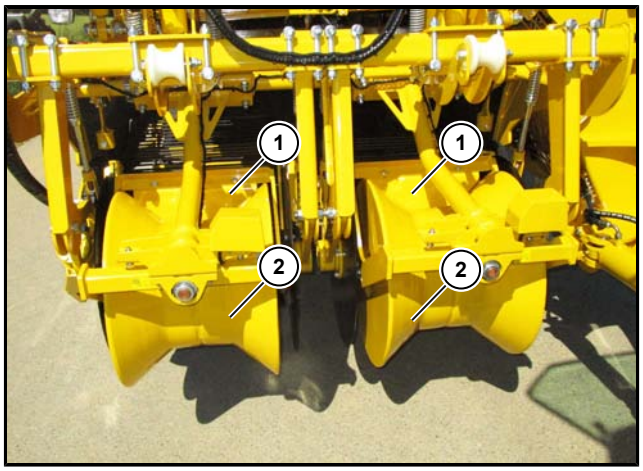
6.12.1 Ridge pickup model



(1) Disc coulter
(2) Ridge roller right
(3) Leaf loading roller
(4) Share
(5) Ridge roller left

When using the ridge pickup the potato ridges are guided via the shares (**4**) to sieve conveyor 1. The depth of the shares (**4**) is determined by the left ridge roller (**5**) and the right ridge roller (**2**). The disc coulters (**1**) cut off the haulm on the sides of the potato ridges. The haulm intake rollers (**3**) pick up the haulm on the sides.

6.12.1.1 Ridge roller



(1) Ridge roller wiper
(2) Ridge roller flat

Different types of ridge rollers are available for different shapes of the potato ridge: the flat ridge roller (**2**), the deep ridge roller and half ridge rollers. The same type of ridge roller must always be used on each side of the ridge pickup.

The wipers (**1**) on the ridge rollers prevent soil from accumulating on the rollers.

6.12.1.2 Ridge centring

(1) Sensor ridge centering right
(2) Sensor ridge centering left
(3) Drawbar steering cylinder

The ridge centring uses the average values of the right ridge roller centring sensors (**1**) and the left ridge roller centring sensors (**2**) on the ridge roller attachments to steer the electromagnetic control valves of the drawbar cylinder (**3**) and centres the sieving channel on the potato ridges all the time. In single row mode only the side of the ridge roller centring is active that is not switched on in single row mode.

The ridge centring is preselected under automatic functions on the tractor terminal. If ridge centring is preselected, it is activated when the pickup is lowered. When the pickup is raised the ridge centring is deactivated and reset to "Preselected". Ridge centring is active within the range of the traverse path of the drawbar.

If the ridge rollers fall from the potato ridge to the left, the machine steers right and the drawbar left. If the ridge rollers fall from the potato ridge to the right, the machine steers left and the drawbar right.

(4) Automatic ridge centring

The current status of ridge centring (**4**) is displayed in the automatic functions display field.

Automatic ridge centring is deactivated.

Automatic ridge centring is preselected. Ridge centring is activated when the pickup is lowered with the start of field key on the lifter control.

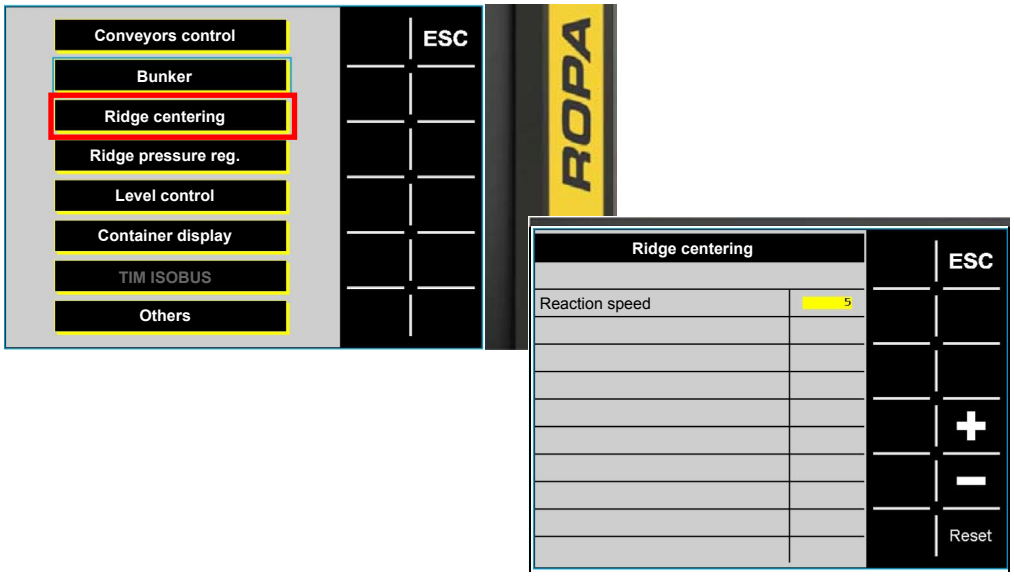
Automatic ridge centring is activated. Ridge centring is reset to "Preselected" when the pickup is raised with the end of field key on the lifter control element.

Press the ridge centring key on the lifter control element to activate the automatic ridge centring. The automatic ridge centring can be activated from the status "Deactivated" and "Preselected". Ridge centring is active when the LED is on. Manual drawbar steering or pressing the key again returns ridge centring to the status prior to activation.

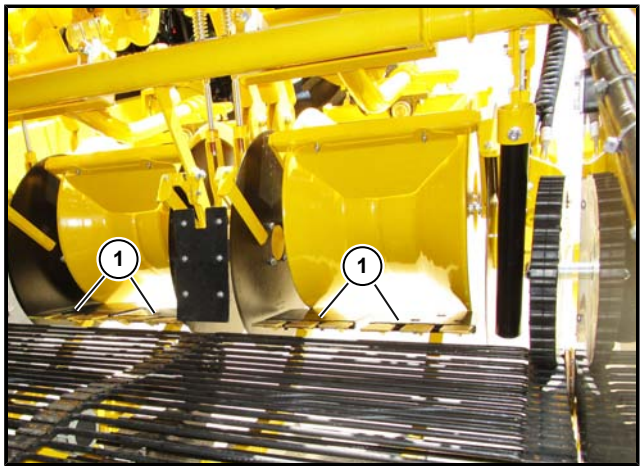
Press the beginning of field key on the lifter control to activate the preselected ridge centring. Ridge centring is activated when the pickup is lowered. Manual drawbar steering or pressing the end of field key again returns ridge centring to the status "Preselected".

Adjusting reaction speed

The reaction speeds can be adjusted from 1 to 10, default setting 5, at the tractor terminal in the "Main settings" menu, "Ridge centring" submenu.



6.12.1.3 Shares

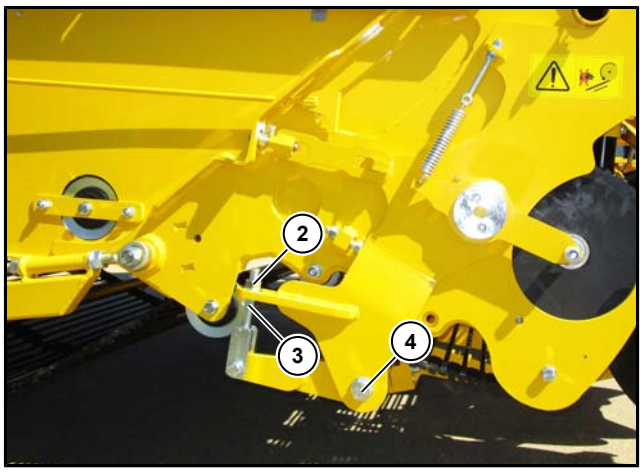


(1) Two-blade share, bent

The share is available in following variants: single-blade share, two-blade share bent (**1**), wide two-blade share for 75 cm row distance, wide two-blade share for 90 cm row distance and three-blade share. Optionally, the shares can be equipped with stone protection.

Should the both central disc coulters loss their function, there are optional central shares for 75 cm row distance and for 90 cm row distance.

The share angle is adjustable. A steeper share angle may improve soil penetration in heavy soil. In the basic setting the shares are at the same level as the sieve conveyor surface and form one line.



(2) Lock nut left
(3) Share inclination nut right
(4) Share safety screw right

– Make adjustments on both sides.
– Loosen share safety screw (**4**).
– Loosen the lock nut (**2**).
– Adjust share inclination with nut (**3**).
– Tighten lock nut (**2**).
– Tighten share safety screw (**4**).

ATTENTION

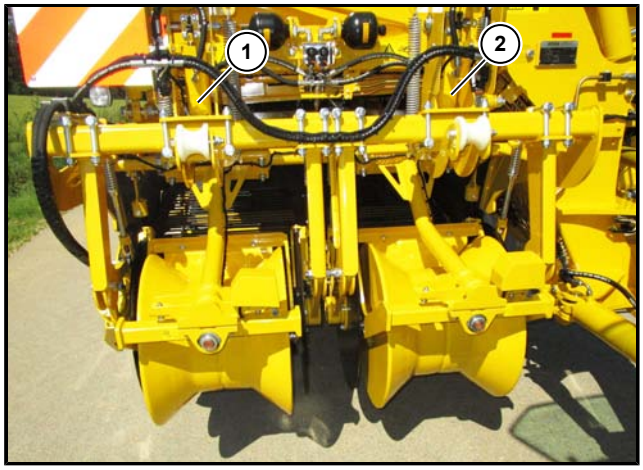
Risk of destruction of pickup and sieve conveyor.

A larger share angle significantly increases the load on the share carrier. This increases the risk of damage to the crop, the pickup and the sieve conveyor.

– Use a measuring stick or similar item on the sieve conveyor and the share for the adjustment.
– The share must not be adjusted more than 10 mm below the level of the sieve conveyor.

6.12.1.4 Lifting depth and ridge pressure regulation

6.12.1.4.1 Lifting depth

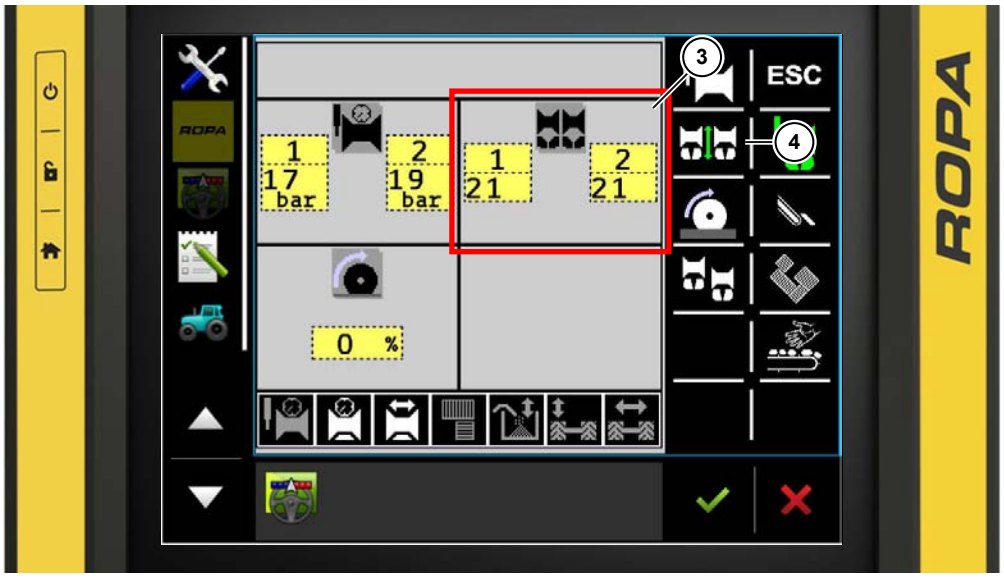


(1) Lifting depth cylinder right
(2) Lifting depth cylinder left

The lifting depth is the distance between the ridge roller and the share. The hydraulic height adjustment cylinder above the ridge roller adjusts the lifting depth independently on each side. The lifting depth can also be adjusted synchronously on both sides of the ridge pickup. The lifting depth can be adjusted at the tractor terminal and also at the sorting platform terminal if it has been released.

Adjusting lifting depth at the tractor terminal

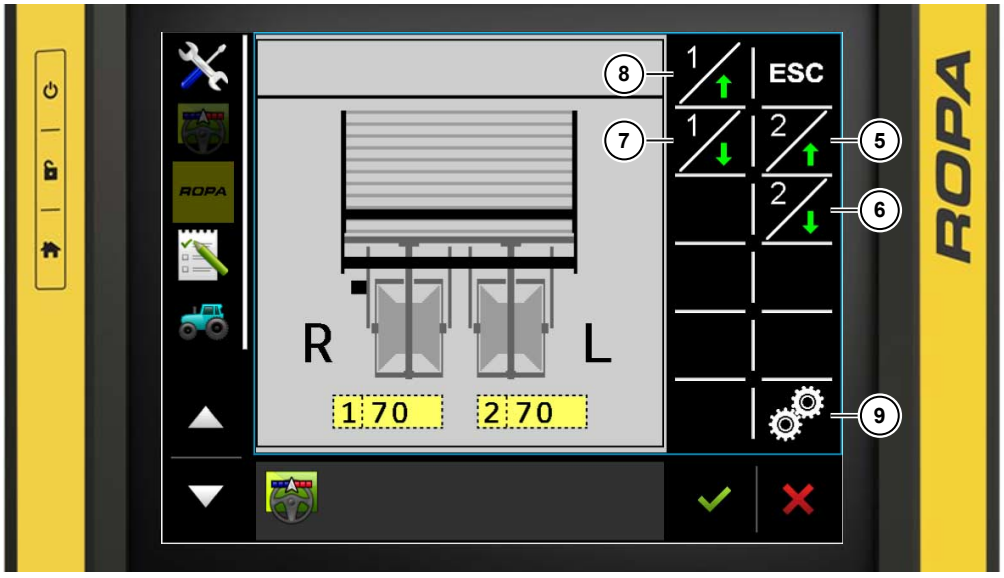
The lifting depth is adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



(3) Lifting depth display field
(4) Lifting depth soft key

The lifting depth display field (**3**) displays the actual setting of the lifting depth is displayed for each side of the pickup. Select the grey button on the lifting depth display field (**3**) to open the lifting depth submenu.

Select the lifting depth soft key to open the lifting depth submenu.



(5) Soft key lifting depth left flatter
(6) Soft key lifting depth left deeper
(7) Soft key lifting depth right deeper
(8) Soft key lifting depth right flatter
(9) Soft key lifting depth synchronous adjustment deactivated

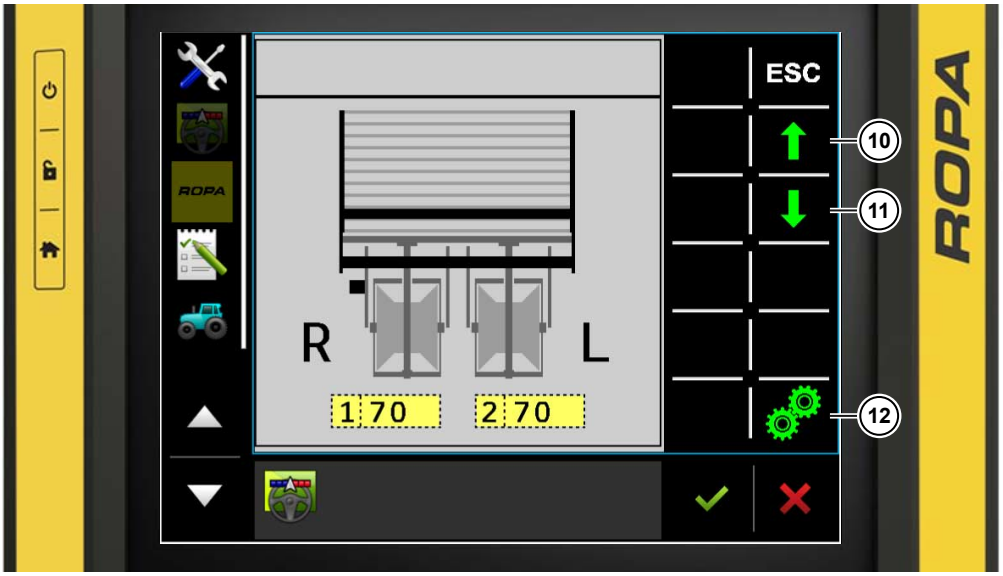
Press the key to flatten the lifting depth on the right. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Press the key to lower the lifting depth on the right. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Press the key to flatten the lifting depth on the left. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

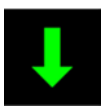
Press the key to lower the lifting depth on the left. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Switch between the individual adjustment of the lifting depth for each side and the synchronous adjustment of the lifting depth with the lifting depth synchronous adjustment soft key . If the soft key is white, synchronous adjustment is deactivated. If the soft key is green, synchronous adjustment is activated.



(10) Soft key lifting depth flatter
(11) Soft key lifting depth deeper
(12) Soft key lifting depth synchronous adjustment activated

Press the key to flatten the lifting depth synchronously. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.



Press the key to lower the lifting depth synchronously. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Adjusting lifting depth at the sorting platform terminal

(13) Soft key pintle belt 1/2 inclination
(14) Front leaf scraper soft key
(15) Lifting depth left soft key
(16) Scroll screen right soft key
(17) Scroll screen left soft key
(18) Lifting depth right soft key
(19) Rear leaf scraper soft key
(20) Soft key pintle belt 4 inclination

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the lifting depth. Select the lifting depth with the lifting depth left soft key 3 or with the lifting depth right soft key 6.

(21) Soft key lifting depth left flatter
(22) Soft key lifting depth left deeper
(23) Soft key lifting depth right deeper
(24) Soft key lifting depth right flatter
(25) Soft key lifting depth synchronous adjustment deactivated

Press the key to flatten the lifting depth on the right. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Press the key to lower the lifting depth on the right. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

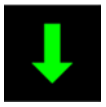
Press the key to flatten the lifting depth on the left. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Press the key to lower the lifting depth on the left. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

Switch between the individual adjustment of the lifting depth for each side and the synchronous adjustment of the lifting depth with the lifting depth synchronous adjustment soft key . If the soft key is white, synchronous adjustment is deactivated. If the soft key is green, synchronous adjustment is activated.

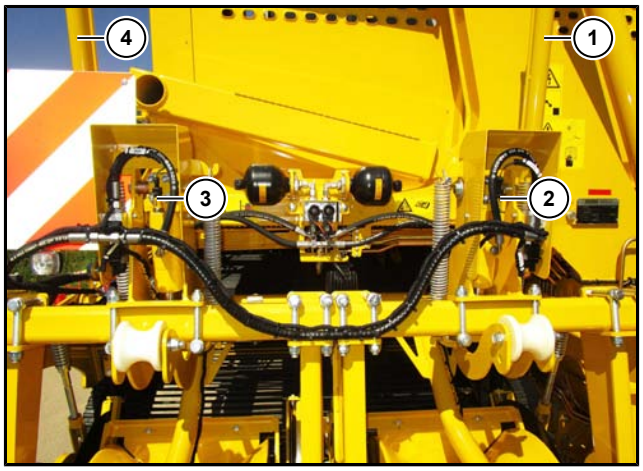
(26) Soft key lifting depth flatter
(27) Soft key lifting depth deeper
(28) Soft key lifting depth synchronous adjustment activated

Press the key to flatten the lifting depth synchronously. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.



Press the key to lower the lifting depth synchronously. The lifting depth is adjusted in steps, where 0 is a completely flat lifting depth and 99 is a very deep lifting depth.

6.12.1.4.2 Ridge pressure regulation



(1) Pickup cylinder left
(2) Ridge pressure regulation sensor left
(3) Ridge pressure regulation sensor right
(4) Pickup cylinder right

The ridge pressure regulation system records the application pressure of the ridge rollers with pressure sensors in the left (**2**) and right (**3**) lifting depth cylinders separately for each row.

The set application pressure is regulated by finely adjusted releasing and loading the left (**1**) and right (**4**) pickup cylinders.

The target application pressure can be separately adjusted at the tractor terminal for each row in the range from 5 bar to 35 bar. The ridge pressure regulation must be adjusted so the ridge rollers roll over the ridge without pushing or compressing the ridge.

The lifting depth must be checked after adjusting the ridge pressure regulation.

E.g.:

- Wet conditions or heavy soil.
  - **minimum application pressure 10 bar.**
- Under dry conditions to ensure proper harvesting and breakage of crusts.
  - **maximum application pressure 25 bar.**

ADVICE

Ridge pressure regulation or ridge pressure relief (*See Page 216*) can function better depending on the external conditions. The models of swath pickup and pickups for special crops function only with ridge pressure relief.

(5) Automatic ridge pressure regulation

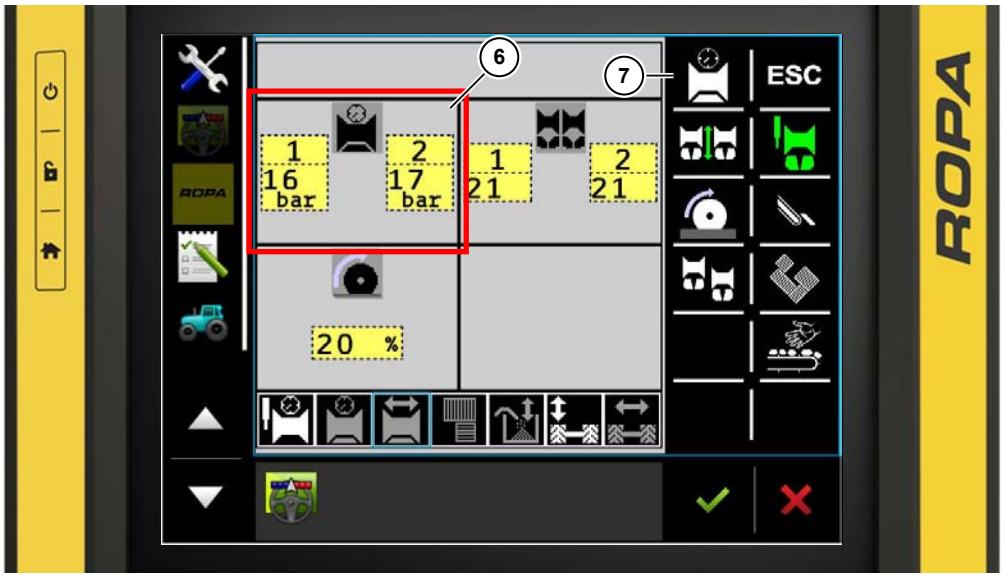
The current status of ridge pressure regulation (**5**) is displayed in the automatic functions display field.

The automatic functions of ridge pressure regulation are deactivated.

The automatic functions of ridge pressure regulation are preselected. Ridge pressure regulation is activated when the pickup is lowered with the start of field key on the lifter control.

The automatic functions of ridge pressure regulation are activated. Ridge pressure regulation is reset to the status "Preselected" when the pickup is raised with the end of field key on the lifter control element.

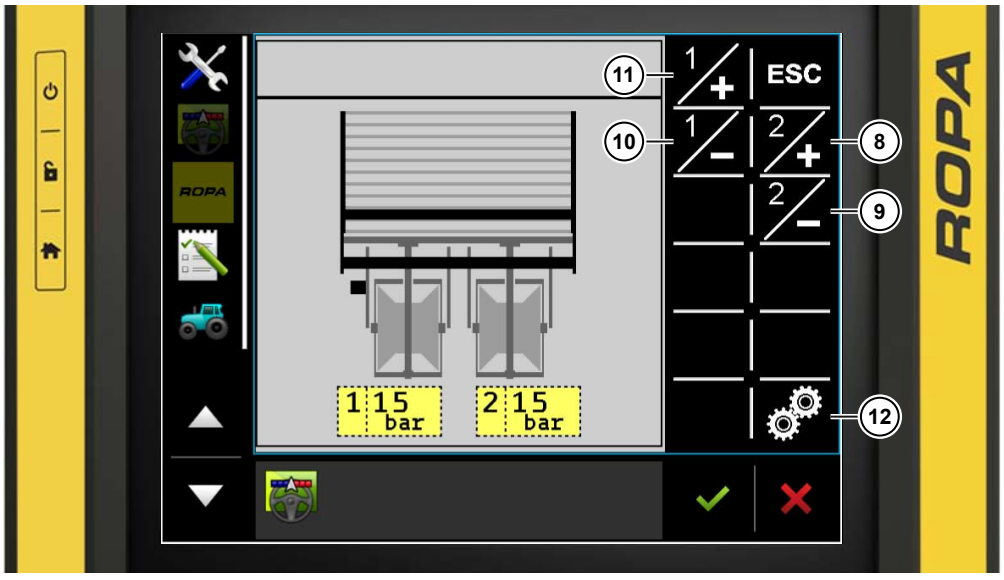
The pressure of the ridge pressure regulation can be adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



(6) Ridge pressure regulation display field
(7) Ridge pressure regulation soft key

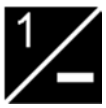
The ridge pressure display field (**6**) shows the current actual pressure of the ridge pressure regulation for each side of the pickup. Select the grey button to open the submenu for adjusting the ridge pressure regulation. The ridge pressure display field (**6**) shows the pressure of the ridge pressure regulation if the automatic ridge pressure regulation is preselected or activated.

The ridge pressure regulation soft key opens the ridge pressure regulation submenu. The ridge pressure regulation soft key can only be selected if under automatic functions the ridge pressure regulation on is "Preselected" or "Activated" .



(8) Soft key increase ridge pressure regulation left
(9) Soft key reduce ridge pressure regulation left
(10) Soft key reduce ridge pressure regulation right
(11) Soft key increase ridge pressure regulation right
(12) Soft key increase ridge pressure regulation synchronous adjustment deactivated

Press the key to increase the pressure on the right. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

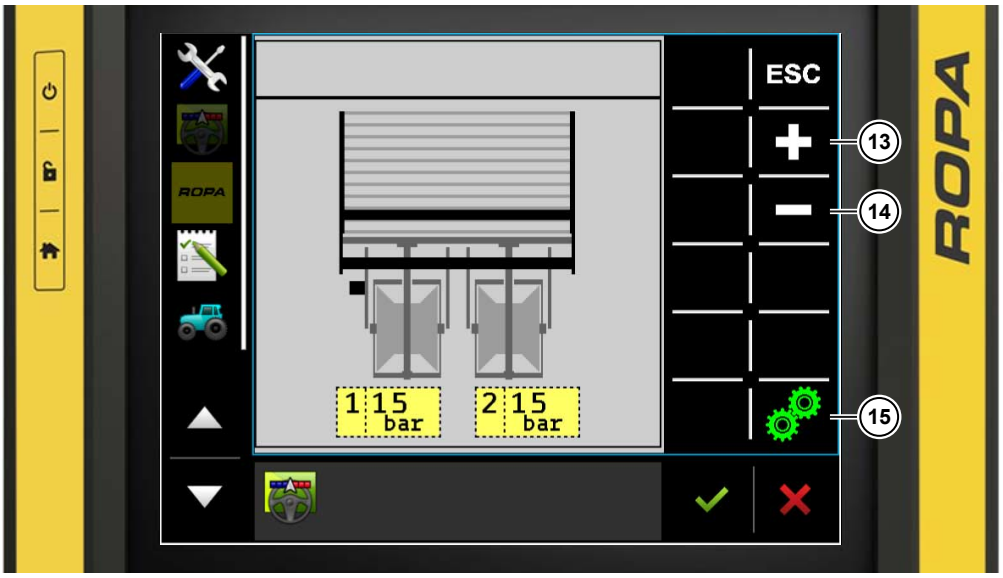


Press the key to reduce the pressure on the right. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

Press the key to increase the pressure on the left. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

Press the key to reduce the pressure on the left. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

Switch between the individual adjustment of the ridge pressure regulation for each side and the synchronous adjustment of the ridge pressure regulation with the ridge pressure regulation synchronous adjustment soft key . If the soft key is white, synchronous adjustment is deactivated. If the soft key is green, synchronous adjustment is activated.



(13) Soft key increase ridge pressure regulation
(14) Soft key reduce ridge pressure regulation
(15) Soft key increase ridge pressure regulation synchronous adjustment activated

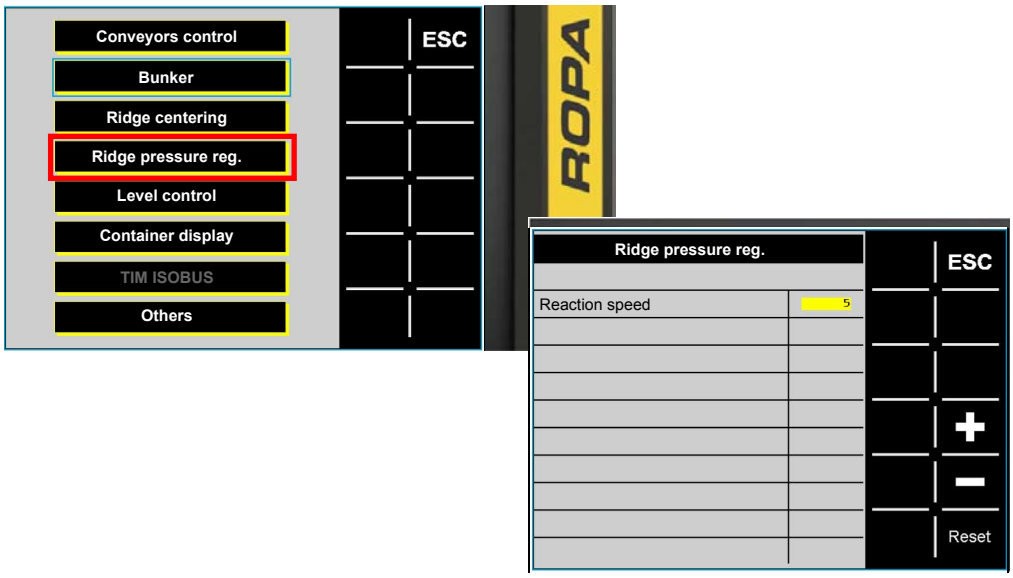
Press the key to increase the pressure synchronously. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

Press the key to reduce the pressure synchronously. The pressure is adjusted in steps in which 5 bar is the minimum load pressure and 35 bar is the maximum load pressure.

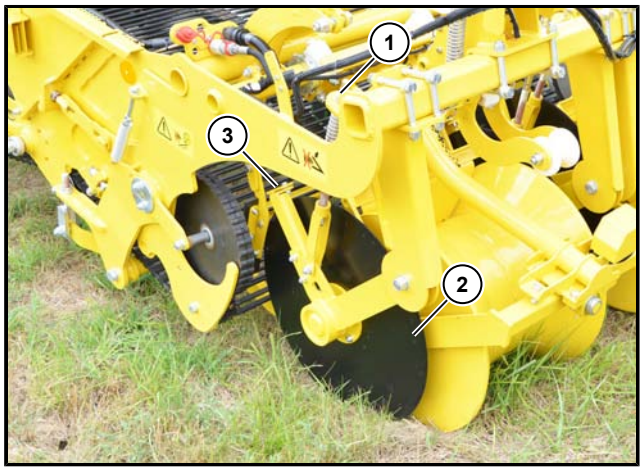
Ridge pressure regulation is activated with the automatic depth control key on the lifter control. It can be activated with the pickup lowered from the preselected status . This is necessary if the pickup is not lowered with the start of field key . If the automatic depth control key on the lifter control element is pressed with automatic ridge pressure regulation activated , the automatic function is reset to "Preselected".

Adjusting reaction speed

The reaction speed of the regulation can be adjusted in 10 steps in the ridge pressure regulation menu item in the main settings menu.



6.12.1.5 Disc coulter



(1) Disc coulter depth adjustment
(2) Disc coulter right
(3) Disc coulter right wiper

Depending on the model the ridge pickup can have two disc coulters or four disc coulters.

The disc coulters on the ridge pickup on the model with two disc coulters are each on the outside of the ridge rollers. The disc coulters on the ridge pickup on the model with four disc coulters are on both sides of the ridge rollers. All disc coulters are identical and are installed as mirror images of one another.

The working depth of the disc coulters can be adjusted independently of one another by turning the depth adjustment screw (**1**) to raise or lower the disc.

The wipers (**3**) are loosely installed above the disc coulters. They move more easily under wet and difficult conditions and keep the disc coulters clean.

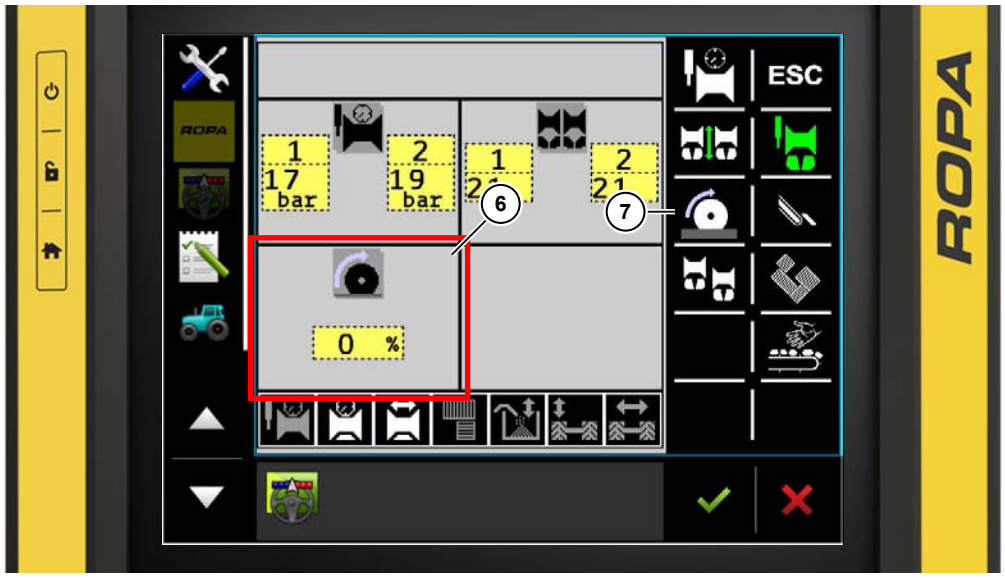
If the haulm is particularly tough, the disc edges can be grinded to ensure that the haulm is cut cleanly.

(4) Ridge pickup with hydraulically driven disc coulter right

(5) Ridge pickup with hydraulically driven disc coulter left

The right disc coulter (**4**) and the left disc coulter (**5**) are optionally available as hydraulically driven disc coulters. Both disc coulters or only right disc coulter can be designed as hydraulically driven. The start of field key on the lifter control switches on the hydraulic disc coulter, the end of field key on the lifter control switches off the hydraulic disc coulter. The hydraulic disc coulter can be manually switched on and off together with the machine drive with the soft key .

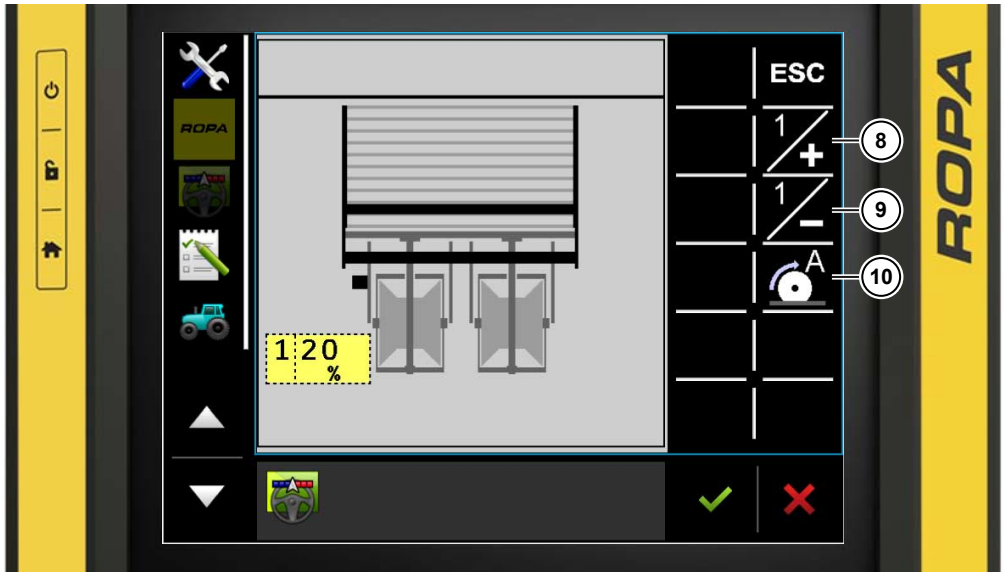
The hydraulic disc coulter is adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



(6) Disc coulter display field
(7) Disc coulter soft key

The disc coulter display field (**6**) displays the current actual speed of the disc coulter. Select the grey button to open the disc coulter submenu and adjust the speed as a percentage.

The disc coulter soft key opens the disc coulter submenu.

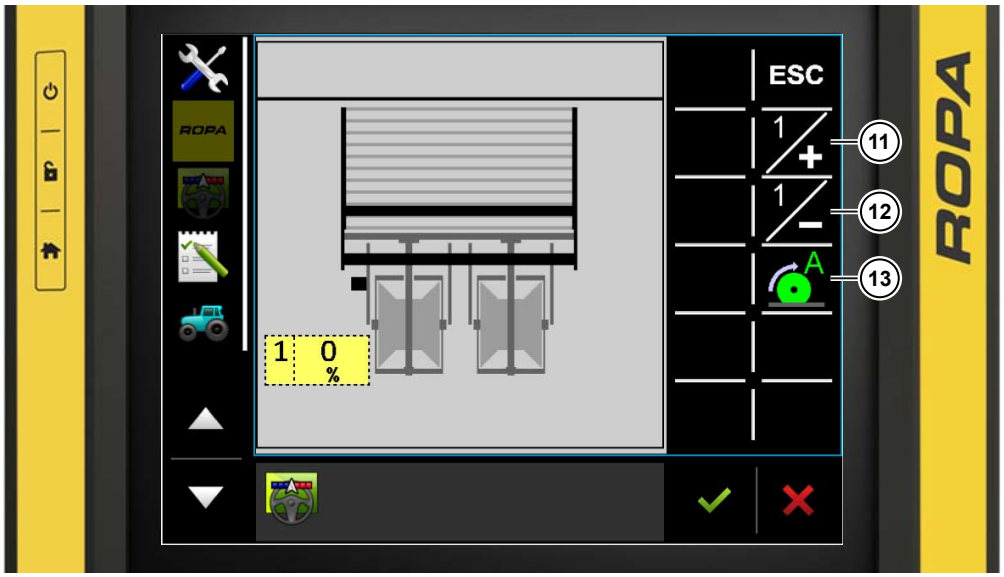


(8) Soft key increase disc coulter speed
(9) Soft key reduce disc coulter speed
(10) Soft key swath pickup automatic function deactivated

The automatic function of the disc coulters is deactivated. The speed of the disc coulters can be adjusted in the range from 20% to 100%.

Press the key (**8**) to increase the speed. The speed of the disc coulter can be adjusted in the range from 20% to 100%. The minimum speed of the hydraulic disc coulter is 20% and 100% is the maximum speed of the hydraulic disc coulter.

Press the key (**9**) to reduce the speed. The speed of the disc coulter can be adjusted in the range from 20% to 100%. The minimum speed of the hydraulic disc coulter is 20% and 100% is the maximum speed of the hydraulic disc coulter.



(11) Soft key increase disc coulter speed ratio
(12) Soft key reduce disc coulter speed ratio
(13) Soft key disc coulter automatic function activated

The automatic function of the disc coulters is activated. The speed of the disc coulters can be adjusted proportionally to the driving speed of the machine in the range from -25% to 25%.

Press the key (**11**) to increase speed ratio of the disc coulters to the driving speed of the machine. The deviation of the disc coulter speed can be adjusted in the range from -25% to 25%. Here, -25% corresponds to the minimum speed of the hydraulic disc coulters to the driving speed, the disc coulters speed lags, and 25% corresponds to the maximum speed of the hydraulic disc coulters to the driving speed, the disc coulters speed leads.

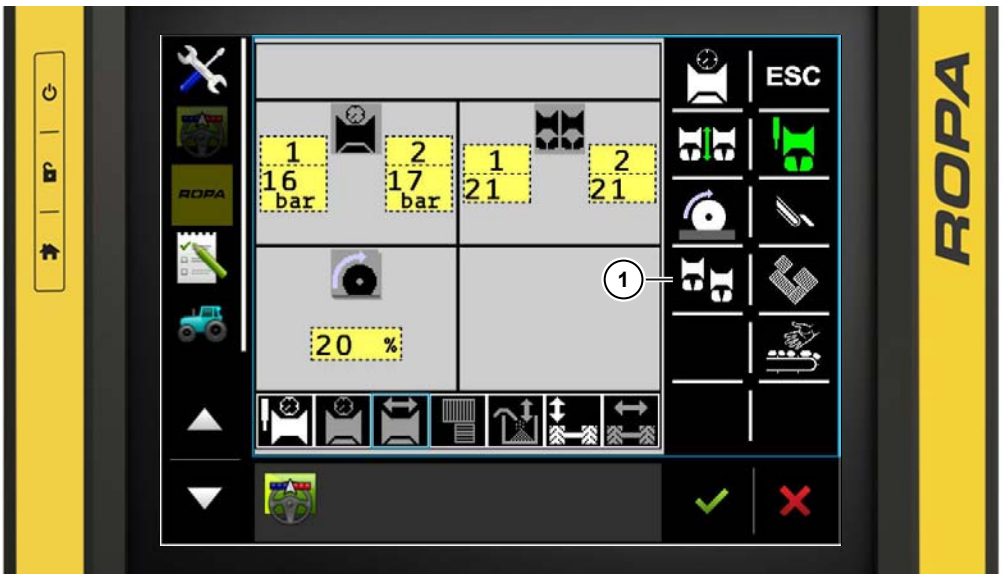
Press the key (**12**) to reduce speed ratio of the disc coulters to the driving speed of the machine. The deviation of the disc coulter speed can be adjusted in the range from -25% to 25%. Here, -25% corresponds to the minimum speed of the hydraulic disc coulters to the driving speed, the disc coulters speed lags, and 25% corresponds to the maximum speed of the hydraulic disc coulters to the driving speed, the disc coulters speed leads.

(14) Additional disc coulter right

An additional disc coulter on the right (**14**) can be installed with a normal disc coulter. The depth settings are to be made as usually with the normal disc coulter.

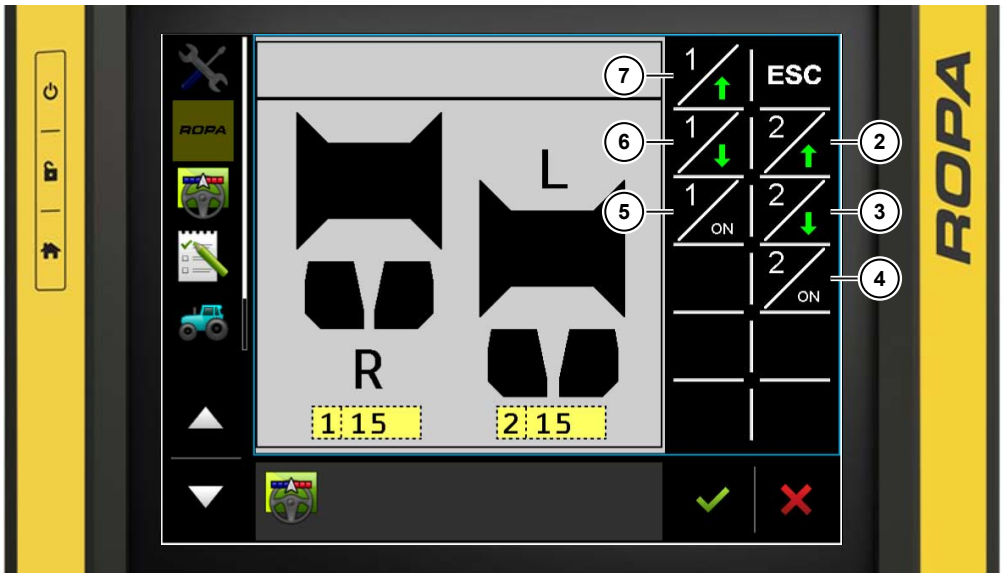
6.12.1.6 Single row pickup

Single row pickup is adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



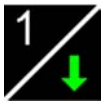
(1) Single row pickup soft key

The single row pickup soft key opens the single row pickup submenu.



(2) Soft key raise left pickup
(3) Soft key lower left pickup
(4) Soft key single row pickup left activated/deactivated
(5) Soft key single row pickup right activated/deactivated
(6) Soft key lower right pickup
(7) Soft key raise right pickup

Press the soft key to raise the right pickup.



Press the soft key to lower the right pickup.

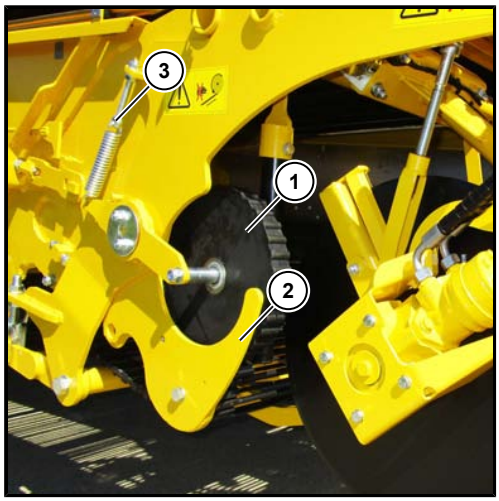
Press the soft key to deactivate the right side of the pickup for single row lifting. After deactivation the soft key becomes green. The sensor for ridge centring is deactivated from this side of the pickup.

Press the soft key to raise the left pickup.

Press the soft key to lower the left pickup.

Press the soft key to deactivate the left side of the pickup for single row lifting. After deactivation the soft key is green. The sensor for ridge centring is deactivated from this side of the pickup.

6.12.1.7 Leaf loading roller



(1) Leaf loading roller right
(2) Leaf deflector skid right
(3) Leaf loading roller clamp right
(4) Installation position of leaf loading roller right

The right and left leaf loading rollers (**1**) are on the ridge pickup between the two outer disc coulters and the side wall of the sieving channel. Both leaf loading rollers are identical and are installed as mirror images of one another.

The spring tensioner (**3**) must be adjusted so the leaf loading rollers are properly driven by the sieve conveyor 1. If the haulm accumulates and if not sufficiently loaded, the spring tension can be increased to increase the pressure on the leaf loading rollers. Each side can be independently adjusted. Higher pressure on the leaf loading rollers also means higher wear.

The leaf deflector skid (**2**) prevents cut haulm and overhanging haulm from the next row from accumulating at the side wall of the sieving channel.

The internally mounted position of the leaf loading rollers (**4**) prevents the flow of the crop from accumulating on the side belts of sieve conveyor 1 where the crop flow cannot be sieved.

6.12.1.8 Setting row distance

Setting row distance mechanically

DANGER

Hazard of severest injuries due to the starting machine.

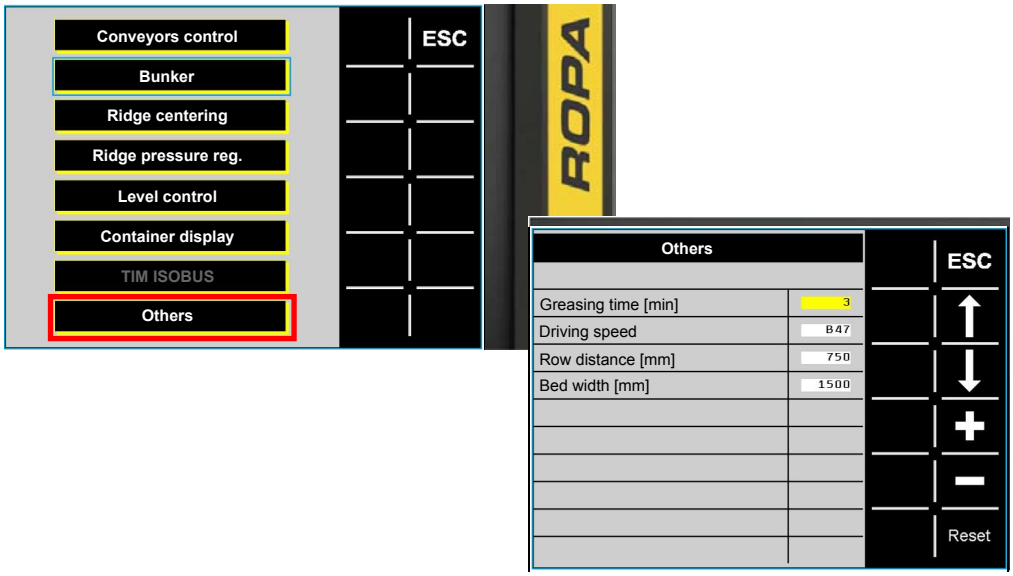
– Shut off the tractor engine before setting the row distance and secure it against inadvertent starting (remove ignition key)!
– Lock the pickup with the two locking ropes to.

The row distance for the ridge pickup can be mechanically adjusted from 750 mm to 900 mm.

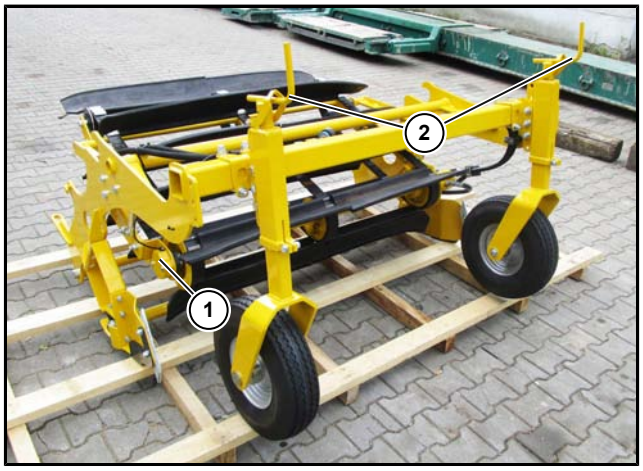
Setting row distance in the software

In the software the row distance can adjusted infinitely from 750 mm to 1 800 mm; default setting 750 mm.

Set the row distance on the tractor terminal in the menu "Main settings", submenu "Others", otherwise the hectare counter will record incorrect values.



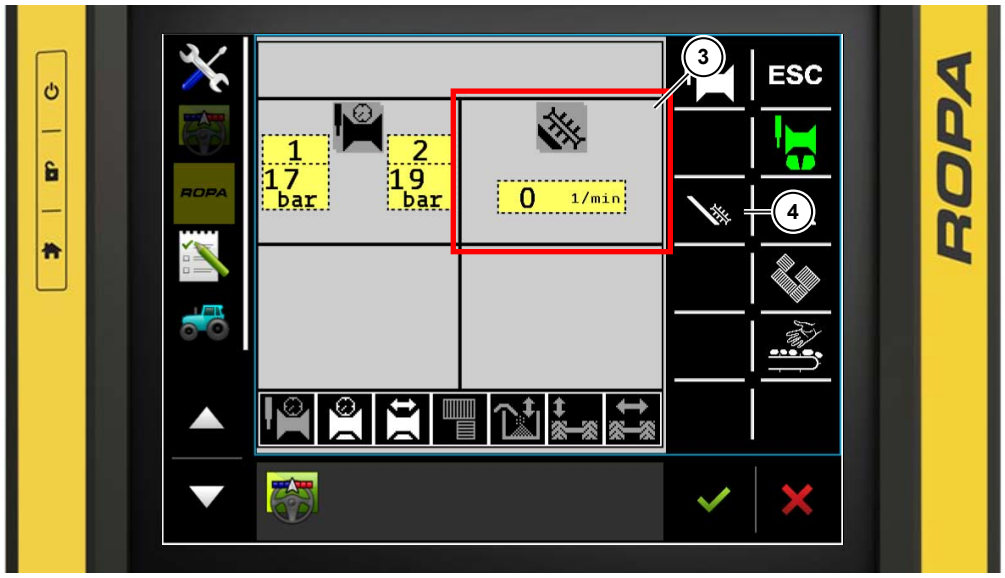
6.12.2 Swath pickup model with lifting shaft and cover belt



(1) Speed of cover belt swath pick-up
(2) Height adjustment of swath pickup

The speed of the swath pickup cover belt (**1**) is set at the tractor terminal for swath pickup with lifting shaft and cover belt. The working depth of the swath pickup can be adjusted mechanically via two cranks (**2**) for the height adjustment sides independently of each other. The speed of the swath pickup cover belt can be manually adjusted. The speed of the swath pickup cover belt can also adjust automatically to the speed of sieve conveyor 1.

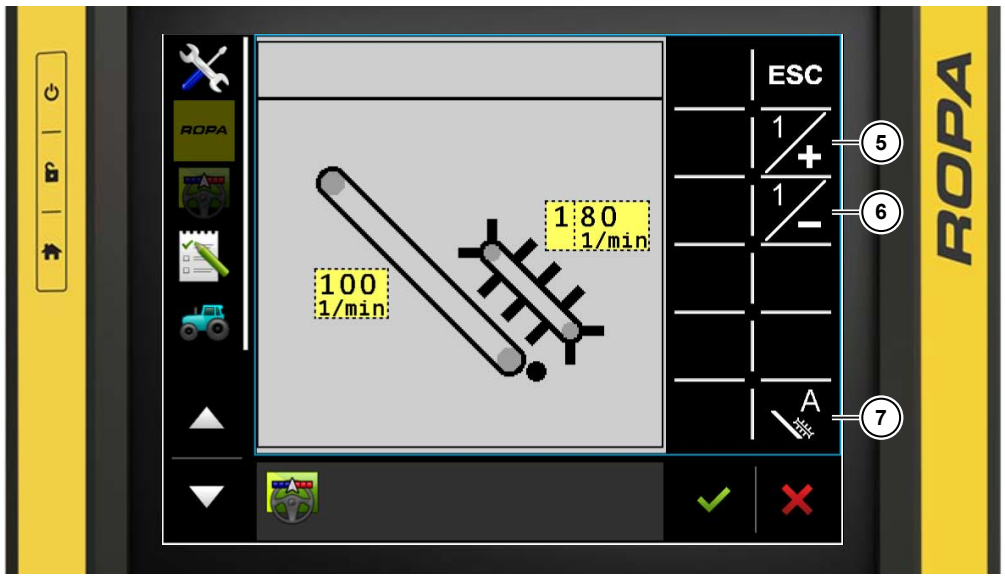
The swath pickup is adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



(3) Swath pickup display field
(4) Swath pickup soft key

The swath pickup display field (**3**) displays the current actual speed of the swath pickup. Select the grey button to open the swath pickup submenu.

Select the swath pickup soft key to open the swath pickup submenu.



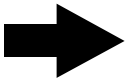
(5) Soft key increase swath pickup speed
(6) Soft key reduce swath pickup speed
(7) Soft key automatic swath pickup

Press the key (**5**) to increase the speed. The speed of the swath pickup cover belt can be adjusted in the range from 50 rpm to 200 rpm.

Press the key (**6**) to reduce the speed. The speed of the swath pickup cover belt can be adjusted in the range from 50 rpm to 200 rpm.

The automatic swath pickup soft key switches the automatic functions of the swath pickup on and off. If the soft key is white, the automatic functions are deactivated. If the soft key is green, the automatic functions are activated. The percentage deviation of the speed from the speed of sieve conveyor 1can be adjusted.

ADVICE

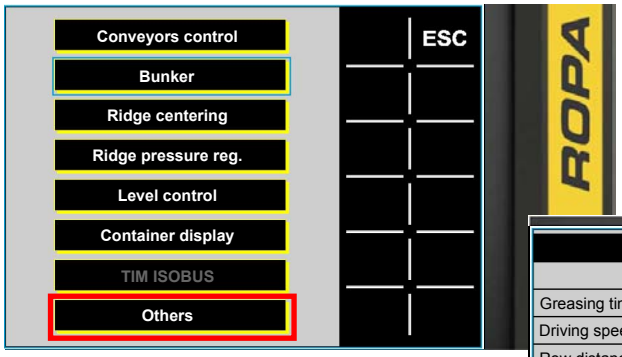


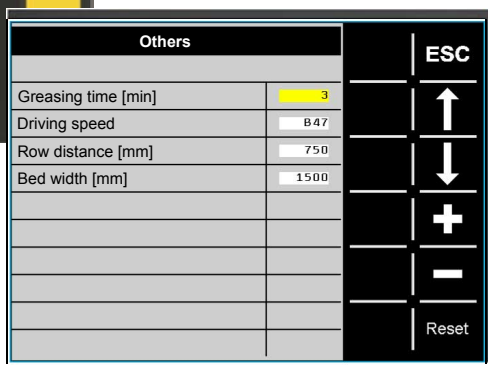
The pickup functions only with the ridge pressure relief. If the ridge pressure relief is activated, it must be set to float position (0 bar) or in the range from 8 bar to 20 bar.

Setting bed width in the software

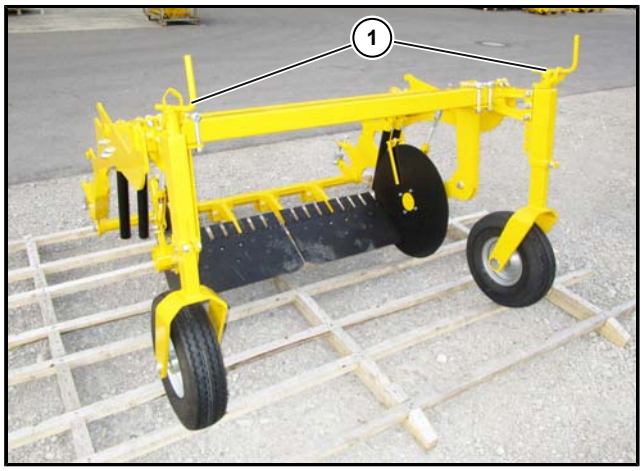
The bed width can be infinitely adjusted in the software from 750 mm to 3,000 mm; default setting is 1,500 mm.

Set the bed width on the tractor terminal in the menu "Main settings", submenu "Others", otherwise the hectare counter will record incorrect values.





6.12.3 Swath pickup with share model



(1) Height adjustment of swath pickup with share

The working depth of the swath pickup can be adjusted mechanically via two cranks (**1**) for the height adjustment sides independently of each other.

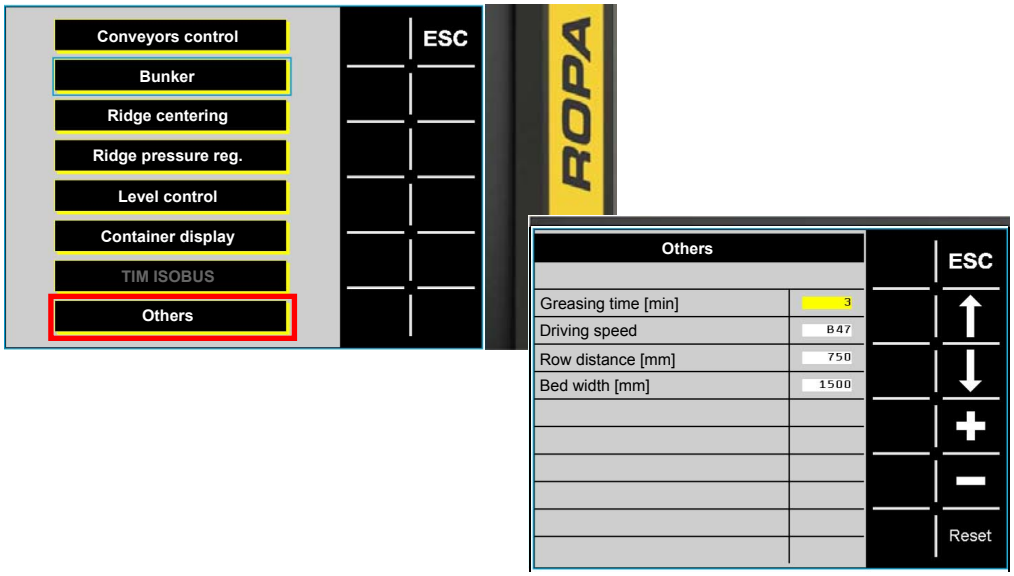
ADVICE

The pickup functions only with the ridge pressure relief. If the ridge pressure relief is activated, it must be set to float position (0 bar) or in the range from 8 bar to 20 bar.

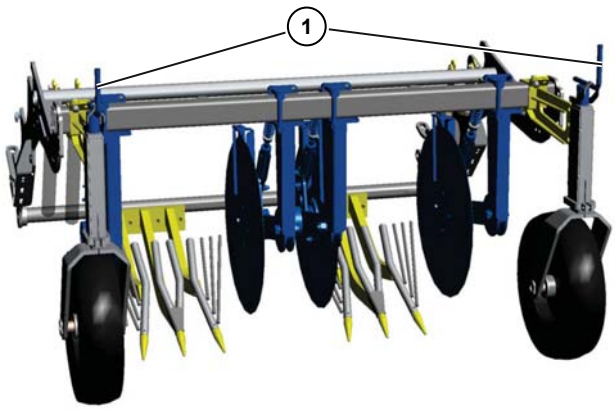
Setting bed width in the software

The bed width can be infinitely adjusted in the software from 750 mm to 3,000 mm; default setting is 1,500 mm.

Set the bed width on the tractor terminal in the menu "Main settings", submenu "Others", otherwise the hectare counter will record incorrect values.



6.12.4 Pickup model for carrots



(1) Height adjustment of the pickup for carrots

The working depth of the pickup can be adjusted mechanically via two cranks (**1**) for the height adjustment sides independently of each other.

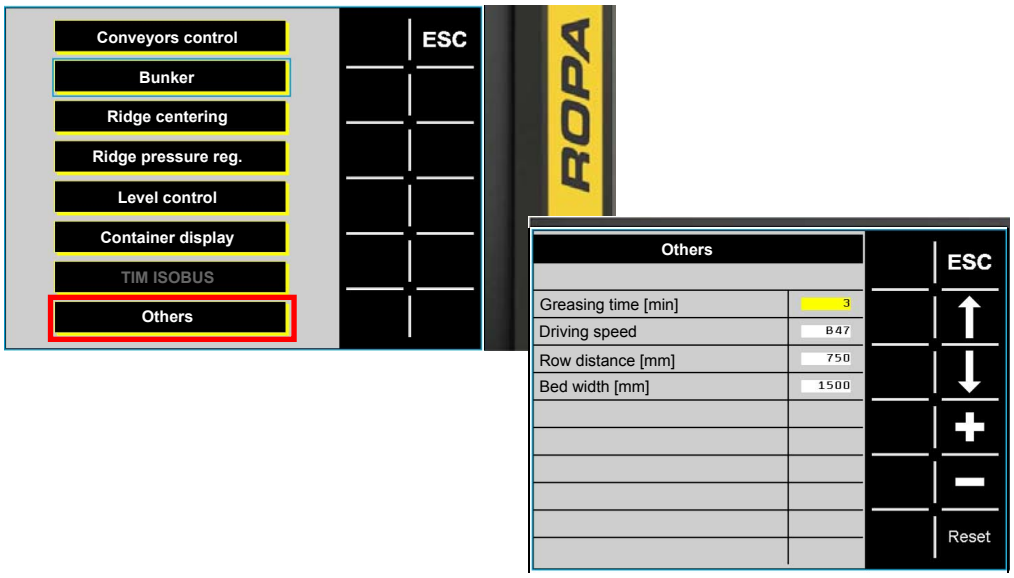
ADVICE

The pickup functions only with the ridge pressure relief. If the ridge pressure relief is activated, it must be set to float position (0 bar) or in the range from 8 bar to 20 bar.

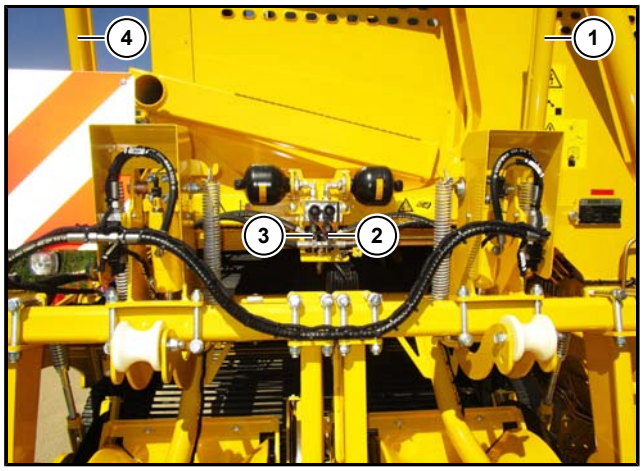
Setting bed width in the software

The bed width can be infinitely adjusted in the software from 750 mm to 3,000 mm; default setting is 1,500 mm.

Set the bed width on the tractor terminal in the menu "Main settings", submenu "Others", otherwise the hectare counter will record incorrect values.



6.12.5 Ridge pressure relief



(1) Pickup cylinder left
(2) Ridge pressure relief sensor left
(3) Ridge pressure relief sensor right
(4) Pickup cylinder right

Each side of the pickup can be hydraulically released separately for ridge pressure relief with the pickup cylinder and the associated reservoir. The relief pressure is displayed on the tractor terminal.

A part of the pickup weight is transferred to the main frame by the pickup cylinder on the left (**1**) and on the right (**4**). The two pressure sensors for ridge pressure relief on the left (**2**) and right (**3**) are installed in the left (**1**) and right (**4**) lines to the pickup cylinders.

The relief pressure can be adjusted separately for each row in the range from 0 bar to 50 bar at the tractor terminal. The ridge pressure relief must be adjusted so the ridge rollers roll over the ridge without pushing or compressing the ridge.

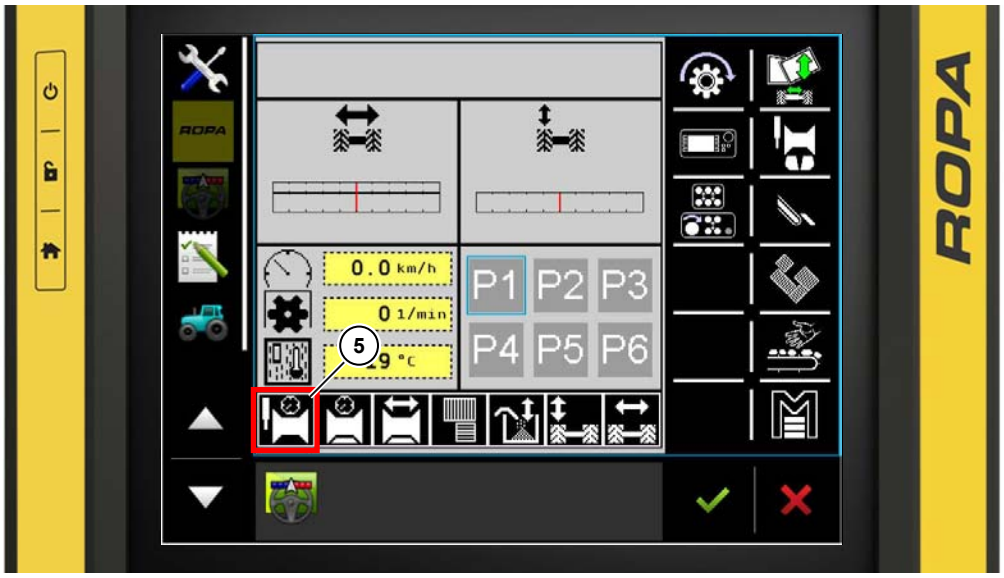
The lifting depth must be checked after adjusting the ridge pressure relief.

E.g.:

- 0 bar is the floating position.
- Wet conditions or heavy soil.
  - **maximum relief pressure 50 bar.**
- Under dry conditions to ensure proper harvesting and breakage of crusts.
  - **minimum relief pressure 20 bar.**

ADVICE

Ridge pressure regulation or ridge pressure relief (*See Page 199*) can function better depending on the external conditions. The models of swath pickup and pickups for special crops function only with ridge pressure relief.



(5) Automatic ridge pressure relief

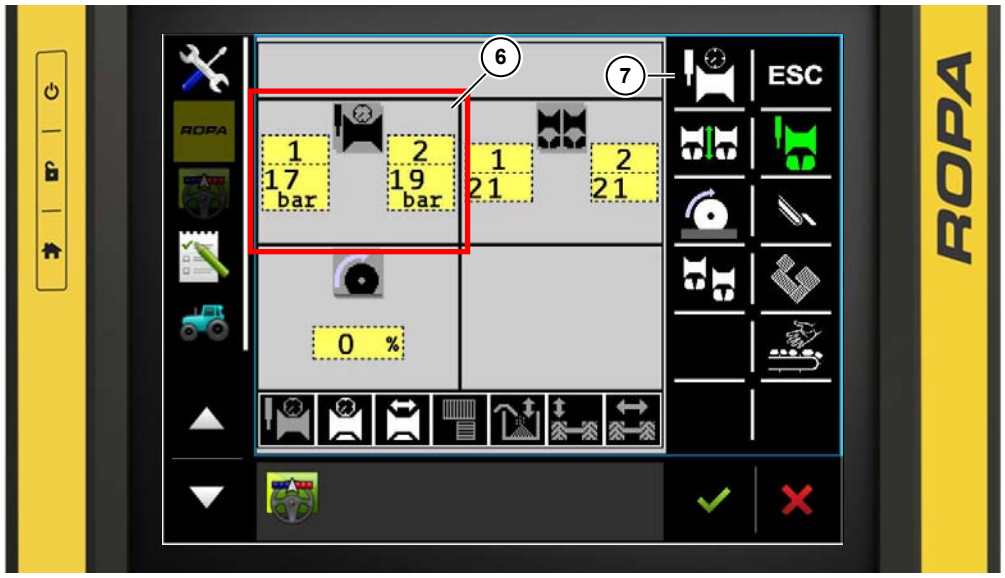
The current status of ridge pressure relief (**5**) is displayed in the automatic functions display field.

Automatic ridge pressure relief is deactivated.

Automatic ridge pressure relief is preselected. Ridge pressure relief is activated with a short activation period when the pickup is lowered with the start of field key on the lifter control.

Automatic ridge pressure relief is activated. Ridge pressure relief is reset to "Preselected" when the pickup is raised with the end of field key on the lifter control element.

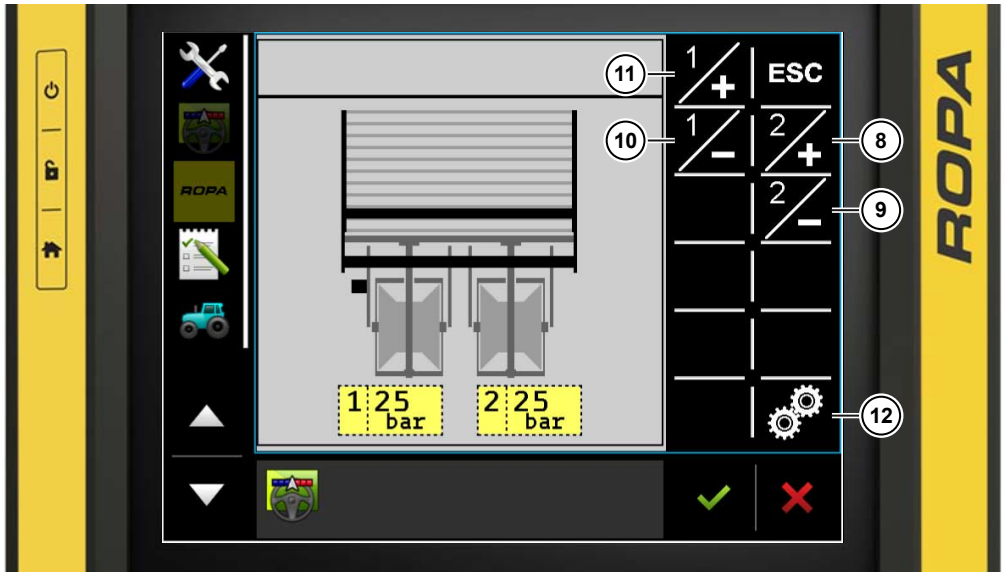
The pressure of the ridge pressure relief can be adjusted in the pickup menu. Select the pickup soft key on the tractor terminal. After selection the soft key is green.



(6) Ridge pressure display field
(7) Ridge pressure relief soft key

The ridge pressure display field (**6**) shows the current actual pressure of the activated automatic depth control, ridge pressure regulation and ridge pressure relief. Select the grey button to open the activated automatic depth control submenu where the setpoint pressure can be adjusted.

The ridge pressure relief soft key opens the ridge pressure relief submenu. The ridge pressure relief soft key can only be selected if the ridge pressure relief is set to "Preselected" or "Activated" in the automatic functions.



(8) Soft key increase ridge pressure relief left
(9) Soft key reduce ridge pressure relief left
(10) Soft key reduce ridge pressure relief right
(11) Soft key increase ridge pressure relief right
(12) Soft key ridge pressure relief synchronous adjustment

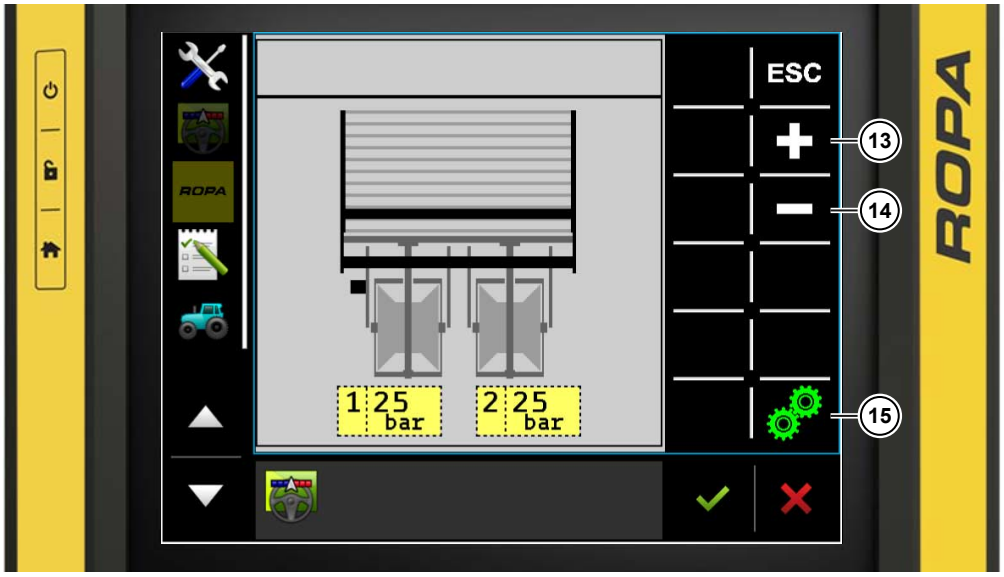
Press the key to increase the pressure on the right. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

Press the key to reduce the pressure on the right. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

Press the key to increase the pressure on the left. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

Press the key to reduce the pressure on the left. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

The ridge pressure relief synchronous adjustment soft key is used to switch between separate adjustment of the ridge pressure relief for each side and synchronous adjustment for both sides. If the soft key is white, synchronous adjustment is deactivated. If the soft key is green, synchronous adjustment is activated.



(13) Soft key increase ridge pressure relief
(14) Soft key reduce ridge pressure relief
(15) Soft key ridge pressure relief synchronous adjustment

Press the key to increase the pressure synchronously. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

Press the key to reduce the pressure synchronously. The pressure is adjusted in steps in which 0 bar is floating position, 20 bar is the minimum relief pressure and 50 bar is the maximum relief pressure.

Ridge pressure relief can be activated with the automatic depth control key on the lifter control. It can be activated with the pickup lowered from the automatic status "Preselected". This is necessary if the pickup is not lowered with the start of field key . If the automatic depth control key on the lifter operating component is pressed with ridge pressure relief activated, the automatic function is reset to the status "Preselected".

6.13 cleaning

The cleaning consists of the sieving channel and leaf separation, separation and sorting.

6.13.1 Sieving channel and leaf separation

The sieving channel consists of sieve conveyor 1 with the optional cleaning roller, the shaker and sieve conveyor 2, which are in the transition from the sieving channel to the leaf separation with the front section of the leaf chain.

Leaf separation includes the leaf chain, leaf scraper and pull-off rods.

6.13.1.1 Sieve conveyor 1

(1) Sieve conveyor 1

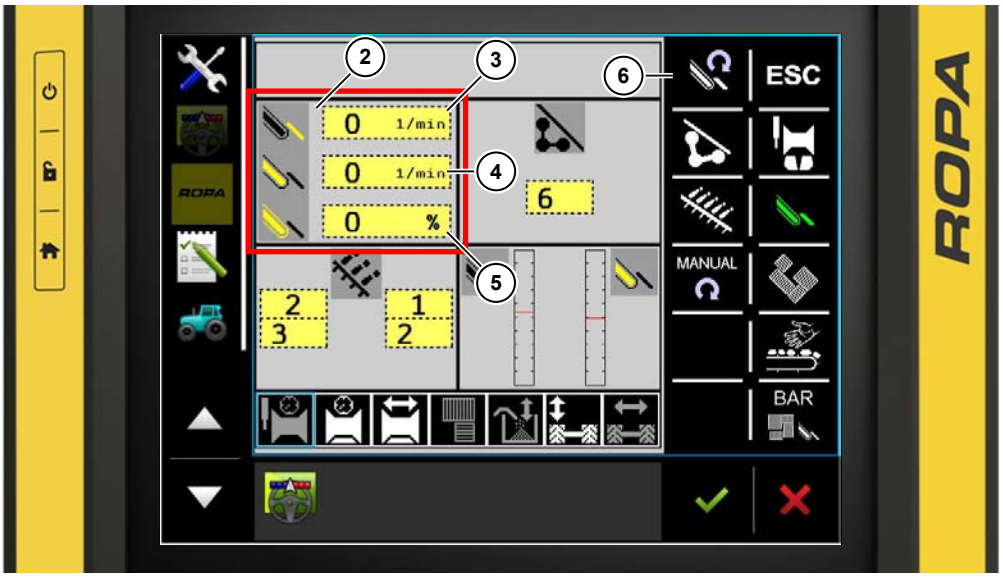
Sieve conveyor 1 is available in the following pitches: 32, 36, 40 and 45.

Sieve conveyor 1 is directly driven by an oil motor. The drive is always implemented as a rod drive, the speed of which can be infinitely adjusted.

The speed of sieve conveyor 1 is controlled at the tractor terminal or the sorting platform terminal if it is released. A speed sensor integrated in the oil motor sends feedback to the control.

Adjusting speed of sieve conveyor 1 at the tractor terminal

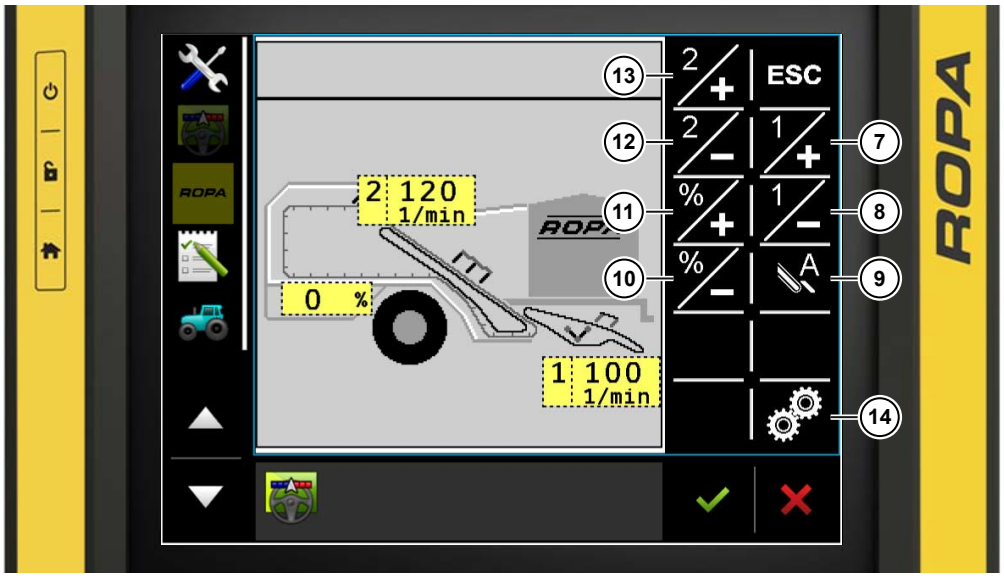
The speed of sieve conveyor 1 can be adjusted in the sieving channel menu. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



(2) Sieving channel speed soft key
(3) Sieve conveyor 1 speed display
(4) Sieve conveyor 2 speed display
(5) Display of difference of leaf chain from sieve conveyor 2
(6) Sieving channel speed soft key

In the sieving channel speed display field (**2**) the speeds of sieve conveyor 1 (**3**), sieve conveyor 2 (**4**) and the percentage difference of the speed of the leaf chain from sieve conveyor 2 (**5**) is shown. Select the grey button to open the sieving channel speed settings submenu.

The sieving channel speed soft key opens the sieving channel speed settings submenu.



(7) Soft key increase sieve conveyor 1 speed
(8) Soft key reduce sieve conveyor 1 speed
(9) Soft key automatic sieve conveyor
(10) Soft key reduce leaf chain speed
(11) Soft key increase leaf chain speed
(12) Soft key reduce sieve conveyor 2 speed
(13) Soft key increase sieve conveyor 2 speed
(14) Soft key sieve conveyor speeds synchronous adjustment

Press the key to increase the speed. The maximum speed of sieve conveyor 1 is 200 rpm.

Press the key to reduce the speed. The minimum speed of sieve conveyor 1 is 50 rpm.

The sieve conveyor synchronous speed adjustment must be deactivated to adjust the speed of sieve conveyor 1. If the sieve conveyor synchronous speed adjustment soft key is white, the sieve conveyor synchronous speed adjustment is deactivated. If the sieve conveyor synchronous speed adjustment soft key is green, the sieve conveyor synchronous speed adjustment is activated.

The pressure in the hydraulic drive of sieve conveyor 1 is continuously displayed and monitored on the pressure monitor on the tractor terminal. If the maximum pressure warning limit set by the driver is exceeded, the tractor terminal shows the warning and a warning sound is also generated.

If sieve conveyor 1 is blocked by a foreign body, the tractor terminal shows the warning icon and a continuous warning sound is also generated. If it is blocked sieve conveyor 1 shuts off automatically to prevent potential damage and subsequent damage. Work can be continued after clearing the blockage.

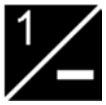
Adjusting speed of sieve conveyor 1 at the sorting platform terminal

(15) Soft key sieve conveyor 1
(16) Scroll screen right soft key
(17) Scroll screen left soft key
(18) Soft key leaf chain
(19) Soft key sieve conveyor 2
(20) Soft key sieve conveyor speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the sieving channel speeds. Select sieve conveyor 1 with the sieve conveyor 1 **1** soft key.

(21) Soft key increase sieve conveyor 1 speed
(22) Soft key reduce sieve conveyor 1 speed

Press the 1/+ key to increase the speed. The maximum speed of sieve conveyor 1 is 200 rpm.



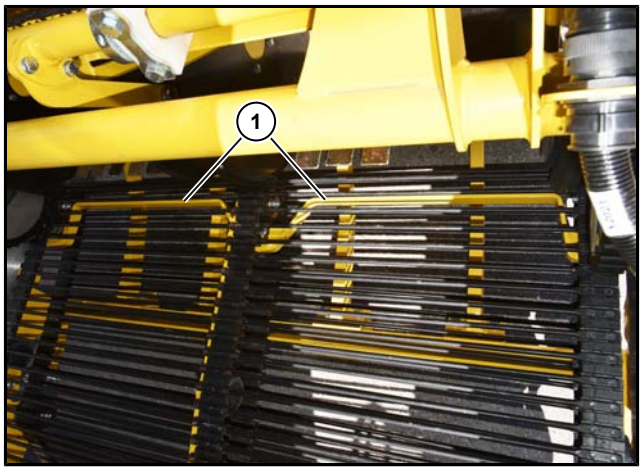
Press the 1/− key to reduce the speed. The minimum speed of sieve conveyor 1 is 50 rpm.

6.13.1.2 Stainless steel plates in sieving channel (option)

(1) Stainless steel plate left in sieving channel

Optionally, stainless steel plates can be installed on the side walls left and right in the front part of the sieving channel above the sieve conveyor 1. These stainless steel plates serve as wear plates and thus protect the frame of sieving channel. As soil does not stick so quickly to the stainless steel plates.

6.13.1.3 Clod breaker of sieve conveyor 1 (option)



(1) Clod breaker of sieve conveyor 1

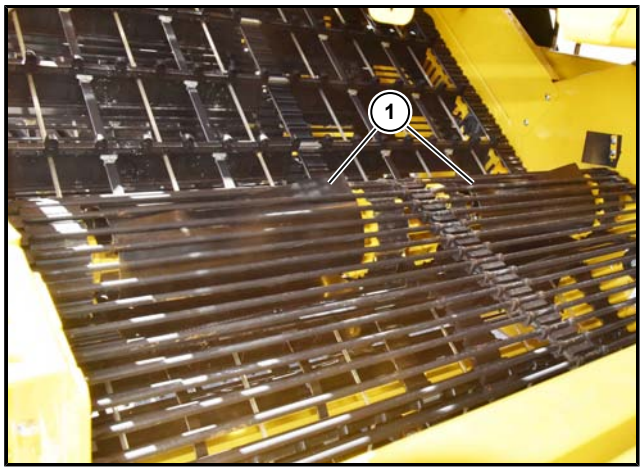
The clod breaker is an option which can be mounted inside the front turn of the sieve conveyor 1. The clod breaker shatters cleaned clods which roll within the front turn of the sieve conveyor 1 and thus prevents clogging of the sieve conveyor 1 in the front area with soil.

6.13.1.4 Sieve conveyor 1 cleaning roller (option from YOM 2016)

(1) Sieve conveyor 1 cleaning roller

The cleaning roller is optional equipment from YOM 2016 and in wet soil conditions it prevents accumulation of soil on sieve conveyor 1. The cleaning roller is integrated in the sieve conveyor clamp and is independent of the pitch of sieve conveyor 1.

6.13.1.5 Rubber paddle roller sieve conveyor 1 (option)



(1) Rubber paddle roller sieve conveyor 1

The rubber paddle roller is optional and can be mounted on the drive shaft of the sieve conveyor 1 (**1**). The rubber paddle roller prevents sticky soil and haulm rolls from adhering to the drive shaft of the sieve conveyor 1.

6.13.1.6 Shaker

(1) Shaker

The standard machine is fitted with a shaker. It is in the vicinity of sieve conveyor 1. The shaker makes rubber rollers on the belts of sieve conveyor 1 effective. It starts sieve conveyor 1 vibrating, which breaks up the soil and makes it easier to remove.

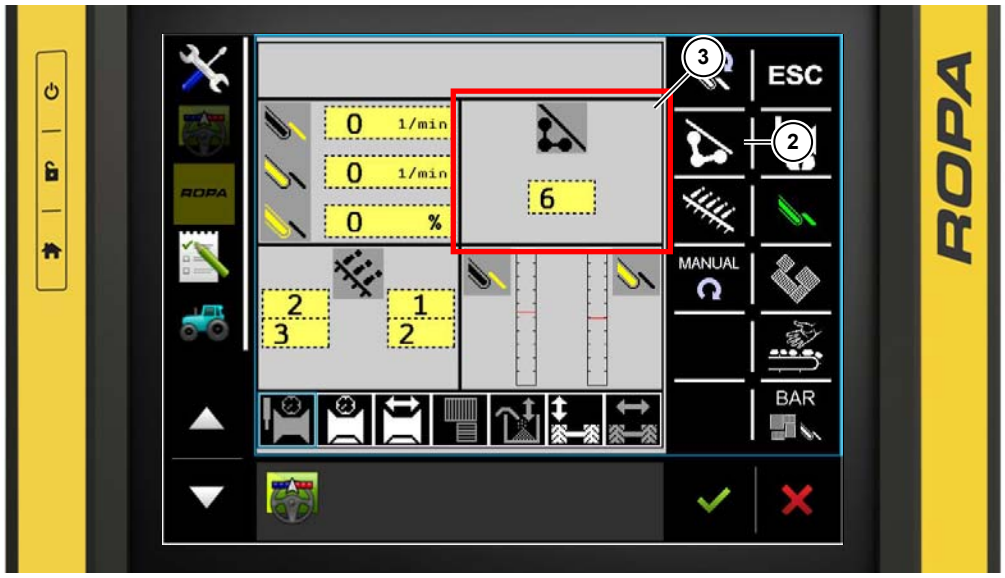
The shaker makes the process more efficient under difficult soil conditions. The shaker is adjusted in steps from 0 to 20. Step 0 = Off and Step 20 = maximum intensity.

ATTENTION

The shaker speed should be kept as low as possible to prevent damage to the tubers. If a greater sieving or cleaning efficiency is required, increase the shaker speed slightly and check the result. The higher the speed of the shaker the greater the danger of damage to the tubers.

Adjusting shaker at the tractor terminal

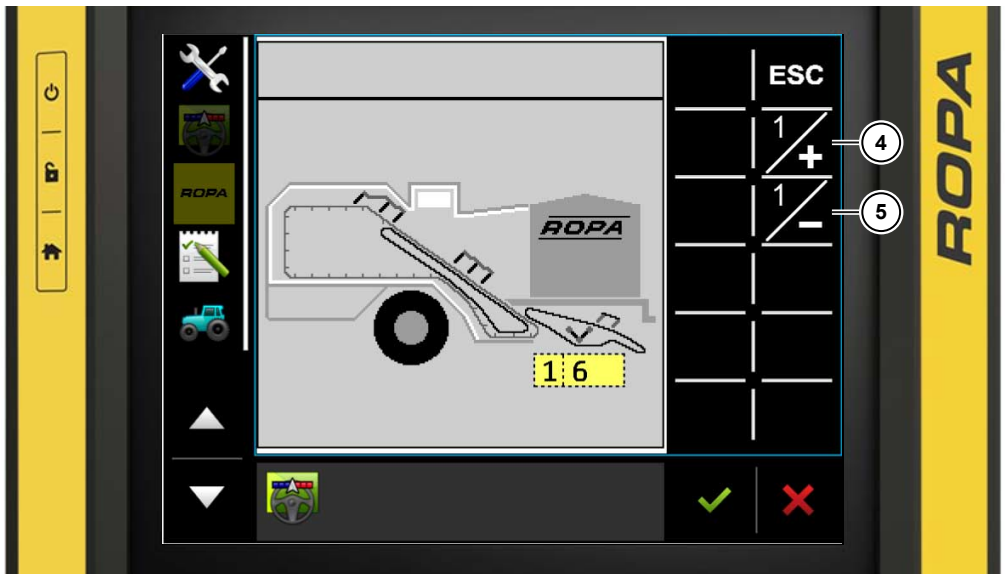
The intensity of the shaker can be adjusted in the sieving channel menu. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



(2) Shaker display field
(3) Shaker soft key

The shaker display field shows the current setting of the shaker. Select the grey button on the shaker display field (**2**) to open the shaker submenu.

Select the shaker soft key to open the shaker submenu.



(4) Soft key increase shaker speed
(5) Soft key reduce shaker speed

Press the key to increase the intensity. The maximum intensity of the shaker is step 20.

Press the 1/- key to reduce the intensity. The minimum intensity of the shaker is step 1. Step 0 is off and the shaker does not move.

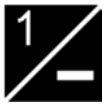
Adjusting shaker at the sorting platform terminal

(6) Shaker soft key
(7) Soft key UFK 1 speed
(8) Working floodlights soft key
(9) Scroll screen right soft key
(10) Scroll screen left soft key
(11) Soft key UFK 2 speed
(12) Soft key trash conveyor

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the shaker. Select the shaker with the shaker soft key 1.

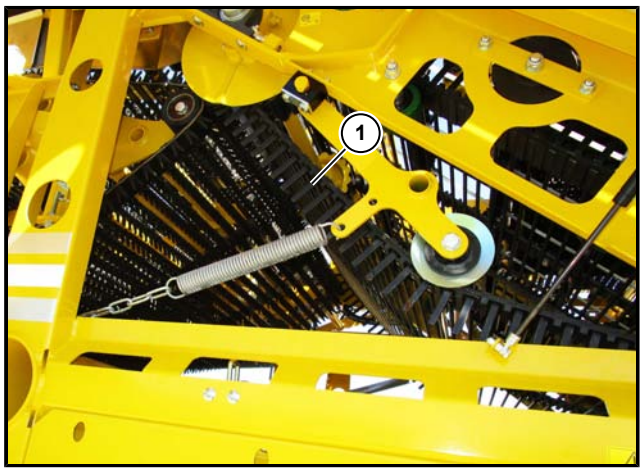
(13) Soft key increase shaker speed
(14) Soft key reduce shaker speed

Press the 1/+ key to increase the intensity. The maximum intensity of the shaker is step 20.



Press the key to reduce the intensity. The minimum intensity of the shaker is step 1. Step 0 is off and the shaker does not move.

6.13.1.7 Sieve conveyor 2



(1) Sieve conveyor 2

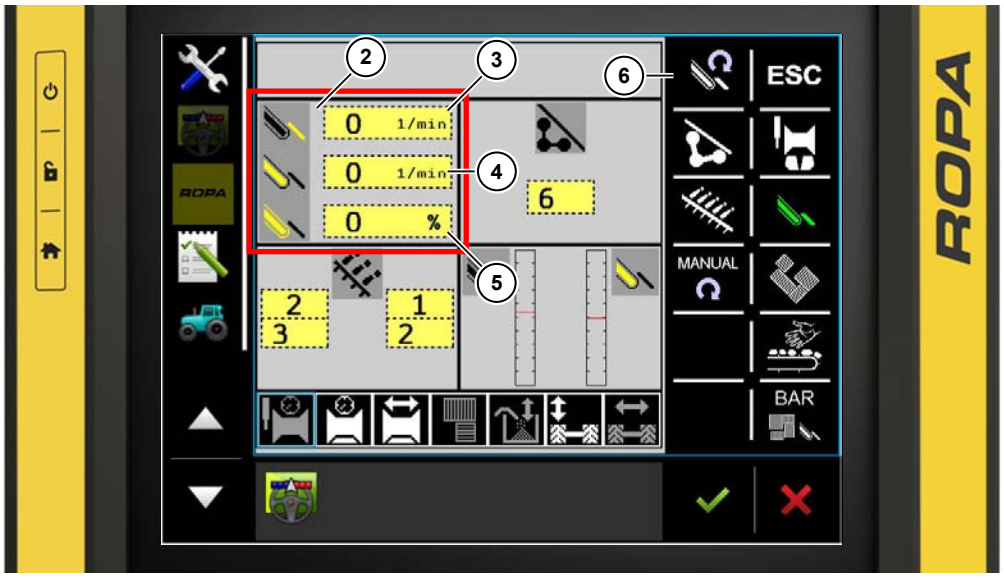
Sieve conveyor 2 is available in 28, 32, 36 and 40 pitch.

Sieve conveyor 2 is directly driven by an oil motor. The drive is always implemented as a rod drive, the speed of which can be infinitely adjusted.

The speed of sieve conveyor 2 is controlled at the tractor terminal or the sorting platform terminal if it is released. A speed sensor integrated in the oil motor sends feedback to the control.

Adjusting speed of sieve conveyor 2 at the tractor terminal

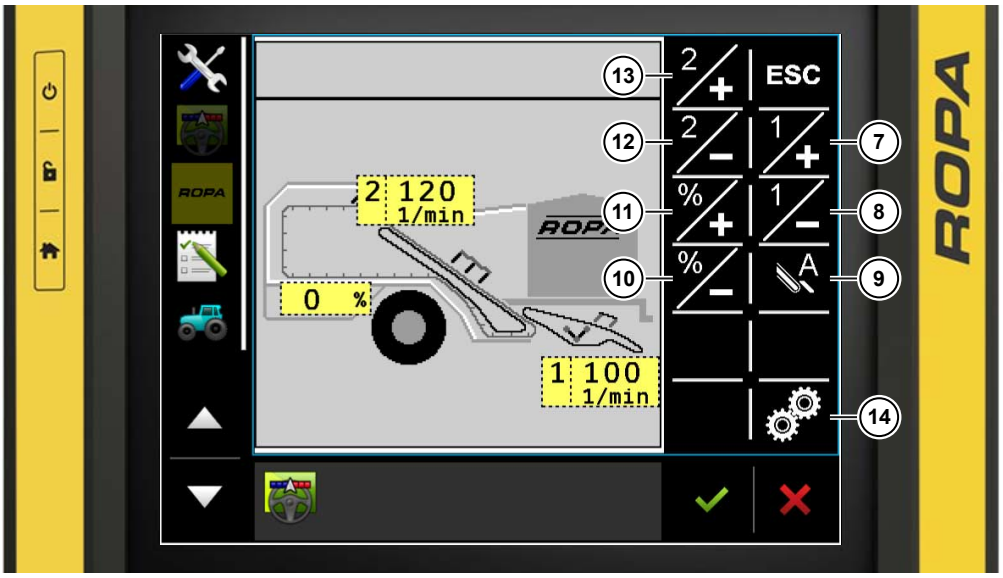
The speed of sieve conveyor 2 can be adjusted in the sieving channel menu. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



(2) Sieving channel speed soft key
(3) Sieve conveyor 1 speed display
(4) Sieve conveyor 2 speed display
(5) Display of difference of leaf chain from sieve conveyor 2
(6) Sieving channel speed soft key

In the sieving channel speed display field (**2**) the speeds of sieve conveyor 1 (**3**), sieve conveyor 2 (**4**) and the percentage difference of the speed of the leaf chain from sieve conveyor 2 (**5**) is shown. Select the grey button to open the sieving channel speed settings submenu.

The sieving channel speed soft key opens the sieving channel speed settings submenu.



(7) Soft key increase sieve conveyor 1 speed
(8) Soft key reduce sieve conveyor 1 speed
(9) Soft key automatic sieve conveyor
(10) Soft key reduce leaf chain speed
(11) Soft key increase leaf chain speed
(12) Soft key reduce sieve conveyor 2 speed
(13) Soft key increase sieve conveyor 2 speed
(14) Soft key sieve conveyor speeds synchronous adjustment

Press the 2+ key to increase the speed. The maximum speed of sieve conveyor 2 is 200 rpm.

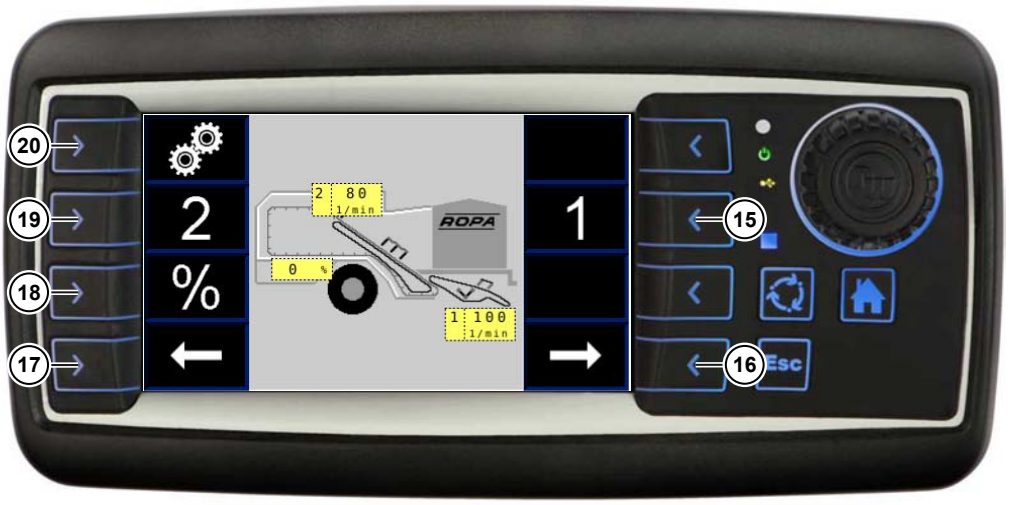
Press the 2− key to reduce the speed. The minimum speed of sieve conveyor 2 is 50 rpm.

The sieve conveyor synchronous speed adjustment must be deactivated to adjust the speed of sieve conveyor 2. If the sieve conveyor synchronous speed adjustment soft key is white, the sieve conveyor synchronous speed adjustment is deactivated. If the sieve conveyor synchronous speed adjustment soft key is green, the sieve conveyor synchronous speed adjustment is activated.

The pressure in the hydraulic drive of sieve conveyor 2 is continuously displayed and monitored on the pressure monitor on the tractor terminal. If the maximum pressure warning limit set by the driver is exceeded, the tractor terminal shows the warning and a warning sound is also generated.

If sieve conveyor 2 or the leaf chain is blocked by a foreign body, the tractor terminal shows the warning icon and a continuous warning sound is also generated. In case of blockage sieve conveyor 1, sieve conveyor 2 and the leaf chain are automatically shut off to prevent potential damage and subsequent damage. Work can be continued after clearing the blockage.

Adjusting speed of sieve conveyor 2 at the sorting platform terminal



(15) Soft key sieve conveyor 1
(16) Scroll screen right soft key
(17) Scroll screen left soft key
(18) Soft key leaf chain
(19) Soft key sieve conveyor 2
(20) Soft key sieve conveyor speeds synchronous adjustment

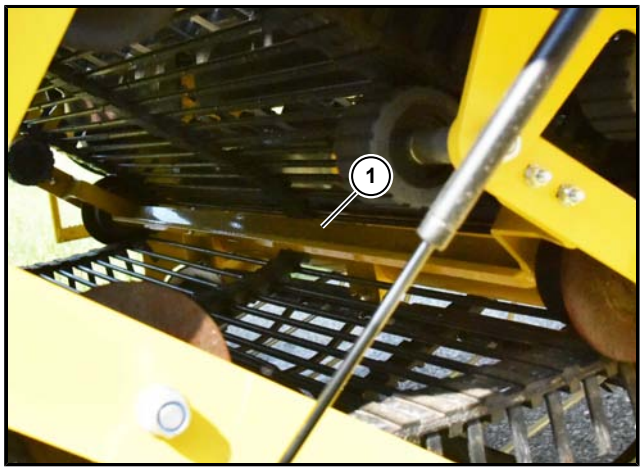
If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the sieving channel speeds. Select sieve conveyor 2 with the sieve conveyor 2 **2** soft key.

(21) Soft key increase sieve conveyor 2 speed
(22) Soft key reduce sieve conveyor 2 speed

Press the 2+ key to increase the speed. The maximum speed of sieve conveyor 2 is 200 rpm.

Press the 2− key to reduce the speed. The minimum speed of sieve conveyor 2 is 50 rpm.

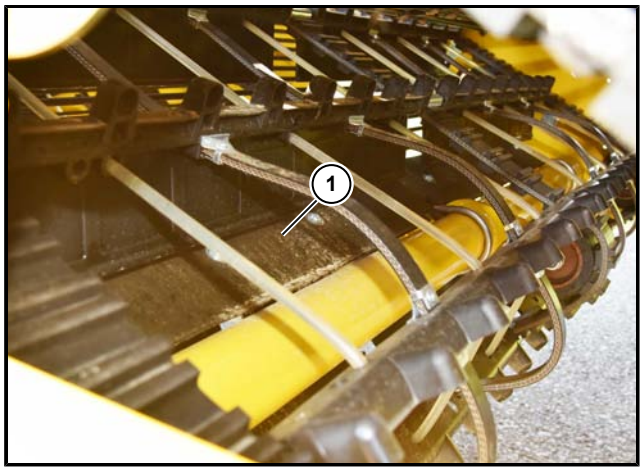
6.13.1.8 Clod breaker of sieve conveyor 2 (option)



(1) Clod breaker of sieve conveyor 2

The clod breaker is an option which can be mounted inside the front turn of the sieve conveyor 2. The clod breaker shatters cleaned clods and prevents clogging of the sieve conveyor 2 in the front area.

6.13.1.9 Transition lock sieve conveyor 2 (option)



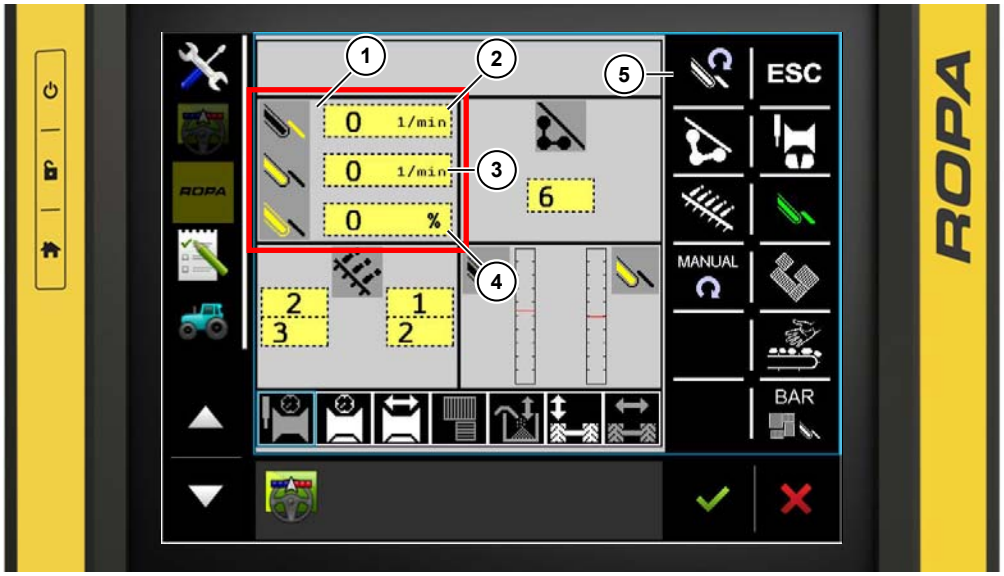
(1) Transition lock sieve conveyor 2

The transition lock is an option which can be mounted in the front area between the sieve conveyor 2 and the leaf chain. The transition lock prevents potatoes from falling out between the sieve conveyor 2 and the leaf chain if the sieve conveyor 2 and leaf chain speed is too slow.

6.13.1.10 Sieve conveyors synchronous adjustment

Sieve conveyors synchronous adjustment at the tractor terminal

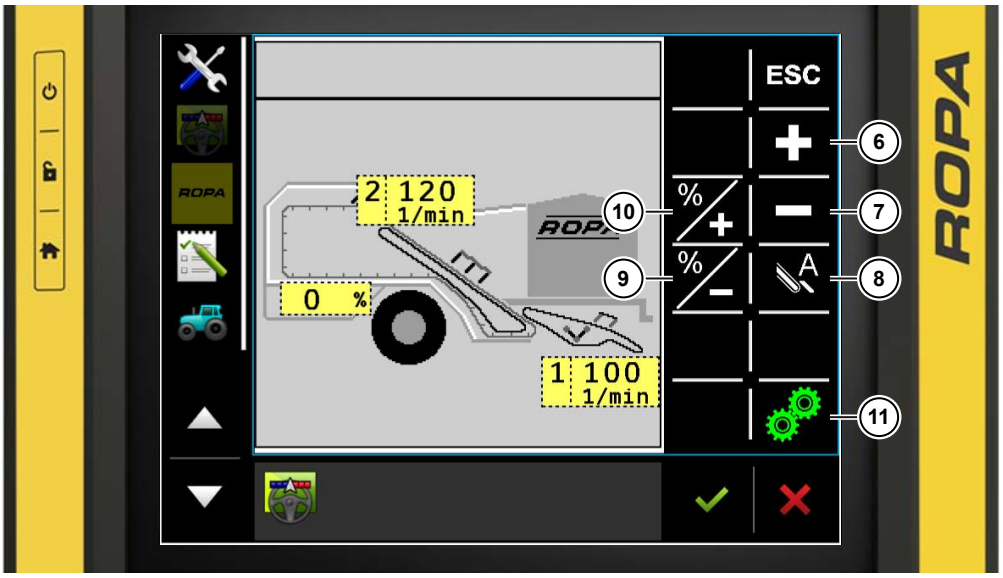
The speed is adjusted at the tractor terminal in synchronous mode. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



(1) Sieving channel speed soft key
(2) Sieve conveyor 1 speed display
(3) Sieve conveyor 2 speed display
(4) Display of difference of leaf chain from sieve conveyor 2
(5) Sieving channel speed soft key

In the sieving channel speed display field (**1**) the speeds of sieve conveyor 1 (**2**), sieve conveyor 2 (**3**) and the percentage difference of the speed of the leaf chain from sieve conveyor 2 (**4**) is shown. Select the grey button to open the sieving channel speed settings submenu.

The sieving channel speed soft key opens the sieving channel speed settings submenu.



(6) Soft key increase sieve conveyors speed
(7) Soft key reduce sieve conveyors speed
(8) Soft key automatic sieve conveyor
(9) Soft key reduce leaf chain speed
(10) Soft key increase leaf chain speed
(11) Soft key sieve conveyor speeds synchronous adjustment

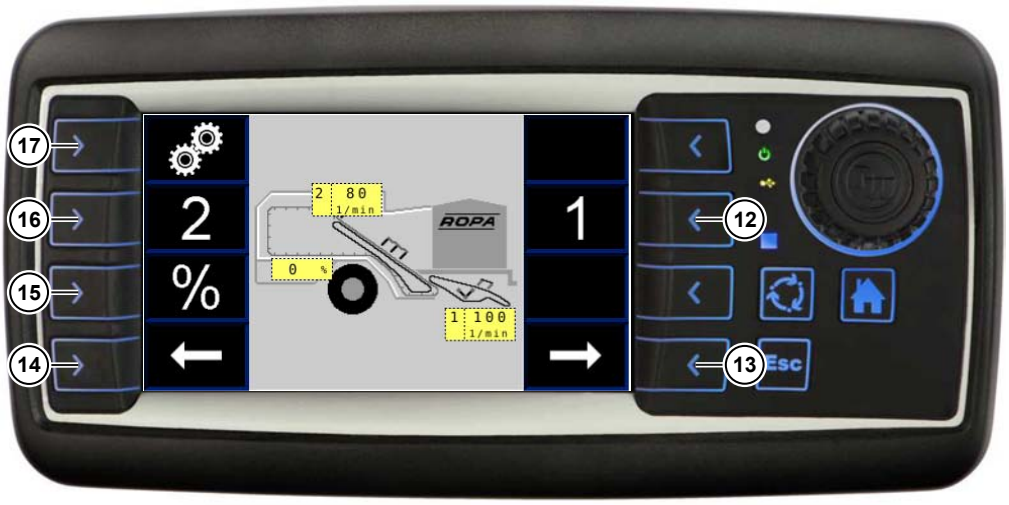
The speeds of sieve conveyor 1 and sieve conveyor 2 can be adjusted together in synchronous mode.

Press the + key to increase the speed synchronously. The maximum speed of the chains is 200 rpm. If one chain has reached this speed and is further increased, the speed of the other chain approaches this speed.

Press the − key to reduce the speed synchronously. The minimum speed of the chains is 50 rpm. If one chain has reached this speed and is further reduced, the speed of the other chain approaches this speed.

The sieve conveyor synchronous speed adjustment must be activated to adjust the speed of sieve conveyors synchronously. If the sieve conveyor synchronous speed adjustment soft key is white, the sieve conveyor synchronous speed adjustment is deactivated. If the sieve conveyor synchronous speed adjustment soft key is green, the sieve conveyor synchronous speed adjustment is activated.

Sieve conveyors synchronous adjustment at the sorting platform terminal



(12) Soft key sieve conveyor 1
(13) Scroll screen right soft key
(14) Scroll screen left soft key
(15) Soft key leaf chain
(16) Soft key sieve conveyor 2
(17) Soft key sieve conveyor speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the sieving channel speeds. Select the sieve conveyor synchronous speed adjustment with the sieve conveyor synchronous speed adjustment soft key ⚙.

(18) Soft key increase sieve conveyors speed
(19) Soft key reduce sieve conveyors speed
(20) Scroll screen right soft key
(21) Scroll screen left soft key
(22) Soft key leaf chain
(23) Soft key sieve conveyor speeds synchronous adjustment

Press the + key to increase the speed synchronously. The maximum speed of the chains is 200 rpm. If one chain has reached this speed and is further increased, the speed of the other chain approaches this speed.

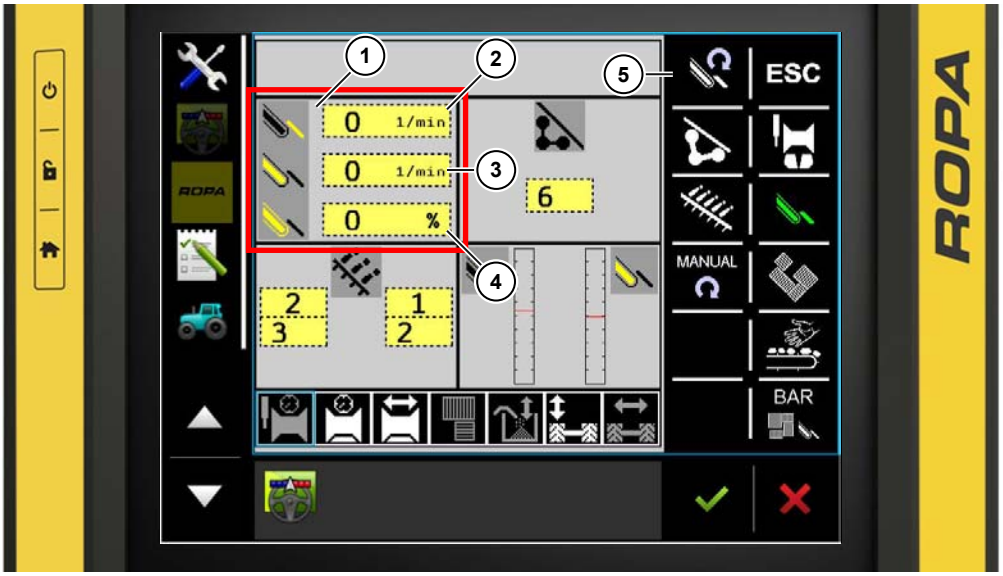
Press the − key to reduce the speed synchronously. The minimum speed of the chains is 50 rpm. If one chain has reached this speed and is further reduced, the speed of the other chain approaches this speed.

The sieve conveyor synchronous speed adjustment must be activated to adjust the speed of sieve conveyors synchronously. If the sieve conveyor synchronous speed adjustment soft key is white, the sieve conveyor synchronous speed adjustment is deactivated. If the sieve conveyor synchronous speed adjustment soft key is green, the sieve conveyor synchronous speed adjustment is activated.

6.13.1.11 Sieve conveyor automatic functions

Activate and adjust sieve conveyor automatic functions at the tractor terminal.

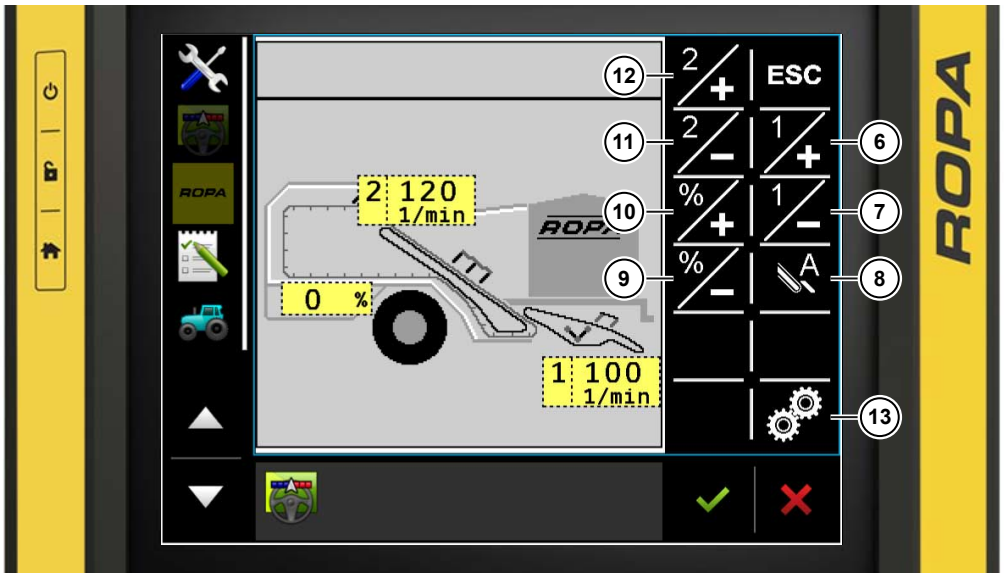
The sieve conveyor automatic functions are activated and deactivated in the sieving channel menu at the sieving channel speeds menu item. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



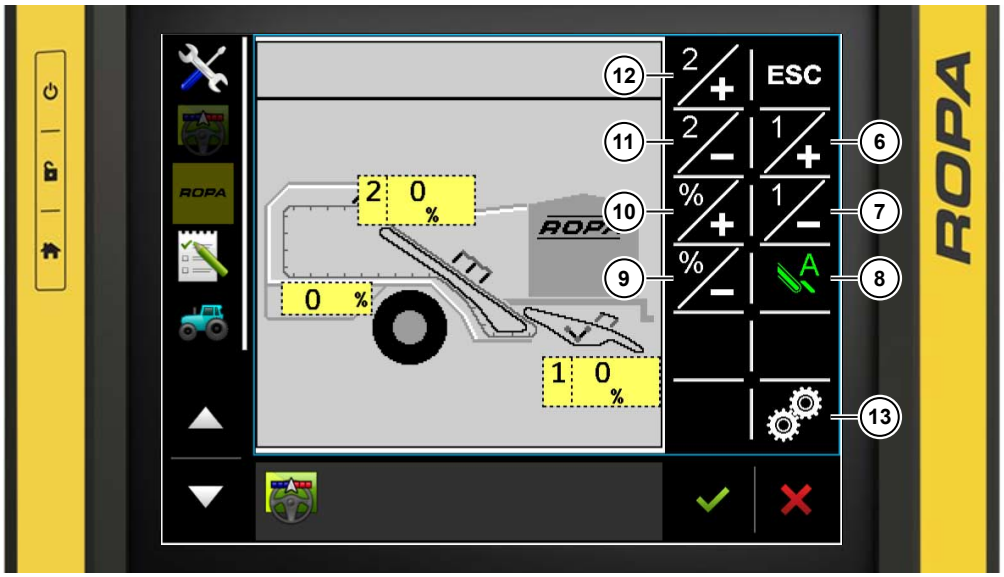
(1) Sieving channel speed soft key
(2) Sieve conveyor 1 speed display
(3) Sieve conveyor 2 speed display
(4) Display of difference of leaf chain from sieve conveyor 2
(5) Sieving channel speed soft key

In the sieving channel speed display field (**1**) the speeds of sieve conveyor 1 (**2**), sieve conveyor 2 (**3**) and the percentage difference of the speed of the leaf chain from sieve conveyor 2 (**4**) is shown. Select the grey button to open the sieving channel speed settings submenu.

The sieving channel speed soft key opens the sieving channel speed settings submenu.

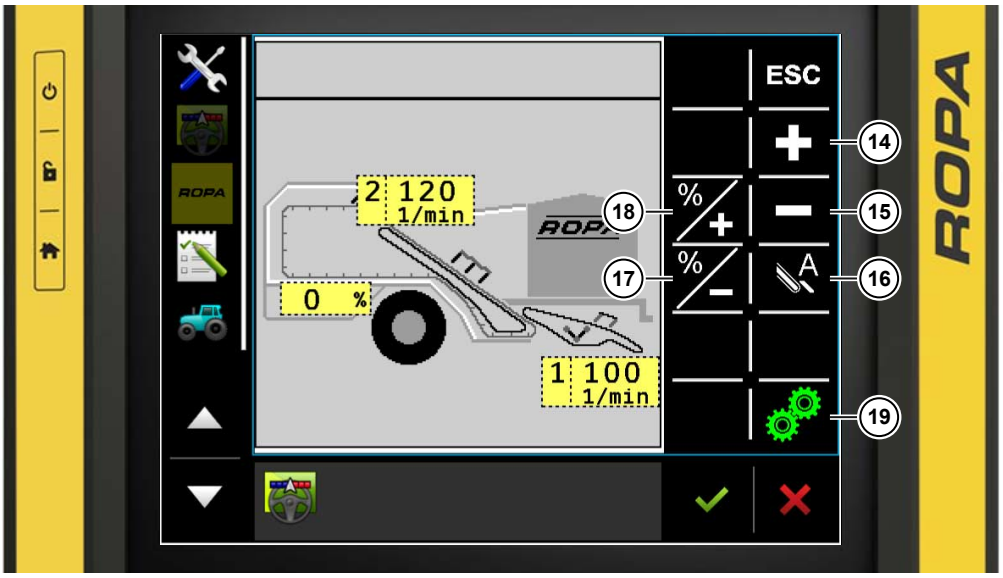


Sieve conveyor automatic functions deactivated with individual adjustment

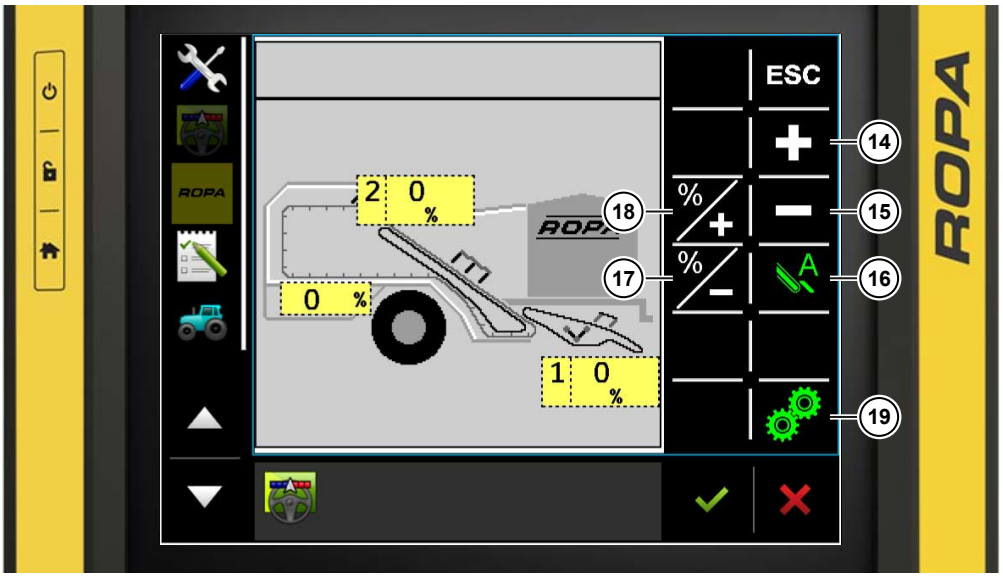


Sieve conveyor automatic functions activated with individual adjustment

(6) Soft key increase sieve conveyor 1 speed
(7) Soft key reduce sieve conveyor 1 speed
(8) Soft key automatic sieve conveyor
(9) Soft key reduce leaf chain speed
(10) Soft key increase leaf chain speed
(11) Soft key reduce sieve conveyor 2 speed
(12) Soft key increase sieve conveyor 2 speed
(13) Soft key sieve conveyor speeds synchronous adjustment



Sieve conveyor automatic functions deactivated with synchronous adjustment

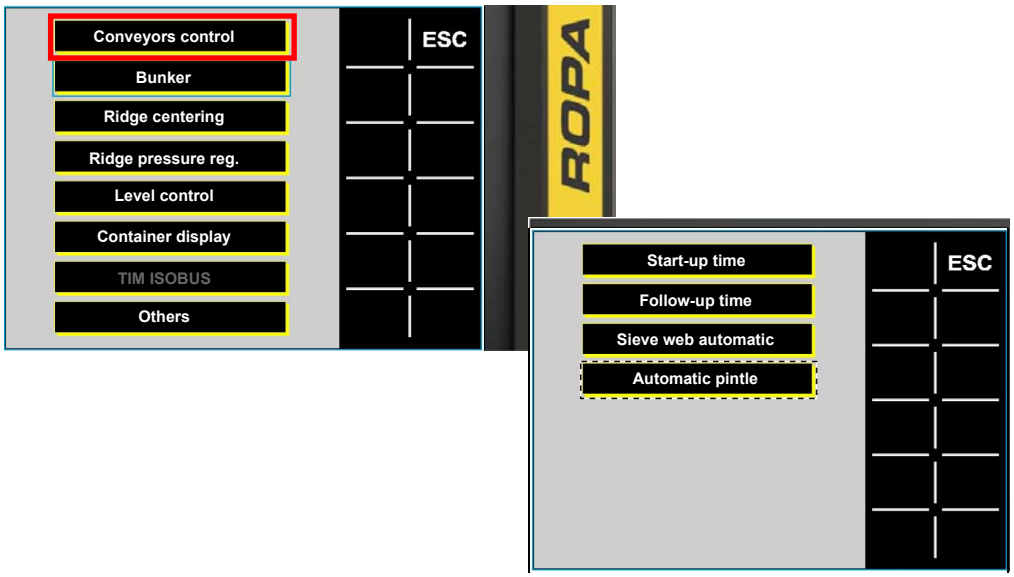


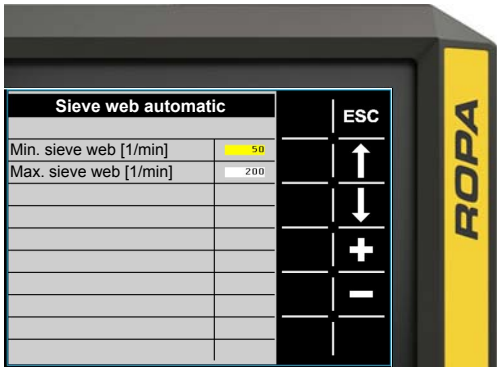
Sieve conveyor automatic functions activated with synchronous adjustment

(14) Soft key increase sieve conveyors speed
(15) Soft key reduce sieve conveyors speed
(16) Soft key automatic sieve conveyor
(17) Soft key reduce leaf chain speed
(18) Soft key increase leaf chain speed
(19) Soft key sieve conveyor speeds synchronous adjustment

The sieve conveyor automatic functions in individual adjustment and in synchronous adjustment of the sieve conveyor speed are activated and deactivated with the soft key . In activated status the soft key is green, in deactivated status the soft key is white.

If sieve conveyor automatic functions are activated, the speeds of the sieve conveyors are equivalent to the current drive speed. The speed of the sieve conveyors can be adjusted individually or synchronously as a percentage of the drive speed. Here, 0% deviation is synchronous to the current driving speed, - % sieve conveyors run slower than the driving speed and + % sieve conveyors run faster than the driving speed. The speed of the leaf chain can be braked in relation to sieve conveyor 2.





The minimum and maximum speed for the automatic control can be set in the main menu in the main settings menu, belt control submenu under sieve conveyor automatic functions. During slow driving the speed of the sieve conveyors is not slower than the minimum set value. During fast driving the speed of the sieve conveyors is not faster than the maximum set value. The default settings are at minimum 50 rpm and at maximum 200 rpm.

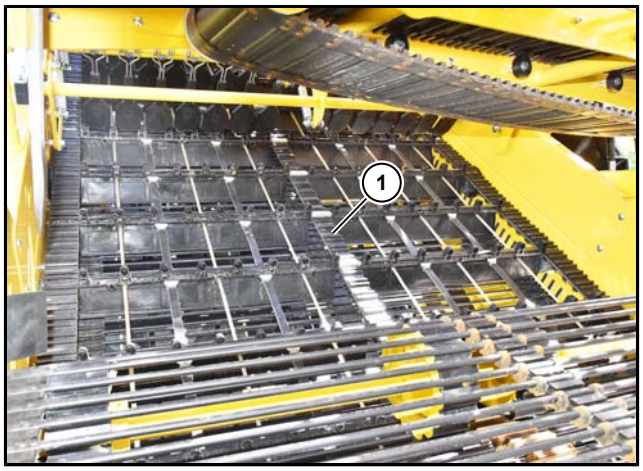
Adjust sieve conveyor automatic functions at the sorting platform terminal

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the sieving channel speeds. If sieve conveyor automatic functions are activated at the tractor terminal, the speeds of sieve conveyor 1 and sieve conveyor 2 can be adjusted individually and synchronously as a percentage of the drive speed.

Sieve conveyor automatic functions individual adjustment at sorting platform

Sieve conveyor automatic functions synchronous adjustment at sorting platform

6.13.1.12 Leaf chain



(1) Leaf chain with integrated leaf strings

The leaf chain is available in the following pitches: 250 and 300.

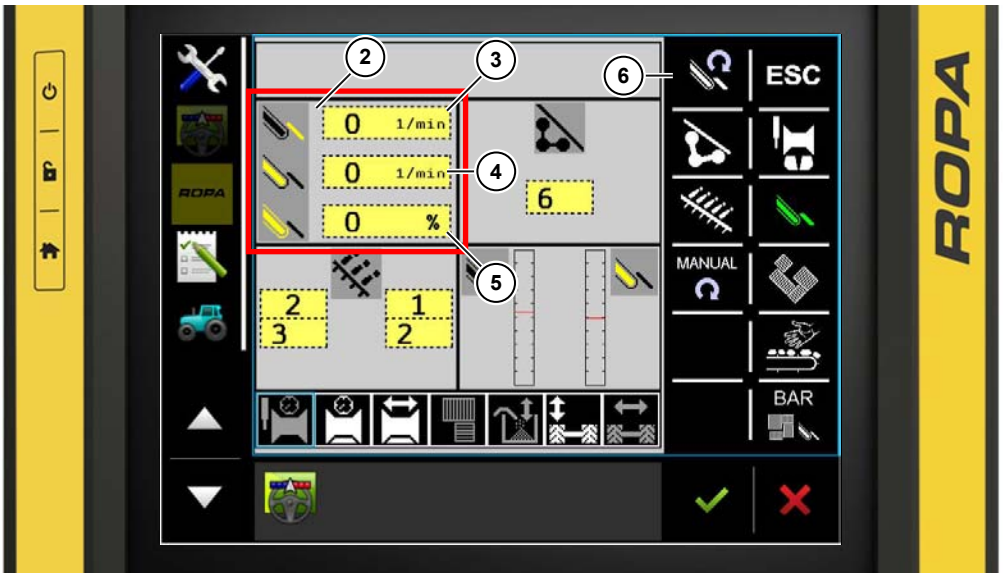
The leaf chain separates crop residues. The crop passes through the machine, during which stems and leaves are ejected through the mesh. The leaf chain consists of rubberised side belts, centre belts and carriers. The integrated leaf strings (**1**) reduce the mesh width and can if necessary be removed from inside to outside.

The speed of the leaf chain can be hydraulically braked depending on the speed of sieve conveyor 2. The feedback comes from the integrated speed sensor in the oil motor of the leaf chain and the integrated speed sensor in the oil motor of sieve conveyor 2. The maximum speed of the leaf chain cannot exceed that of sieve conveyor 2, and is also slower up to a specific deviation. This enables an additional cleaning effect under specific conditions.

The adjustment of the difference of the leaf chain to sieve conveyor 2 is controlled at the tractor terminal or the sorting platform terminal if it is released. A speed sensor integrated in the oil motor sends feedback of the percentage to the control. When the speed of sieve conveyor 2 is adjusted, the speed of the leaf chain automatically retains the defined percentage difference.

Adjusting speed of leaf chain at the tractor terminal

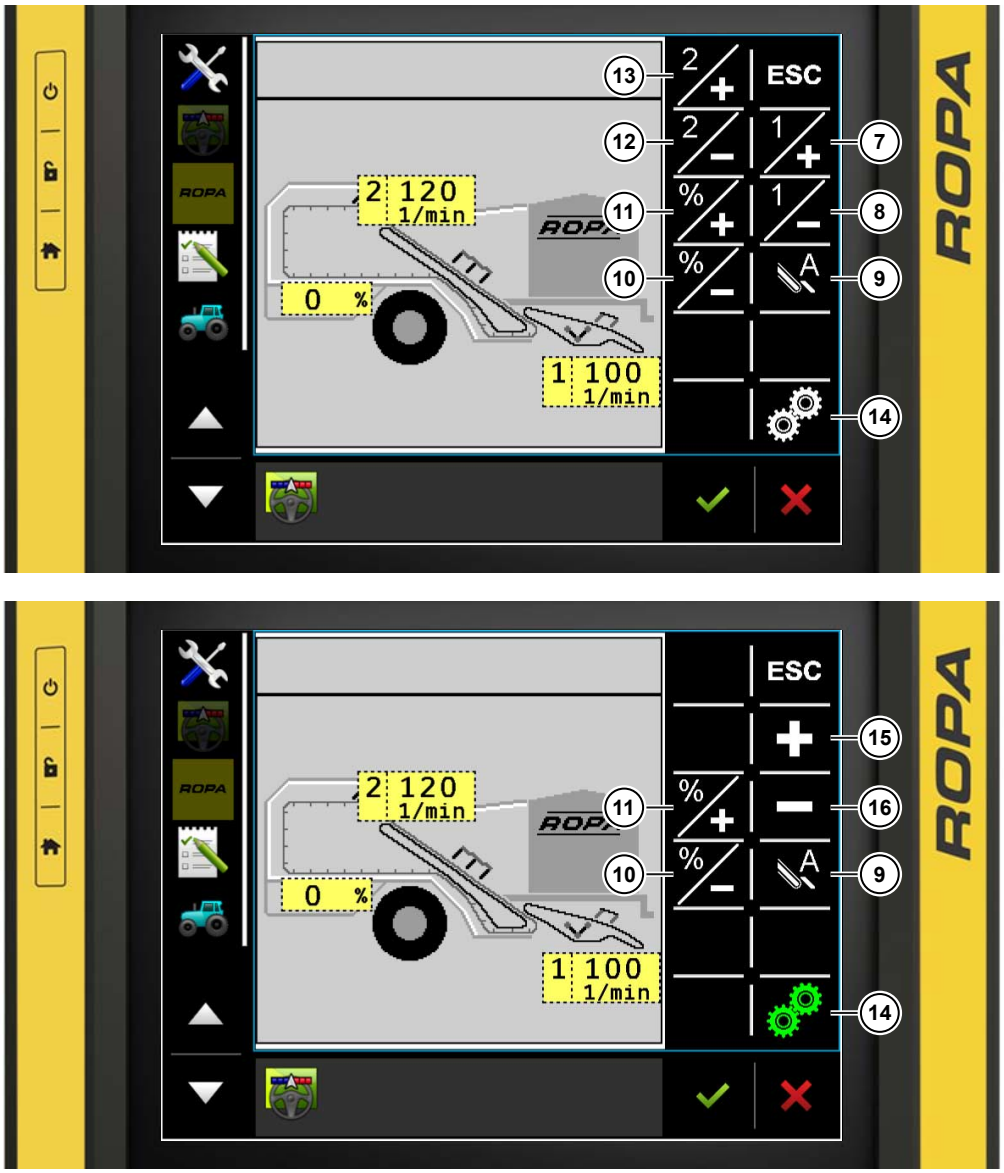
The percentage deviation of the speed of the leaf chain to sieve conveyor 2 can be adjusted in the sieving channel menu. Select the soft key on the tractor terminal. After selection the soft key is green.



(2) Sieving channel speed soft key
(3) Sieve conveyor 1 speed display
(4) Sieve conveyor 2 speed display
(5) Display of difference of leaf chain from sieve conveyor 2
(6) Sieving channel speed soft key

In the sieving channel speed display field (**2**) the speeds of sieve conveyor 1 (**3**), sieve conveyor 2 (**4**) and the percentage difference of the speed of the leaf chain from sieve conveyor 2 (**5**) is shown. Select the grey button to open the sieving channel speed settings submenu.

The sieving channel speed soft key opens the sieving channel speed settings submenu.



(7) Soft key increase sieve conveyor 1 speed
(8) Soft key reduce sieve conveyor 1 speed
(9) Soft key automatic sieve conveyor
(10) Soft key reduce leaf chain speed
(11) Soft key increase leaf chain speed
(12) Soft key reduce sieve conveyor 2 speed
(13) Soft key increase sieve conveyor 2 speed
(14) Soft key sieve conveyor speed synchronous adjustment
(15) Soft key increase sieve conveyors speed
(16) Soft key reduce sieve conveyors speed

Press the % key to increase the speed. If the leaf chain is synchronised with sieve conveyor 2, the maximum speed of the leaf chain is reached and a deviation of 0% is displayed. When the speed of sieve conveyor 2 is adjusted, the defined percentage difference to the leaf chain remains the same.

Press the % key to reduce the speed. At a deviation of -20% the minimum speed of the leaf chain compared to sieve conveyor 2 is reached. When the speed of sieve conveyor 2 is adjusted, the defined percentage difference to the leaf chain remains the same.

Adjusting speed of leaf chain at the sorting platform terminal

(17) Soft key sieve conveyor 1
(18) Scroll screen right soft key
(19) Scroll screen left soft key
(20) Soft key leaf chain
(21) Soft key sieve conveyor 2
(22) Soft key sieve conveyor speeds synchronous adjustment
(23) Soft key increase sieve conveyors speed
(24) Soft key reduce sieve conveyors speed

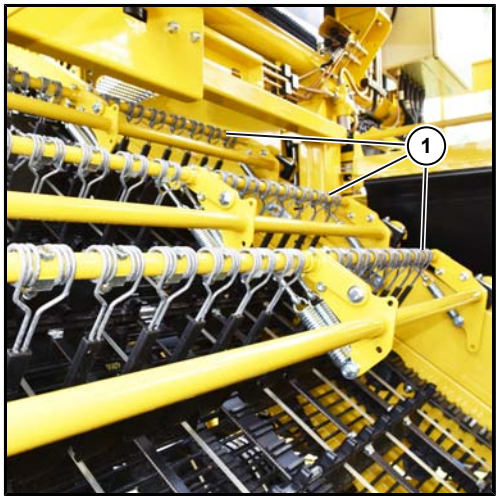
If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the sieving channel speeds. Select the leaf chain with leaf chain soft key %.

(25) Soft key increase leaf chain speed
(26) Soft key reduce leaf chain speed

Press the % key to increase the speed. If the leaf chain is synchronised with sieve conveyor 2, the maximum speed of the leaf chain is reached and a deviation of 0% is displayed. When the speed of sieve conveyor 2 is adjusted, the defined percentage difference to the leaf chain remains the same.

Press the % key to reduce the speed. At a deviation of -20% the minimum speed of the leaf chain compared to sieve conveyor 2 is reached. When the speed of sieve conveyor 2 is adjusted, the defined percentage difference to the leaf chain remains the same.

6.13.1.13 Leaf scraper



(1) Front leaf-scraper
(2) Rear leaf-scraper

Above the leaf chain there are 6 rows (optionally 7 rows) of adjustable leaf scrapers with individual leaf springs to catch the potatoes hanging from or caught in the haulm. The potatoes fall through the leaf chain directly onto sieve conveyor 2 or on the slow-moving pintle belt 1.

The leaf scrapers are divided into two independently adjustable segments, the 3 rows of front leaf scrapers (**1**) and the 3 rows (optionally 4 rows) of rear leaf scrapers (**2**). They are adjusted at the tractor terminal or the sorting platform terminal if it is released.

If the haulm is young and green and the tubers are firmly attached to the haulm, the leaf scrapers should be set close to the leaf chain. If the haulm is dry and withered and the tubers are already detached, the leaf scrapers can be set further away from the leaf chain to have as little haulm residue in the mesh as possible.

ATTENTION

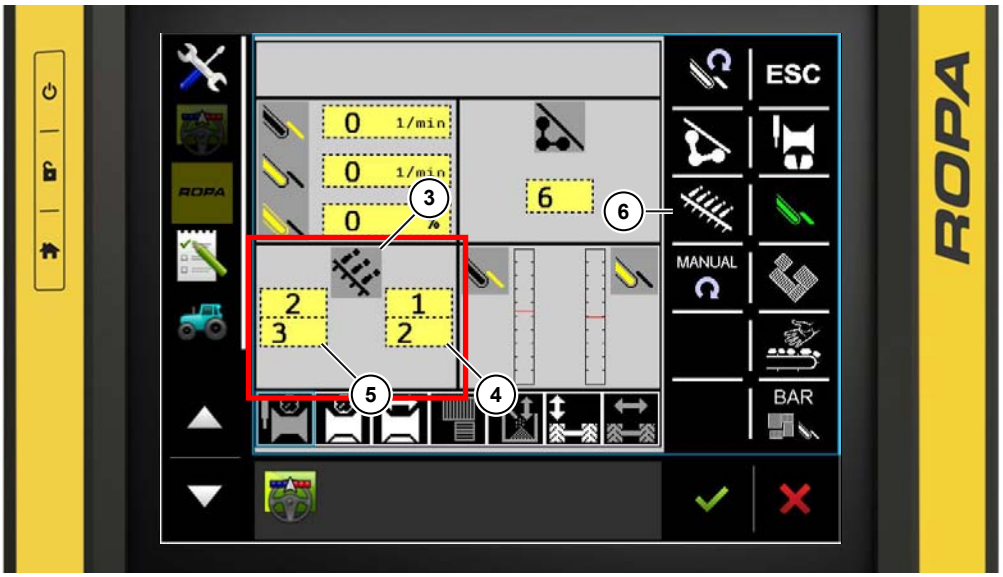
Increased wear and crop damage.

Aggressively adjusted leaf scrapers that grip the leaf chain may increase wear on the leaf scrapers and the leaf chain. There will also be a risk of crop damage.

– Adjust leaf scrapers so they contact the leaf chain only as much as necessary and check the cleaning effect for subsequent adjustment if necessary.

Adjusting leaf scrapers at the tractor terminal

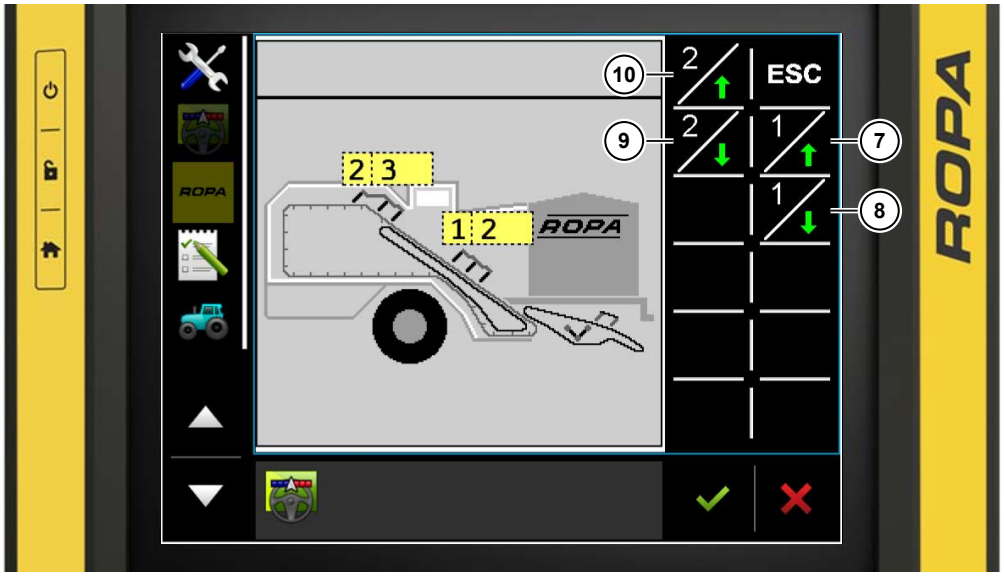
Leaf scrapers can be adjusted in the sieving channel menu. Select the sieving channel soft key on the tractor terminal. After selection the soft key is green.



(3) Leaf scraper display field
(4) Display of front leaf-scraper height
(5) Display of rear leaf-scraper height
(6) Leaf scraper soft key

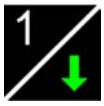
The leaf scraper display field (**3**) shows the heights of the front leaf scrapers (**4**) and the heights of the rear leaf scrapers (**5**). Select the grey button to open the leaf scraper submenu.

Select the leaf scraper soft key to open the leaf scraper submenu.



(7) Raise front leaf scrapers soft key
(8) Lower front leaf scrapers soft key
(9) Lower rear leaf scrapers soft key
(10) Raise rear leaf scrapers soft key

Press the key to raise the front leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.



Press the key to lower the front leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

Press the key to raise the rear leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

Press the key to lower the rear leaf scrapers. Display 0 shows that the leaf scrapers are very close to the leaf chain and display 20 shows that the leaf scrapers are well away from the leaf chain.

Adjusting leaf scrapers at the sorting platform terminal

(11) Soft key pintle belt 1/2 inclination
(12) Front leaf scraper soft key
(13) Lifting depth left soft key
(14) Scroll screen right soft key
(15) Scroll screen left soft key
(16) Lifting depth right soft key
(17) Rear leaf scraper soft key
(18) Soft key pintle belt 4 inclination

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the leaf scrapers. Select the leaf scrapers with the front leaf scrapers soft key 2 or the rear leaf scrapers soft key 5.

(19) Raise front leaf scrapers soft key
(20) Lower front leaf scrapers soft key
(21) Lower rear leaf scrapers soft key
(22) Raise rear leaf scrapers soft key

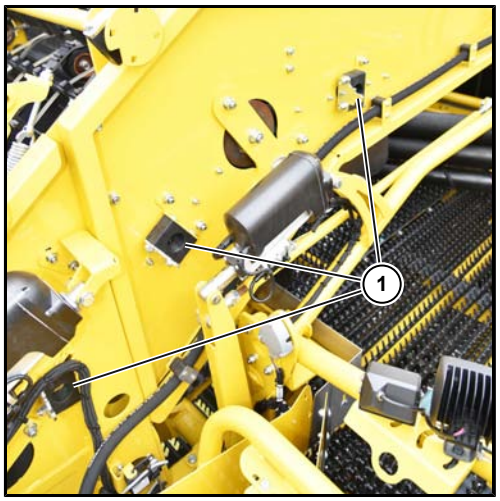
Press the 2/↑ key to raise the front leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

Press the 2 key to lower the front leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

Press the 5 key to raise the rear leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

Press the 5 key to lower the rear leaf scrapers. Display 0 shows the leaf scrapers very close to the leaf chain and display 20 shows the leaf scrapers well away from the leaf chain.

6.13.1.14 Pull-off rods in the leaf separation



(1) Pull-off rods working positions
(2) Pull-off rods storage positions

If the potatoes do not come loose in spite of aggressively adjusted leaf scrapers, operational pull-off rods (**1**) can be installed in up to 3 positions. The potatoes are then caught between the pull-off rods, the leaf scrapers and the leaf chain, which will remove the haulm. If the pull-off rods are not required, they can be stored on the machine (**2**). The pull-off rods have a plastic tube to protect the potatoes.

ATTENTION

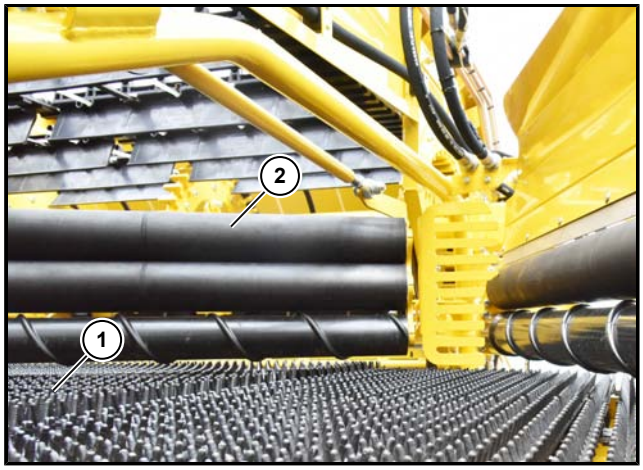
Increased wear and crop damage.

Using pull-off rods will increase wear of the leaf chain and the leaf scrapers. There will also be a risk of crop damage.

6.13.2 Separation

Separation consists of pintle belt 1 with deflector roller 1 and the dirt discharge conveyor, pintle belt 2 with deflector roller 2, pintle belt 3 with deflector roller 3, pintle belt 4 with the rotating finger comb (UFK), the inclination of pintle belt 1/2 and the inclination of pintle belt 4.

6.13.2.1 Pintle belt 1



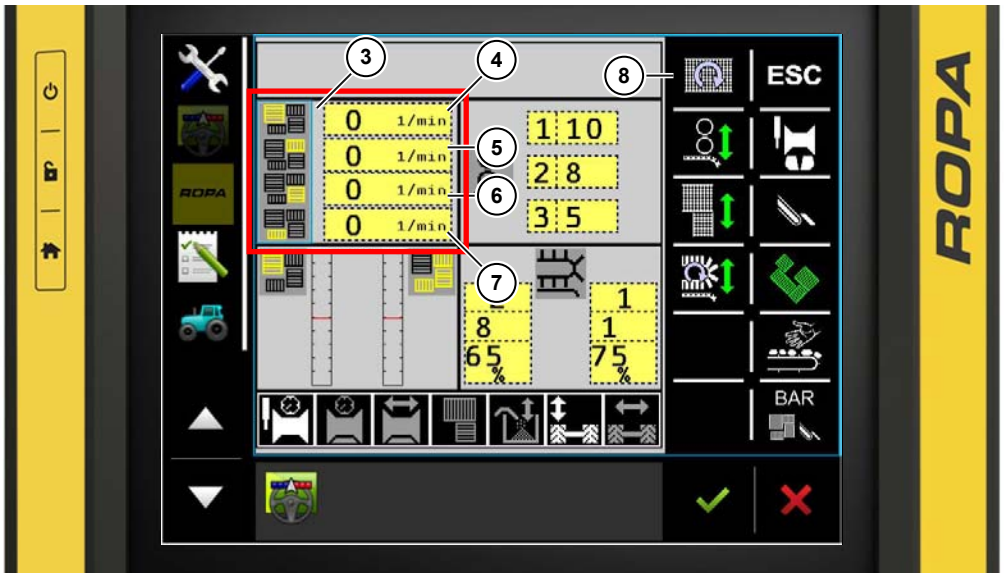
(1) Pintle belt 1
(2) Deflector roller 1

The pintle belt 1 is available in the following pitches: 36 and 40.

The standard pintle belt 1 (**1**) is fitted with rubberised finger rods arranged in V-profile pattern. Optionally, the pintle belt 1 is available with finger rods arranged in H-profile pattern. Deflector roller 1 (**2**) is above. Small amounts of trash and haulm are passed through the rubber fingers and deflector roller 1 and separated. The speed of pintle belt 1 can be adjusted at the tractor terminal or at the sorting platform terminal if it has been released.

Adjusting speed of pintle belt 1 at the tractor terminal

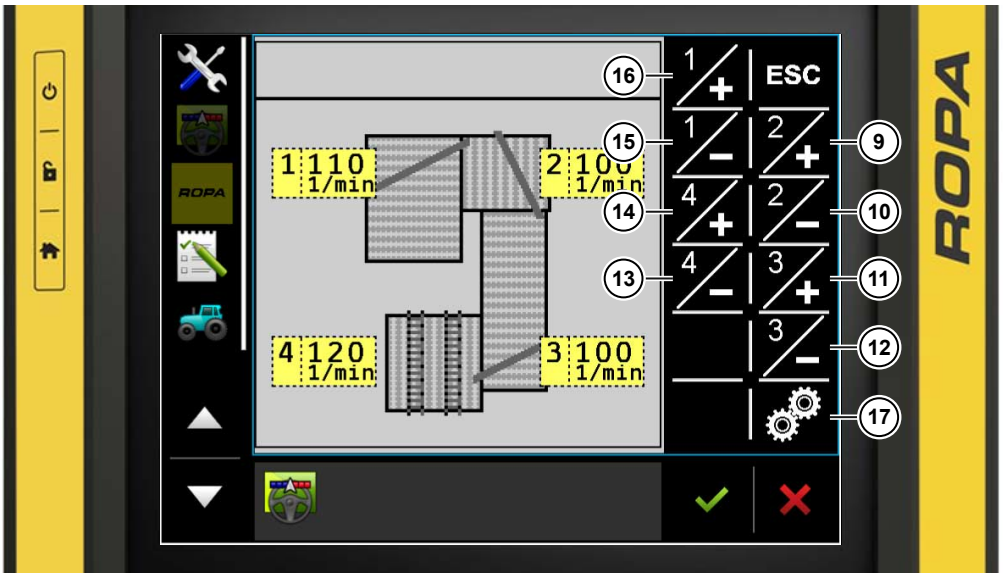
The speed of pintle belt 1 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Pintle belt speeds display field
(4) Speed display for pintle belt 1
(5) Speed display for pintle belt 2
(6) Speed display for pintle belt 3
(7) Speed display for pintle belt 4
(8) Soft key pintle belt speeds

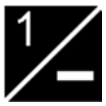
The pintle belt speeds display field (**3**) shows the speeds of pintle belt 1 (**4**), pintle belt 2 (**5**), pintle belt 3 (**6**) and pintle belt 4 (**7**). Select the grey button for direct access to the pintle belt speed settings submenu.

The pintle belt speed soft key opens the pintle belt speed settings submenu.



(9) Soft key increase pintle belt 2 speed
(10) Soft key reduce pintle belt 2 speed
(11) Soft key increase pintle belt 3 speed
(12) Soft key reduce pintle belt 3 speed
(13) Soft key reduce pintle belt 4 speed
(14) Soft key increase pintle belt 4 speed
(15) Soft key reduce pintle belt 1 speed
(16) Soft key increase pintle belt 1 speed
(17) Soft key pintle belt speeds synchronous adjustment

Press the 1/+ key to increase the speed. The maximum speed of pintle belt 1 is 250 rpm.



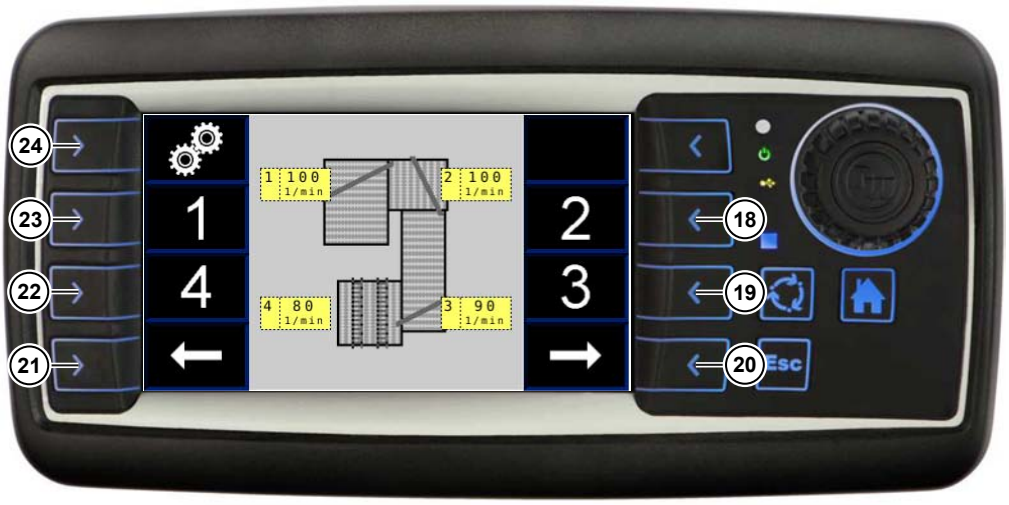
Press the 1/− key to reduce the speed. The minimum speed of pintle belt 1 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 1. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

The pressure in the hydraulic drive of pintle belt 1 is continuously displayed and monitored on the pressure monitor on the tractor terminal. If the maximum pressure warning limit set by the driver is exceeded, the tractor terminal shows the warning and a warning sound is also generated.

If pintle belt 1 is blocked by a foreign body, the tractor terminal shows the warning icon and a continuous warning sound is also generated. In case of blockage sieve conveyor 1, sieve conveyor 2, the leaf chain, pintle belt 1 and deflector roller 1 are automatically shut off to prevent potential damage and subsequent damage. Work can be continued after clearing the blockage.

Adjusting speed of pintle belt 1 at the sorting platform terminal

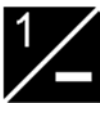


(18) Soft key pintle belt 2
(19) Soft key pintle belt 3
(20) Scroll screen right soft key
(21) Scroll screen left soft key
(22) Soft key pintle belt 4
(23) Soft key pintle belt 1
(24) Soft key pintle belt speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt speeds. Select pintle belt 1 with the soft key 1.

(25) Soft key increase pintle belt 1 speed
(26) Soft key reduce pintle belt 1 speed

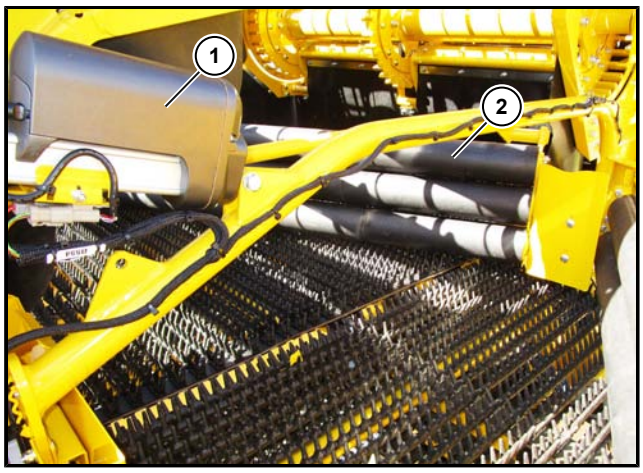
Press the 1/+ key to increase the speed. The maximum speed of pintle belt 1 is 250 rpm.



Press the 1/− key to reduce the speed. The minimum speed of pintle belt 1 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 1. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

6.13.2.2 Deflector roller 1



(1) Electric height adjustment of deflector roller 1
(2) Deflector roller 1

Deflector roller 1 is hydraulically driven at a speed depending on the speed of pintle belt 1. If the speed of pintle belt 1 is adjusted, this also adjusts the speed of deflector roller 1. The height of the standard version of deflector roller 1 can be electrically adjusted with keys on the tractor terminal or the sorting platform terminal if it is released and it is designed as a 3x deflector roller.
The lower roller can be optionally designed as a spiral roller.

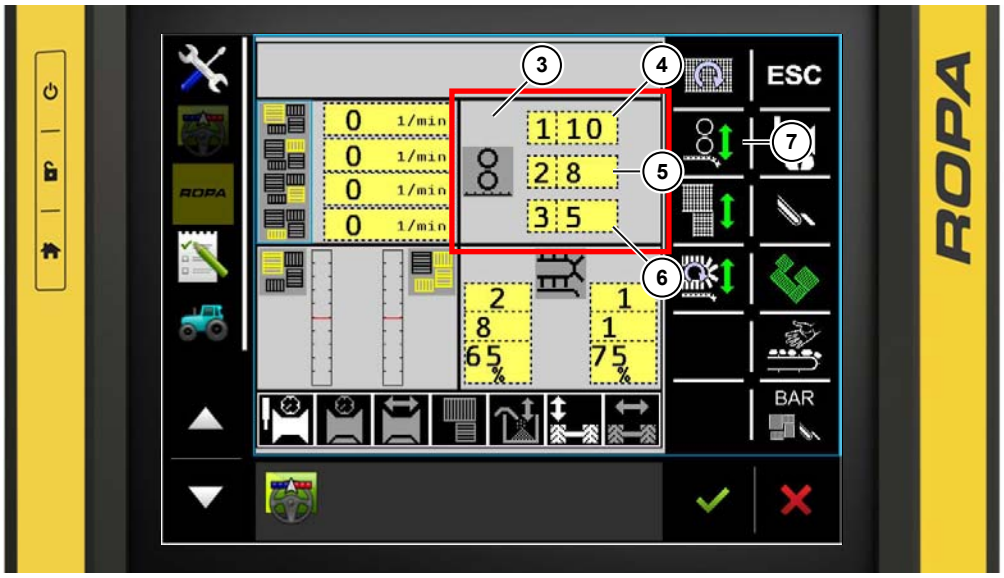
ATTENTION

Danger of losses and machine damage.

The larger the set gap between pintle belt 1 and deflector roller 1 the greater the danger of crop loss. The narrower the set gap between pintle belt 1 and deflector roller 1 the greater the danger of increased wear, because soil may accumulate on deflector roller 1 and pintle belt 1.

Adjusting height of deflector roller 1 at the tractor terminal

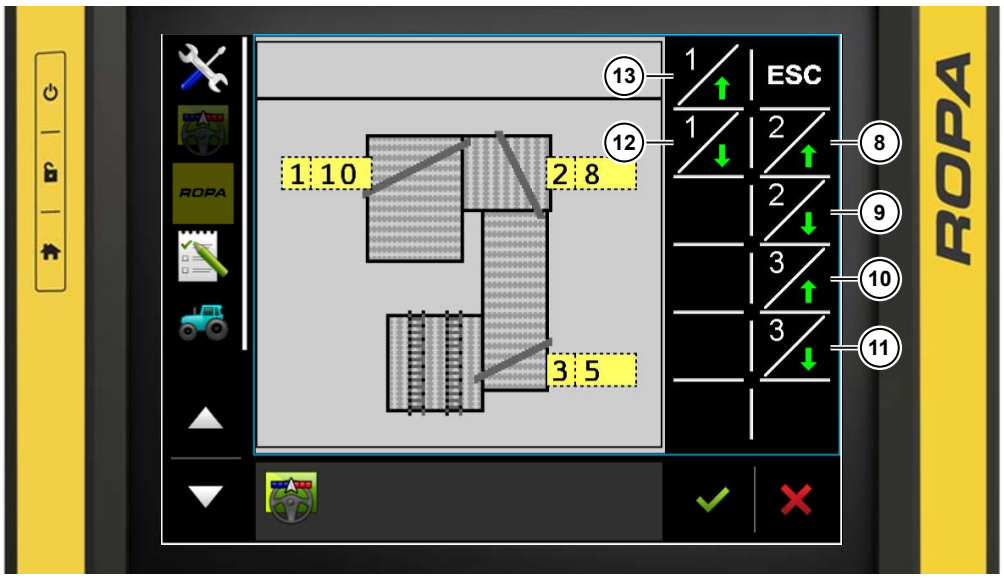
The height of deflector roller 1 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Deflector roller height display field
(4) Display of height of deflector roller 1
(5) Display of height of deflector roller 2
(6) Display of height of deflector roller 3
(7) Soft key deflector roller height

The deflector roller height display field (**3**) shows the heights of deflector roller 1 (**4**), deflector roller 2 (**5**) and deflector roller 3 (**6**). Select the grey button to open the deflector roller height adjustment submenu.

Select the deflector roller height soft key to open the deflector roller height adjustment submenu.

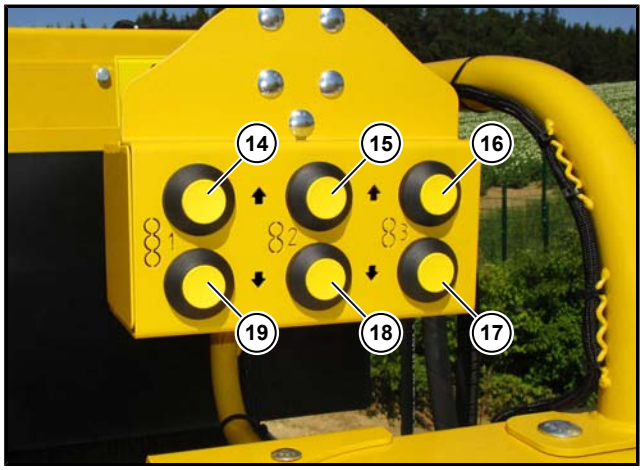


(8) Soft key increase height of deflector roller 2
(9) Soft key reduce height of deflector roller 2
(10) Soft key increase height of deflector roller 3
(11) Soft key reduce height of deflector roller 3
(12) Soft key reduce height of deflector roller 1
(13) Soft key increase height of deflector roller 1

Press the key to raise deflector roller 1. The maximum distance between pintle belt 1 and deflector roller 1 is 20.

Press the key to lower deflector roller 1. The minimum distance between pintle belt 1 and deflector roller 1 is 0.

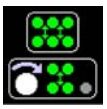
Adjusting height of deflector roller 1 at the sorting platform terminal



(14) Deflector roller 1 higher key
(15) Deflector roller 2 higher key
(16) Deflector roller 3 higher key
(17) Deflector roller 3 lower key
(18) Deflector roller 2 lower key
(19) Deflector roller 1 lower key

Press the key (**14**) to raise deflector roller 1. The maximum distance between pintle belt 1 and deflector roller 1 is 20.

Press the key (**19**) to lower deflector roller 1. The minimum distance between pintle belt 1 and deflector roller 1 is 0.



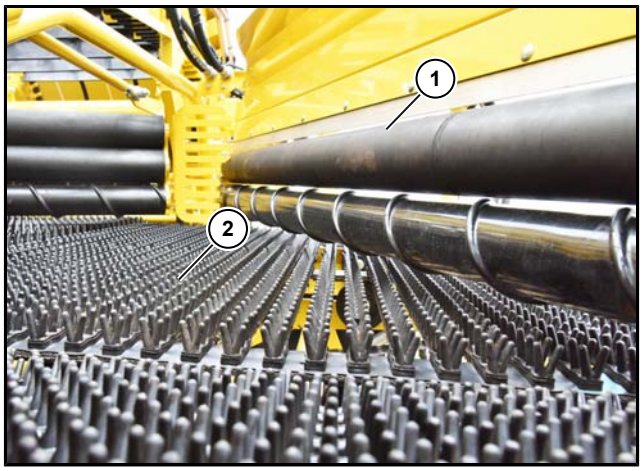
If the soft key on the tractor terminal is green, deflector roller 1 can be adjusted from the sorting platform.

6.13.2.3 Dirt discharge conveyor

(1) Dirt discharge conveyor

The dirt discharge conveyor (**1**) is hydraulically driven in proportion to the speed of pintle belt 1. If the speed of pintle belt 1 is adjusted, this also adjusts the speed of the dirt discharge conveyor.

6.13.2.4 Pintle belt 2



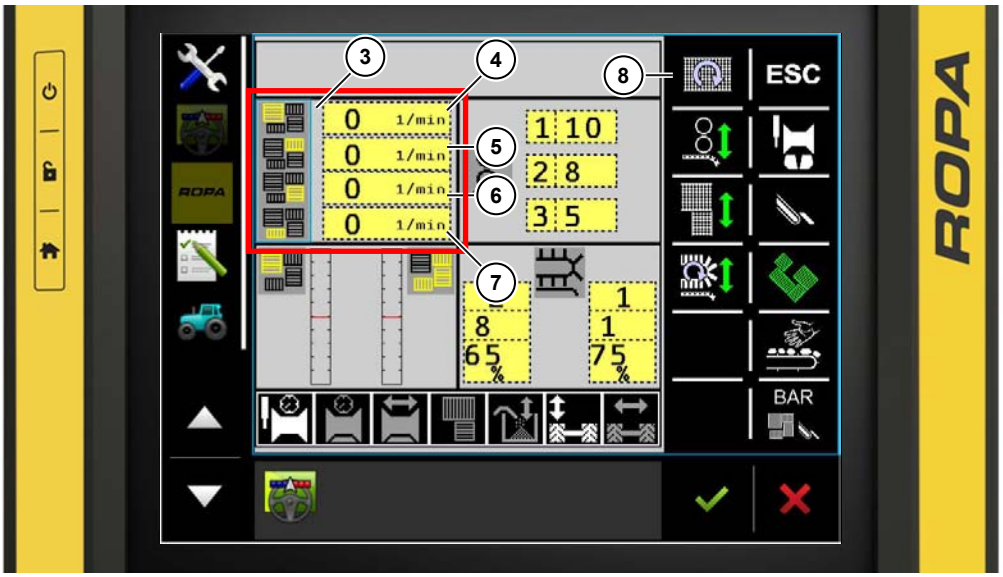
(1) Deflector roller 2
(2) Pintle belt 2

The pintle belt 2 is available in the following pitches: 36 and 40.

The standard pintle belt 2 (**2**) is fitted with rubberised finger rods arranged in V-profile pattern. Optionally, the pintle belt 2 is available with finger rods arranged in H-profile pattern. Deflector roller 2 (**1**) is above. Small amounts of trash and haulm are passed through the rubber fingers and deflector roller 2 and separated. The speed of pintle belt 2 can be adjusted at the tractor terminal or at the sorting platform terminal if it has been released.

Adjusting speed of pintle belt 2 at the tractor terminal

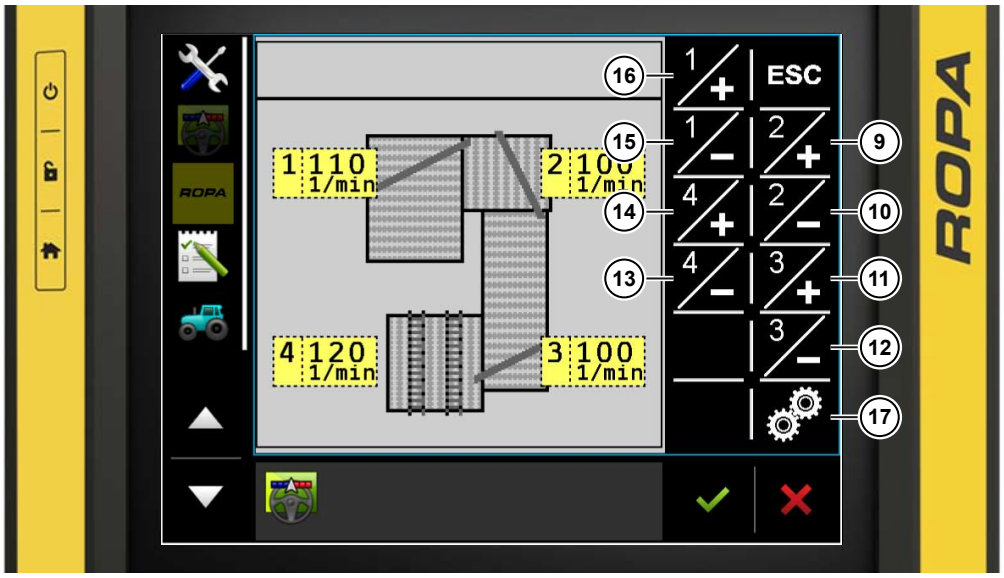
The speed of pintle belt 2 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Pintle belt speeds display field
(4) Speed display for pintle belt 1
(5) Speed display for pintle belt 2
(6) Speed display for pintle belt 3
(7) Speed display for pintle belt 4
(8) Soft key pintle belt speeds

The pintle belt speeds display field (**3**) shows the speeds of pintle belt 1 (**4**), pintle belt 2 (**5**), pintle belt 3 (**6**) and pintle belt 4 (**7**). Select the grey button for direct access to the pintle belt speed settings submenu.

The pintle belt speed soft key opens the pintle belt speed settings submenu.



(9) Soft key increase pintle belt 2 speed
(10) Soft key reduce pintle belt 2 speed
(11) Soft key increase pintle belt 3 speed
(12) Soft key reduce pintle belt 3 speed
(13) Soft key reduce pintle belt 4 speed
(14) Soft key increase pintle belt 4 speed
(15) Soft key reduce pintle belt 1 speed
(16) Soft key increase pintle belt 1 speed
(17) Soft key pintle belt speeds synchronous adjustment

Press the 2+ key to increase the speed. The maximum speed of pintle belt 2 is 250 rpm.

Press the 2− key to reduce the speed. The minimum speed of pintle belt 2 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 2. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

The pressure in the hydraulic drive of pintle belt 2 is continuously displayed and monitored on the pressure monitor on the tractor terminal. If the maximum pressure warning limit set by the driver is exceeded, the tractor terminal shows the warning and a warning sound is also generated.

If pintle belt 2 is blocked by a foreign body, the tractor terminal shows the warning icon and a continuous warning sound is also generated. In case of blockage sieve conveyor 1, sieve conveyor 2, the leaf chain, pintle belt 1, deflector roller 1, pintle belt 2, deflector roller 2, pintle belt 3, deflector roller 3 and pintle belt 4 are automatically shut off to prevent potential damage and subsequent damage. Work can be continued after clearing the blockage.

Adjusting speed of pintle belt 2 at the sorting platform terminal

(18) Soft key pintle belt 2
(19) Soft key pintle belt 3
(20) Scroll screen right soft key
(21) Scroll screen left soft key
(22) Soft key pintle belt 4
(23) Soft key pintle belt 1
(24) Soft key pintle belt speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt speeds. Select pintle belt 2 with the soft key 2.

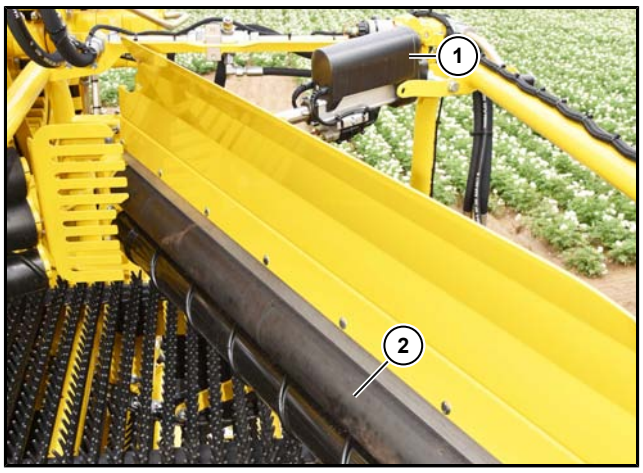
(25) Soft key increase pintle belt 2 speed
(26) Soft key reduce pintle belt 2 speed

Press the 2+ key to increase the speed. The maximum speed of pintle belt 2 is 250 rpm.

Press the 2− key to reduce the speed. The minimum speed of pintle belt 2 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 2. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

6.13.2.5 Deflector roller 2



(1) Electric height adjustment of deflector roller 2
(2) Deflector roller 2

Deflector roller 2 is hydraulically driven at a speed depending on the speed of pintle belt 2. If the speed of pintle belt 2 is adjusted, this also adjusts the speed of deflector roller 2. The height of the standard version of deflector roller 2 can be electrically adjusted with keys on the tractor terminal or the sorting platform terminal if it is released and designed as a double deflector roller.
The lower roller can be optionally designed as a spiral roller.

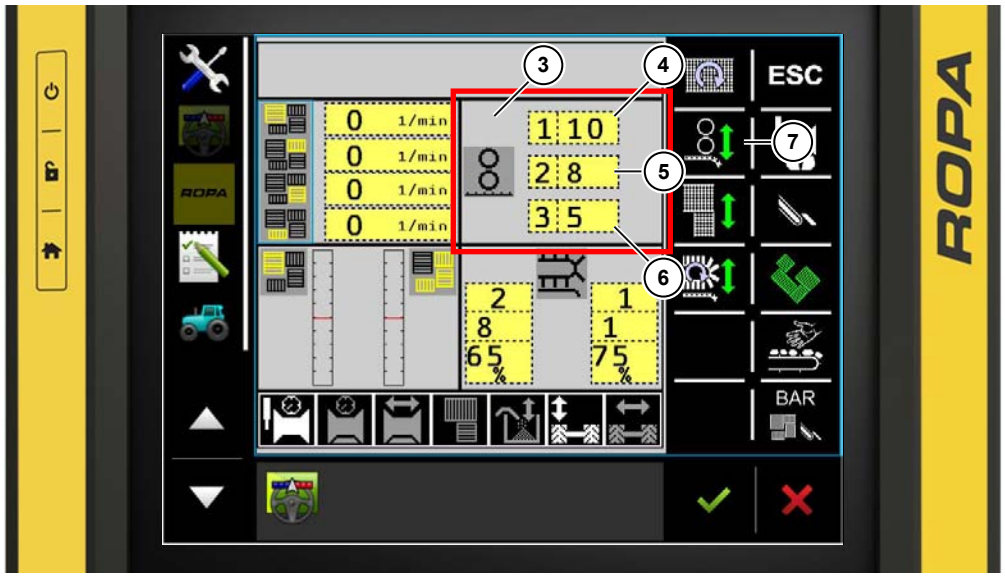
ATTENTION

Danger of losses and machine damage.

The larger the set gap between pintle belt 2 and deflector roller 2 the greater the danger of crop loss. The narrower the set gap between pintle belt 2 and deflector roller 2 the greater the danger of increased wear, because soil may accumulate on deflector roller 2 and pintle belt 2.

Adjusting height of deflector roller 2 at the tractor terminal

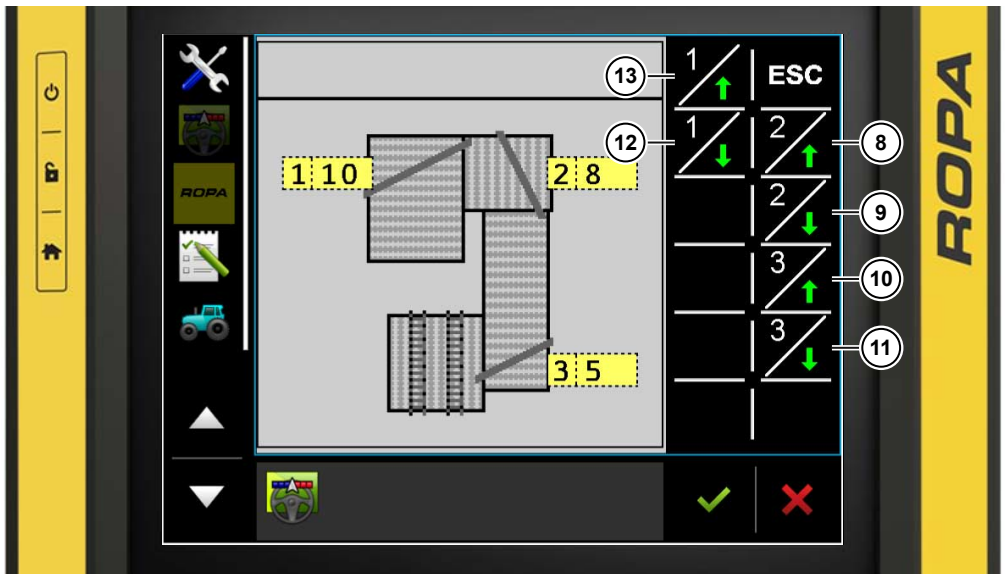
The height of deflector roller 2 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Deflector roller height display field
(4) Display of height of deflector roller 1
(5) Display of height of deflector roller 2
(6) Display of height of deflector roller 3
(7) Soft key deflector roller height

The deflector roller height display field (**3**) shows the heights of deflector roller 1 (**4**), deflector roller 2 (**5**) and deflector roller 3 (**6**). Select the grey button to open the deflector roller height adjustment submenu.

Select the deflector roller height soft key to open the deflector roller height adjustment submenu.

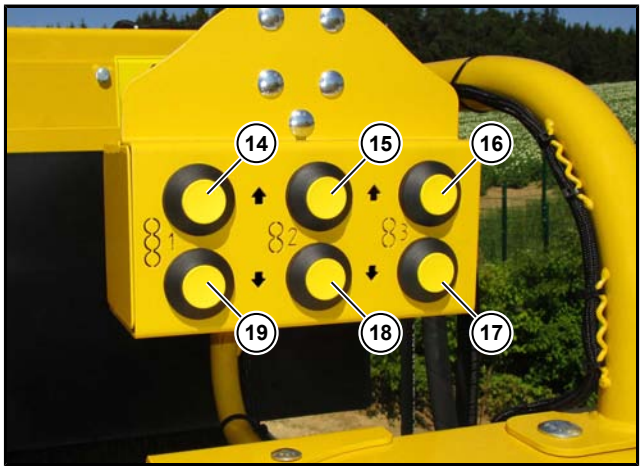


(8) Soft key increase height of deflector roller 2
(9) Soft key reduce height of deflector roller 2
(10) Soft key increase height of deflector roller 3
(11) Soft key reduce height of deflector roller 3
(12) Soft key reduce height of deflector roller 1
(13) Soft key increase height of deflector roller 1

Press the key to raise deflector roller 2. The maximum distance between pintle belt 2 and deflector roller 2 is 20.

Press the key to lower deflector roller 2. The minimum distance between pintle belt 2 and deflector roller 2 is 0.

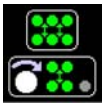
Adjusting height of deflector roller 2 at the sorting platform terminal



(14) Deflector roller 1 higher key
(15) Deflector roller 2 higher key
(16) Deflector roller 3 higher key
(17) Deflector roller 3 lower key
(18) Deflector roller 2 lower key
(19) Deflector roller 1 lower key

Press the key (**15**) to raise deflector roller 2. The maximum distance between pintle belt 2 and deflector roller 2 is 20.

Press the key (**18**) to lower deflector roller 2. The minimum distance between pintle belt 2 and deflector roller 2 is 0.



If the soft key on the tractor terminal is green, deflector roller 2 can be adjusted from the sorting platform.

Modification of deflector roller 2 in case of haulm problems

(20) Intermediate piece deflector roller 2
(21) Position of lifting spindle drive with deflector comb
(22) Position of lifting spindle drive without deflector comb
(23) Deflector comb

There is a possibility, under certain harvesting conditions, of haulm building up in the transition from pintle belt 1 to pintle belt 2 in the corner of the deflector comb (**23**). In order to prevent the haulm from building up, the deflector comb (**23**) must be dismantled and the deflector roller 2 displaced.

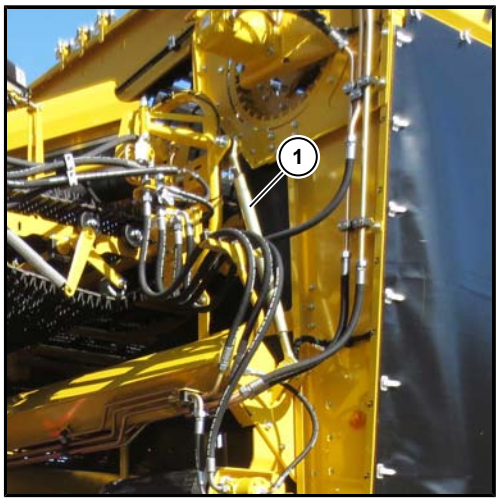
Dismantling deflector comb:

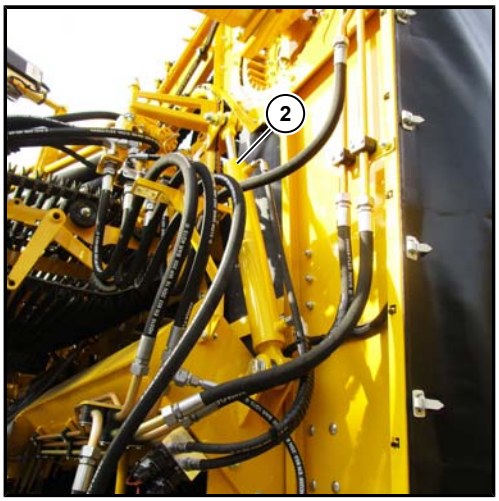
– Remove the deflector comb (**23**).
– Dismantle the deflector roller 2 from the intermediate piece deflector roller 2 (**20**).
– Dismantle the intermediate piece deflector roller 2 (**20**).
– Replace the lifting spindle drive from the position with deflector comb (**21**) to the position without deflector comb (**22**).
– Mount the deflector roller 2 to the previous position of the intermediate piece deflector roller 2 (**20**).
– Check the top and bottom positions of the deflector roller 2 and, if necessary, teach them in again with the sensor B556 in Teach In.

Mounting the defelctor comb:

– Dismantle the deflector roller 2 from the place where the intermediate piece deflector roller 2 (**20**) has to be mounted.
– Replace the lifting spindle drive from the position without deflector comb (**22**) to the position with deflector comb (**21**).
– Mount the intermediate piece deflector roller 2 (**20**).
– Mount the deflector roller 2 to the intermediate piece deflector roller 2 (**20**).
– Mount the deflector comb (**23**).
– Check the top and bottom positions of the deflector roller 2 and, if necessary, teach them in again with the sensor B556 in Teach In.

6.13.2.6 Pintle belt 1/2 inclination





(1) Upper arm pintle belt 1/2 inclination (standard)
(2) Hydraulic cylinder pintle belt 1/2 inclination (optional)

The standard version of pintle belt 1/2 is fitted with an upper arm (**1**) to adjust the inclination. The inclination of pintle belt 1/2 is manually adjusted by rotating the upper arm.

DANGER

Hazard to life due to moving machine parts!

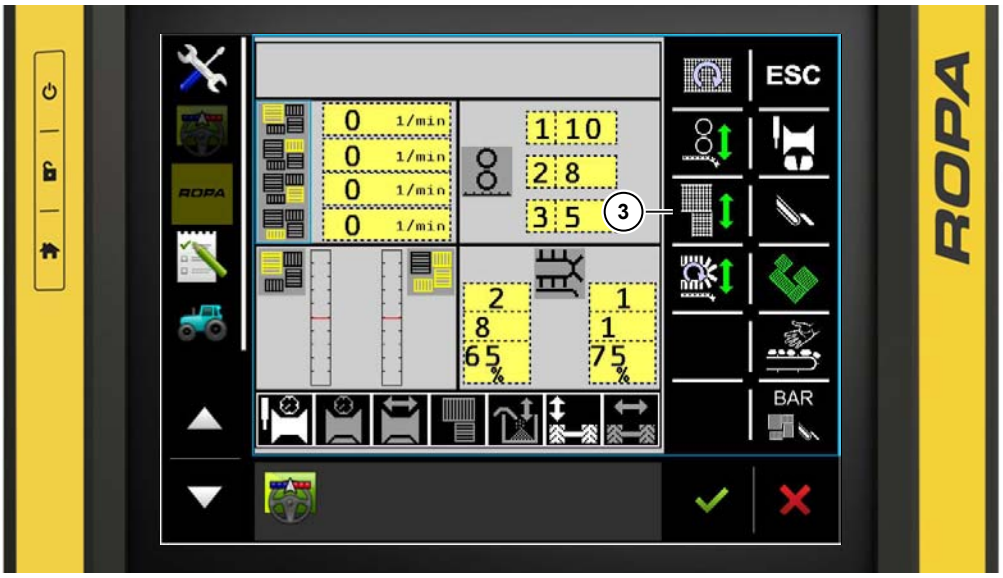
Adjustment of the pintle belt 1/2 upper arm is permitted only if the machine drive is shut off and locked to prevent restart and the machine is secured to prevent movement. There is a danger of fatal injuries caused by tearing off parts of the body if the machine is running.

Pintle belt 1/2 can optionally be fitted with a hydraulic cylinder (**2**). The inclination of pintle belt 1/2 can be adjusted hydraulically while the machine is operating at the tractor terminal or the sorting platform terminal if it is released.

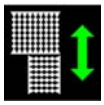
If automatic pintle is activated the inclination of pintle belt 1/2 is always maintained at a constant angle to the ground within the range of the potential adjustment path of pintle belt 1/2 inclination.

Adjusting inclination of pintle belt 1/2 at the tractor terminal

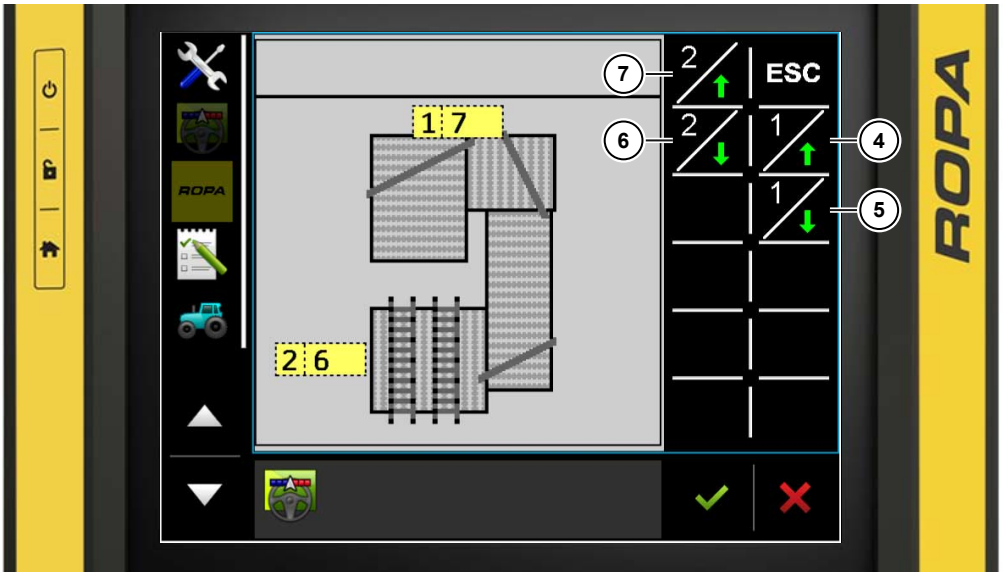
The inclination of pintle belt 1/2 can be adjusted in the separation menu. Select the soft key on the tractor terminal. After selection the soft key is green.



(3) Soft key pintle belt height

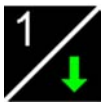


The pintle belt height soft key opens the pintle belt height submenu.



(4) Soft key pintle belt 1/2 higher
(5) Soft key pintle belt 1/2 lower
(6) Soft key pintle belt 4 lower
(7) Soft key pintle belt 4 higher

Press the key to raise pintle belt 1/2. The maximum height of pintle belt 1/2 is 20.



Press the key to lower pintle belt 1/2. The minimum height of pintle belt 1/2 is 0.

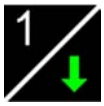
Adjusting inclination of pintle belt 1/2 at the sorting platform terminal

(8) Soft key pintle belt 1/2 inclination
(9) Front leaf scraper soft key
(10) Lifting depth left soft key
(11) Scroll screen right soft key
(12) Scroll screen left soft key
(13) Lifting depth right soft key
(14) Rear leaf scraper soft key
(15) Soft key pintle belt 4 inclination

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt height. Select pintle belt 1/2 height with the soft key 1.

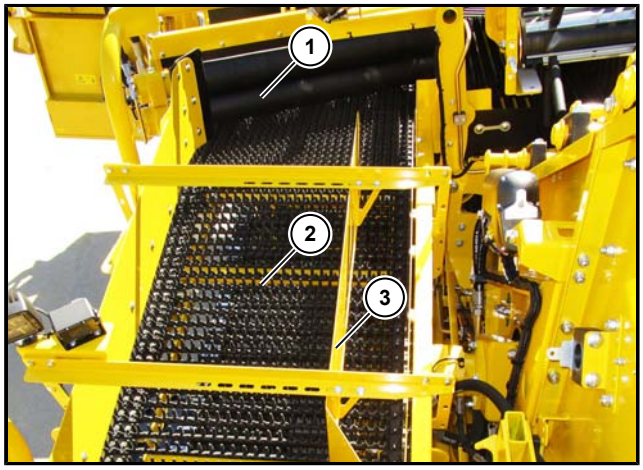
(16) Soft key raise pintle belt 1/2
(17) Soft key lower pintle belt 1/2

Press the 1/↑ key to raise pintle belt 1/2. The maximum height of pintle belt 1/2 is 20.



Press the key to lower pintle belt 1/2. The minimum height of pintle belt 1/2 is 0.

6.13.2.7 Pintle belt 3



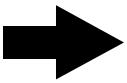
(1) Deflector roller 3
(2) Pintle belt 3
(3) Pintle belt 3 partition

The pintle belt 3 is available in the following pitches: 36 and 40.

The standard pintle belt 3 (**2**) is fitted with rubberised finger rods arranged in V-profile pattern. Optionally, the pintle belt 3 is available with finger rods arranged in H-profile pattern. Deflector roller 3 (**1**) is above. Small amounts of trash and haulm are passed through the rubber fingers and deflector roller 3 and separated. The speed of pintle belt 3 can be adjusted at the tractor terminal or at the sorting platform terminal if it has been released.

The pintle belt 3 (**3**) partition prevents the tubers from rolling if there are not many potatoes. The width of the passage can be adjusted. The partition can be removed for heavy crops.

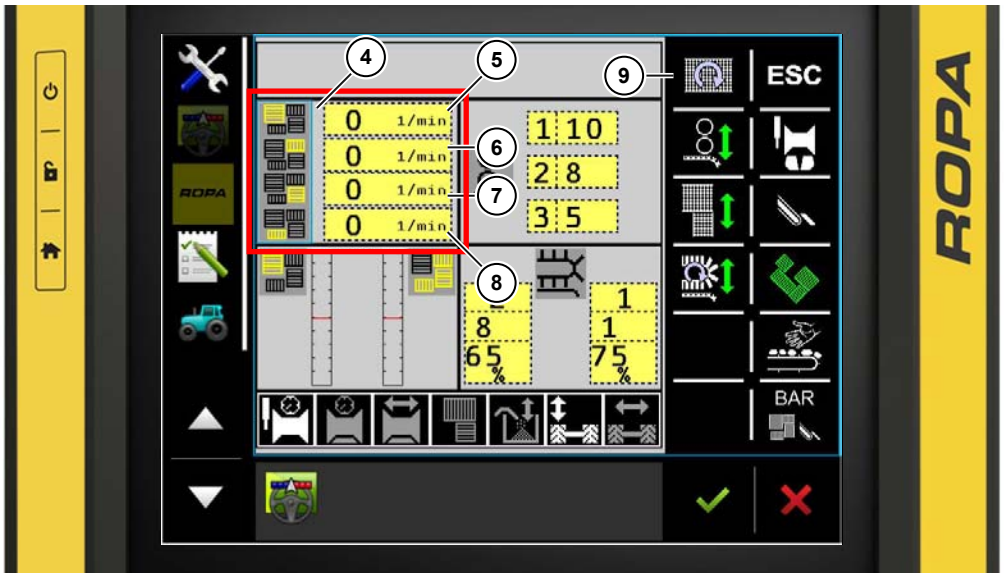
ADVICE



The speed of pintle belt 3 cannot exceed that of pintle belt 2.

Adjusting speed of pintle belt 3 at the tractor terminal

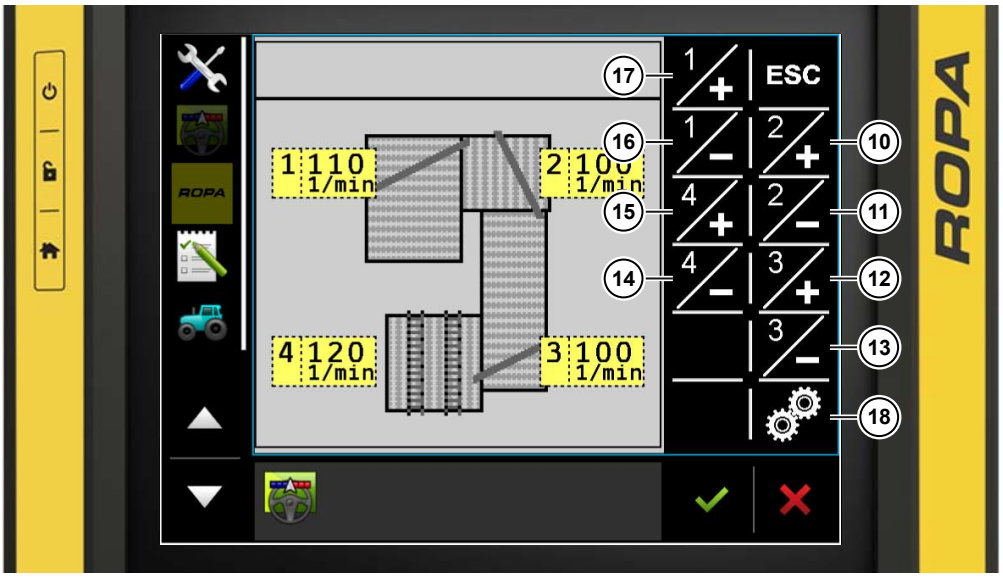
The speed of pintle belt 3 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(4) Pintle belt speeds display field
(5) Speed display for pintle belt 1
(6) Speed display for pintle belt 2
(7) Speed display for pintle belt 3
(8) Speed display for pintle belt 4
(9) Soft key pintle belt speeds

The pintle belt speeds display field (**4**) shows the speeds of pintle belt 1 (**5**), pintle belt 2 (**6**), pintle belt 3 (**7**) and pintle belt 4 (**8**). Select the grey button for direct access to the pintle belt speed settings submenu.

The pintle belt speed soft key opens the pintle belt speed settings submenu.



(10) Soft key increase pintle belt 2 speed
(11) Soft key reduce pintle belt 2 speed
(12) Soft key increase pintle belt 3 speed
(13) Soft key reduce pintle belt 3 speed
(14) Soft key reduce pintle belt 4 speed
(15) Soft key increase pintle belt 4 speed
(16) Soft key reduce pintle belt 1 speed
(17) Soft key increase pintle belt 1 speed
(18) Soft key pintle belt speeds synchronous adjustment

Press the 3+ key to increase the speed. The maximum speed of pintle belt 3 is 250 rpm.

Press the 3− key to reduce the speed. The minimum speed of pintle belt 3 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 3. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

Adjusting speed of pintle belt 3 at the sorting platform terminal

(19) Soft key pintle belt 2
(20) Soft key pintle belt 3
(21) Scroll screen right soft key
(22) Scroll screen left soft key
(23) Soft key pintle belt 4
(24) Soft key pintle belt 1
(25) Soft key pintle belt speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt speeds. Select pintle belt 3 with the soft key 3.

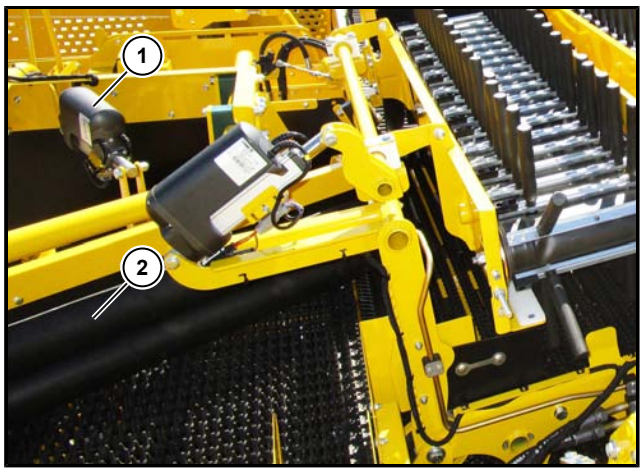
(26) Soft key increase pintle belt 3 speed
(27) Soft key reduce pintle belt 3 speed

Press the 3 + key to increase the speed. The maximum speed of pintle belt 3 is 250 rpm.

Press the 3 − key to reduce the speed. The minimum speed of pintle belt 3 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 3. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

6.13.2.8 Deflector roller 3



(1) Electric height adjustment of deflector roller 3
(2) Deflector roller 3

Deflector roller 3 is hydraulically driven at a speed depending on the speed of pintle belt 3. If the speed of pintle belt 3 is adjusted, this also adjusts the speed of deflector roller 3. The height of the standard version of deflector roller 3 can be electrically adjusted with keys on the tractor terminal or the sorting platform terminal if it is released and designed as a double deflector roller.
The lower roller can be optionally designed as a spiral roller.

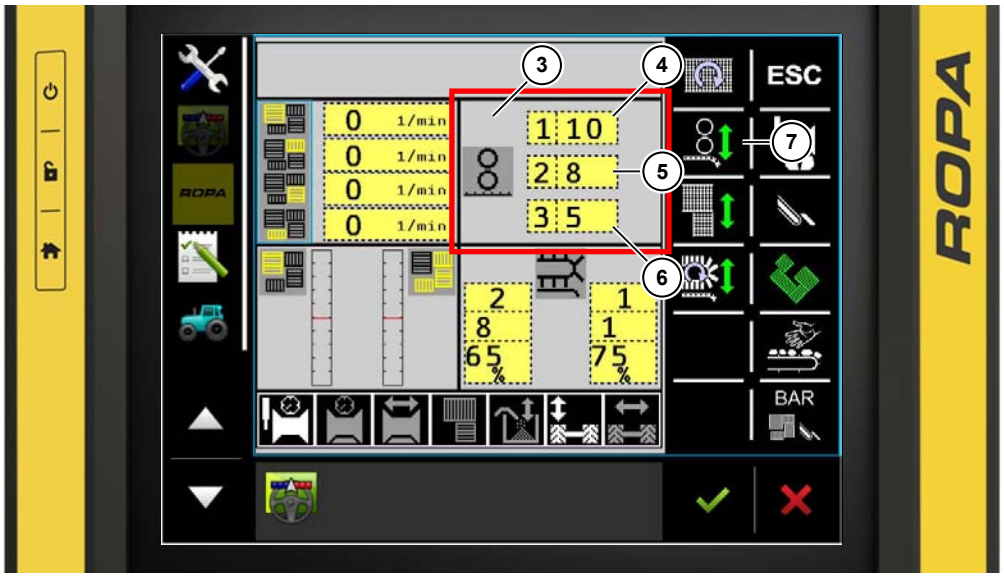
ATTENTION

Danger of losses and machine damage.

The larger the set gap between pintle belt 3 and deflector roller 3 the greater the danger of crop loss. The narrower the set gap between pintle belt 3 and deflector roller 3 the greater the danger of increased wear, because soil may accumulate on deflector roller 3 and pintle belt 3.

Adjusting height of deflector roller 3 at the tractor terminal

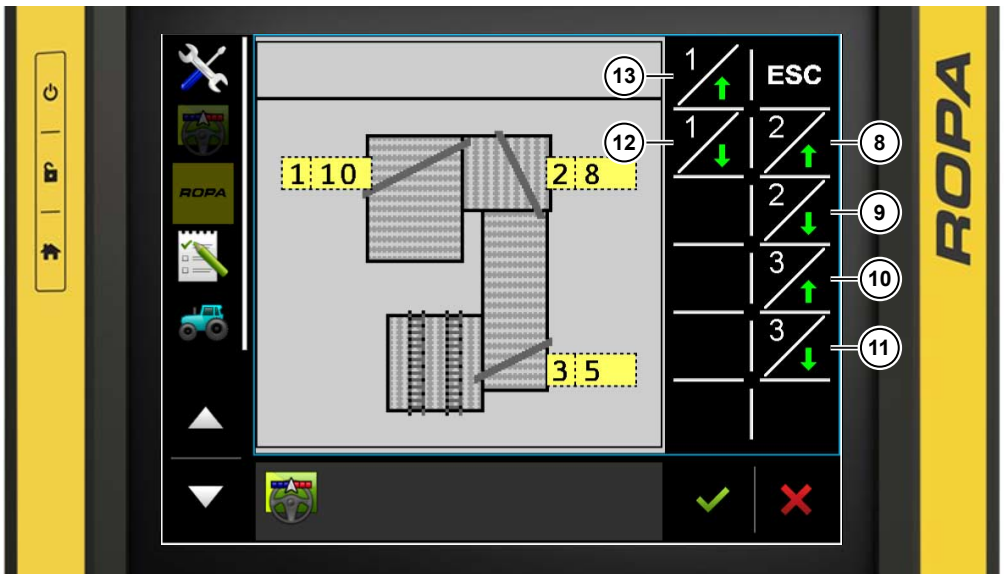
The height of deflector roller 3 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Deflector roller height display field
(4) Display of height of deflector roller 1
(5) Display of height of deflector roller 2
(6) Display of height of deflector roller 3
(7) Soft key deflector roller height

The deflector roller height display field (**3**) shows the heights of deflector roller 1 (**4**), deflector roller 2 (**5**) and deflector roller 3 (**6**). Select the grey button to open the deflector roller height adjustment submenu.

Select the deflector roller height soft key to open the deflector roller height adjustment submenu.

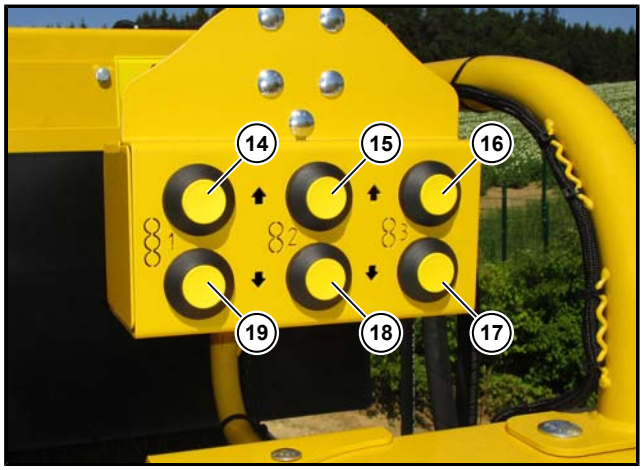


(8) Soft key increase height of deflector roller 2
(9) Soft key reduce height of deflector roller 2
(10) Soft key increase height of deflector roller 3
(11) Soft key reduce height of deflector roller 3
(12) Soft key reduce height of deflector roller 1
(13) Soft key increase height of deflector roller 1

Press the key to raise deflector roller 3. The maximum distance between pintle belt 3 and deflector roller 3 is 20.

Press the key to lower deflector roller 3. The minimum distance between pintle belt 3 and deflector roller 3 is 0.

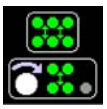
Adjusting height of deflector roller 3 at the sorting platform terminal



(14) Deflector roller 1 higher key
(15) Deflector roller 2 higher key
(16) Deflector roller 3 higher key
(17) Deflector roller 3 lower key
(18) Deflector roller 2 lower key
(19) Deflector roller 1 lower key

Press the key (**16**) to raise deflector roller 3. The maximum distance between pintle belt 3 and deflector roller 3 is 20.

Press the key (**17**) to lower deflector roller 3. The minimum distance between pintle belt 3 and deflector roller 3 is 0.



If the soft key on the tractor terminal is green, deflector roller 3 can be adjusted from the sorting platform.

6.13.2.9 Pintle belt 4

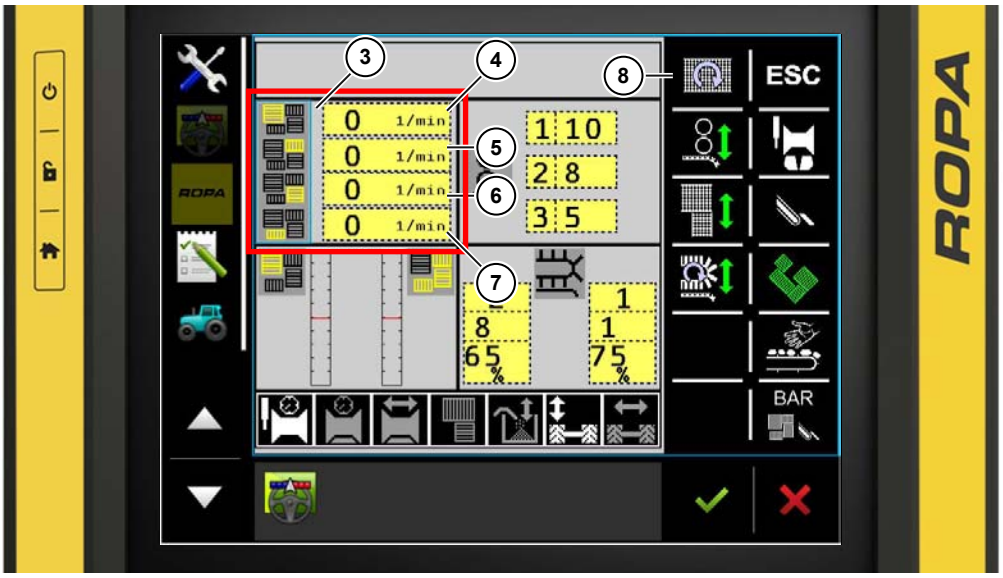
(1) Rotating finger comb (UFK)
(2) Pintle belt 4

The pintle belt 4 is available in the following pitches: 36 and 40.

The standard pintle belt 4 (**2**) is fitted with rubberised finger rods arranged in H-profile pattern. The rotating finger comb (UFK) (**1**) is mounted above the belt. The crop is transported onto the picking conveyor by the UFK, the height and speed of which is adjustable. The speed of pintle belt 4 can be adjusted at the tractor terminal or at the sorting platform terminal if it has been released.

Adjusting speed of pintle belt 4 at the tractor terminal

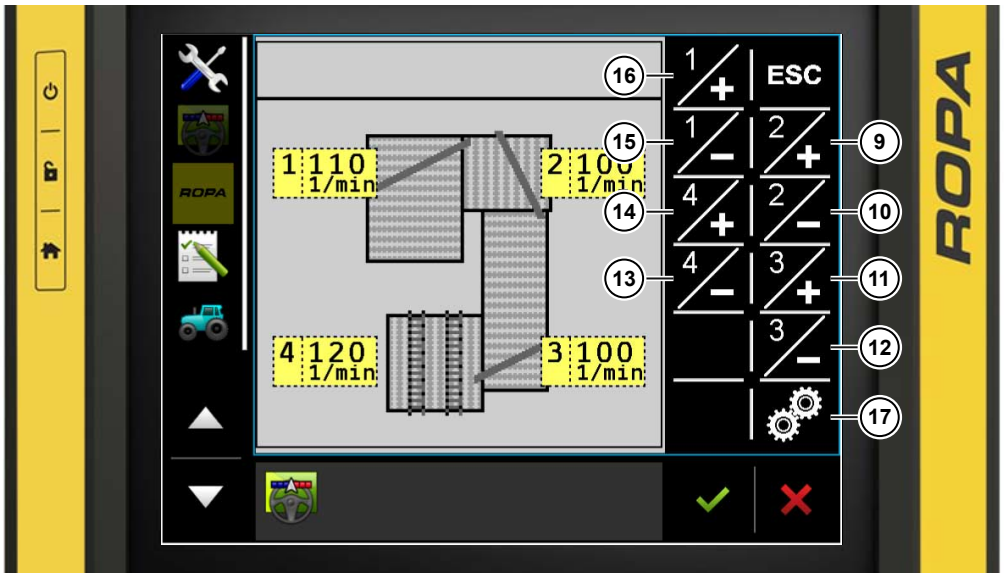
The speed of pintle belt 4 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Pintle belt speeds display field
(4) Speed display for pintle belt 1
(5) Speed display for pintle belt 2
(6) Speed display for pintle belt 3
(7) Speed display for pintle belt 4
(8) Soft key pintle belt speeds

The pintle belt speeds display field (**3**) shows the speeds of pintle belt 1 (**4**), pintle belt 2 (**5**), pintle belt 3 (**6**) and pintle belt 4 (**7**). Select the grey button for direct access to the pintle belt speed settings submenu.

The pintle belt speed soft key opens the pintle belt speed settings submenu.



(9) Soft key increase pintle belt 2 speed
(10) Soft key reduce pintle belt 2 speed
(11) Soft key increase pintle belt 3 speed
(12) Soft key reduce pintle belt 3 speed
(13) Soft key reduce pintle belt 4 speed
(14) Soft key increase pintle belt 4 speed
(15) Soft key reduce pintle belt 1 speed
(16) Soft key increase pintle belt 1 speed
(17) Soft key pintle belt speeds synchronous adjustment

Press the 4+ key to increase the speed. The maximum speed of pintle belt 4 is 250 rpm.

Press the 4− key to reduce the speed. The minimum speed of pintle belt 4 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 4. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

Adjusting speed of pintle belt 4 at the sorting platform terminal

(18) Soft key pintle belt 2
(19) Soft key pintle belt 3
(20) Scroll screen right soft key
(21) Scroll screen left soft key
(22) Soft key pintle belt 4
(23) Soft key pintle belt 1
(24) Soft key pintle belt speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt speeds. Select pintle belt 4 with the soft key 4.

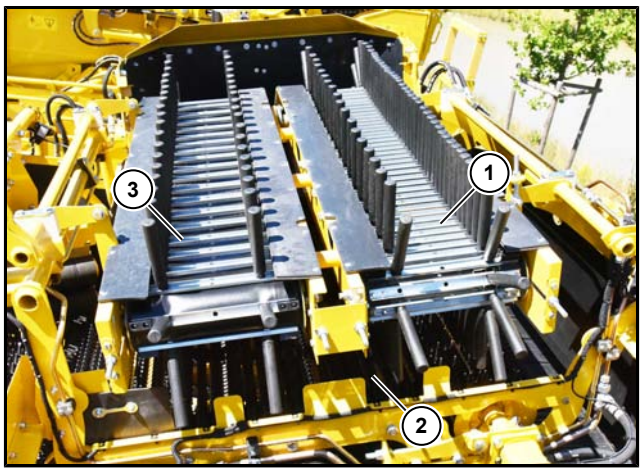
(25) Soft key increase pintle belt 4 speed
(26) Soft key reduce pintle belt 4 speed

Press the 4 + key to increase the speed. The maximum speed of pintle belt 4 is 250 rpm.

Press the 4 − key to reduce the speed. The minimum speed of pintle belt 4 is 50 rpm.

The pintle belt synchronous speed adjustment must be deactivated to adjust the speed of pintle belt 4. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

6.13.2.10 Rotating finger comb (UFK)



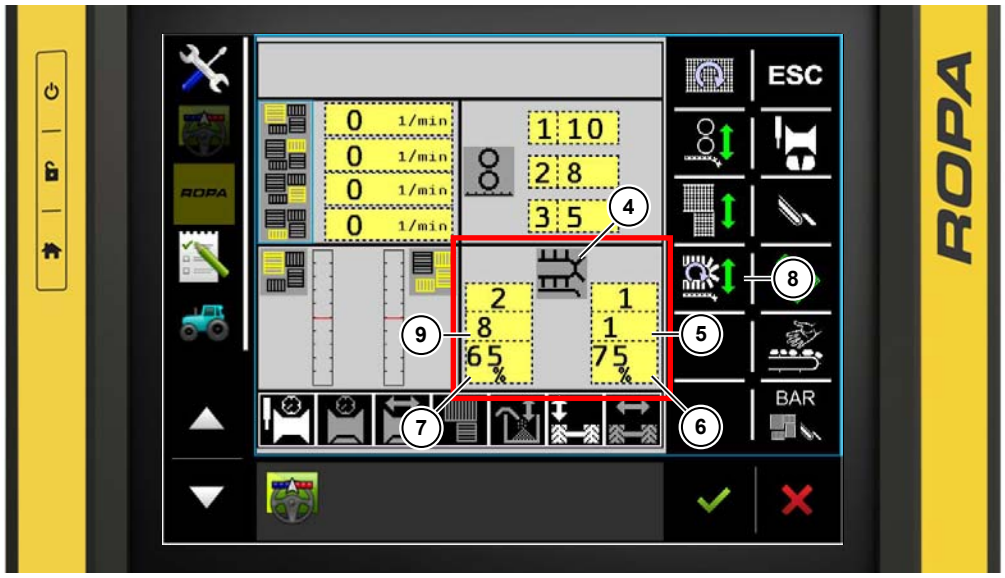
(1) Rotating finger comb 2 (UFK 2)
(2) Pintle belt 4
(3) Rotating finger comb 1 (UFK 1)

The standard machine is fitted with a rotating finger comb (UFK). The rotating finger comb (UFK) has 4 rows of fingers, with 2 rows each driven separately at an adjustable speed. The UFK 1 (**3**) and UFK 2 (**1**) identification goes in the direction of flow of the crop.

The UFK is located transverse to the transport direction of pintle belt 4. The 4 rows of fingers guide the potatoes to the picking conveyor while clumps are separated by the finger gaps and the gap to pintle conveyor 4.

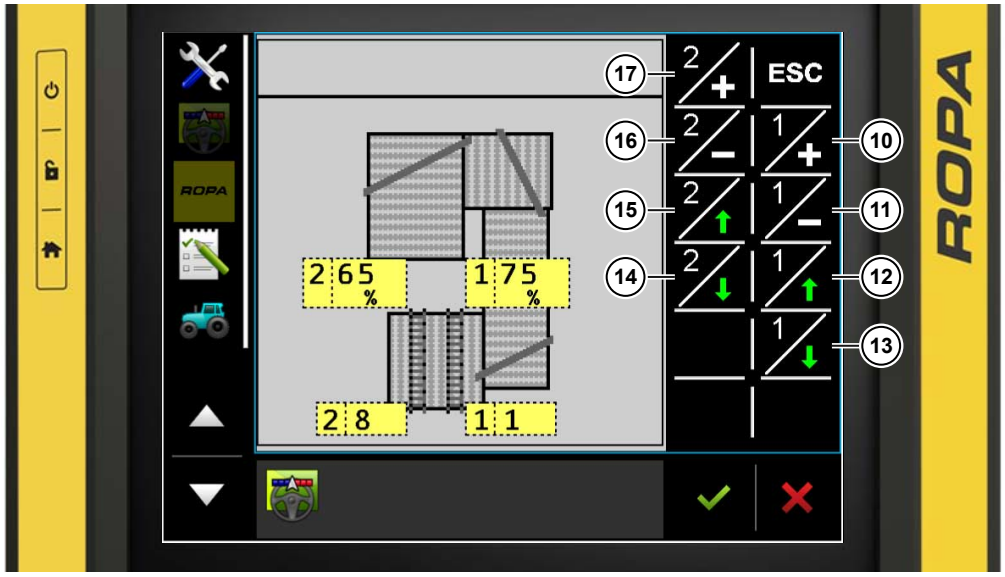
Adjusting the rotating finger comb (UFK) at the tractor terminal

The speed and height of the rotating finger comb can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key becomes green.



(4) Speed and height display field for rotating finger comb (UFK)
(5) Height display for UFK 1
(6) Speed display for UFK 1
(7) Speed display for UFK 2
(8) UFK adjustment soft key
(9) Height display for UFK 2

Select the soft key for adjustment of UFK to open the rotating finger comb (UFK) submenu.



(10) Soft key increase UFK 1 speed
(11) Soft key reduce UFK 1 speed
(12) Soft key UFK 1 higher
(13) Soft key UFK 1 lower
(14) Soft key UFK 2 lower
(15) Soft key UFK 2 higher
(16) Soft key reduce UFK 2 speed
(17) Soft key increase UFK 2 speed

Press the key to increase the speed of UFK 1. The maximum speed of the UFK 1 is 100%.

Press the key to reduce the speed of UFK 1. The minimum speed of the UFK 1 is 1%, at 0%UFK 1 is stationary.

Press the key to increase the height of UFK 1. The maximum distance between pintle belt 4 and UFK 1 is 20.

Press the key to reduce the height of UFK 1. The minimum distance between pintle belt 4 and UFK 1 is 0.

Press the key to increase the speed of UFK 2. The maximum speed of the UFK 2 is 100%.

Press the key to reduce the speed of UFK 2. The minimum speed of the UFK 2 is 1%, at 0%UFK 2 is stationary.

Press the key to increase the height of UFK 2. The maximum distance between pintle belt 4 and UFK 2 is 20.

Press the key to reduce the height of UFK 2. The minimum distance between pintle belt 4 and UFK 2 is 0.

Adjusting the speed of the rotating finger comb (UFK) at the tractor terminal

(18) Shaker soft key
(19) Soft key UFK 1
(20) Working floodlights soft key
(21) Scroll screen right soft key
(22) Scroll screen left soft key
(23) Soft key UFK 2
(24) Soft key trash conveyor

If the sorting platform terminal is released, scroll with the scroll screen right soft key ➡ or the scroll screen left soft key ⬅ to open the screen for adjusting the UFK speed. Select the UFK with the 3 soft key or with the 4 soft key.

(25) Soft key increase UFK 1 speed
(26) Soft key reduce UFK 1 speed
(27) Soft key reduce UFK 2 speed
(28) Soft key increase UFK 2 speed

Press the 3 + key to increase the speed of UFK 1. The maximum speed of the UFK 1 is 100%.

Press the 3 key to reduce the speed of UFK 1. The minimum speed of the UFK 1 is 1%, at 0%UFK 1 is stationary.

Press the 4 key to increase the speed of UFK 2. The maximum speed of the UFK 2 is 100%.

Press the 4 key to reduce the speed of UFK 2. The minimum speed of the UFK 2 is 1%, at 0%UFK 2 is stationary.

Adjusting the height of the rotating finger comb (UFK) at the sorting platform terminal

(29) Sorting platform terminal
(30) Sorting platform emergency stop switch
(31) Raise UFK 1
(32) Tractor terminal horn
(33) Lower UFK 1
(34) Lower UFK 2
(35) Picking conveyor speed
(36) Raise UFK 2

Press the key (**31**) to raise UFK 1. The maximum distance between pintle belt 4 and UFK 1 is 20.

Press the key (**33**) to lower UFK 1. The minimum distance between pintle belt 4 and UFK 1 is 0.

Press the key (**36**) to raise UFK 2. The maximum distance between pintle belt 4 and UFK 2 is 20.

Press the key (**34**) to lower UFK 2. The minimum distance between pintle belt 4 and UFK 2 is 0.

(37) Combined finger comb and brush comb

The rotating finger comb can optionally be designed as a 6-row rotating brush comb with each 3 rows separately driven or as combined (**37**) rotating finger comb and rotating brush comb.

6.13.2.11 Pintle belt 4 inclination

(1) Upper arm pintle belt 4 inclination (standard)
(2) Hydraulic cylinder pintle belt 4 inclination (optional)

The standard version of pintle belt 4 is fitted with an upper arm (**1**) to adjust the inclination. The inclination of pintle belt 4 is manually adjusted by rotating the upper arm.

DANGER

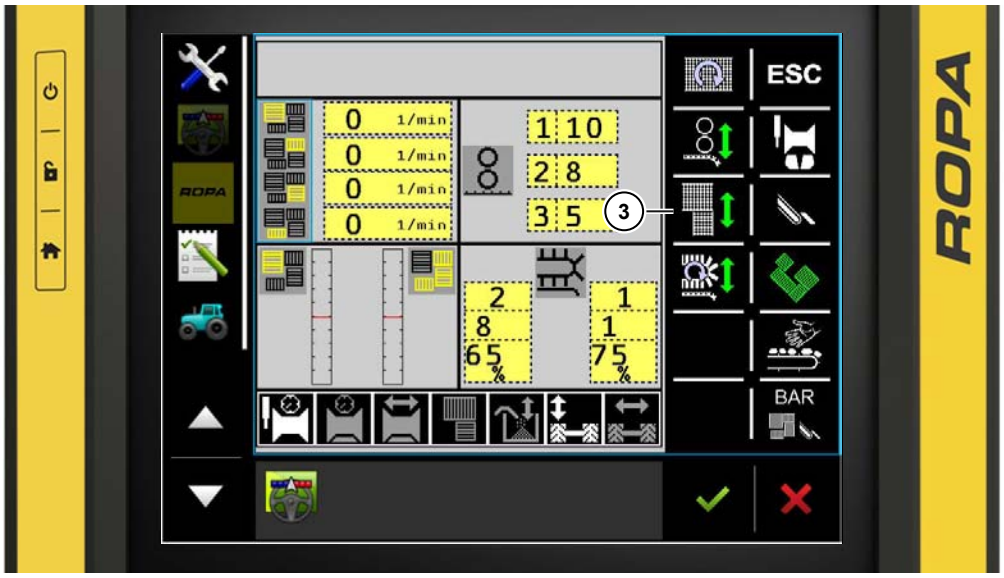
Hazard to life due to moving machine parts!

Adjustment of the pintle belt 4 upper arm is permitted only if the machine drive is shut off and locked to prevent restart and the machine is secured to prevent movement. There is a danger of fatal injuries caused by tearing off parts of the body if the machine is running.

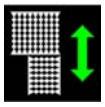
Pintle belt 4 can optionally be fitted with a hydraulic cylinder (**2**). The inclination of pintle belt 4 can be adjusted hydraulically while the machine is operating at the tractor terminal or the sorting platform terminal if it is released.

Adjusting inclination of pintle belt 4 at the tractor terminal

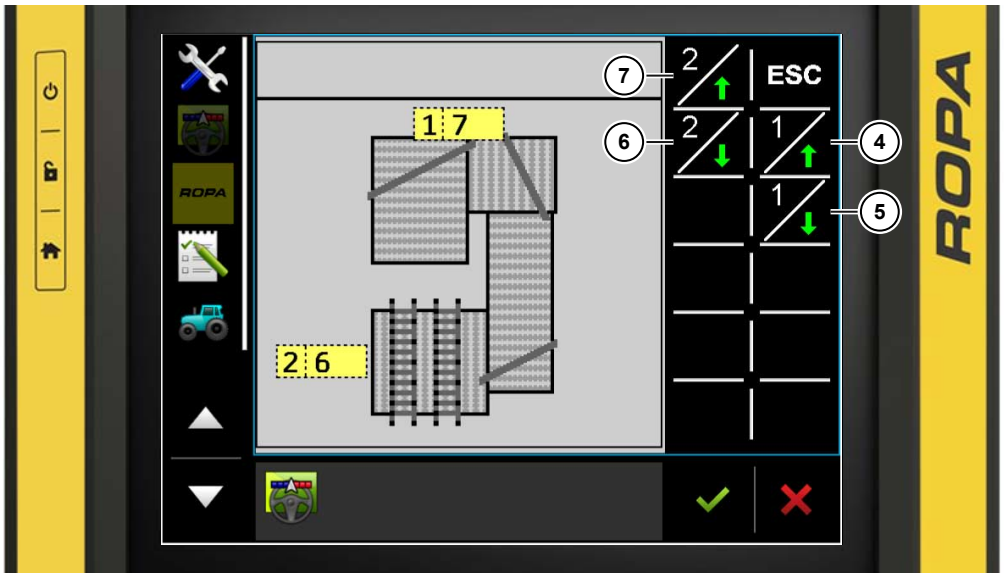
The inclination of pintle belt 4 can be adjusted in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(3) Soft key pintle belt height



The pintle belt height soft key opens the pintle belt height submenu.



(4) Soft key pintle belt 1/2 higher
(5) Soft key pintle belt 1/2 lower
(6) Soft key pintle belt 4 lower
(7) Soft key pintle belt 4 higher

Press the key to raise pintle belt 4. The maximum height of pintle belt 4 is 20.

Press the key to lower pintle belt 4. The minimum height of pintle belt 4 is 0.

Adjusting inclination of pintle belt 4 at the sorting platform terminal

(8) Soft key pintle belt 1/2 inclination
(9) Front leaf scraper soft key
(10) Lifting depth left soft key
(11) Scroll screen right soft key
(12) Scroll screen left soft key
(13) Lifting depth right soft key
(14) Rear leaf scraper soft key
(15) Soft key pintle belt 4 inclination

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt height. Select pintle belt 4 height with the soft key 4.

(16) Soft key raise pintle belt 4
(17) Soft key lower pintle belt 4

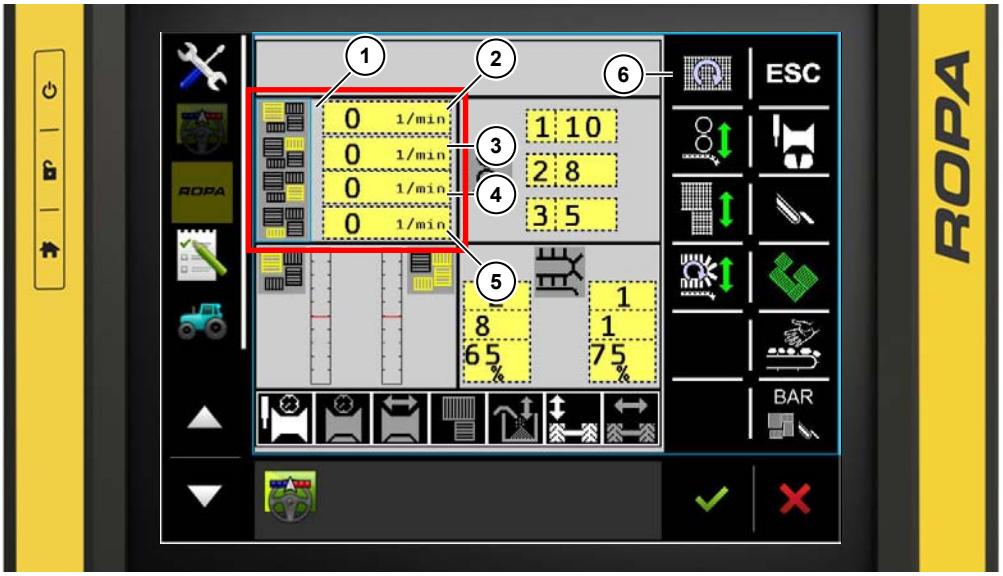
Press the 4 key to raise pintle belt 4. The maximum height of pintle belt 4 is 20.

Press the 4 key to lower pintle belt 4. The minimum height of pintle belt 4 is 0.

6.13.2.12 Pintle belts synchronous adjustment

Pintle belt synchronous adjustment at the tractor terminal

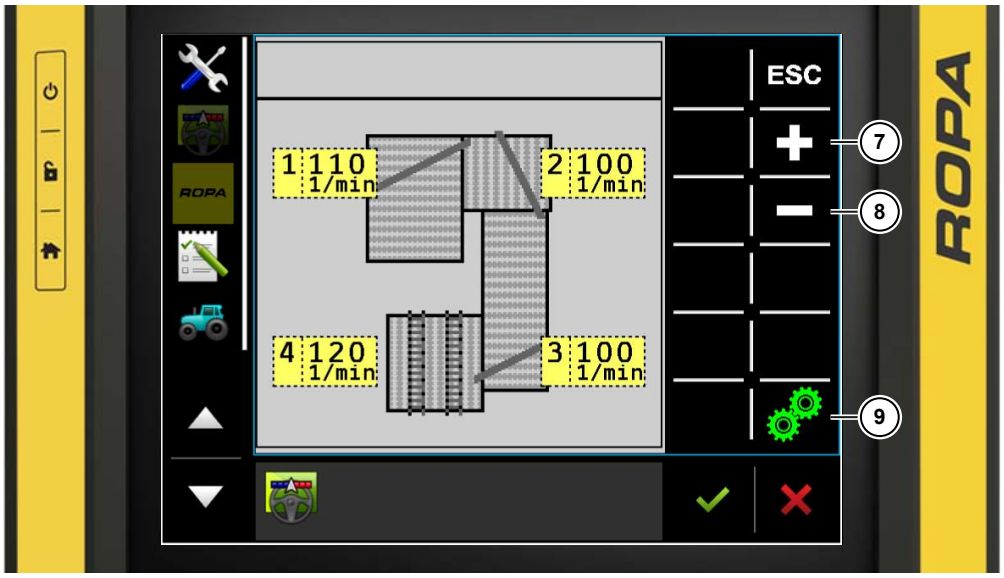
The speed is adjusted at the tractor terminal in the separation menu. Select the separation soft key on the tractor terminal. After selection the soft key is green.



(1) Pintle belt speeds display field
(2) Speed display for pintle belt 1
(3) Speed display for pintle belt 2
(4) Speed display for pintle belt 3
(5) Speed display for pintle belt 4
(6) Soft key pintle belt speeds

The pintle belt speeds display field (**1**) shows the speeds of pintle belt 1 (**2**), pintle belt 2 (**3**), pintle belt 3 (**4**) and pintle belt 4 (**5**). Select the grey button for direct access to the pintle belt speed settings submenu.

The pintle belt speed soft key opens the pintle belt speed settings submenu.



(7) Soft key increase pintle belt speed
(8) Soft key reduce pintle belt speed
(9) Soft key pintle belt speeds synchronous adjustment

The speeds of pintle belt 1, pintle belt 2, pintle belt 3 and pintle belt 4 can be adjusted simultaneously in synchronous mode.

Press the + key to increase the speed synchronously. The maximum speed of the pintle belts is 250 rpm. If one pintle belt has reached this speed and is further increased, the speed of the other pintle belts approaches this speed.

Press the − key to reduce the speed synchronously. The minimum speed of the pintle belts is 50 rpm. If one pintle belt has reached this speed and is further reduced, the speed of the other pintle belts approaches this speed.

The pintle belt synchronous speed adjustment must be activated to adjust the speed of pintle belts synchronously. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

Pintle belt synchronous adjustment at the sorting platform terminal

(10) Soft key pintle belt 2 speed
(11) Soft key pintle belt 3 speed
(12) Scroll screen right soft key
(13) Scroll screen left soft key
(14) Soft key pintle belt 4 speed
(15) Soft key pintle belt 1 speed
(16) Soft key pintle belt speeds synchronous adjustment

If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the pintle belt speeds. Select the pintle belt synchronous speed adjustment with the pintle belt synchronous speed adjustment soft key ⚙.

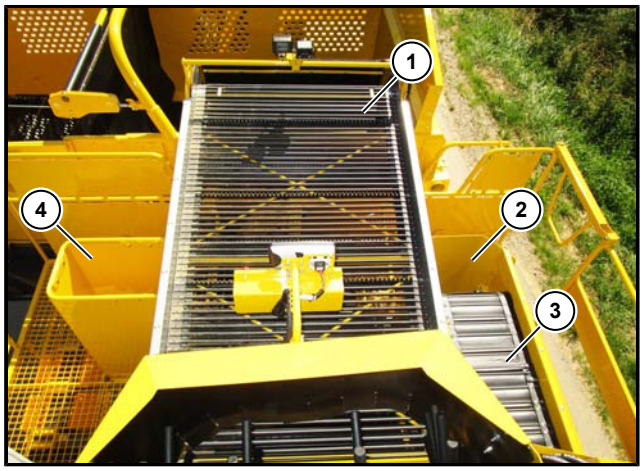
(17) Soft key increase pintle belt speed
(18) Soft key reduce pintle belt speed
(19) Scroll screen right soft key
(20) Scroll screen left soft key
(21) Soft key pintle belt speeds synchronous adjustment

Press the + key to increase the speed synchronously. The maximum speed of the pintle belts is 250 rpm. If one pintle belt has reached this speed and is further increased, the speed of the other pintle belts approaches this speed.

Press the − key to reduce the speed synchronously. The minimum speed of the pintle belts is 50 rpm. If one pintle belt has reached this speed and is further reduced, the speed of the other pintle belts approaches this speed.

The pintle belt synchronous speed adjustment must be activated to adjust the speed of pintle belts synchronously. If the pintle belt synchronous speed adjustment soft key is white, the pintle belt synchronous speed adjustment is deactivated. If the pintle belt synchronous speed adjustment soft key is green, the pintle belt synchronous speed adjustment is activated.

6.13.3 Picking



(1) Picking conveyer
(2) Discharge chute right
(3) Trash conveyer
(4) Discharge chute left

The picking equipment consists of the picking conveyor (**1**) and the trash conveyor (**3**). The crop can be checked here and trash or incorrectly diverted crop can be sorted out.

A large discharge chute i installed on each side, the left discharge chute (**4**) and the right discharge chute (**2**), for quick disposal of trash.

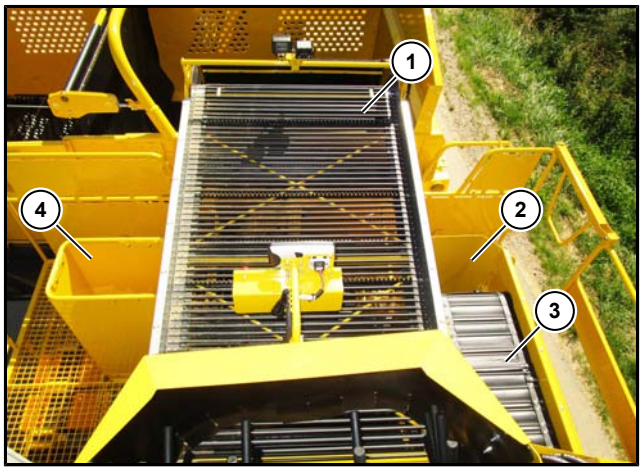
DANGER

Injury hazard! Hazard to life!

Never reach into the conveyors with your fingers. Entrapment may include injuries to hands up to and including loss of fingers and hands.

Always wear tight-fitting clothing. Clothing may be trapped in the conveyors and the wearer may be pulled in. This may cause very serious injury up and including fatal injuries!

6.13.3.1 Picking conveyer

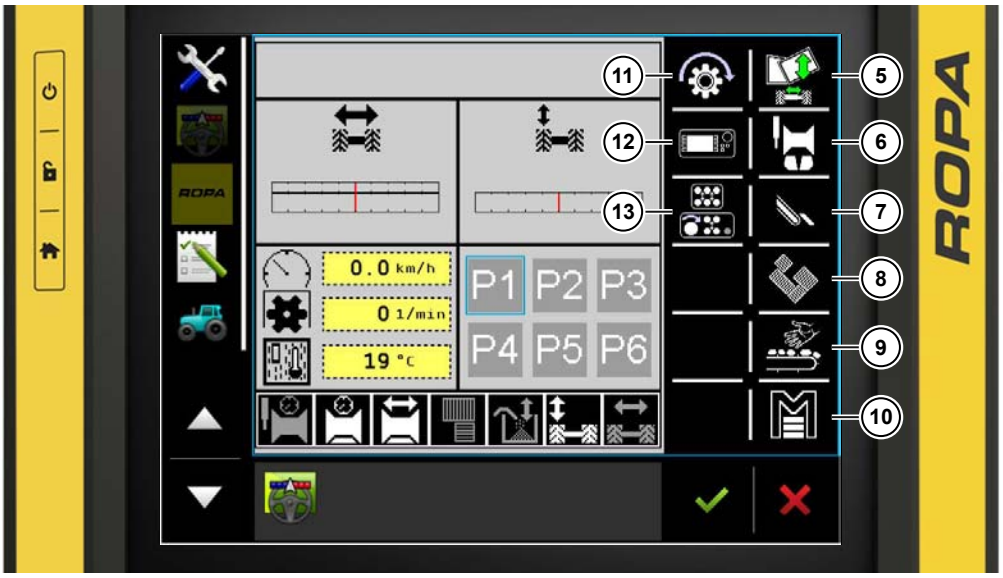


(1) Picking conveyer
(2) Discharge chute right
(3) Trash conveyer
(4) Discharge chute left

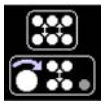
The picking conveyor (**1**) is hydraulically driven and forms a single unit with the bunker filling conveyor.

The speed of the picking conveyor can be adjusted from the tractor terminal or directly from the sorting platform. Simultaneous adjustment is not possible. The adjustment option at the sorting platform can be locked or released at the tractor terminal.

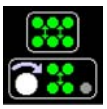
The picking conveyor starts immediately the pickup is lowered. After raising the pickup the picking conveyor continues to run from 0 to 99 seconds, default setting 30 seconds. The stopping time can be set in the main settings, bunker submenu.



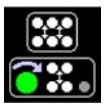
(5) Dropdown menu soft key
(6) Soft key pickup
(7) Sieving channel soft key
(8) Separation soft key
(9) Picking table soft key
(10) Main menu soft key
(11) Machine manual On/Off soft key
(12) Sorting platform terminal soft key
(13) Sorting platform quick adjustment soft key



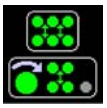
All quick settings at the sorting platform are locked.



Quick adjustment of the heights of deflector roller 1, deflector roller 2, deflector roller 3, rotating finger comb 1 and rotating finger comb 2 is released at the sorting platform. The heights can be adjusted at the same time at the tractor terminal.
Quick adjustment of the picking conveyor speed is locked at the sorting platform.



Quick adjustments of heights is locked at the sorting platform.
Quick adjustment of the speed of the picking conveyor is released at the sorting platform. The speed cannot be adjusted at the same time at the tractor terminal.



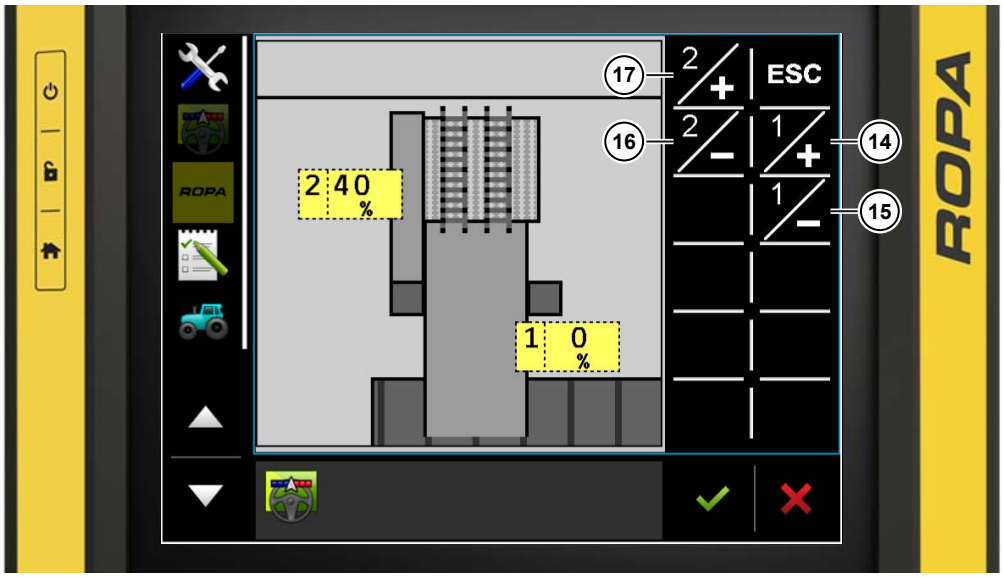
Quick adjustment of the heights of deflector roller 1, deflector roller 2, deflector roller 3, rotating finger comb 1 and rotating finger comb 2 is released at the sorting platform. The heights can be adjusted at the same time at the tractor terminal.
Quick adjustment of the picking conveyor speed is locked at the sorting platform. The speed cannot be adjusted at the same time at the tractor terminal.

Adjusting picking conveyor at the tractor terminal

Picking table soft key without drive wheel option

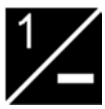
Picking table soft key with drive wheel option

Press the picking table soft key to open the picking table submenu. Depending on the machine equipment, with or without the drive wheel option, the picking table soft key is located in the field operation or separation menu.



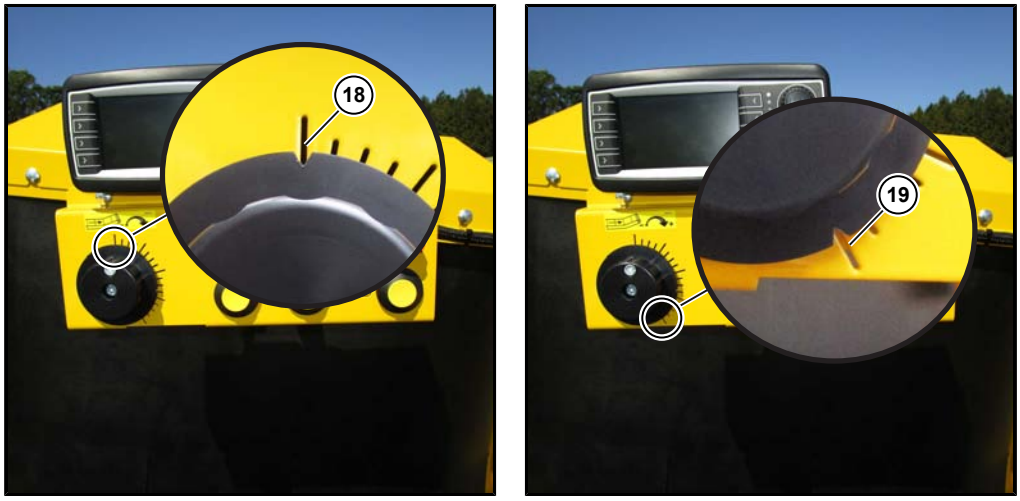
(14) Soft key increase picking conveyor speed
(15) Soft key reduce picking conveyor speed
(16) Soft key reduce trash conveyor speed
(17) Soft key increase trash conveyor speed

Press the key to increase the speed. The maximum speed of the picking conveyor is 100%.



Press the key to reduce the speed. The minimum speed of the picking conveyor is 1%. If the display shows 0% the conveyor is off and the picking conveyor is stopped.

Adjusting picking conveyor at the machine sorting platform

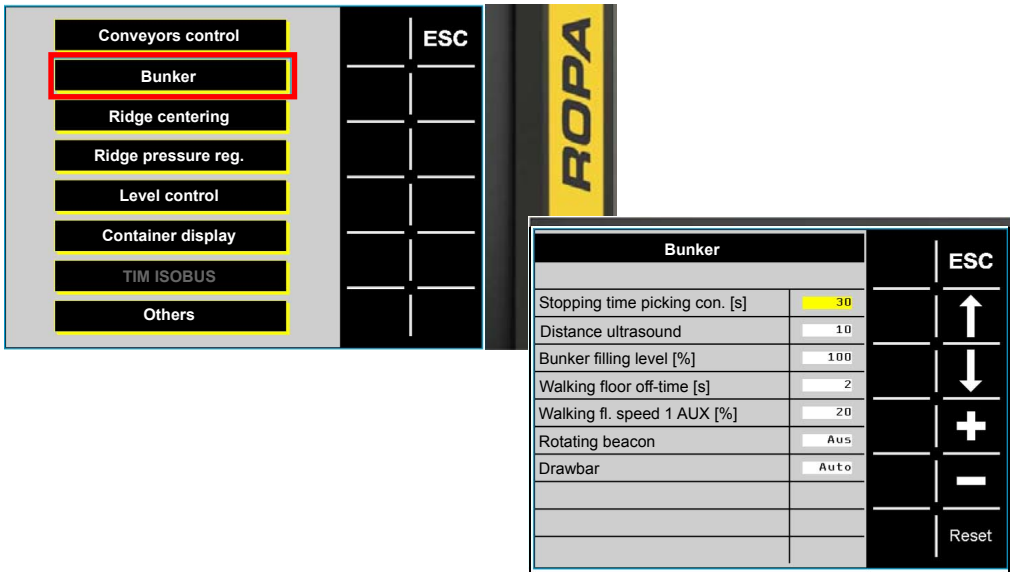


(18) Picking conveyer standstill
(19) Picking conveyor maximum speed

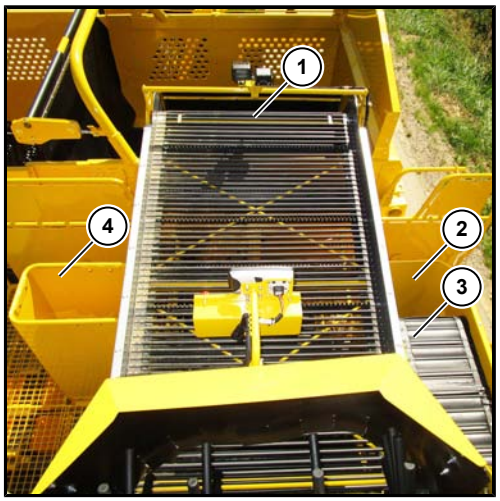
After release of the picking conveyor adjustment at the sorting platform, the previously set speed at the tractor terminal must be captured at the first adjustment. After that, the speed of the picking conveyor can be adjusted very precisely and also very quickly. The left stop (**18**) is picking conveyor Off and the right stop (**19**) is the maximum speed of the picking conveyor.

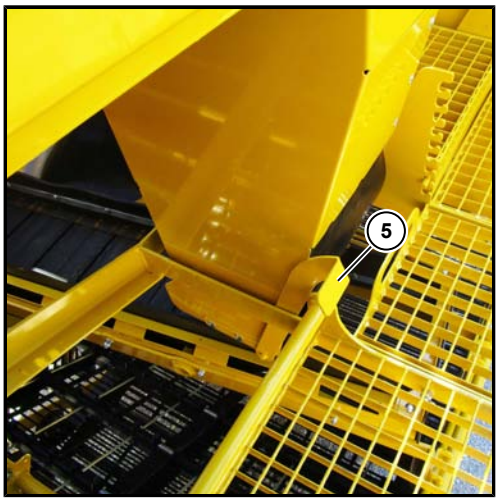
Setting picking conveyor stopping time

The stopping time of the picking conveyor can be set from 0 to 99 seconds at the tractor terminal in the main settings menus, bunker submenu. The default setting is 30 seconds.



6.13.3.2 Trash conveyer



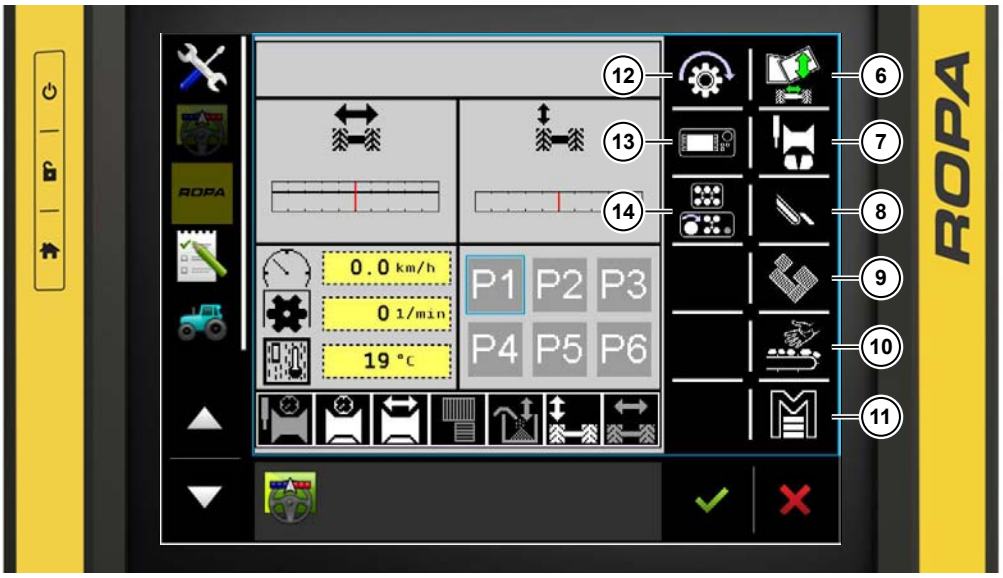


(1) Picking conveyer
(2) Discharge chute right
(3) Trash conveyer
(4) Discharge chute left
(5) Changeover flap lever

The trash conveyor (**3**) is hydraulically driven and runs hydraulically with the picking conveyor (**1**). The trash conveyor picks up the separated trash from pintle belt 4. Misdirected crop can be sorted out here. The remaining trash is directed via the right discharge chute (**2**) to the trash discharge conveyor or the sieving channel with the switchover flap lever (**5**).

The trash conveyor starts immediately the pickup is lowered. If the speed of the picking conveyor is reduced to zero, the trash conveyor also shuts off. After raising the pickup the trash conveyor continues to run as long as the picking conveyor.

Adjusting trash conveyor at the tractor terminal

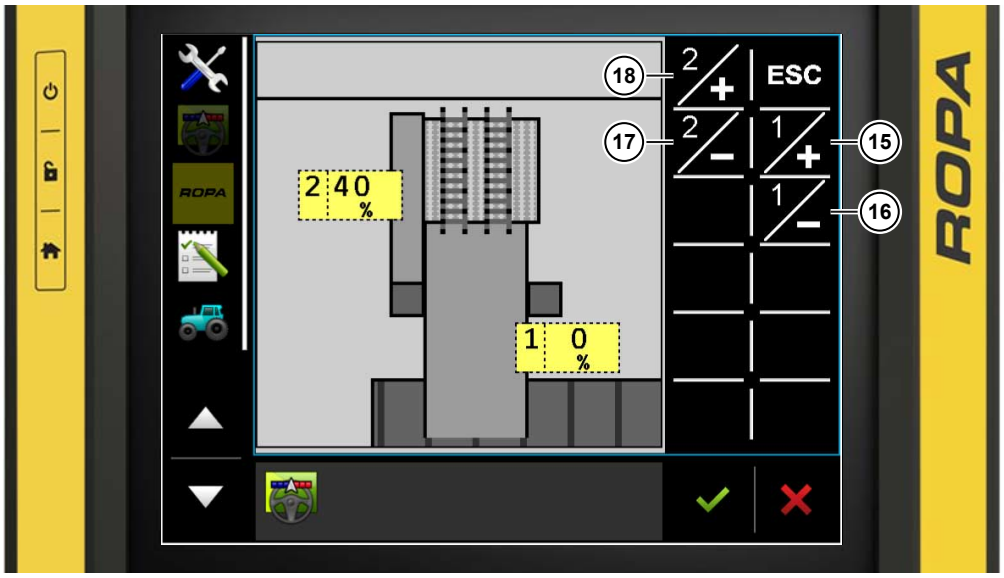


(6) Dropdown menu soft key
(7) Pickup soft key
(8) Sieving channel soft key
(9) Separation soft key
(10) Picking table soft key
(11) Main menu soft key
(12) Machine manual On/Off soft key
(13) Sorting platform terminal soft key
(14) Sorting platform quick adjustment soft key

Picking table soft key without drive wheel option

Picking table soft key with drive wheel option

Press the picking table soft key to open the picking table submenu. Depending on the machine equipment, with or without the drive wheel option, the picking table soft key is located in the field operation or separation menu.



(15) Soft key increase picking conveyor speed
(16) Soft key reduce picking conveyor speed
(17) Soft key reduce trash conveyor speed
(18) Soft key increase trash conveyor speed

Press the key to increase the speed. The maximum speed of the trash conveyor is 100%.

Press the key to reduce the speed. The minimum speed of the trash conveyor is 20%.

Adjusting trash conveyor at the sorting platform terminal

(19) Shaker soft key
(20) Soft key UFK 1
(21) Working floodlights soft key
(22) Scroll screen right soft key
(23) Scroll screen left soft key
(24) Soft key UFK 2
(25) Soft key trash conveyor

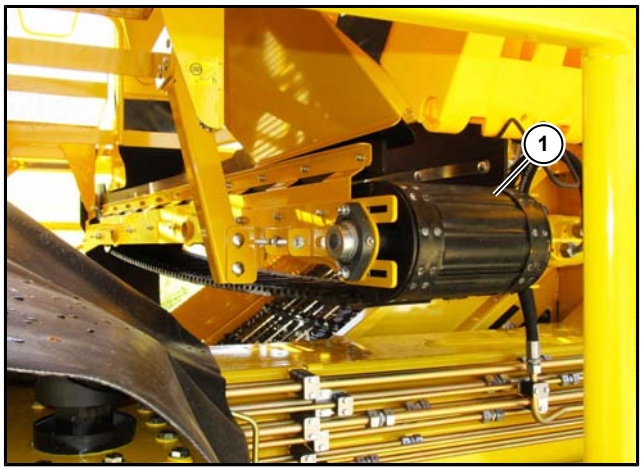
If the sorting platform terminal is released, scroll with the scroll screen right soft key → or the scroll screen left soft key ← to open the screen for adjusting the trash conveyor. Select the trash conveyor with the soft key 2.

(26) Soft key increase trash conveyor speed
(27) Soft key reduce trash conveyor speed

Press the 2+ key to increase the speed. The maximum speed of the trash conveyor is 100%.

Press the 2− key to reduce the speed. The minimum speed of the trash conveyor is 20%.

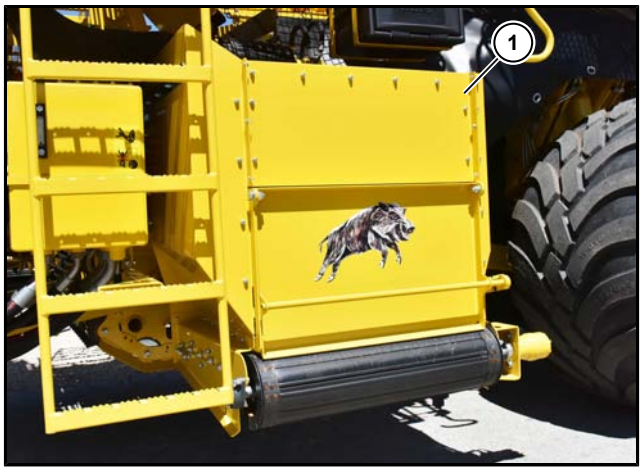
6.13.3.3 Trash discharge conveyor



(1) Trash discharge conveyor

The trash discharge conveyor is hydraulically driven and runs hydraulically with the trash conveyor. If the speed of the trash conveyor is adjusted, this also adjusts the speed of the trash discharge conveyor.

6.13.3.4 Collection box (option)



(1) Collection box

The optional collection box is located on the left side of the machine in front of the axle. Stones and trash can be collected here and unloaded at the edge of the field.

The collection box is opened with the key on the bunker control element. Emptying of the collection box is started. The position of the flap of the collection box is not monitored.

The collection box is closed with the key on the bunker control element. Emptying of the collection box is stopped. The position of the flap of the collection box is not monitored.

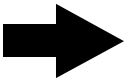
The collection box can be switched to continuous operation. For this purpose press simultaneously the keys and on the bunker control element and hold them for three seconds.
To switch the continuous operation of the collection box off, press one of the keys or on the bunker control element.

WARNING

Warning of injuries.

The hazard zone around the collection box must be strictly observed during emptying. Moving parts and moving trash, e.g. stones, may cause injuries.

ADVICE



For road travel, the collection box must be closed manually with the key on the bunker control element.

6.14 Bunker

The bunker exclusively serves as intermediate storage of the lifted potatoes until they can be unloaded into a stationary transport vehicle. They can also be unloaded onto a pile at the edge of the field. It is in no case meant as a freight compartment or for transporting goods or objects.

DANGER

Never enter the bunker if the tractor engine is running. There is an extreme hazard to life if the bunker waking floor starts unexpectedly.

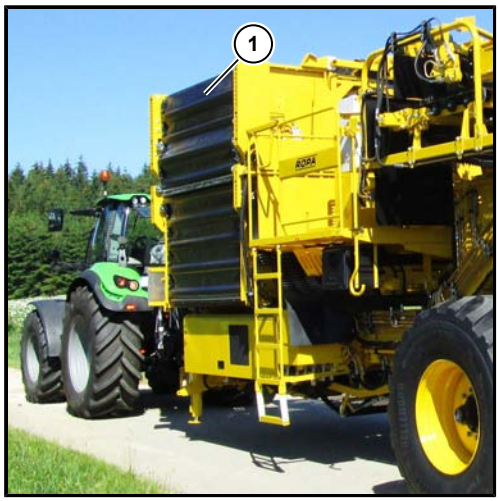
– When working in the bunker, shut off the tractor engine and secure it against inadvertent starting (e.g. by removing the ignition key and securely holding it, protected against access by third parties e.g. by holding it in your pants pocket).

The bunker filling conveyor is in the bunker. It is used to fill the bunker under manual control or using the automatic bunker filling function. The bunker filling conveyor can be raised and lowered. The bunker walking floor can be moved forward slowly to ensure optimum filling of the bunker. The standard bunker floor supports the bunker filling process. It prevents the potatoes from falling out at the end of the bunker. A tray filler is optionally available for optimum truck loading in boxes.

For **road travel** the bunker filling conveyor and optional sun / weather protection roof is lowered, the optional tray filler is folded up, the bunker articulation is folded up, the bunker flap is open, the bunker folding section is folded in, the optional collection box is closed and the telescopic axle is retracted.

In **lifting position** the bunker folding section is folded out, the bunker flap is closed, the optional sun / weather protection roof is extended and the bunker filling conveyor is adjusted so the crop can slide into the bunker at the minimum drop level. The optional tray filler and optional bunker articulation are swivelled as required for unloading the bunker. The telescopic axle is retracted during primary lifting and extended for lifting and unloading the bunker.

6.14.1 Bunker folding section and bunker flap



(1) Bunker in transport position
(2) Bunker in working position

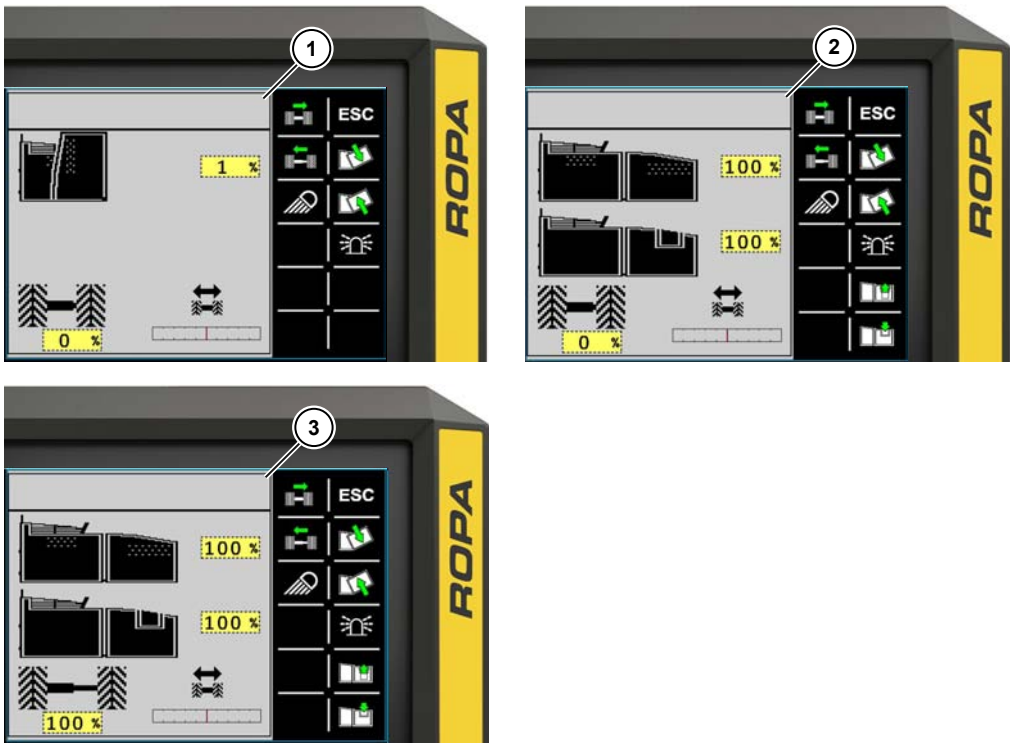
The position of the bunker primarily determines whether the machine is in transport position (**1**) or working position (**2**). The bunker can only be folded if the bunker and the bunker filling conveyor are completely lowered (bottom position), the bunker flap is open and the telescopic axle is retracted.

ATTENTION

Danger of machine damage.

The folding bunker section must only be folded if the bunker filling conveyor is fully lowered (*See Page 310*) and the bunker flap is fully open. If this is not complied with, then machine parts may collide and cause serious damage to the machine.

The folding menu soft key opens the folding mode menu.



(3) Dropdown menu road position
(4) Dropdown menu lifting through position
(5) Dropdown menu lifting position/bunker unloading position

Press the key to move the folding bunker section to working position. If the display on the tractor terminal is 100% and the image has changed, the folding bunker section is in working position.

Before the folding bunker section can be moved to transport position, the bunker and the bunker filling conveyor must be at the bottom position, the bunker flap must be fully open and the telescopic axle must be retracted.
Press the key to move the folding bunker section to transport position. If the display on the tractor terminal is 0% and the image has changed, the folding bunker section is in transport position.

Press the key to close the bunker flap. The bunker flap cannot be closed until the folding bunker section is in working position. If the display on the tractor terminal is 100% and the image has changed, the bunker flap is in working position.

Press the key to open the bunker flap. The bunker flap must be completely open before the folding bunker section of the machine can be folded to transport position. If the display on the tractor terminal is 0% and the image has changed, the bunker flap is in transport position.

6.14.2 Raising / lowering bunker

The bunker can be raised and lowered from the driver's seat with the bottom mini joystick on the bunker control. The bunker can only be raised and lowered in working position. The position of the bunker is monitored by a sensor. When the bunker is raised, the bunker filling conveyor automatically lifts to the top position first. The bunker can only be raised if the drawbar is in "straight-ahead position" and the telescopic axle is extended.

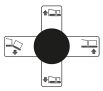
DANGER

Hazard to life! Danger of machine damage!

When the bunker is raised and lowered there are pinch and crush points on the bunker and the sorting platform. The centre of gravity of the machine is also significantly raised, involving an increased danger of tipping the machine. This involves extreme risk of injuries and even fatal injuries.

When raising and lowering the bunker make sure that the bunker does not collide with any objects, e.g. the trailer vehicle. There is a risk of serious damage to the machine.

– Keep clear of moving parts when raising and lowering the bunker.
– Keep away from the area under the raised bunker.
– Select an unloading area that is flat if possible.



The bunker can be raised and lowered with the bottom mini joystick on the bunker control. The speed of raising and lowering depends on how far the joystick is moved, minimum movement is slow and maximum movement is fast. The telescopic axle must be extended and the drawbar must be in the specified area to raise the bunker.

The bunker is lowered with the lower bunker filling conveyor key on the lifter control. The bunker filling conveyor does not lower until the bunker is fully lowered.

6.14.3 Bunker walking floor

The speed of the bunker walking floor can be infinitely adjusted from the driver's seat. The bunker walking floor unloads the bunker and is also actuated for optimum filling of the bunker. The standard version of the bunker walking floor is a cloth floor. This ensures gentle filling from the start.

ATTENTION

Risk of damage to the bunker

The bunker walking floor must never be moved unless the bunker is in working position. The bunker walking floor and the bunker itself may be damaged.

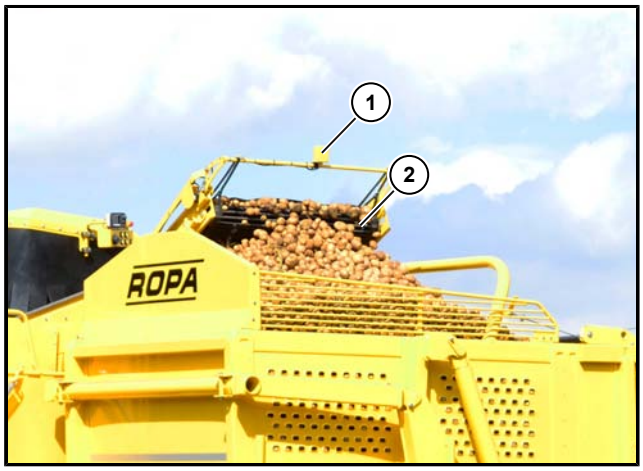
– Always move the bunker to working position and only then switch on the walking floor.

The bunker walking floor is switched on with the START STOP key on the bunker control. The red LED on the key indicates when the bunker walking floor is switched on.

The speed of the bunker walking floor can be infinitely adjusted with the rotary wheel on the bunker control. If the rotary wheel is set to position 0 the bunker walking floor is off, position 5 is the highest torque and position 10 is the maximum speed. If the speed is set higher and the bunker is to be completely unloaded, the speed is automatically regulated with the integrated pressure sensor.

Pressing the raise bunker filling conveyor key on the lifter control actuates the bunker walking floor after the bunker filling conveyor has reached its top end position. When the end switch on the bunker floor is tripped the walking floor feed is automatically switched off.

6.14.4 Bunker filling conveyor



(1) Automatic filling ultrasound sensor
(2) Bunker filling conveyor

The bunker filling conveyor (**2**) can be raised and lowered manually from the driver's seat. The position of the bunker filling conveyor is monitored by a sensor. If automatic filling is activated (**1**) the bunker filling conveyor is automatically raised depending on the fill level of the bunker. This ensures optimum filling with maximum protection of the crop by a low drop height.

ATTENTION

Danger of machine damage!

The bunker filling conveyor must only be raised if the bunker folding section (*See Page 306*) is in working position. If this is not complied with, machine parts may collide and cause serious damage to the machine.

The bunker filling conveyor is raised with the key on the lifter control. The bunker filling conveyor moves up while the key is pressed. If the bunker filling conveyor has reached the top end position, the bunker walking floor is actuated until the end switch on the bunker floor is tripped.

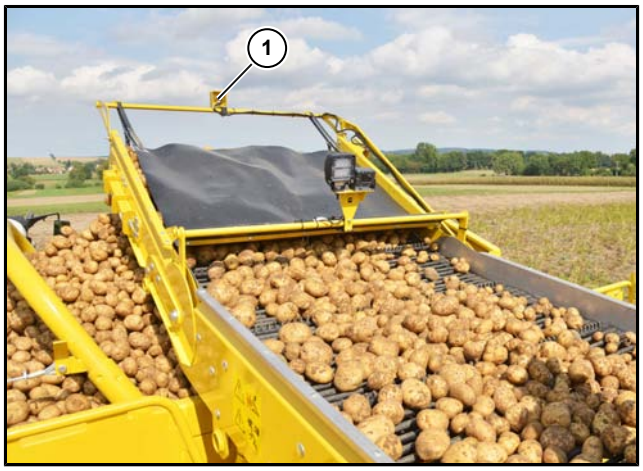
The bunker filling conveyor is lowered with the key on the lifter control. The bunker filling conveyor moves down while the key is pressed.

ADVICE

With the bunker raised press the key on the lifter control to lower first the bunker and then the bunker filling conveyor!

If automatic bunker filling is activated, accidentally pressing the key for the second time on the lifter control element after release will switch off the automatic filling of the bunker.

6.14.5 Bunker filling at bunker machine



(1) Automatic filling ultrasound sensor

The bunker filling can be performed manually or automatically.

Manual bunker filling

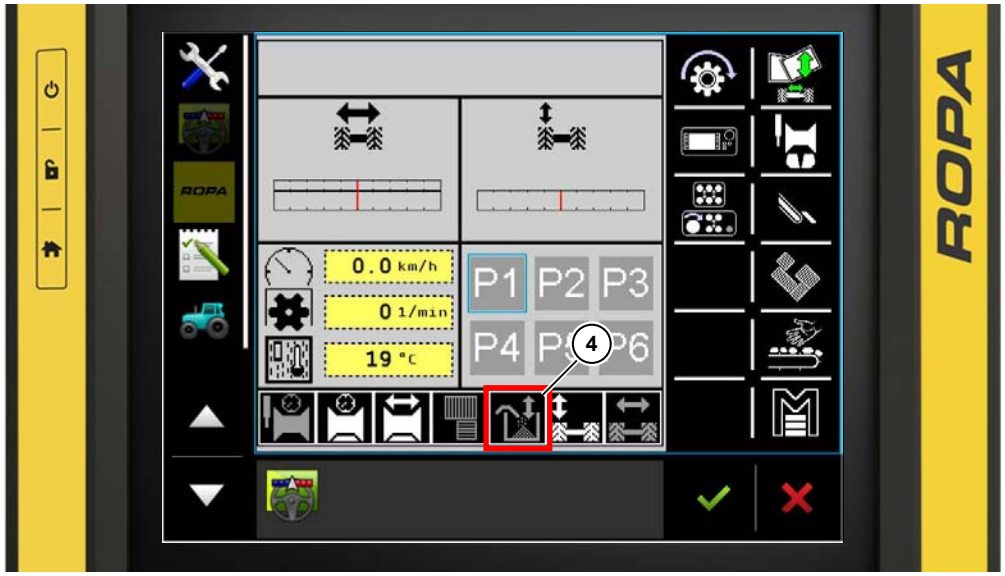
During manual bunker filling the fall height of the crop from the bunker filling conveyor into the bunker must be checked. The bunker filling conveyor must also not be covered with the crop. The bunker filling conveyor (*See Page 310*) is raised with the key and lowered with the key.

The bunker feed (*See Page 309*) must be actuated manually. This is done by pressing the raise bunker filling conveyor key on the lifter control element. The bunker feed is activated when the top end position of the bunker filling conveyor is reached. If the end switches on the rear (**2**) or the front of the bunker floor (**3**) are tripped, the "Bunker full!" signal is displayed to the driver on the tractor terminal to indicate that the maximum fill level has been reached.

Automatic bunker filling

For automatic bunker filling the automatic functions (**4**) are preselected at the tractor terminal under automatic functions. Automatic bunker filling is activated with the start of field key . The automatic filling ultrasound sensor (**1**) automatically maintains the bunker filling conveyor at a low fall height above the filling cone. The bunker feed operates automatically when the bunker filling conveyor has reached the top position and the ultrasound sensor detects crop. If the end switches on the rear (**2**) or the front of the bunker floor (**3**) are tripped, the "Bunker full!" signal is displayed to the driver on the tractor terminal to indicate that the maximum fill level has been reached. The automatic filling shuts off until bunker unloading.

(2) Rear bunker floor end switch
(3) Front bunker floor end switch



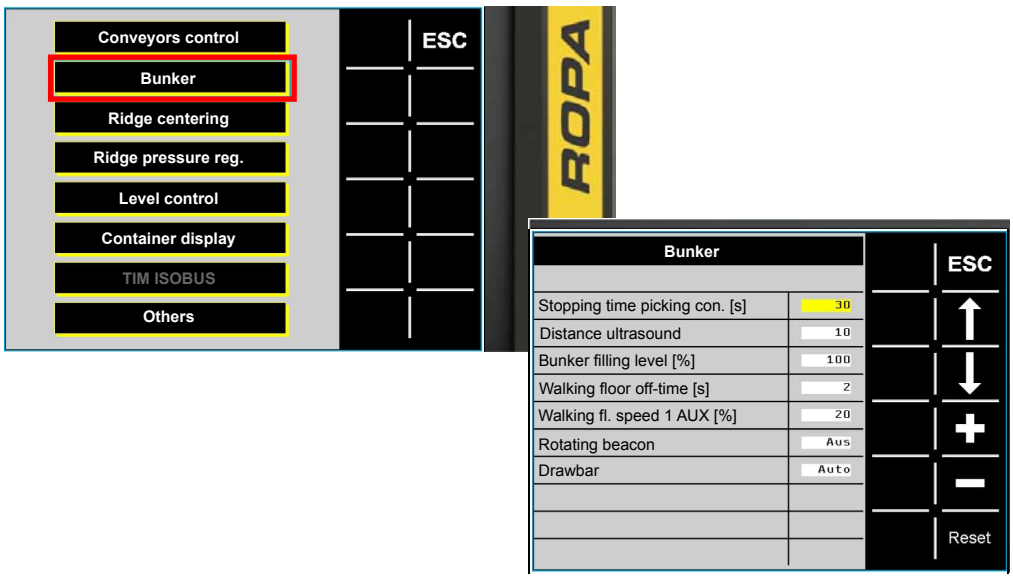
(4) Automatic bunker filling

The current status of automatic filling (**4**) is displayed in the automatic functions display field. Automatic bunker filling can be preselected, activated and deactivated by touching the tractor terminal.

Automatic bunker filling is deactivated.

The bunker filling automatic function is preselected. Automatic bunker filling is activated when the pickup is lowered with the start of field key on the lifter control.

The bunker filling automatic function is activated. Automatic filling is activated when the pickup is raised with the end of field key on the lifter control. Automatic filling can be deactivated again at the tractor terminal under automatic functions. When the end switches on the bunker floor are tripped the automatic bunker filling is switched off.



The sensitivity of automatic filling, the maximum bunker fill level and off-time of the bunker feed can be adjusted in the main menu , main settings menu, bunker sub-menu.

The sensitivity of the ultrasound sensor can be adjusted between the values of 1 to 20, the default setting is 10.

The bunker fill level can be adjusted between the values from 50 % to 100 %, the default setting is 100 %. The top end position of the bunker filling conveyor is limited here.

The off-time of the bunker feed can be set from 0 seconds to 5 seconds, with the default setting of 2 seconds. After reaching the top end position of the bunker filling conveyor this time counts down until the walking floor is released for automatic filling.

The Walking floor speed 1 AUX is used to control the walking floor. An optional ISOBUS joystick can be used to adjust between 0 % and 100 %.

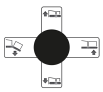
6.15 Bunker unloading at bunker machine

Procedure for bunker unloading

- Raise the pickup, disengage the tractor PTO shaft and align the drawbar in "straight-ahead position".
- Drive to the unloading site and do not raise the bunker until just before the trailer. Only raise the bunker as high as necessary.
- Unload the bunker into the trailer until the bunker is completely empty. Crop that is not emptied and is unfavourably positioned in the bunker will fall out when the bunker is filled again.
- After unloading the bunker raise it completely and reset the bunker floor with the key. The bunker floor can slide to working position and switch to working position.
- Lower the bunker completely when driving away from the trailer. Lifting is possible only with the bunker fully lowered in working position. Lower the bunker filling conveyor completely to minimise the fall height.

The speed of the bunker walking floor is activated and deactivated with the bunker walking floor "START - STOP" key on the bunker control. This allows the bunker walking floor to be stopped quickly, e.g. when filling the corners in the trailer.

The speed of the bunker walking floor is infinitely adjusted with the bunker walking floor speed rotary wheel on the bunker control. When using the rotary wheel position 0 means that the bunker walking floor is stopped, at position 5 the bunker walking floor has the highest torque and at position 10 the bunker walking floor is at its maximum speed. During unloading the bunker walking floor automatically regulates the speed with a pressure sensor. If the speed set with the rotary wheel is too high the walking floor moves more slowly.

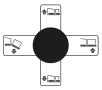


The bunker is raised and lowered with the bottom mini joystick on the bunker control. The joystick up raises the bunker and the joystick down lowers it. The extent of movement of the mini joystick is proportional to the speed of raising and lowering.

6.15.1 Articulated bunker section (optional)

(1) Articulated bunker section working position
(2) Articulated bunker section unloading position

The optional articulated bunker section can be adjusted from the driver's seat of the tractor. The position of the articulated bunker section is not monitored. The articulated bunker section ensures gentle loading of the crop into the trailer. It minimises the fall height into the trailer.



The articulated bunker section is adjusted with the bottom mini joystick on the bunker control. When the mini joystick is moved to the left the articulated bunker section is lowered and with the mini joystick to the right it is raised. The driver must visually check the position of the articulated bunker section.

ATTENTION

Risk of damage to the crop and the machine!

If the crop is loaded on the trailer with the articulated bunker section, make sure that the lowered articulated bunker section does not come into contact with the trailer. It is also important to raise the bunker early so the articulated bunker section is not buried under the crop. This may damage the crop and the articulated bunker section.

6.15.2 Tray filler (optional)

(1) Tray filler forward
(2) Tray filler back

The optional tray filler can be moved forward (**1**) and back (**2**) from the driver's seat. The position of the tray filler is not monitored. The box filler is intended for filling trays, but it can also be used as a fall brake for filling trailers. There are nine rubber flaps as a fall brake inside the tray filler.

When the tray filler is moved forward, select the speed of the bunker walking floor to prevent overflow. The speed of the bunker walking floor must be reduced in this case.

The tray filler is moved forward with the key on the bunker control. The hydraulic system will try to adjust the tray filler so long as the key is pressed. The driver must visually check that the tray filler is moved completely forward.

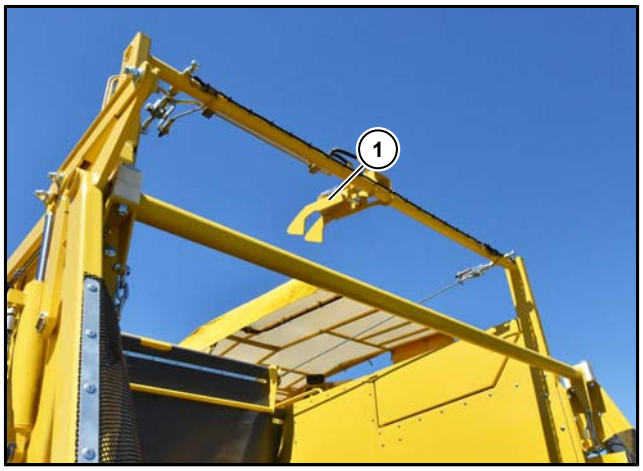
The tray filler is moved back with the key on the bunker control. The hydraulic system will try to adjust the tray filler so long as the key is pressed. The driver must visually check that the tray filler is moved completely back.

ATTENTION

Risk of damage to the crop and the machine!

If the crop is being loaded with the tray filler, make sure that the tray filler does not overflow, bump into the trailer and is not overfilled with crop. This may damage the crop and the tray filler.

6.15.3 Reset bunker floor



(1) Reset bunker floor hook

The hook (**1**) for reset of the bunker floor is operated from the tractor driver's seat.

Pressing the reset bunker floor key on the bunker control trips the hook on the unloading side of the bunker. This ensures that the bunker floor slides smoothly back to the working position after unloading with the bunker fully raised. The hook is open so long as the key on the bunker control is pressed. When the key is released the hook is briefly energised in the closing direction and closes.

6.16 Overloading bunker (option)

The overloading bunker exclusively serves as intermediate storage of the lifted potatoes until they can be unloaded into a transporting vehicle. They can also be unloaded onto a pile at the edge of the field. It is in no case meant as a freight compartment or for transporting goods or objects.

DANGER

Never enter the bunker if the tractor engine is running. There is an extreme hazard to life if the bunker waking floor starts unexpectedly.

– When working in the bunker, shut off the tractor engine and secure it against inadvertent starting (e.g. by removing the ignition key and securely holding it protected against access by third parties, e.g. by holding it in your pants pocket).

The bunker filling conveyor is located in the overloading bunker. It is used to fill the overloading bunker under manual control or using the automatic filling function. The bunker filling conveyor can be raised and lowered. The bunker walking floor and the unload conveyor can be moved forward slowly to ensure optimum filling of the overloading bunker. The three ultrasound sensors at the overloading bunker, bunker filling conveyor, transition from bunker walking floor to the unload conveyor and outside at the truck conveyor arm support the automatic filling and prevent the overloading bunker from overflowing during filling and unloading. A tray filler is optionally available for optimum truck loading in boxes.

For **road travel** the picking conveyor, bunker filling conveyor and optional sun / weather protection roof are lowered, both chains of the tray filler are unhooked, the unload conveyor and the ladders are folded in, the telescopic axle and the sorting platform are retracted, the optional collection box is closed and the drawbar is in the road travel position.

In **lifting position** the unload conveyor is folded out, the picking conveyor is raised, the sun / weather protection roof is extended, both chains of the optional tray filler are attached and the bunker filling conveyor is adjusted so that the crop can slide into the bunker at the minimum drop level. The telescopic axle is retracted during primary lifting and extended for lifting and unloading the bunker.

6.16.1 Unload conveyor and bunker rear wall

(1) Unload conveyor transport position
(2) Bunker rear wall closed

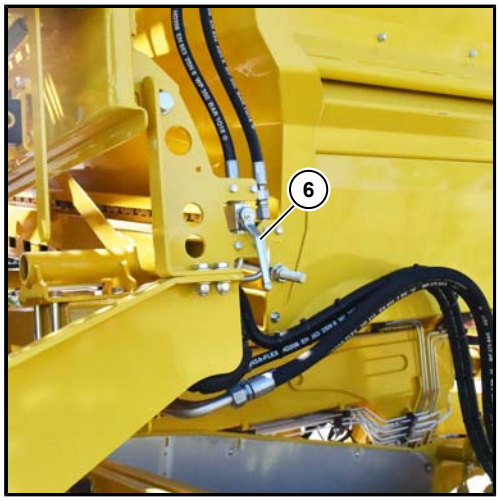
The position of the overloading bunker primarily determines whether the machine is in the transport position or working position. In the transport position the unload conveyor is folded in completely (**1**) and the bunker rear wall is closed (**2**).

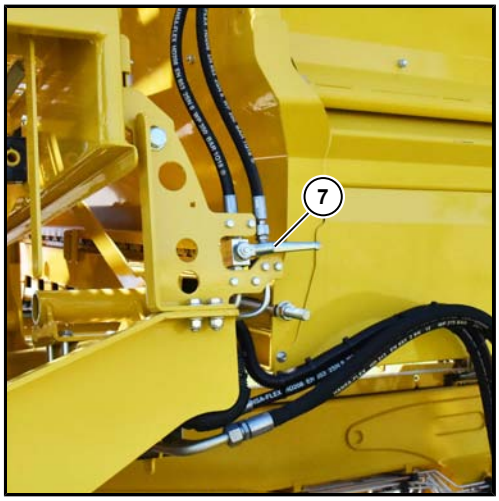
(3) Unload conveyor folded up
(4) Unloading conveyor lifting position

When folding up the unloading conveyor, make sure that there is sufficient space upwards (**3**) and to the side (**4**).

(5) Bunker rear wall folded up

The bunker rear wall (**5**) is folded up automatically when the unload conveyor folds up.





(6) Bunker rear wall stopcock open
(7) Bunker rear wall stopcock closed

If the bunker rear wall has to remain closed, e.g. in order to lift the field edge with a subsequent row of trees, the bunker rear wall can be shut off with the stopcock (**7**). The bunker rear wall remains in the position in which the stopcock was closed. Only the unload conveyor can be folded open or closed.

ATTENTION

Danger of machine damage.

The bunker rear wall can be folded in or out only if the bunker trough is leer. There is a risk of damage to crop and bunker rear wall if some crop remains in the bunker trough.

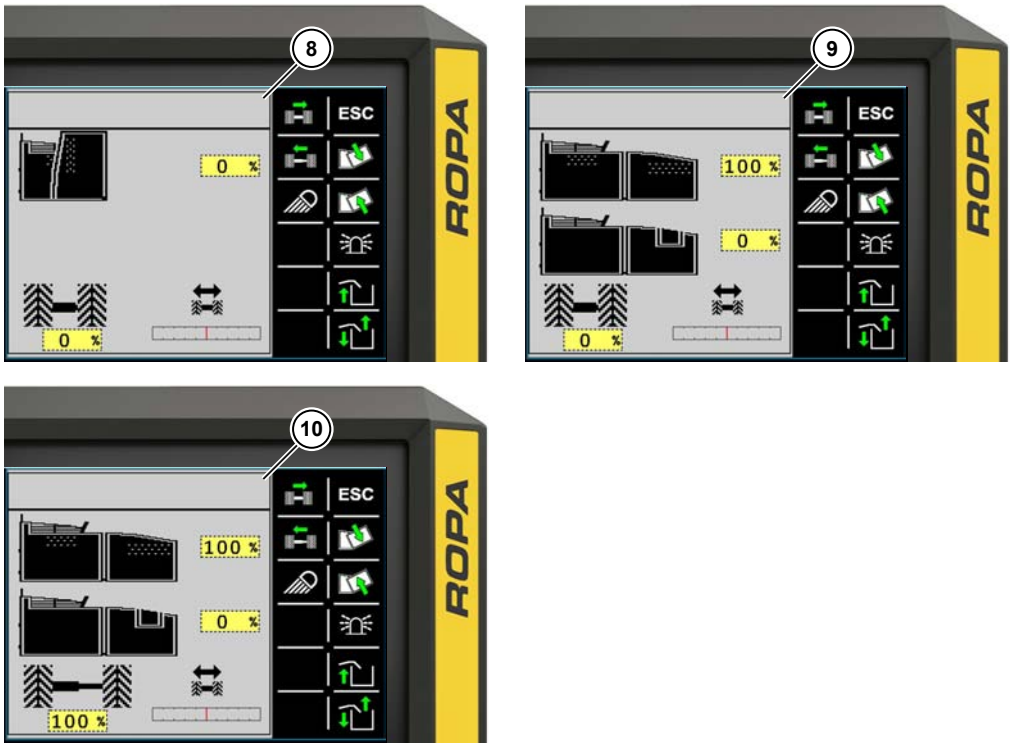
The unload conveyor can only be retracted in the transport position, if the bunker filling conveyor and the picking conveyor are completely lowered (the lowest position) and the telescopic axle is retracted. The bunker rear wall must be folded in to ensure the maximum width of 3.30 m.

ATTENTION

Danger of machine damage.

The unload conveyor may only be folded in if the bunker filling conveyor and the picking conveyor are fully lowered. If this is not complied with, then machine parts may collide and cause serious damage to the machine.

The folding menu soft key opens the folding mode menu.

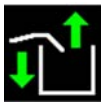


(8) Dropdown menu road position
(9) Dropdown menu lifting through position
(10) Dropdown menu lifting position/overloading position

Press the key to move the unload conveyor to working position. If the display on the tractor terminal has reached 100% and the image has changed, the unload conveyor is in the working position.

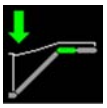
Before the unload conveyor can be moved to transport position, the picking conveyor and the bunker filling conveyor must be at the bottom position (completely lowered) and the telescopic axle must be retracted.
Press the key to move the folding bunker section to transport position. If the display on the tractor terminal has reached 0% and the image has changed, the unload conveyor is in the transport position.

Press the key to raise the picking conveyor. The picking conveyor can only be raised if the unload conveyor is in the working position. The automatic filling only works with the picking conveyor completely raised.



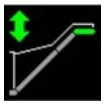
Press the key to lower the picking conveyor and the bunker filling conveyor. The picking conveyor and bunker filling conveyor must be completely lowered before the unloading conveyor of the machine can be folded into the transport position.

The unload conveyor can be raised and lowered with the AUX-N function "Unload conveyor raise/lower analogue" on the freely assignable control element left.



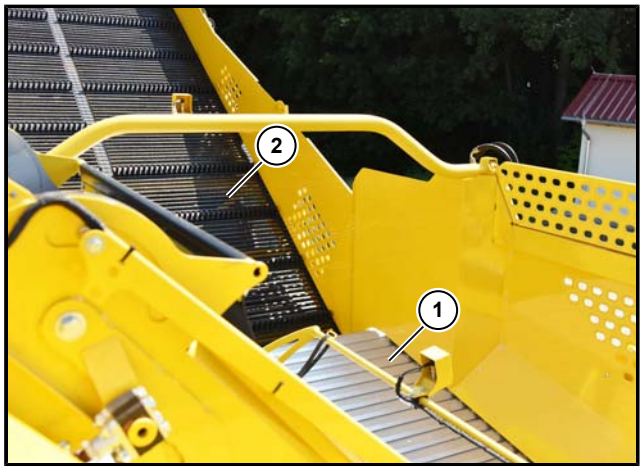
The unload conveyor articulation 1 can be lowered with the AUX-N function "Lower unload conveyor articulation 1" on the freely assignable control element left.

The unload conveyor articulation 1 can be raised with the AUX-N function "raise unload conveyor articulation 1" on the freely assignable control element left.



The unload conveyor articulation 2 can be raised and lowered with the AUX-N function "Raise/lower unload conveyor articulation 2 analogue" on the freely assignable control element left.

6.16.2 Walking floor bunker trough and unloading conveyor



(1) Walking floor bunker trough
(2) Unloading conveyor

The unloading conveyor and the walking floor of the bunker trough can be activated and deactivated with the AUX-N function "Unload conveyor on/off" on the freely assignable control element left. This allows the unload conveyor to be stopped quickly, e.g. when filling corners of the trailer.

The walking floor of the bunker trough can be switched on and off with the AUX-N function "Walking floor on/off" on the freely assignable control element left, if the unload conveyor drive is switched on. Thus, the unload conveyor can run empty also if the bunker trough is filled only partially.

The speed of the unload conveyor and that of the bunker trough walking floor, which depends on it, can be continuously adjusted with the rotary wheel for unload conveyor drive speed on the freely assignable control element left. The unloading conveyor stands still when the rotary wheel is in the left stop position and runs with its maximum speed when the rotary wheel is in the right stop position.

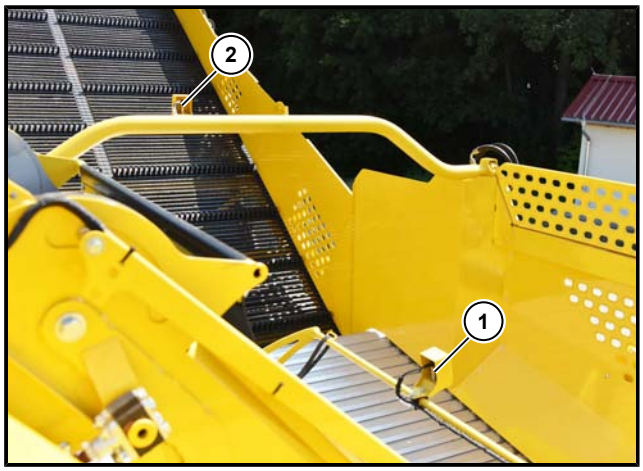
6.16.3 Bunker filling conveyor and picking conveyor

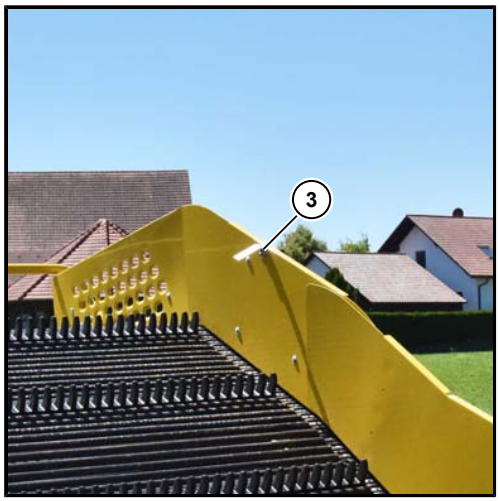
(1) Picking conveyor lowered
(2) Picking conveyor raised

Press the key to raise the picking conveyor. The picking conveyor can only be raised if the unload conveyor is in the working position. The automatic filling only works with the picking conveyor completely raised.

Press the key to lower the picking conveyor and the bunker filling conveyor. The picking conveyor and bunker filling conveyor must be completely lowered before the unloading conveyor of the machine can be folded into the transport position.

6.16.4 Bunker filling at overloading bunker machine





(1) Bunker filling conveyor ultrasound sensor
(2) Bunker trough ultrasound sensor
(3) Unloading conveyor ultrasound sensor

The bunker filling can be performed manually or automatically.

Manual bunker filling

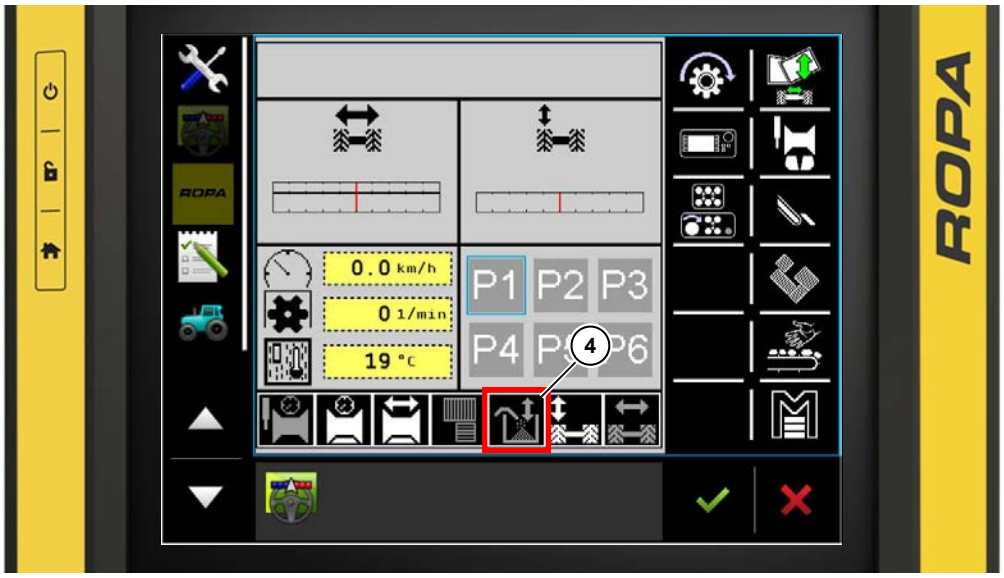
During manual bunker filling the fall height of the crop from the bunker filling conveyor into the bunker must be checked. The bunker filling conveyor must also not be covered with the crop. The bunker filling conveyor (*See Page 323*) is raised with the key and lowered with the key.

The bunker feed and the unload conveyor feed (*See Page 322*) must be actuated manually. This is done by pressing the raise bunker filling conveyor key on the lifter control element. The bunker feed and the unloading conveyor feed are activated when the top end position of the bunker filling conveyor is reached. If the unload conveyor ultrasound sensor (**3**) is tripped, the "Bunker full!" signal is displayed to the driver on the tractor terminal to indicate that the maximum fill level has been reached.

Automatic bunker filling

For automatic bunker filling the automatic functions (**4**) are preselected at the tractor terminal under automatic functions. Automatic bunker filling is activated with the start of field key . The bunker filling conveyor ultrasound sensor (**1**) automatically maintains the bunker filling conveyor at a low fall height above the filling cone. The bunker feed and the unloading conveyor feed operate automatically when the bunker filling

conveyor has reached the top position and the ultrasound sensor detects crop. If the unload conveyor ultrasound sensor (**3**) is tripped, the "Bunker full!" signal is displayed to the driver on the tractor terminal to indicate that the maximum fill level has been reached. The automatic filling shuts off until bunker unloading.



(4) Automatic bunker filling

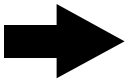
The current status of automatic filling (**4**) is displayed in the automatic functions display field. Automatic bunker filling can be preselected, activated and deactivated by touching the tractor terminal.

Automatic bunker filling is deactivated.

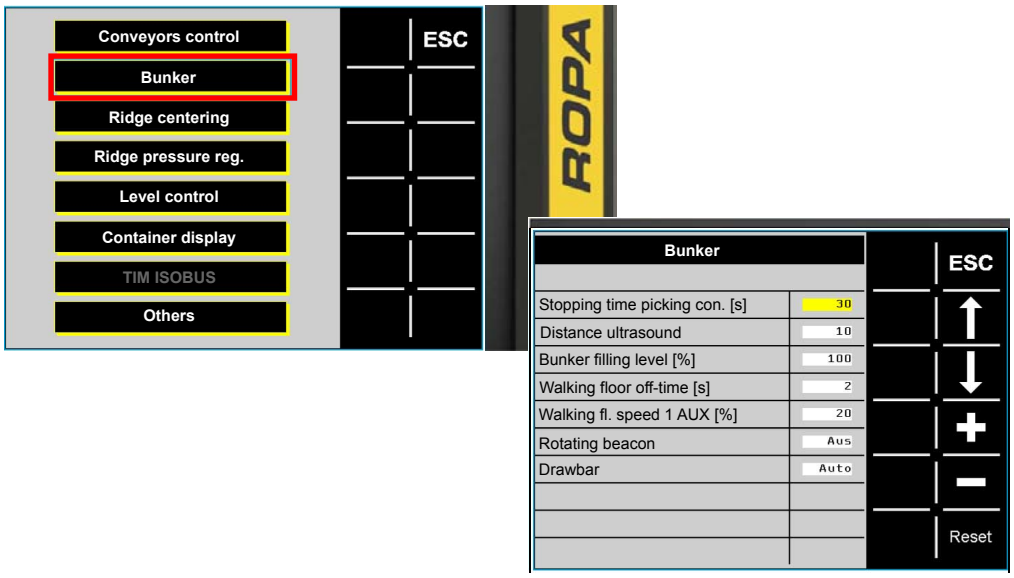
The bunker filling automatic function is preselected. Automatic bunker filling is activated when the pickup is lowered with the start of field key on the lifter control.

The bunker filling automatic function is activated. Automatic filling is activated when the pickup is raised with the end of field key on the lifter control. Automatic filling can be deactivated again at the tractor terminal under automatic functions.

ADVICE



If the angle of the unloading conveyor is too steep, only the bunker trough is filled with the automatic filling. The unloading conveyor switches off automatically and the automatic bunker filling flashes on the tractor terminal.



The sensitivity of automatic filling, the maximum bunker fill level and off-time of the bunker feed can be adjusted in the main menu, main settings menu, bunker sub-menu.

The sensitivity of the ultrasound sensor can be adjusted between the values of 1 to 20, the default setting is 10.

The bunker fill level can be adjusted between the values of 50 to 100, the default setting is 100. The top end position of the bunker filling conveyor is limited here.

The off-time of the bunker feed can be set from 0 seconds to 5 seconds, with the default setting of 2 seconds. After reaching the top end position of the bunker filling conveyor this time counts down until the bunker walking floor and the unloading conveyor walking floor are released for automatic filling.

The Walking floor speed 1 AUX is used to control the unloading conveyor. An optional ISOBUS joystick can be used to adjust between 0 % and 100 %.

The rotating beacon can be switched on automatically if the option rotating beacon is installed. To do this, switch the rotating beacon to "On". Depending on the set percentage value of bunker fill level, the rotating beacon switches on and off automatically.

6.17 Bunker unloading with overloading bunker

Procedure for overloading bunker emptying

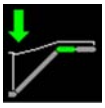
- In the overloading bunker the walking floor transports potatoes for unloading through the deflector roller to the unloading conveyor.
- The unload conveyor moves the potatoes from the overloading bunker to a vehicle driving alongside or onto a pile.
- The whole emptying of the bunker is controlled with the freely assignable control element left on the left side of the driver‘s seat or with the optional AUX-N joystick.

The unloading conveyor and the walking floor of the bunker trough can be activated and deactivated with the AUX-N function "Unload conveyor on/off" on the freely assignable control element left. This allows the unload conveyor to be stopped quickly, e.g. when filling corners of the trailer.

The walking floor of the bunker trough can be switched on and off with the AUX-N function "Walking floor on/off" on the freely assignable control element left, if the unload conveyor drive is switched on. Thus, the unload conveyor can run empty also if the bunker trough is filled only partially.

The speed of the unload conveyor and that of the bunker trough walking floor, which depends on it, can be continuously adjusted with the rotary wheel for unload conveyor drive speed on the freely assignable control element left. The unloading conveyor stands still when the rotary wheel is in the left stop position and runs with its maximum speed when the rotary wheel is in the right stop position.

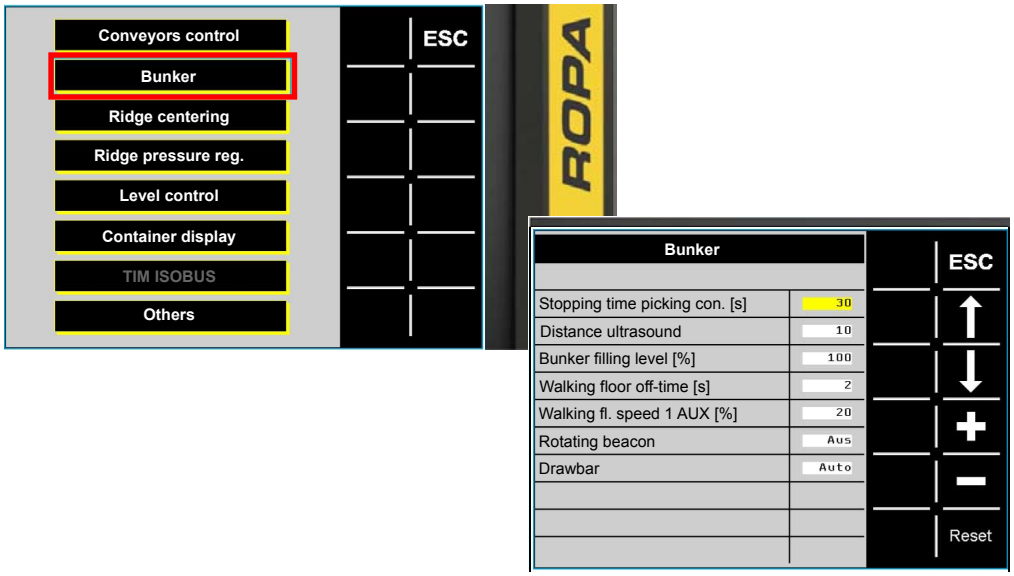
The unload conveyor can be raised and lowered with the AUX-N function "Unload conveyor raise/lower analogue" on the freely assignable control element left.



The unload conveyor articulation 1 can be lowered with the AUX-N function "Lower unload conveyor articulation 1" on the freely assignable control element left.

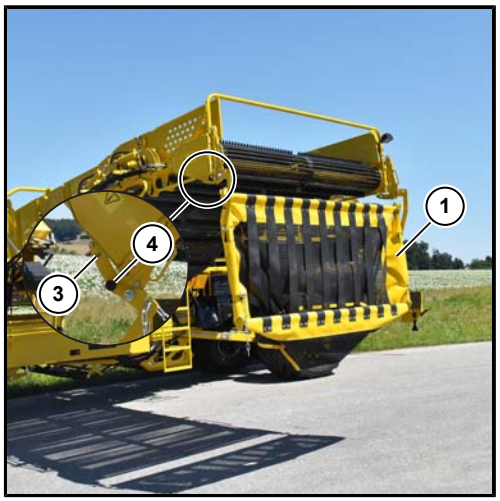
The unload conveyor articulation 1 can be raised with the AUX-N function "raise unload conveyor articulation 1" on the freely assignable control element left.

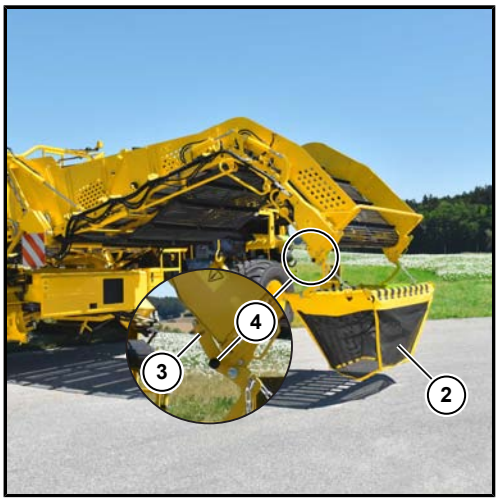
The unload conveyor articulation 2 can be raised and lowered with the AUX-N function "Raise/lower unload conveyor articulation 2 analogue" on the freely assignable control element left.



The drawbar setting "Auto" or "Off" determines if the overloading bunker machine swivels the drawbar in "straight-ahead position" when pressing the start of field key or let it remain in the position for lifting.

6.17.1 Tray filler overloading bunker (option)





(1) Tray filler chains unhooked
(2) Tray filler chains attached
(3) Hole for working position front
(4) Hole with bolt locking for transport position front

Move the optional tray filler into the transport or working position manually.

For the **transport position**, unhook both chains front and rear on the tray filler (**1**) and insert the bolt locking into the hole for the transport position front (**4**) and rear. This is the only way to maintain a maximum height of less than 4 metres when the machine is folded in.

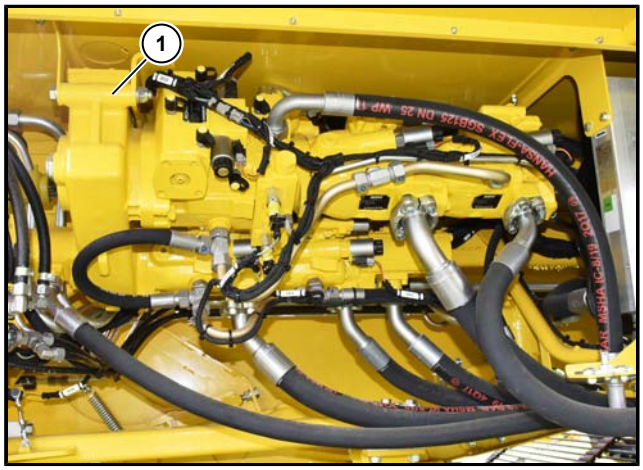
For the **working position**, attach both chains front and rear on the tray filler (**2**) and insert the bolt locking into the hole for the working position front (**3**) and rear. This is the only way to ensure correct emptying by the tray filler and that the crop does not jump over the tray filler at higher unloading conveyor speeds.

ATTENTION

Risk of damage to the crop and the machine!

If the crop is being loaded with the tray filler, make sure that the tray filler does not overflow, bump into the trailer and is not overfilled with crop. This may damage the crop and the tray filler.

6.18 Pump distributor gears



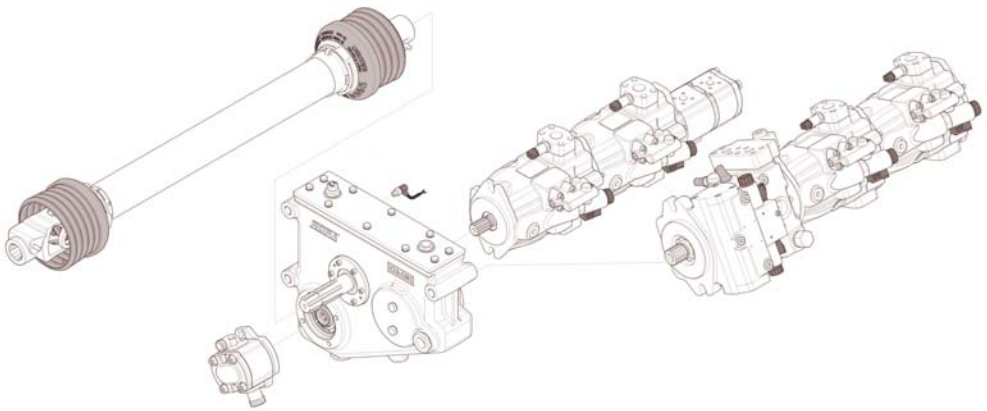
(1) Pump distributor gears

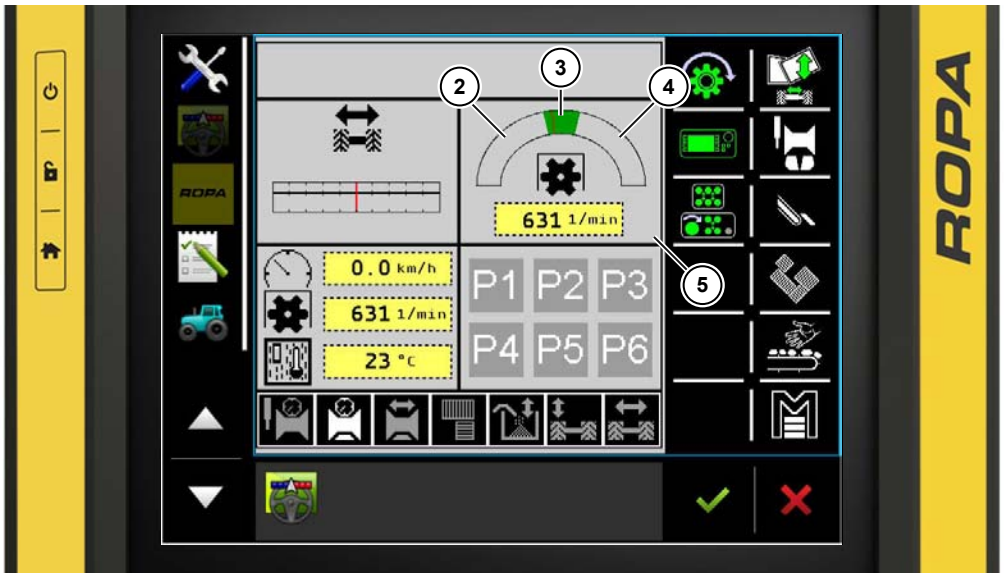
The pump distributor gear (**1**) is directly attached to the flange of the the articulated shaft, which is connected to the tractor PTO and transfers the tractor engine power to the hydraulic pumps of the machine hydraulic system. The pump distributor gear (PDG) is front left under the machine cover panels.

ADVICE

The highest allowed PDG input speed to the drive for the hydraulic pumps must not be exceeded at any time – not even for a short time.

Maximum rotary speed: 1000 rpm





(2) PTO shaft speed too low
(3) PTO shaft speed optimal
(4) PTO shaft speed too high
(5) Display monitoring PTO speed

The input speed of the tractor PTO shaft is monitored on the pump distributor gears. The higher the PTO shaft speed on the tractor is, the higher the speed of the pump distributor gears and the more hydraulic oil the flanged pumps can provide.

In the menu "Main settings", submenu "Container display" (*See Page 132*) one can adjust the setting of the containers displayed in the field operation menu and set the display monitoring of the PTO shaft speed (**5**).

If the PTO shaft speed is too low (**2**) the display is located in the left area and additionally a warning message "PTO shaft speed too low" is generated. The speed of the tractor PTO shaft must be increased, so that the machine is provided with enough hydraulic oil for its drives.

If the PTO shaft speed is optimal (**3**) the display is located in the green area and the system provides enough hydraulic oil for the set speeds of the chains and conveyors. This is where the machine works effectively.

If the PTO shaft speed is too high (**4**) the display is located in the right area and the system provides too much hydraulic oil as the machine needs for the set speeds of the chains and conveyors. It is recommended to reduce the PTO shaft speed in order to work more cost-effectively.

6.19 Hydraulic system

WARNING

The hydraulic system is under high pressure.

Hot hydraulic fluid may emit from leaks and cause severe injuries! The prestress of the pressure reservoirs is present even when the remaining hydraulic system is already pressureless. When dirt, even only in the smallest quantities, enters the hydraulic system, this may lead to serious damage to the complete hydraulic system.

- Work on pressure reservoirs of the machine may only be performed by trained personnel.
- When working on the pressure reservoirs, the machine must first be rendered completely pressureless.
- The pressure reservoirs themselves may in no case be damaged or opened, because substantial injuries to people can occur due to the constant prestress.
- During all work on the hydraulic system, ensure extreme cleanliness.

The machine hydraulic system is subdivided into tractor hydraulic system, machine hydraulic system and the support stand, all independent of one another.

The **tractor hydraulic system** includes all hydraulic actuation functions as well as the drives for the bunker walking floor, the unload conveyor, the picking conveyor and the trash conveyor. This enables unloading if the tractor PTO is disengaged. The hydraulic oil is cooled via the tractor. The machine feed can be connected via a single-acting control unit, a double-acting control unit or the LS hydraulic system of the tractor. The overloading bunker machine must be connected to the LS hydraulics of the tractor. The 7-part LVS block on the machine must be adjusted by an adjusting screw depending on how the tractor hydraulic system is operated. Dynamic pressure must not build up when the machine is reversed.

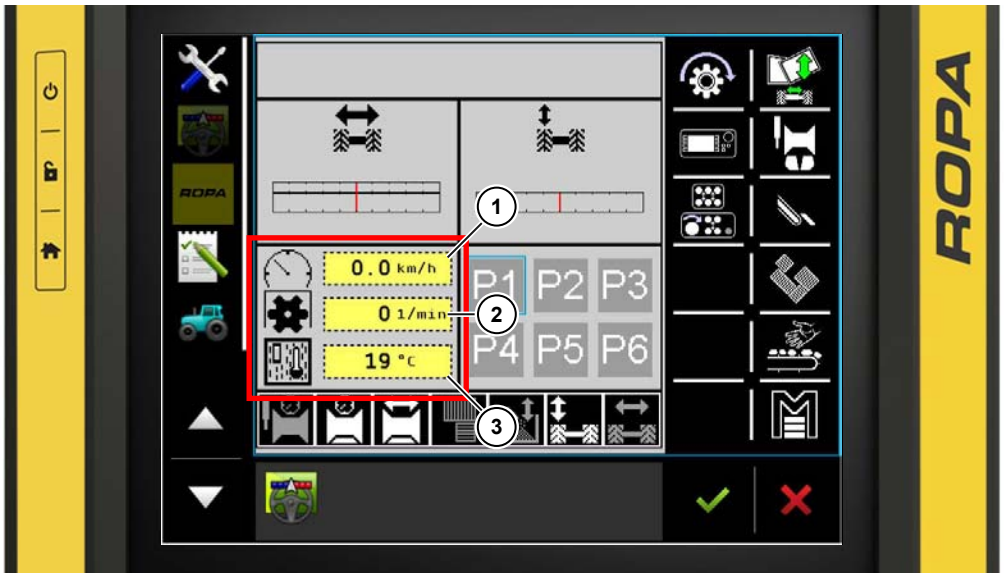
ATTENTION

Risk of damage to the hydraulic system.

If the return pressure is too high at over 5 bar, the "Tractor return pressure too high" warning appears. Make sure that the return at the tractor is sufficiently high to prevent damage to the hydraulic system.

The **machine hydraulic system** includes the drives for the swath pickup with lifter shaft and cover belt, the hydraulic disc coulter, sieve conveyor 1, the shaker, sieve conveyor 2, the leaf chain, pintle belt 1, deflector roller 1, the dirt discharge conveyor, pintle belt 2, deflector roller 2, pintle belt 3, deflector roller 3, pintle belt 4 and the rotating finger comb. The hydraulic oil is cooled via the integrated hydraulic oil cooler.

The **support foot** and the **additional axle** are connected to a double-acting control unit on the tractor. The support foot is required for parking the machine and only needs to be connected for coupling and uncoupling the machine. The stopcock on the support foot must be closed at all times and only opened briefly when required. An additional axle must be completely lowered for driving on public roads and paths. After lowering switch the control unit of the tractor into the floating position and open the stopcock of the additional axle.



(1) Speed of machine
(2) Rotational speed PDG input
(3) Temperature of hydraulic system

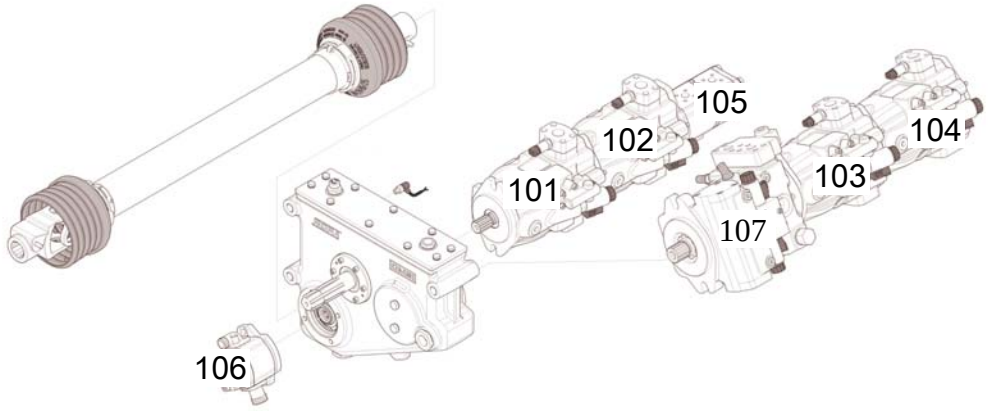
Regularly check the hoses of the hydraulic system for aging and damage! Immediately exchange damaged or aged hoses. Use only original ROPA hoses or hoses fully conforming to the technical specifications of the original hoses! Observe the regionally applying safety regulations on the service life of hydraulic hoses.

The hydraulic system is operational after the tractor engine has been started if the ISOBUS tractor terminal is completely operational.

The temperature of the hydraulic fluid (**3**) in the machine hydraulic system can be read at any time on the tractor terminal. If the temperature of the hydraulic fluid is 75° C or higher, or if the icon is displayed on the tractor terminal, immediately clean the hydraulic oil cooler.

The level in the hydraulic fluid tank with the machine in a horizontal position should in the medium to high range of the display in the inspection glass. The level must not be above the inspection glass. If the hydraulic fluid level is too low, then the tractor terminal displays the warning icon: hydraulic fluid level too low. Disengage the tractor PTO IMMEDIATELY! Refill hydraulic fluid and determine the cause for the lack of fluid. In case of a burst hydraulic hose, in the most unfavourable case, the complete hydraulic fluid tank becomes empty within 30 seconds.

Hydraulic pumps:



Pos.	Function
101	Sieve conveyor 1
102	Pintle belt 1, deflector roller 1, dirt discharge conveyor
103	sieve conveyor 2, leaf chain
104	pintle belt 2, deflector roller 2, pintle belt 3, deflector roller 3, pintle belt 4
105	Shaker, rotating finger comb (UFK), fan drive
106	Optional: hydraulic disc coulter, swath pickup with lifer shaft and cover belt
107	Option: drive wheel pump

6.20 Compressed air system

The compressed air system of the machine is designed for the twin-circuit air brake system and is fed by the tractor twin-circuit air brake system.

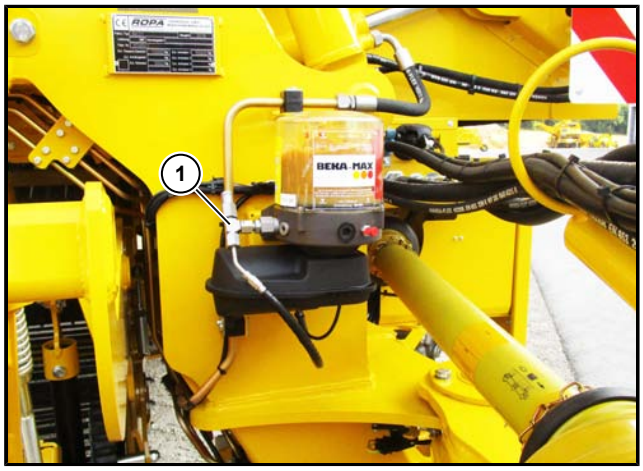
6.20.1 Compressed air reservoir

(1) Compressed air reservoir with drain valve

The compressed air reservoir (**1**) is behind the axle bracket under the main frame. It acts as an air reservoir for the service brake, e.g. when the machine is parked. The compressed air reservoir is only installed if the machine is fitted with a compressed air brake system.

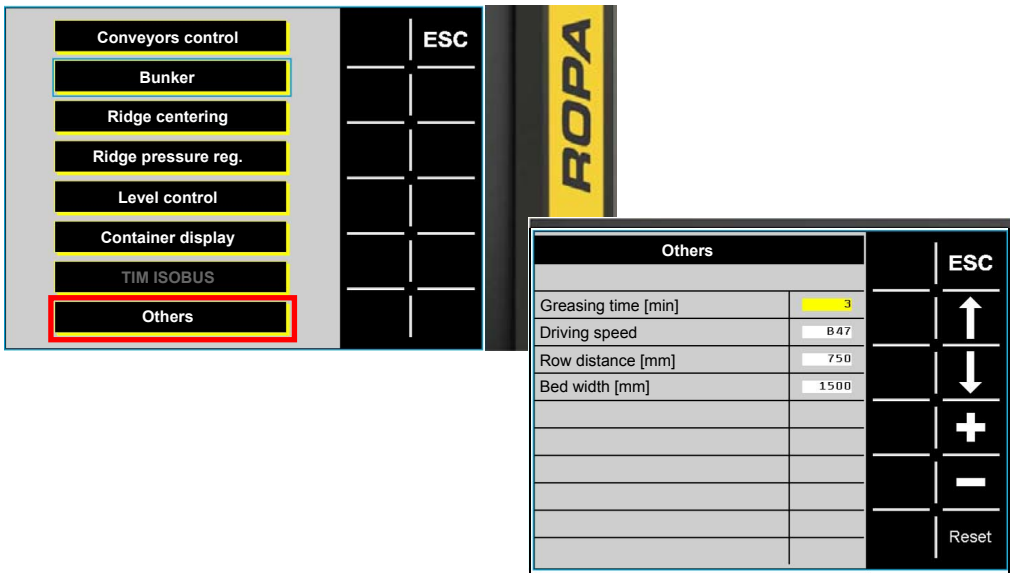
6.21 Central lubricating system (optional)

The machine is fitted with an optional central lubricating system and has one lubricating circuit.



(1) Lubricating circuit 1

All connected lubricating points are automatically supplied with grease. The lubricating pump supplies the grease to the main distributors, the main distributors distribute the grease to sub-distributors, and these supply it to the individual lubricating points. As long as the lubricating pump is running, a stirring paddle is rotating in the grease reservoir. During operation (tractor PTO is engaged), the lubricating pump in basic setting is switched on for at least 3 minutes, then makes a pause for 90 minutes.
If necessary, this setting can be adapted at any time to individual requirements in the menu "Main settings", submenu "Others", line "Greasing time [min]".



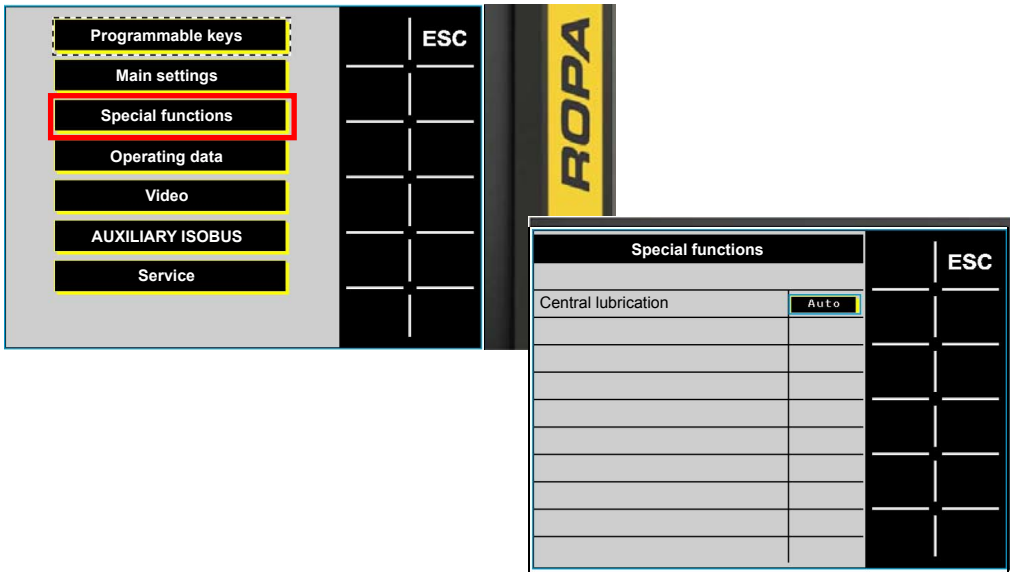
Never completely fill up the 1.9 kg supply reservoir of the grease pump. Only fill up the supply reservoir for the grease pump for 90 %.

ADVICE

In any case, make sure that there is always sufficient grease supply in the grease reservoir. In no case may the grease supply be used up so that air enters the pipe system!

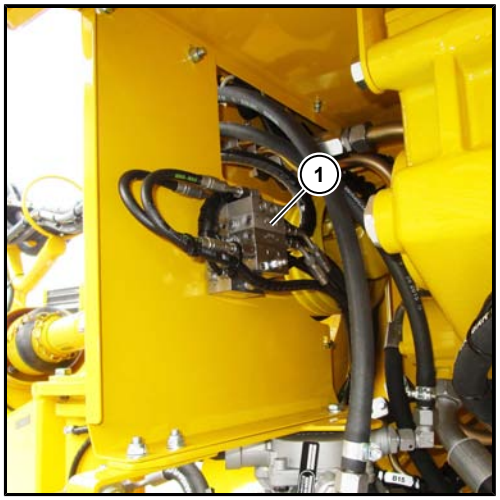
6.21.1 Intermediate lubrication

The lubrication system can be manually activated at any time. At the tractor terminal in the "Special functions" menu in the "Central lubrication" row switch the option from "AUTO" to "ON".



Upon expiry of the lubricating interval set in Others menu, manual lubrication is switched off again.

Regularly check the lubricating pipe system. Check daily whether the lubricating system works without faults. One option is to check the safety valve on the pump element. If grease leaks out, there is a blockage. Another option is to check the level in the supply reservoir at the electric pump. The level decreases slightly after every lubrication cycle. This shows whether the pump element of this lubricating circuit is operating.



(1) Main distributor
(2) Pump element safety valve

6.22 Video system (optional)

WARNING

The video system is only for assistance and may show obstacles in distorted form, incorrectly or not at all. It can not replace your attention. The video system can not display all the objects situated to close and/or above the rear view camera. It does not warn you about collision, people or objects. You are responsible for the safety and must pay attention to your immediate surroundings. This applies not only to rear but also to the front and side areas around the machine. Otherwise you might not see people or objects, and continue driving, causing injures to people or damage to property and the machine.

The video system could either fail or work incorrectly, when

- it rains heavily, snows or is foggy.
- the camera is exposed to very strong white light. White streaks may appear on the screen.
- the camera lens is dirty or covered.

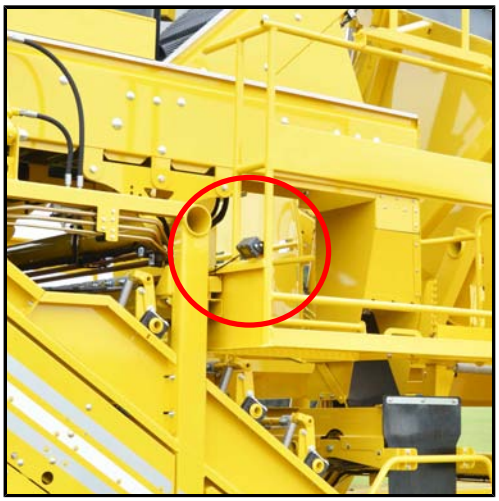
The cameras are maintenance-free. When the image quality deteriorates, you should clean the lens cover using a soft, clean and lightly moistened cloth. During cleaning, make sure that you do not scratch the lens cover.

The machine can be fitted with up to two optional video monitors and up to eight video cameras. One video monitor can show up to four video cameras. Seven camera positions are defined and one position can be selected as desired. There is one camera on top at the rear of the machine, which acts as a reversing camera. There is a camera on the sorting platform to monitor the picking conveyor. The camera for monitoring the transition from pintle belt 1 to pintle belt 2 is installed in the transition from pintle belt 2 to pintle belt 3. A camera for monitoring the distance between the right tyre and the next ridge is installed on the right sorting platform. The camera that monitors the dirt discharge conveyor is installed on the left transverse tube of the main frame behind the axle. The camera for monitoring the bunker discharge is mounted on the bunker. The camera for monitoring sieve conveyor 2 is mounted under the right sorting platform.

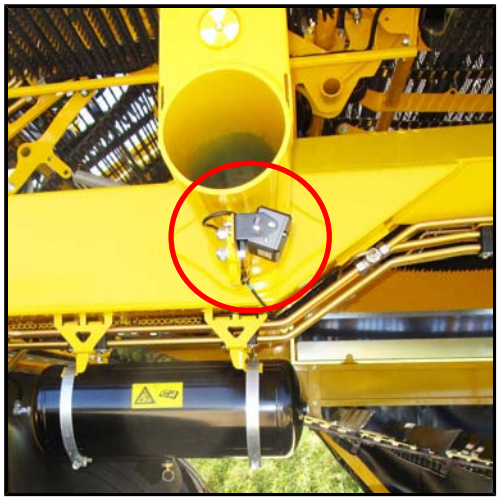
Rear view camera

Picking conveyer video camera

Pintle belt 1/2 video camera

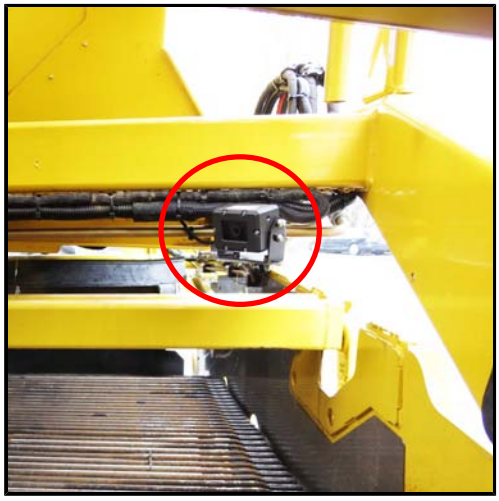


Right tyre video camera



Dirt discharge conveyor video camera

Bunker discharge video camera



Sieve conveyor 2 video camera

Video monitor

Monitor on/off

Open and switch the menus in this sequence:

brightness	brightness - 0(MIN) ... 60(MAX)
contrast	contrast - 0(MIN) ... 60(MAX)
colour	colour saturation - 0(MIN) ... 60(MAX)
standard	Reset to factory settings
Language	Language - English, French, German, Spanish, Portuguese, Italian, Polish
Reflection	the camera image is reflected. Return to the main menu with the "Input" menu item. Close the menu with the "Exit" menu item.
Video	PAL, NTSC, Auto
Poc	OFF/ON. Monitor is started with ignition switched OFF monitor can be switched on and off at the monitor.
Timer on/off	automatically switches camera on and off
Timer setup	Sets the display period for every single camera in timer mode

"Plus" selection key

"Minus" selection key

day/night switching

CAM Use this key to switch among camera 1, camera 2, camera 3 and camera 4 in single-image mode. In split-screen mode the operator can switch among cameras 1/2, 2/3, 3/4 and cameras 4/1. This key has no function in triple and quadruple image mode. Cameras can only be selected if a control line is not assigned.

MODE Pressing the mode key allows the operator to switch among the individual display modes (single image, split image and quadruple image).

6.22.1 ROPA video switch (option)

The rear view camera, pintle belt 1/2 camera, bunker articulation camera, sieve conveyor 2 camera and picking conveyor camera can be activated automatically with the Ropa video switch. Up to 4 cameras can be connected.

(1) Soft key ROPA video switch

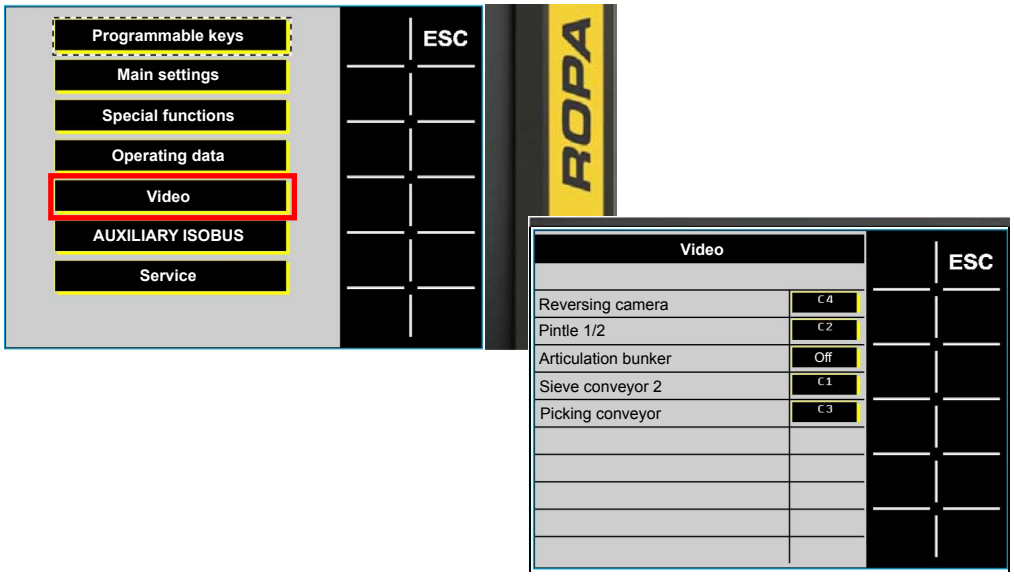
The optional ROPA video switch can be switched on and off with the soft key ROPA video switch . If the ROPA video switch is on, the soft key becomes green.

If the ROPA video switch is activated (green), manual switching of the cameras on the video monitor is no longer possible. First, ROPA video switch must be deactivated (white).

When the ROPA video switch is activated, the corresponding camera images are displayed for the following situations:

- The rear view camera is displayed when the ISOBUS signal from tractor sends the signal "Wheel-Based Machine Direction" backwards. If the signal "Wheel-Based Machine Direction" backwards is no longer transmitted, the ROPA video switch changes to the previously switched camera image. The rear view camera has the highest priority.
- The sieve conveyor 2 camera is displayed if the set sieve conveyor 2 pressure threshold is reached (*See Page 138*). If the value falls below the set sieve conveyor 2 pressure threshold, the ROPA video switch changes over to the previously switched camera image after a delay time of 3 seconds. The sieve conveyor 2 camera and the pintle belt 1/2 camera together have the second highest priority. The camera image is displayed depending on which warning threshold is reached first.
- The pintle belt 1/2 camera is displayed if the set pintle belt 1 pressure threshold or the set pintle belt 2, 3, 4 pressure threshold is reached (*See Page 138*). If the value falls below the set pintle belt 1 pressure threshold or the set pintle belt 2, 3, 4 pressure threshold, the ROPA video switch changes over to the previously switched camera image after a delay time of 3 seconds. The sieve conveyor 2 camera and the pintle belt 1/2 camera together have the second highest priority. The camera image is displayed depending on which warning threshold is reached first.
- The picking conveyor camera is displayed if the horn has been pressed on the sorting platform. If the horn is not pressed any more, the ROPA video switch changes over to the previously switched camera image after a delay time of 10 seconds. The picking conveyor camera has the second lowest priority.
- The bunker articulation camera is displayed, if the bunker at the bunker machine is no longer in its lowest end position and the driving speed is less than 0.5 km/h. If the driving speed is higher than 0.5 km/h or the bunker is again in its lowest end position, the ROPA video switch changes over to the previously switched camera image. The bunker articulation camera has the lowest priority.

The camera positions for the ROPA video switch can be set in the main menu, "Video" menu item, e.g. for retrofitting.



The corresponding camera is selected and the assignment determined.

6.23 Electrics

ATTENTION

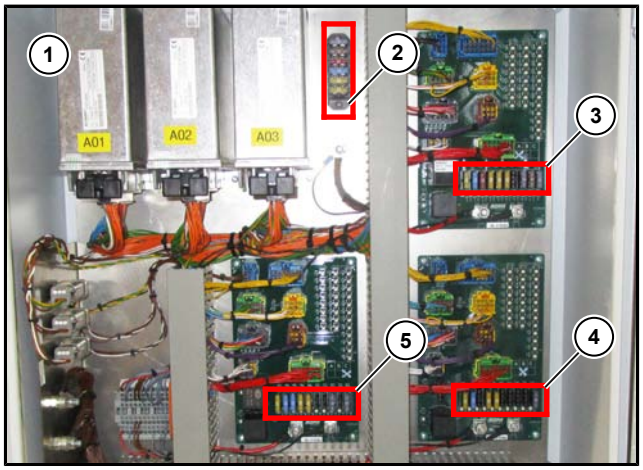
Hazard of damage to the electrical and electronic systems of the machine.

– The ISOBUS plug must not be disconnected while the machine is running.

6.23.1 Voltage monitoring

The battery voltage of the tractor is monitored by the system. If the voltage is too high or too low, then the warning icon is displayed on the tractor terminal. The battery voltage of the tractor must not exceed 16 V and must not fall below 12 V. If the battery voltage falls below 12 V, experience shows that the machine will not operate correctly.

6.23.2 Fuses



(1) Central electrical system
(2) Reserve fuses
(3) Fuses (F01.A to F10.A) in the central electrical system
(4) Fuses (F01.B to F10.B) in the central electrical system
(5) Fuses (F01.C to F10.C) in the central electrical system

The fuses for the electrical system are in the central electrical system box (**1**) at the left sorting platform.

Labels on the inside of the metal cover identify the fuses. In case of problems with the electric or electronic systems, please contact ROPA service.

6.24 Shutdown

Park the machine so that nobody is impeded or endangered. Also make sure of a sufficient safety distance to freely suspended power lines.

– Raise pickup completely and secure it.

  Bunker machine:

  – Empty bunker and lower completely, lower bunker filling conveyor completely.
  – Check position of articulated bunker section and tray filler.
  – Retract telescopic axle completely.
  – Open bunker flap and fold folding bunker section to road travel position.

  Overloading bunker machine:

  – Empty bunker and lower completely bunker filling conveyor and picking conveyor.
  – Retract telescopic axle completely.
  – Remove both chains of the tray filler.
  – Fold in the unload conveyor to road travel position.

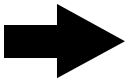
– Completely lower the sun / weather protection roof and fold in the right side of the roof.
– Switch off tractor engine and secure it against inadvertent starting.
– Set the machine parking brake and position wheel chocks to prevent movement.
– Disconnect articulated shaft, ISOBUS cable, vehicle cable and tractor hydraulic system from the machine, connect the support stand hydraulics if not yet connected and open the support stand stopcock.
– Couple the flow hose and the return hose of the tractor hydraulics together.
– Traverse support stand so the machine can be uncoupled from the tractor.
– Close support stand stopcock, release hydraulic system and completely disconnect hydraulic system.
– Move tractor away from machine.
– Retract and lock right sorting platform.
– Fold and lock right sorting platform access ladder.
– Fold and lock left sorting platform access ladder.

ATTENTION

Risk of tipping machine.

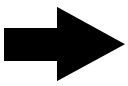
The machine must never be parked on the support stand with a full bunker. If the bunker is full, the machine must always be coupled to a tractor. The machine may tip over if it is parked on the support stand and the weight distribution of a full bunker is unfavourable. The support stand is designed for an unladen machine.

ADVICE



Please, in case of need, consider additional protection for children.

ADVICE



Always couple the flow hose and the return hose of the tractor hydraulics together after uncoupling the machine!
A check valve is installed in the return hose for safety reasons. Sunlight causes pressure accumulation in the return hose between the coupling and the check valve, thus, coupling to the tractor becomes no longer possible. It can be prevented by coupling the return hose and the flow hose together.

7 Maintenance and service

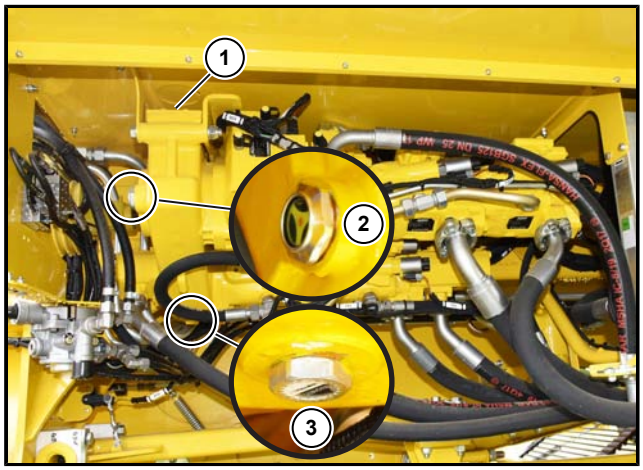
WARNING

During all maintenance work, there is the hazard of serious or fatal injury and the hazard of damage to the machine.

– Never climb over the sorting platform rails.
– During all maintenance work, make sure that nobody can inadvertently start the machine (remove the ignition key, lock the tractor cabin, always carry the tractor ignition key and if possible disconnect the ISOBUS plug connection to the tractor).
– Only perform maintenance work for which you have been trained and for which you have the required knowledge and tools.
– During all maintenance work, strictly comply with all regional regulations on safety, health protection and protection of the environment. Never forget: when you do not comply with the applicable regulations on safety, health protection or protection of the environment, you needless endanger yourself, other people and the environment. You may also lose your insurance cover.
– Always use approved and safe ladders and climbing aids.
– Do not walk on the open flaps of the sieve channel and the panels under the bunker.
– Always lower the pickup completely or secure it against unintentional lowering, if any maintenance work is required in the pickup area.
– Always secure bunker with the bunker support at the rear bunker cylinder, if any maintenance work is required in the area of the raised bunker.

7.1 Pump distributor gears (PVG)

The pump distributor gear is mounted on the left of the main frame in the front section of the panels under the bunker and transmits the PTO output of the tractor to the hydraulic pumps by an articulated shaft.



(1) Oil filling screw
(2) Inspection glass
(3) Oil drain screw

The oil level of the pump distributor gears must indispensably be checked daily. Check the fluid level before engaging the tractor PTO! When the tractor PTO shaft is engaged the oil level can no longer be checked.
To read the oil level, the machine must be standing on even and level ground and the tractor PTO shaft must have been disengaged for at least 5 minutes. When the oil level rises or falls without evident reason, indispensably call in a customer service mechanic.
The oil level can be read at the inspection glass (**2**). It must be within the inspection glass range (in no case above the top edge of the inspection glass!). The inspection glass is located on the front left side of the pump distributor gears.

The first oil change is required after 50 operating hours, further oil changes must be performed annually.

Proceed as follows for changing the oil:

– Before changing the oil clean a wide area around the PDG.
– Change the oil only with gears warm after operation.
– Put an oil-resistant collecting vessel of sufficient size underneath.
– Open the oil drain plug (**3**) to allow the gear oil to flow out.
– Replace the oil drain plug (**3**).
– Open the oil filler plug (**1**) and add fresh oil into the filler opening until the oil level is in the upper range of the inspection glass (**2**).
– Replace the oil filler plug (**1**).
– Conduct a test run and then check the oil level.

Prescribed oil variants:	**Gear oil API GL 5, SAE 90**
Filling volume:	approx. 3.2 litres

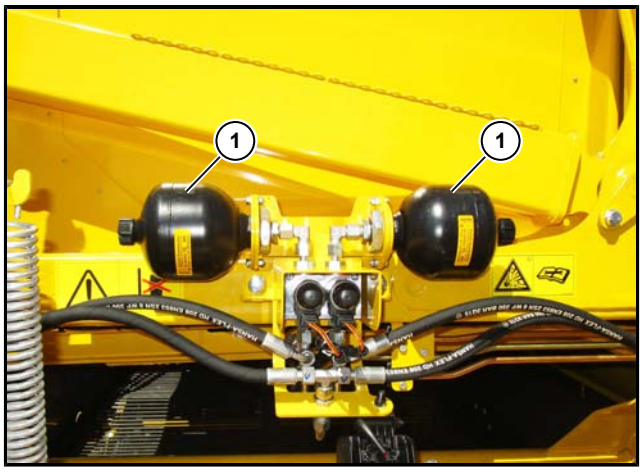
7.2 Hydraulic system

WARNING

Hazard from pressure accumulator!

The pressure reservoirs (**1**) of the hydraulic system are constantly under high internal pressure, even if the remaining hydraulic system is already rendered pressureless.

– Work on the pressure reservoirs may only be performed by especially trained people who are familiar with handling of pressure reservoirs.
– Render the system pressureless before all work on the hydraulic system or on the pressure reservoirs.
– Work on the hydraulic system may only be performed by people having been instructed about the special risks and hazards when working on hydraulic systems.



(1) Pressure accumulator

Regularly check the hoses of the hydraulic system for aging and damage!

Immediately exchange damaged or aged hoses. Only use hoses for replacements conforming to the specifications of the original hose!

For cost reasons we recommend ordering replacement hoses directly from ROPA, because original ROPA hydraulic hoses are generally significantly more economical than competitive products.

(2) Hydraulic oil cooler
(3) Fan

The machine hydraulic system is cooled with a hydraulic fluid cooler (**2**) and the tractor hydraulic system is cooled by the tractor.

The hydraulic fluid cooler (**2**) and the fan (**3**) must be regularly inspected for dirt and cleaned as required. Consider that a soiled cooler achieves a clearly reduced cooling performance. This will substantially reduce the load capacity of the machine. If the hydraulic fluid is overheated, the machine hydraulic system will automatically shut down. Usually, the hydraulic fluid cooler is contaminated.

WARNING

Burning hazard!

All coolers heat up during operation. Hazard of severe burnings!

- Wear protective gloves!
- Before all work performed on the cooling systems, let the machine cool down sufficiently!

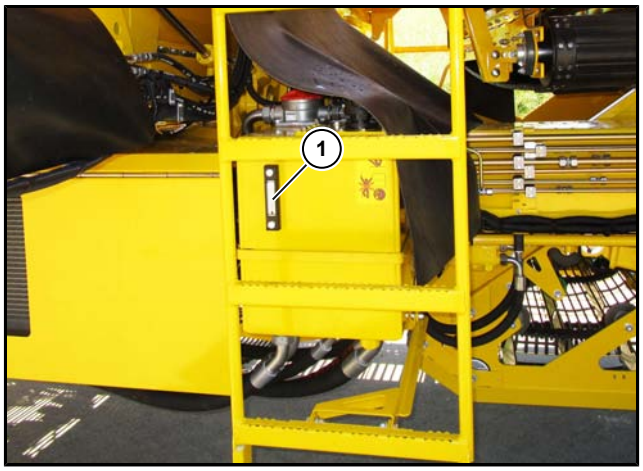
ATTENTION

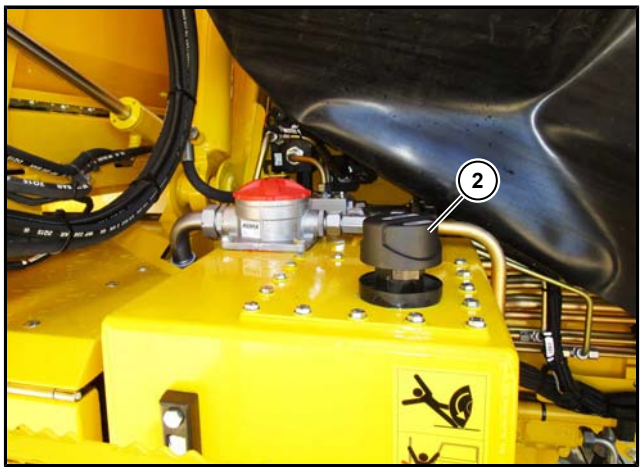
Danger of machine damage.

Clean the hydraulic fluid cooler carefully to avoid damage to the cooling fins. This may cause the machine to overheat and this may extensively damage it.

7.2.1 Hydraulic fluid tank for machine hydraulics

The tank for the hydraulic fluid is located at the left behind the panels at the access ladder. In addition to the display on the tractor terminal, the fluid level and temperature can also be read at the inspection glass (**1**) on the left side of the hydraulic fluid tank. The hydraulic fluid level should always remain in the range between the centre of the inspection glass and the upper edge of the inspection glass. Make sure that the oil level in the hydraulic oil tank is correct at all times. During all work on the hydraulic system, make sure of the utmost cleanliness!
Please observe that different types of hydraulic fluid may not be mixed.





(1) Inspection glass oil level + oil temperature
(2) Oil filling cap

Filling in hydraulic oil:

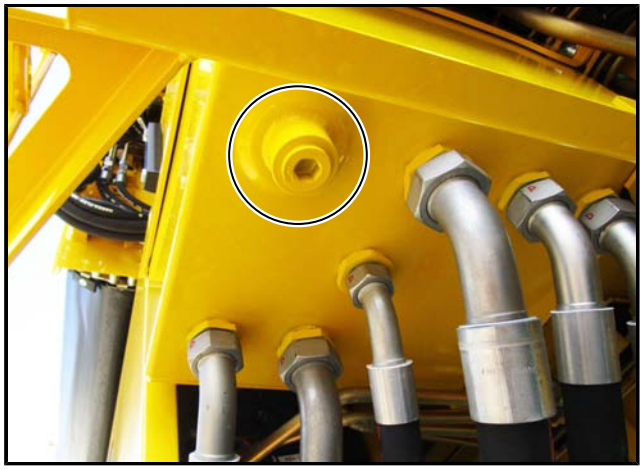
– Fold the rubber guard above the hydraulic fluid tank to the side.
– For refilling hydraulic fluid, unscrew the black filling cap (bleeding head) (**2**) from the lid of the fluid tank.
– When you open the filling lid for the hydraulic fluid, then it is possible that you hear a 'hissing' sound. This sound is normal.
  The filling lid (ROPA item no. 270070000) (**2**) is both a filler and vent filter. It maintains the required air balance as the fluid level varies (e.g. due to the fluid temperature).
  Replace it as soon as it becomes dirty, but no later than every 2 years.

ADVICE

When using a vacuum pump, do not set a vacuum on more than 0.2 bar.

7.2.1.1 Changing hydraulic fluid

The hydraulic fluid must be changed annually – best shortly before start of the season. For this purpose, provide a barrel of sufficient size. Unscrew the drain plug to change the hydraulic fluid. The drain plug is in the bottom of the hydraulic fluid tank. The old fluid is drained.



Oil drain screw

ADVICE

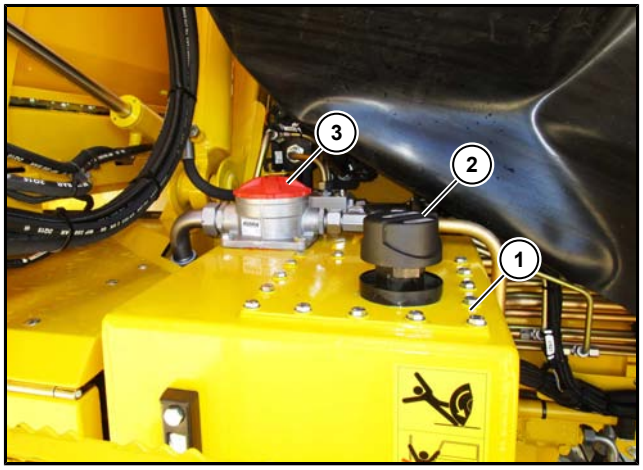
The entire machine contains more than twice as much hydraulic fluid as can be drained during a hydraulic fluid change. For this reason it is essential to adhere strictly to the prescribed intervals for changing the hydraulic fluid.

Prescribed oil variants:	**Hydraulic oilHVLP 46** (containing zinc)
	ISO-VG 46 as per DIN 51524 part 3
Filling volume:	approx. 63 litres

Cleaning intake sieves

The intake sieves inside of the hydraulic fluid tank must be checked for soiling every two years before filling up the fresh hydraulic fluid by optical inspection. If the sieves are soiled, they must be cleaned.

- For this purpose, the metal lid of the hydraulic fluid container must be taken off.
- Flush the intake sieves from inside to the outside using sufficient cleaning agent.
- Reinstall the intake sieves.
- Place the gasket and the metal lid onto them.
- Before installing them, coat the bolts for fastening the metal lid with sealing compound (ROPA item no. 017002600) and tighten the bolts.
- Before filling up with fresh hydraulic fluid, replace all filters in the hydraulic system. These filters are non-reusable products. They may not be cleaned. Cleaning destroys the filters. The hydraulic system might sustain heavy damage.
- Fill up the hydraulic system only using approved hydraulic fluid.

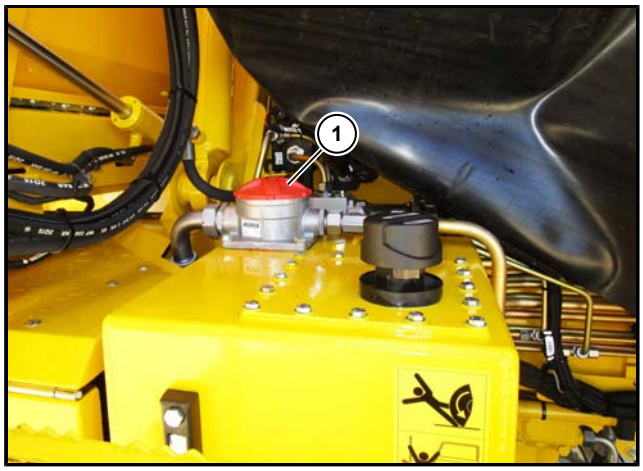


(1) Metal lid
(2) Fluid filling cap with integrated bleeding and ventilation filter
(3) Return filter

7.2.1.2 Replacing return filter element

There is a return filter on the hydraulic tank (**1**). (Filter element ROPA item no. 270071500).

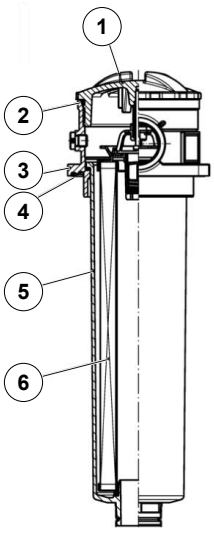
First exchange of all filter element is required after the first 50 operating hours, thereafter, annually.



(1) Return filter

ADVICE

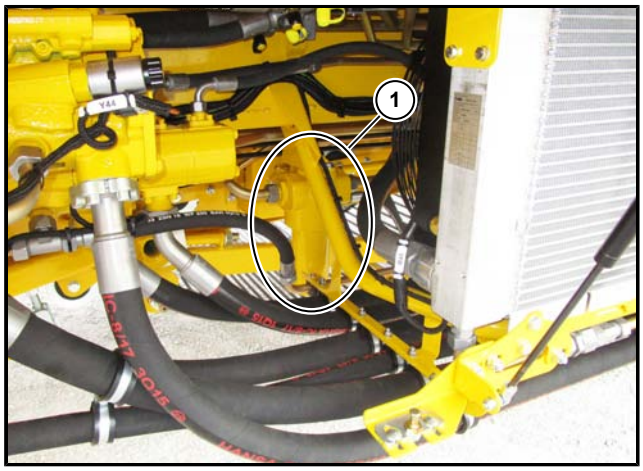
When exchanging the filter elements – as well as during all works on the hydraulic system – make sure of the utmost cleanliness. Make sure that the O-ring seals in the filter housing are not damaged or contaminated.



In order to replace the filter element in the return filter proceed as follows:

– Before opening the filter housing, make sure that the hydraulic system is fully depressurised and the oil filling cap is open.
– Unscrew the filter cover (**1**) with a tool, e.g. flat or round bar, while paying attention to the O-ring (**2**).
– Hold the filter element (**6**) and pull it out of the head section (**3**) while paying attention to the seal (**4**).
– Remove the old filter element (**6**) from the filter housing (**5**) by pulling and turning it and dispose of it responsibly.
– Dispose of the residual fluid from the filter housing (**5**) responsibly. Clean the housing and cover thoroughly.
– Check the filter on mechanical damages. Damaged parts may not be installed again (they must be immediately replaced).
– Check the O-rings and replace any damaged parts.
– Moisten sealing surfaces, thread and O-rings with fresh hydraulic fluid before installation.
– Always use a new filter element.
– When inserting the new filter element use the included O-ring.
– Insert new filter element (**6**) in the filter housing (**5**). Note: use only original-ROPA filter elements (ROPA item no. 270071500).
– Insert filter housing (**5**) with filter element (**6**) in the head section (**1**) while paying attention to the sealing ring (**4**). Replace the sealing ring if it has visible damage.
– Screw in the filter cover (**1**) and tighten it with a tool. Tightening torque 20 Nm. Make sure that the O-ring (**2**) is positioned correctly.
– Test run the system and check for leaks. Retighten the cover if any leaks are found.

7.2.2 Replacing tractor hydraulic system pressure filter element



(1) Tractor hydraulic system pressure filter

Tractor hydraulic system pressure filter

The pressure filter for the tractor hydraulic system is on the left side of the machine under the bunker between the oil cooler and main frame. First exchange of all filter element is required after the first 50 operating hours, thereafter, annually. Besides a fluid-resistant and sufficiently large catchment barrel, you will need a ring wrench or fork wrench SW 32.

Filter exchange

– Switch off tractor engine, use chocks to prevent movement and lock it to prevent restart (remove ignition key).
– Unscrew the filter bowl. Catch the liquid in a suitable container and clean it respectively dispose of it in an environmentally compatible manner.
– Pull the filter element from the element holding pin. After having removed the filter element, check if there is a metal end cap at the top. If this is not the case, pull off the end cap separately from the element holding pin. Inspect the element surface for dirt residue and larger particles. These may point to damage to the components.
– Clean the bowl.
– Inspect the filter for mechanical damage; check sealing surfaces and threads in particular.
– Replace O-ring on the filter bowl. Dirt or incomplete pressure relief during disassembly may lead to seizing of the bowl screw thread.

Element installation

- Coat thread and sealing surfaces of the filter bowl and head as well as the O-ring of the bowl and element with clean hydraulic fluid.
- Install a new element (ROPA item no. 270043000).
- Carefully install the filter element on the element holding pin.
- Screw in the filter bowl to the stop.
- Unscrew the filter bowl by one sixth of a revolution.
- Start the tractor and e.g. raise the pickup to the stop (move against pressure), check filter for leaks.

ADVICE

Filter element must be disposed of in compliance with regional environmental protection regulations!

7.2.3 Exchanging the drive wheel suction filter element

(1) Drive wheel suction filter

Drive wheel suction filter

The suction filter for the drive wheel is located on the left side of the machine under the hydraulic oil cooler, between the oil cooler and main frame. First exchange of the filter element is required after the first 50 operating hours, thereafter, annually. Besides a fluid-resistant and sufficiently large catchment barrel, you will need a ring wrench or fork wrench SW 27.

Filter exchange

- Switch off tractor engine, use chocks to prevent movement and lock it to prevent restart (remove ignition key).
- Unscrew the filter bowl. Catch the liquid in a suitable container and clean it respectively dispose of it in an environmentally compatible manner.
- Pull the filter element from the element holding pin. After having removed the filter element, check if there is a metal end cap at the top. If this is not the case, pull off the end cap separately from the element holding pin. Inspect the element surface for dirt residue and larger particles. These may point to damage to the components.
- Clean the bowl.
- Inspect the filter for mechanical damage; check sealing surfaces and threads in particular.

Element installation

- Coat thread and sealing surfaces of the filter bowl and head as well as the O-ring of the bowl and element with clean hydraulic fluid.
- Install a new element (ROPA item no. 270081800).
- Carefully install the filter element on the element holding pin.
- Screw in the filter bowl to the stop.
- Unscrew the filter bowl by one sixth of a revolution.
- Start the tractor and switch the drive wheel on, check filter for leaks.

ADVICE

Filter element must be disposed of in compliance with regional environmental protection regulations!

7.3 Axle

Check wheel nuts at regular intervals and tighten to 510 Nm with a torque spanner. Tighten for the first time after 10 operating hours, for the second time after 50 operating hours and after that every 50 operating hours.

Check tyre pressure of the axle every 50 operating hours. The minimum pressure is 2.4 bar.

ADVICE

We expressly point out that tyre damage caused by insufficient tyre pressure is neither subject to warranty nor goodwill claims!

7.4 Pneumatic system

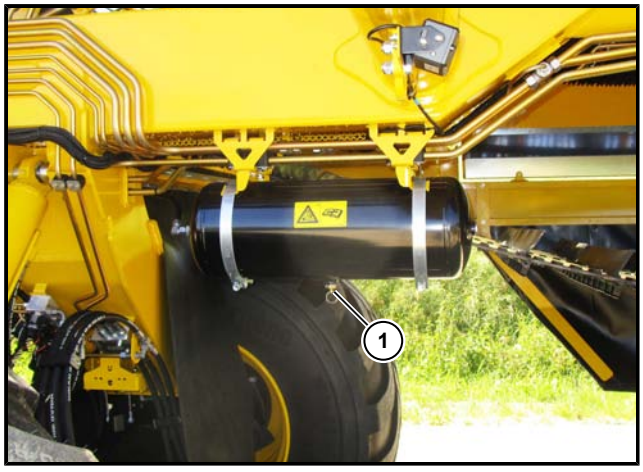
The only maintenance work required for the pneumatic system is on the compressed air reservoir. The compressed air reservoir is under the main frame behind the axle.

The condensation water must be drained from the compressed air reservoir every 50 operating hours. If the machine is to be taken out of operation for a longer period (more than a week) the condensation water must also be drained from the compressed air tank. For this, press the drain valve slightly sideward or backward.

CAUTION

Injury hazard!

- Before draining water, stop the machine and switch off the tractor engine.
- The tractor must be locked to prevent accidental starting of the engine.
- All maintenance and repair work may only be performed by trained personnel.
- Always wear gloves, protective goggles and suitable protective clothing.



(1) Drain valve

7.5 Pickup

DANGER

Injury hazard! Hazard to life due to moving parts!

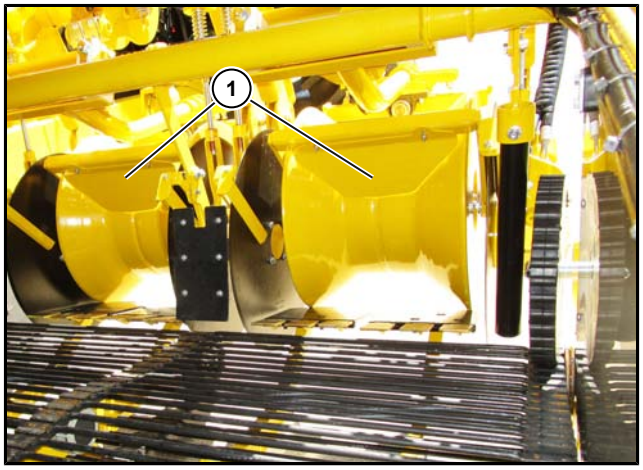
When working on the raised pickup, there is a risk that the pickup may lower without warning. People in this area may be seriously injured as a result. Before starting work, the pickup must be completely raised and secured with locking ropes. If securing with the locking ropes is impossible, the pickup must be securely supported with material of sufficient load bearing capacity. Observe the applicable regulations on safety and health protection at work under raised loads.

7.5.1 Ridge pickup model

The ridge pickup must be checked daily for operational function and damage. Clear jammed stones and other foreign bodies from the ridge pickup every day.

7.5.1.1 Ridge roller

7.5.1.1.1 Ridge roller wiper



(1) Ridge roller wiper

The wipers on the ridge rollers must be adjusted as required to prevent the ridge rollers from becoming clogged under severe harvesting conditions.

Proceed as follows to adjust the wipers on the ridge rollers:

– Clean the ridge roller in the area of the wiper.
– Loosen the two self-locking nuts on the wiper with a SW 13 ring spanner or fork spanner.
– Push the wiper to 1.5 mm from the ridge roller.
– Tighten the two self-locking nuts on the adjusted wiper.
– Repeat the process with the other ridge roller as required so both ridge rollers are correctly adjusted.

The wipers are different for the different types of ridge rollers.

- Wiper for ridge roller flat: ROPA item no. 520016901
- Wiper for ridge roller deep: ROPA item no. 510100201
- Wiper for half ridge roller: ROPA item no. 520137101

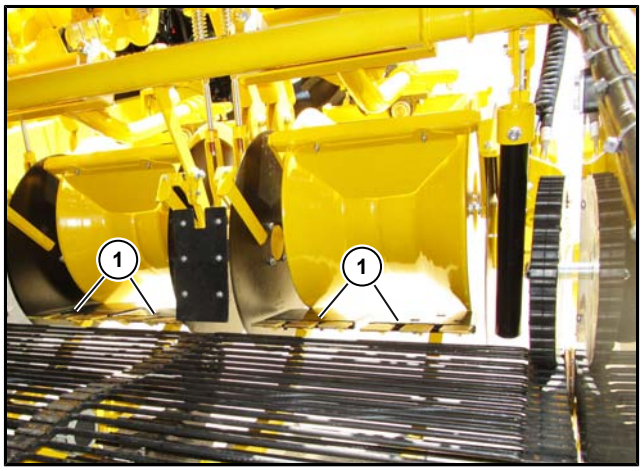
7.5.1.1.2 Adjusting ridge centring sensor

(1) Ridge rollers steering sensor right
(2) Ridge rollers steering sensor left
(3) Ridge roller limit stop adjusting screws

The sensitivity of the ridge centring can be adjusted in the main menu under main settings / ridge centring from steps 1 to 10, default setting 5.
The higher the sensitivity the faster the reaction of the drawbar with the corresponding steering movement. The lower the value of the sensitivity the slower the reaction of the drawbar with the corresponding steering movement.

The adjusting screws for the ridge roller limit stops (**3**) must be set so the ridge roller does not touch the disc coulters on the right and left if the ridge roller is tipped to one side of the ridge.

7.5.1.2 Shares

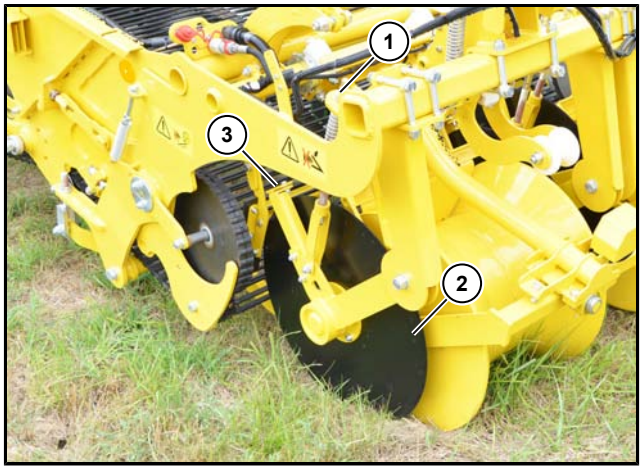


(1) Two-blade share

If the machine is out of service for an extended period, the shares must be coated with an environmentally friendly grease. Rusty shares will wear much faster and the machine will be much heavier to tow.

Worn shares must be promptly replaced to prevent damage to the crop and machine.

7.5.1.3 Disc coulter



(1) Disc coulter right depth adjustment
(2) Disc coulter right
(3) Disc coulter right wiper

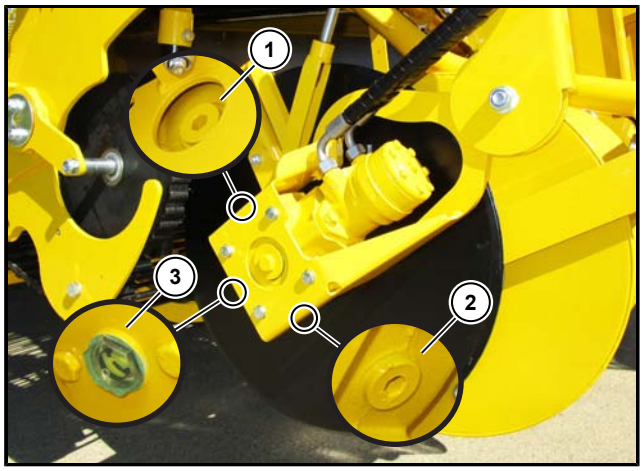
If the machine is out of service for an extended period, the disc coulters must be coated with an environmentally friendly grease. Rusty disc coulters will wear much faster.

Worn and bent disc coulters, e.g. damaged by stones, must be replaced promptly to prevent damage to the machine.

Check the wipers (**3**) on the disc coulters at regular intervals. They must be movable and must not be jammed. Jammed wipers will wear much faster.

Check that the depth adjustment of the disc coulters (**1**) moves easily at regular intervals. This will enable to react to external influences quickly in the field.

7.5.1.4 Hydraulic disc coulter (optional)



(1) Oil filling screw disc coulter gears right
(2) Oil drain screw disc coulter gears right
(3) Inspection glass disc coulter gears right

The mechanical settings on the hydraulic disc coulter left and right are identical to those required for a mechanical disc coulter (*See Page 365*).

The oil level in the hydraulic disc coulter gears left and right must be checked every day. Check the fluid level before engaging the tractor PTO! The fluid level cannot be checked once the tractor PTO shaft has been engaged and the machine hydraulics started.

To check the fluid level the angular gear of the hydraulic disc coulter left and right must be in a horizontal position and the tractor PTO shaft must have been disengaged for at least 5 minutes. When the oil level rises or falls without evident reason, always call in a customer service mechanic.

The oil level can be read in the inspection glass (**3**). It must be within the inspection glass range. The inspection glass is located at the back of the angular gears of the hydraulic disc coulter left and right.

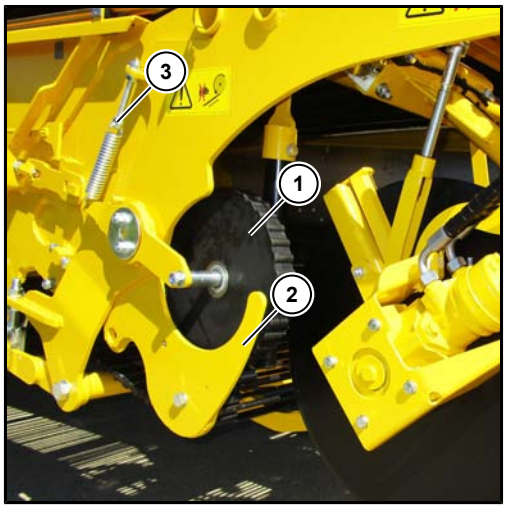
The first oil change is required after 50 operating hours, further oil changes must be performed annually.

Proceed as follows for changing the oil:

– Raise the pickup fully until the oil drain plug (**2**) is vertically above the ground and lock the pickup with suitable sturdy blocks.
– Before changing the oil clean a wide area around the hydraulic disc coulter gear.
– Change the oil only with gears warm after operation.
– Put an oil-resistant collecting vessel of sufficient size underneath.
– Open the oil drain plug (**2**) to allow the gear oil to flow out.
– Replace the oil drain plug (**2**).
– Open the oil filler plug (**1**) and add fresh oil into the filler opening until the oil level is in the upper range of the inspection glass (**3**).
– Replace the oil filler plug (**1**).

Prescribed oil variants:	**Gear oil API GL 5, SAE 90**
Filling volume:	approx. 0.6 litres

7.5.1.5 Leaf loading roller



(1) Leaf loading roller right
(2) Leaf deflector skid right
(3) Leaf loading roller clamp right

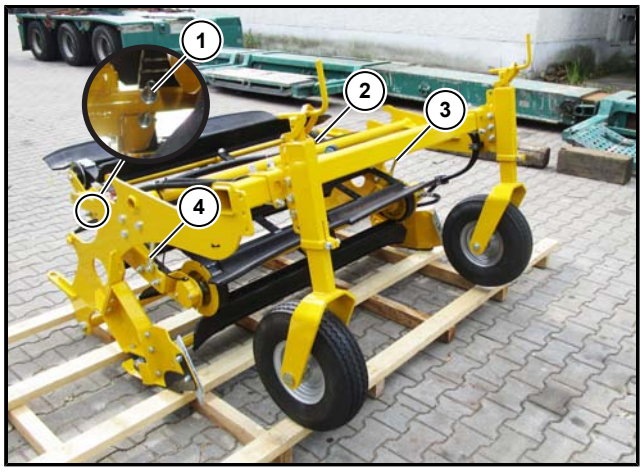
The spring tensioner must be adjusted on each side so the leaf loading rollers are properly driven from sieve conveyor 1. If the tension is incorrectly adjusted the leaf loading roller will be subjected to higher wear. The tension of the right leaf loading roller (**1**) is adjusted with the right leaf loading roller tensioner (**3**) and the tension of the left leaf loading roller is adjusted with left leaf loading roller tensioner.

The leaf loading rollers must be checked for wear at regular intervals and replaced promptly. Worn leaf loading rollers will e.g. become blocked with haulm more frequently on the sides of the pickup.

7.5.2 Swath pickup model

The swath pickup must be checked daily for operational function and damage. The swath pickup must also be cleaned daily of jammed stones and other foreign objects.

7.5.2.1 Setting cover belt tension and synchronism



(1) Cover belt swath pickup tensioner right
(2) Cover belt swath pickup tensioner left
(3) Height adjustment of right cover belt
(4) Height adjustment of left cover belt

The swath pickup is driven by an oil motor. To prevent the swath pickup cover belt from slipping on the drive wheels, the tension of the swath pickup cover belt is maintained by two adjustable rollers on one shaft.

The two tensioners on the right (**1**) and left (**2**) must always be set at the same tension. To ensure that the swath pickup cover belt runs centred in the groove, the cover belt height adjustments must be adjusted on the right (**4**) and left (**3**). During the adjustment make sure that the swath pickup cover belt is only tensioned sufficiently to prevent the swath pickup cover belt from slipping on the drive wheels.

ADVICE

The tension of the swath pickup cover belt must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the swath pickup cover belts are too loose, they will slip and may cause damage to the crop and to the machine.

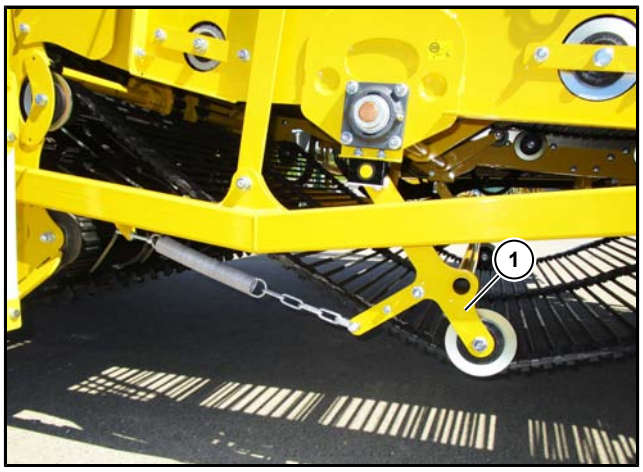
7.6 Sieving channel and leaf separation

7.6.1 Sieve conveyor 1

ATTENTION

All rollers of sieve conveyor 1 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Sieve conveyor 1 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.6.1.1 Tension

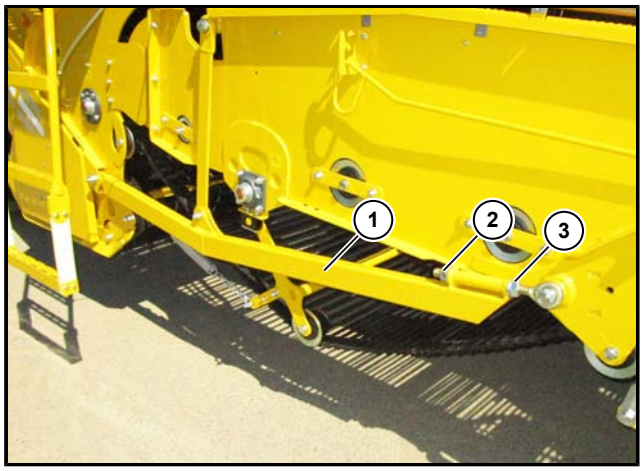


(1) Tensioner sieve conveyor 1

Sieve conveyor 1 is driven by an oil motor using a rod drive. To ensure that sieve conveyor 1 does not skip under heavy load, the tension of sieve conveyor 1 is maintained by a sieve conveyor tensioner (**1**).

The sieve conveyor tensioner (**1**) must always be adjusted equally on each side of sieve conveyor 1. During adjustment make sure that the tension of sieve conveyor 1 is just sufficient to prevent sieve conveyor 1 from jumping off the drive wheels.

7.6.1.2 Setting synchronism



(1) Thrust rod right
(2) Lock nut adjustment thrust rod right
(3) Adjusting nut thrust rod right

If sieve conveyor 1 runs against the sieving channel wall on the left or right, it must be adjusted to equalise immediately, otherwise the wear on sieve conveyor 1 will be greatly increased.

Proceed as follows:

– Loosen the adjusting nuts on the right and left thrust rods (**3**).
– Loosen the lock nuts on the right and left thrust rods (**2**).
– Turn the adjusting nuts so sieve conveyor 1 no longer runs against the sides of the sieving channel.
– Tighten all screws again and allow sieve conveyor 1 to run for a few minutes. Check by visual inspection that sieve conveyor 1 runs straight. If this is not the case, then repeat the process until sieve conveyor 1 runs evenly in the centre.

7.6.1.3 Replacing sieve conveyor 1

DANGER

Injury hazard!

To replace sieve conveyor 1 always have 2 persons, never try to replace sieve conveyor 1 alone. Parts of the machine will move while sieve conveyor 1 is being replaced. Every step must be discussed beforehand to prevent injury!

DANGER

Injury hazard! Hazard to life due to moving parts!

When working on the raised pickup, there is a risk that the pickup may lower without warning. People in this area may be seriously injured as a result. Before starting work, the pickup must be completely raised and secured with locking ropes. If securing with the locking ropes is impossible, the pickup must be securely supported with material of sufficient load bearing capacity. Observe the applicable regulations on safety and health protection at work under raised loads.

Proceed in the following sequence to replace sieve conveyor 1:

- Couple the machine to a suitable tractor and secure to prevent movement (tractor brake, set machine parking brake and use the two machine wheel chocks).
- Move sieve conveyor 1 with the conveyor cleaning menu on the tractor terminal "Min" actuation so the lock of sieve conveyor 1 is at the position at which the rod with the safety rings can be removed from the lock.
- Switch off tractor engine and lock it to prevent restart.
- Carefully loosen both sides of the sieve conveyor 1 tensioner.
- Pull the rod out of the sleeve lock while locking sieve conveyor 1 to the tensioner belt with the lock.
- Pull sieve conveyor 1 out.
- Replace drive wheels if they are worn or of a different pitch from the new sieve conveyor 1.
- Pull the sieve conveyor 1 in correctly, rods are on the outside of the belt and the female part pulls the male part.
- Insert the greased rod into the sleeve lock while locking sieve conveyor 1 to the tensioner belt with the lock.
- Tighten sieve conveyor tensioner evenly.
- Conduct a test run to check the movement of sieve conveyor 1 and if necessary adjust as described in the chapter "Sieve conveyor 1 tension and equalisation" (*See Page 369*).

7.6.2 Shaker

ATTENTION

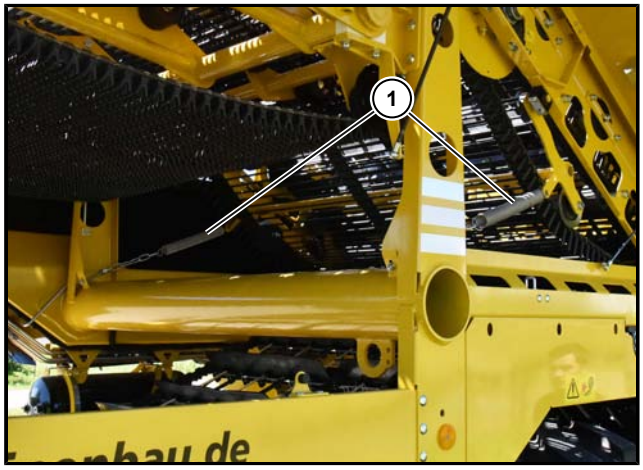
The shaker must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. The shaker and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.6.3 Sieve conveyor 2

ATTENTION

All rollers of sieve conveyor 2 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Sieve conveyor 2 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.6.3.1 Tension



(1) Sieve conveyor tensioner

Sieve conveyor 2 is driven by an oil motor using a rod drive. To ensure that sieve conveyor 2 does not skip under heavy load, the tension of sieve conveyor 2 is maintained by a sieve conveyor tensioner (**1**).

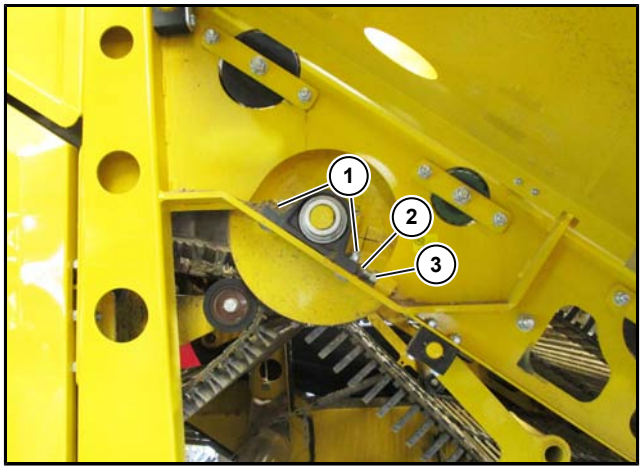
The sieve conveyor tensioner (**1**) must always be adjusted equally on each side of sieve conveyor 2. During adjustment make sure that the tension of sieve conveyor 2 is just sufficient to prevent sieve conveyor 2 from jumping off the drive wheels.

7.6.3.2 Setting synchronism

If sieve conveyor 2 moves onto the bar of the drive wheel more on the left or right side, then immediately set synchronism, because otherwise sieve conveyor 2 is subject to increased wear.

Proceed as follows:

– Loosen the two screws (**1**).
– Loosen the lock nut (**3**) and then turn the adjusting screw (**2**), then lock the adjusting screw again.
– Tighten the two screws (**1**) again and allow sieve conveyor 2 to run for a few minutes. Check by visual inspection that sieve conveyor 2 runs straight. If this is not the case, then repeat the adjustment process until sieve conveyor 2 runs evenly in the centre.



(1) Shaft fastening screws
(2) Adjusting screw
(3) Lock nut

Setting note

Conveyor runs to the right → turn adjusting screw clockwise.

Conveyor runs to the left → turn adjusting screw anticlockwise.

7.6.3.3 Replacing sieve conveyor 2

DANGER

Injury hazard!

To replace sieve conveyor 2 always have 2 persons, never try to replace sieve conveyor 2 alone. Parts of the machine will move while sieve conveyor 2 is being replaced. Every step must be discussed beforehand to prevent injury!

The leaf chain must be removed first to replace sieve conveyor 2. To remove the leaf chain follow the instructions in "Replacing leaf chain" (*See Page 377*). Then proceed as follows:

- Traverse sieve conveyor 2 at the tractor terminal in the conveyor cleaning menu with "Min" actuation until the overlaps of sieve conveyor 2 are at a position at which the overlaps can be easily opened.
- Switch off tractor engine and lock it to prevent restart.
- Carefully loosen both sides of the sieve conveyor 2 tensioner.
- Lock sieve conveyor 2 over the overlap with a tension belt.
- Open the three belts.
- Carefully release tension belts and pull sieve conveyor 2 out.
- Replace drive wheels if they are worn or of a different pitch from the new sieve conveyor 2.
- Pull sieve conveyor 2 in the correct position.
- Lock sieve conveyor 2 over the overlap with a tension belt.
- Connect the ends of the belts and then tighten sieve conveyor tensioner evenly.
- Conduct a test run to check the movement of sieve conveyor 2 and if necessary adjust as described in the chapter "Adjust Sieve conveyor 2 equalisation" (*See Page 373*).

7.6.4 Leaf chain

ATTENTION

All rollers of the leaf chain must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. The leaf chain and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.6.4.1 Tension

(1) Leaf chain tensioner right
(2) Leaf chain tensioner left

The leaf chain is driven by an oil motor. To prevent the leaf chain from slipping on the drive wheels, the tension of the leaf chain is maintained by two adjustable rollers, one on each side.

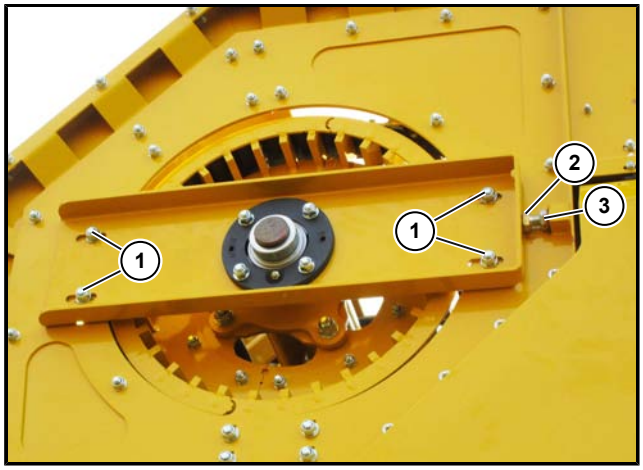
The right (**1**) and left leaf chain tensioner (**2**) must always be adjusted so the leaf chain is evenly tensioned. During the adjustment make sure that the leaf chain is only tensioned sufficiently to prevent the leaf chain from slipping on the drive wheels.

7.6.4.2 Setting synchronism

If leaf chain moves onto the bar of the drive wheel more on the left or right side, then immediately set synchronism, because otherwise the leaf chain is subject to increased wear.

Proceed as follows:

– Loosen the four screws (**1**).
– Loosen the lock nut (**3**) and then turn the adjusting screw (**2**), then lock the adjusting screw again.
– Tighten the two screws (**1**) again and allow the leaf chain to run for a few minutes. Check by visual inspection whether the leaf chain runs evenly straight. If this is not the case, then repeat the setting process for so long until the leaf chain runs evenly in the centre.



(1) Shaft fastening screws
(2) Adjusting screw
(3) Lock nut

Setting note

Conveyor runs to the right → turn adjusting screw clockwise.

Conveyor runs to the left → turn adjusting screw anticlockwise.

7.6.4.3 Replacing leaf chain

DANGER

Injury hazard!

To replace the leaf chain always have 2 persons, never try to replace the leaf chain alone. Parts of the machine will move while the leaf chain is being replaced. Every step must be discussed beforehand to prevent injury!

Proceed in the following sequence to replace the leaf chain:

- Couple the machine to a suitable tractor and secure to prevent movement (tractor brake, set machine parking brake and use the two machine wheel chocks).
- Traverse the leaf chain at the tractor terminal in the conveyor cleaning menu with "Min" actuation until the overlaps of the leaf chain are at a position at which the overlaps can be easily opened.
- Switch off tractor engine and lock it to prevent restart.
- Loosen both sides of the leaf chain tensioner rollers.
- Lock leaf chain over the overlap with a tension belt.
- Open the six leaf cords and the four small belts, and then open the three large belts.
- Carefully release tension belts and pull the leaf chain out.
- Replace drive wheels if they are worn.
- Pull leaf chain in correctly, the carriers are on the inside and indicate the direction of motion.
- Lock leaf chain over the overlap with a tension belt.
- Connect the three large belt ends, and then connect the four small belt ends and if necessary connect the leaf cords or pull the leaf cords out.
- Tighten leaf chain tensioner rollers.
- Conduct a test run to check the movement of the leaf chain and if necessary adjust as described in "Adjust leaf chain tension and setting synchronism" (*See Page 375*).

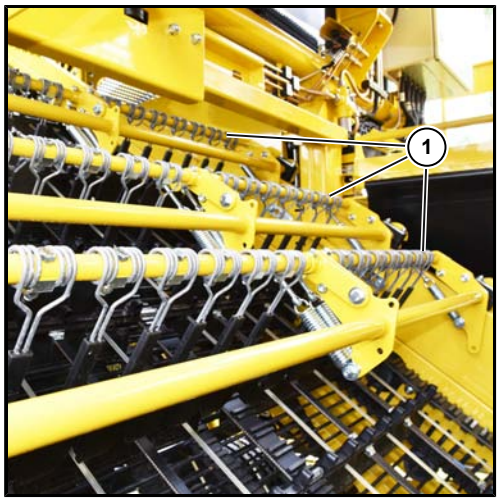
7.6.5 Leaf scraper

WARNING

Falling hazard!

Never walk over the accessible area of the sorting platform to other parts of the machine. Dirt, haulm and weather influences mean that it is not safe to stand on the machine apart from the sorting platform. There is a very serious risk of falling.

– Use a stable ladder and do not climb over the sorting platform railings.
– When work at heights near the edge of the machine use fall harness, e.g. a safety belt or scaffold and comply with the regional safety regulations.



(1) Front leaf-scraper
(2) Rear leaf-scraper

ATTENTION

If dirt and haulm accumulates on the leaf scrapers and the haulm is wrapped around the leaf scraper, it must be removed regularly, if necessary several times a shift. Switch off the machine and lock it to prevent restart (remove ignition key). This will prevent unnecessary damage to the crop and to the machine.

Use a stable ladder or stable scaffold to clean the leaf scrapers. Depending on how dirt and haulm have been caught, adjust the height of the leaf scrapers as described in "Cleaning / sieving channel and leaf separation / leaf scrapers" (*See Page 247*) for easier cleaning.

7.7 Separation

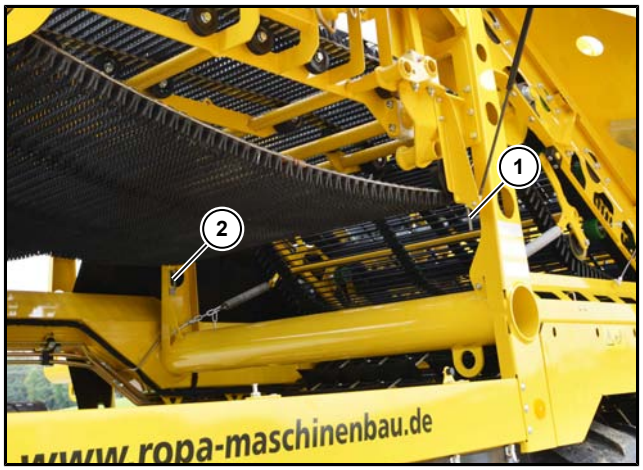
7.7.1 Pintle belt 1

ATTENTION

All rollers of pintle belt 1 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Pintle belt 1 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.1.1 Tension

Tension till year of construction 2017



(1) Pintle belt 1 right tension roller
(2) Pintle belt 1 left tension roller

Pintle belt 1 is directly driven by an oil motor with rubber-coated friction wheels. To prevent pintle belt 1 from slipping on the rubber friction wheels the tension of pintle belt 1 is maintained by the right tension roller (**1**) and the left tension roller (**2**).

The two tension rollers of pintle belt 1 must always be adjusted equally for both sides. During adjustment make sure that the tension of the pintle belt 1 is just sufficient to prevent the pintle belt 1 from slipping on the drive wheels.

ADVICE

The tension of the pintle belt must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the pintle belts are too loose, they will slip and may cause damage to the crop and to the machine.

Tension from year of construction 2018

The pintle belt 1 has no longer to be retightened from the year of construction 2018. Since pintle belt 1 keeps itself under tension due to its own weight.

7.7.1.2 Setting synchronism

If pintle belt 1 runs unevenly on the left or right, the synchronism must be adjusted immediately, otherwise the pintle belt 1 becomes subject to increased wear.

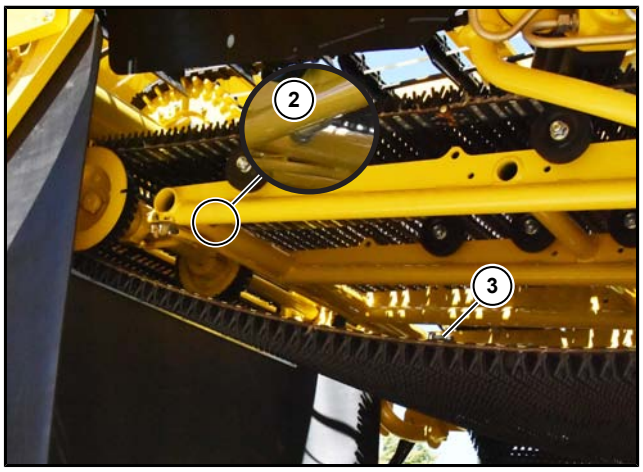
Setting synchronism till year of construction 2017

(1) Synchronism adjustment of pintle belt 1 till year of constr. 2017

Proceed as follows:

– Loosen the nut in the direction in which the synchronism of pintle belt 1 is to be adjusted.
– Adjust the other nuts in the direction of the first nut.
– Tighten both nuts again and allow pintle belt 1 to run for a few minutes. Check by visual inspection whether pintle belt 1 runs evenly straight. If this is not the case, then repeat the adjustment process until pintle belt 1 runs evenly in the centre.

Setting synchronism from year of construction 2018



(2) Synchronism adjustment pintle belt 1 right from year of constr. 2018
(3) Synchronism adjustment pintle belt 1 left from year of constr. 2018

Proceed as follows:

– Loosen the nut on the synchronism adjustment pintle belt 1 right (**2**) in the direction in which the synchronism of pintle belt 1 is to be adjusted.
– Adjust the other nut on the synchronism adjustment pintle belt 1 right (**2**) in the same direction as the first nut on the synchronism adjustment pintle belt 1 right (**2**).
– Tighten both nuts on the synchronism adjustment pintle belt 1 right (**2**) and let pintle belt 1 run for a few minutes. Check by visual inspection whether pintle belt 1 runs evenly straight. If this is not the case, then repeat the adjustment process until pintle belt 1 runs evenly in the centre.
– If the adjustment range on the synchronism adjustment pintle belt 1 right (**2**) is not sufficient, the synchronism can also be adjusted on the synchronism adjustment pintle belt 1 left (**3**).

ATTENTION

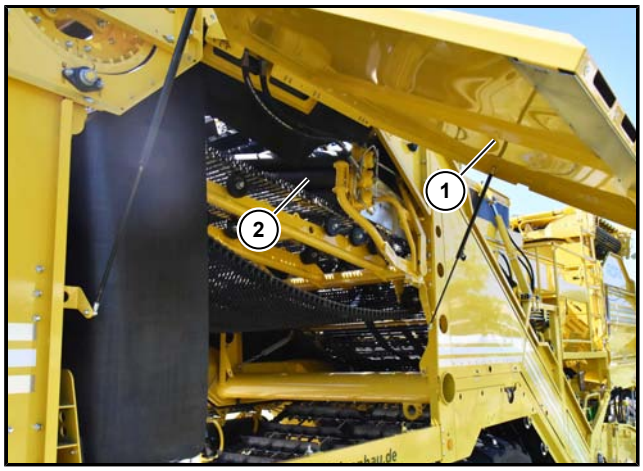
Danger of machine damage!

When adjusting, make sure that there are no collisions with other machine components.

7.7.2 Deflector roller 1

ATTENTION

Under difficult lifting conditions dirt, earth and haulm will accumulate on deflector roller 1. The dirt must be removed regularly, if necessary several times a shift. Switch off the machine and lock it to prevent restart (remove ignition key). This will prevent unnecessary damage to the crop and to the machine.



(1) Side cover
(2) Deflector roller 1

To clean deflector roller 1 (**2**) open the side panel (**1**). Use a stable ladder to access deflector roller 1. Use the dirt scraper or hook to clean deflector roller 1. After cleaning deflector roller 1 clean the side panel.

7.7.3 Dirt discharge conveyor

ATTENTION

All rollers of the dirt discharge conveyor must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Dirt discharge conveyor and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.3.1 Adjusting tension and synchronism

(1) Dirt discharge conveyor

The dirt discharge conveyor (**1**) is driven by an oil motor. The tension of the dirt discharge conveyor is maintained by its drive shaft, the tension of which can be adjusted on both sides. This prevents the dirt discharge conveyor from slipping on the drive wheels.

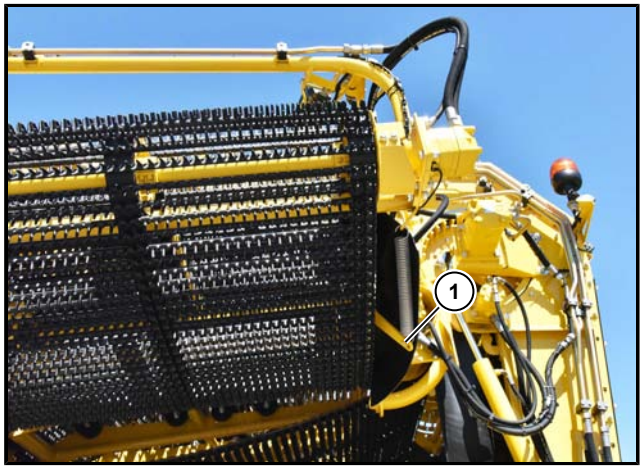
The drive shaft of the dirt discharge conveyor must always be adjusted so the dirt discharge conveyor is evenly tensioned and to ensure that the dirt discharge conveyor runs centrally in the groove. During the adjustment make sure that the dirt discharge conveyor is only tensioned sufficiently to prevent the dirt discharge conveyor from slipping on the drive wheels.

7.7.4 Pintle belt 2

ATTENTION

All rollers of pintle belt 2 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Pintle belt 2 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.4.1 Tension

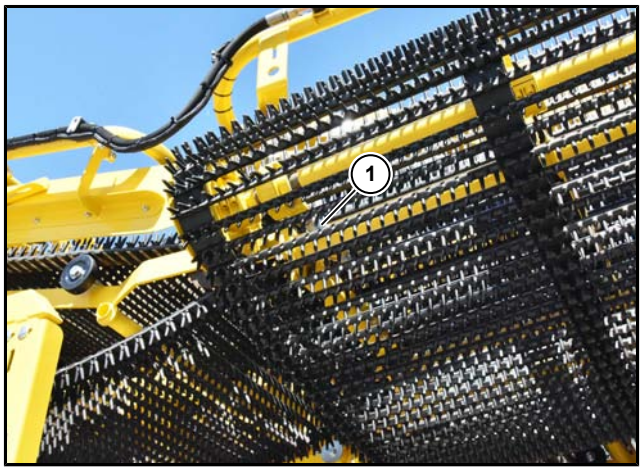


(1) Pintle belt 2 tensioner

Pintle belt 2 is directly driven by an oil motor with rubber-coated friction wheels. To prevent pintle belt 2 from slipping on the drive wheels, the tension of pintle belt 2 is maintained by a tensioner (**1**).

The tensioner of pintle belt 2 operates automatically by spring force and does not require adjustment.

7.7.4.2 Setting synchronism



(1) Adjusting synchronism of pintle belt 2

If pintle belt 2 runs unevenly on the left or right, the synchronism must be adjusted immediately, otherwise the ear on pintle belt 2 will be greatly increased.

Proceed as follows:

– Loosen the nut in the direction in which the synchronism of pintle belt 2 is to be adjusted.
– Adjust the other nuts in the direction of the first nut.
– Tighten both nuts again and allow pintle belt 2 to run for a few minutes. Check by visual inspection whether pintle belt 2 runs evenly straight. If this is not the case, then repeat the adjustment process until pintle belt 2 runs evenly in the centre.

7.7.5 Deflector roller 2

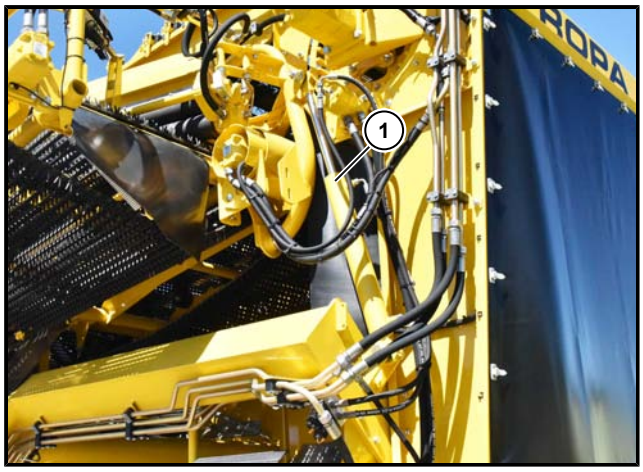
ATTENTION

Under difficult lifting conditions dirt, earth and haulm will accumulate on deflector roller 2. The dirt must be removed regularly, if necessary several times a shift. Switch off the machine and lock it to prevent restart (remove ignition key). This will prevent unnecessary damage to the crop and to the machine.

(1) Deflector roller 2

Do not step on the machine to clean deflector roller 2. There is a risk of slipping on the machine due to the accumulation of soil and haulm. Use a stable ladder to access deflector roller 2. Use the dirt scraper or hook to clean deflector roller 2.

7.7.6 Pintle belt 1/2 inclination



(1) Cylinder pintle belt 1/2 inclination

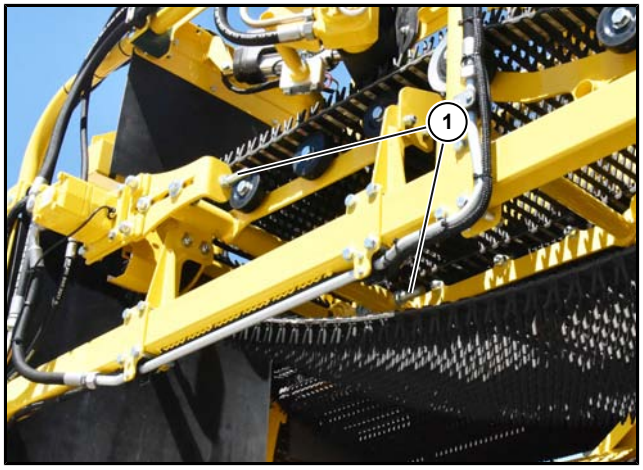
The inclination of pintle belt 1/2 is adjusted by an upper arm or optionally by a cylinder (**1**). Check at intervals that the adjustment mechanism operates smoothly.

7.7.7 Pintle belt 3

ATTENTION

All rollers of pintle belt 3 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Pintle belt 3 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.7.1 Adjusting tension and synchronism



(1) Adjusting pintle belt 3

Pintle belt 3 is directly driven by an oil motor with rubber-coated friction wheels. To prevent pintle belt 3 from slipping on the drive wheels, the tension of pintle belt 3 is maintained by the adjustable drive shaft.

Each side of the pintle belt 3 drive shaft must always be adjusted so pintle belt 3 is evenly tensioned and to ensure that pintle belt 3 runs centrally in the groove. During adjustment make sure that the tension of pintle belt 3 is just sufficient to prevent pintle belt 3 from slipping on the drive wheels.

7.7.8 Deflector roller 3

ATTENTION

Under difficult lifting conditions dirt, earth and haulm will accumulate on deflector roller 3. The dirt must be removed regularly, if necessary several times a shift. Switch off the machine and lock it to prevent restart (remove ignition key). This will prevent unnecessary damage to the crop and to the machine.

(1) Deflector roller 3

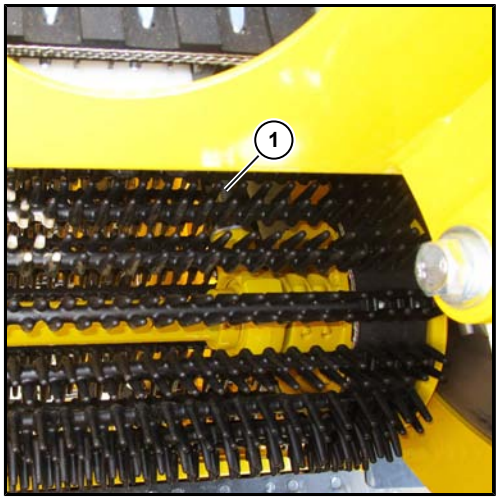
Do not step on the machine to clean deflector roller 3. There is a risk of slipping on the machine due to the accumulation of soil and haulm. Use a stable ladder to access deflector roller 3 if you cannot fully reach deflector roller 3 from the left sorting platform. Use the dirt scraper or hook to clean deflector roller 3.

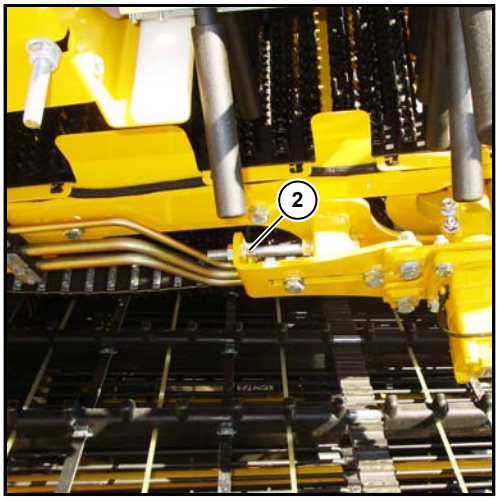
7.7.9 Pintle belt 4

ATTENTION

All rollers of pintle belt 4 must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Pintle belt 4 and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.9.1 Adjusting tension and synchronism





(1) Adjustment at front
(2) Adjustment at rear

Pintle belt 4 is directly driven by an oil motor with rubber-coated friction wheels. To prevent pintle belt 4 from slipping on the drive wheels, the tension of pintle belt 4 is maintained by the adjustable drive shaft.

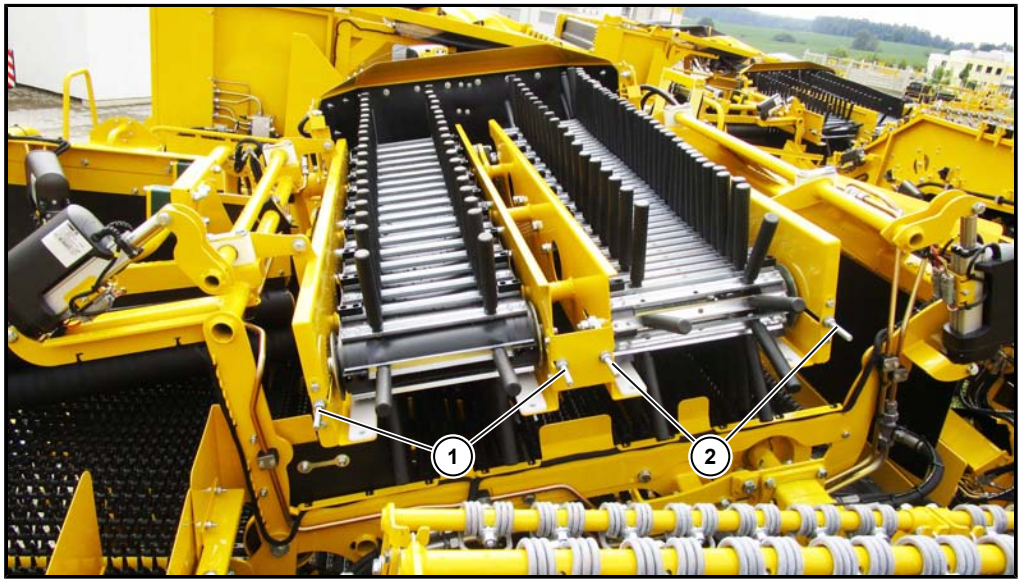
Each side of the drive shaft of pintle belt 4 front (**1**) and rear (**2**) must always be adjusted to maintain even tension on pintle belt 4 and to ensure that pintle belt 4 runs centrally in the groove. During adjustment make sure that the tension of pintle belt 4 is just sufficient to prevent pintle belt 4 from slipping on the drive wheels.

7.7.10 Rotating finger comb (UFK)

ATTENTION

All rollers and fingers of the rotating finger comb (UFK) must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Damaged or broken UFK fingers must be replaced. UFK belts and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.7.10.1 Adjusting tension and synchronism

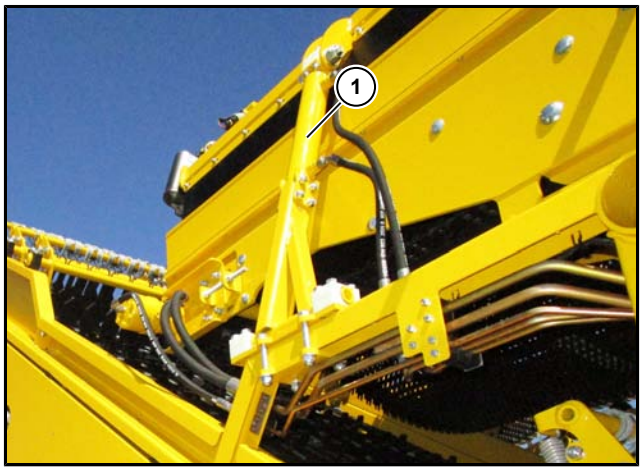


(1) Rotating finger comb 1 tensioner
(2) Rotating finger comb 2 tensioner

The rotating finger comb (UFK) is subdivided into to independently adjustable units, rotating finger comb 1 (UFK 1) and rotating finger comb 2 (UFK 2). They are directly driven by an oil motor, with UFK 2 connected hydraulically in series to UFK 1.

To prevent the friction wheels from slipping, UFK 1 (**1**) and UFK 2 (**2**) must be tensioned independently of each other. It is important to make that both UFKs are evenly tensioned on both sides. This ensure that the belts always run centrally. UFK 1 and UFK 2 must be tensioned to ensure that the friction wheel drives do not slip and that the belts do not sag. A sagging UFK belt wears faster.

7.7.11 Pintle belt 4 inclination



(1) Cylinder pintle belt 4 inclination

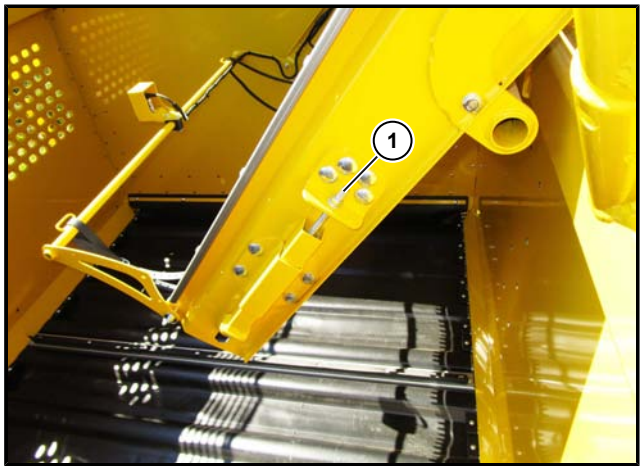
The inclination of pintle belt 4 is adjusted by an upper arm or optionally by a cylinder (**1**). Check at intervals that the adjustment mechanism operates smoothly.

7.8 Picking conveyer

ATTENTION

All rollers of the picking conveyor must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. The picking conveyor and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.8.1 Adjusting tension and synchronism



(1) Picking conveyor tensioner left

The picking conveyor is directly driven by an oil motor with rubber-coated friction wheels. To prevent the picking conveyor from slipping on the drive wheels, the picking conveyor must be kept tensioned.

Each side of the picking conveyor on the left (**1**) and right must always be adjusted so the picking conveyor is evenly tensioned and runs centrally in the groove. During adjustment make sure that the tension of the picking conveyor is just sufficient to prevent the picking conveyor from slipping on the drive wheels.

ADVICE

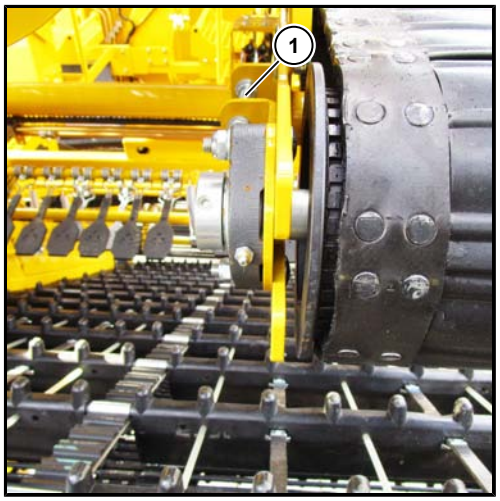
The tension of the picking conveyor must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the picking conveyor is too loose, it will slip and may cause damage to the crop and to the machine.

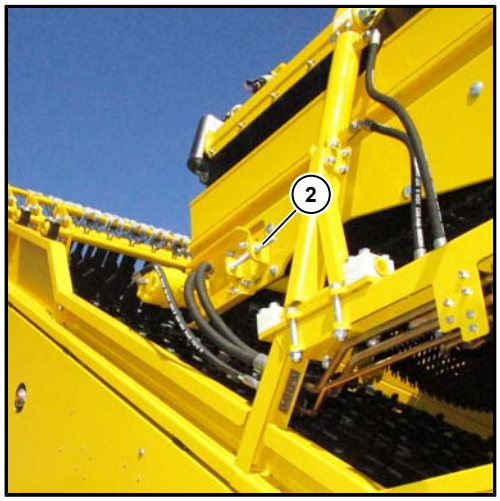
7.9 Trash conveyer

ATTENTION

All rollers of the trash conveyor must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. The trash conveyor and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.9.1 Adjusting tension and synchronism





(1) Trash conveyer tensioner left
(2) Trash conveyer tensioner right

The trash conveyor is directly driven by an oil motor with rubber-coated friction wheels. To prevent the trash conveyor from slipping on the drive wheels, the trash conveyor must be kept tensioned.

The tension of the trash conveyor can be adjusted with a SW 13 fork or ring spanner. The left (**1**) and right trash conveyor tensioner (**2**) must always be adjusted so the trash conveyor is evenly tensioned and so runs centrally in the groove. During adjustment make sure that the tension of the trash conveyor is just sufficient to prevent the trash conveyor from slipping on the drive wheels.

ADVICE

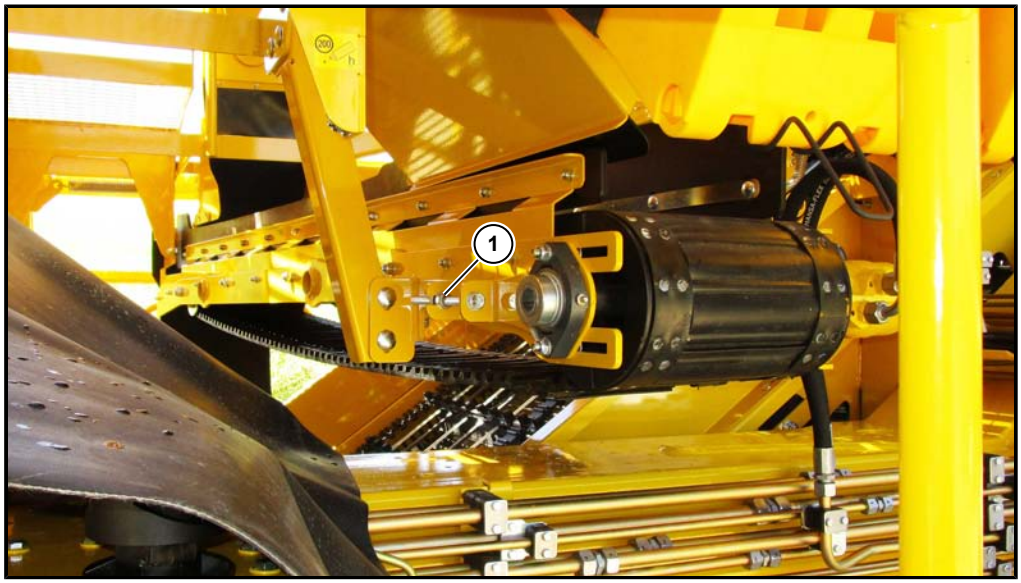
The tension of the trash conveyor must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the trash conveyor is too loose, it will slip and may cause damage to the crop and to the machine.

7.10 Trash discharge conveyor

ATTENTION

All rollers of the trash discharge conveyor must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Trash discharge conveyor and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.10.1 Adjusting tension and synchronism



(1) Trash discharge conveyor front tensioner

The trash discharge conveyor is directly driven by an oil motor with rubber-coated friction wheels. To prevent the trash discharge conveyor from slipping on the drive wheels, the trash discharge conveyor must be kept tensioned.

The tension and even running of the trash discharge conveyor are adjusted with the front tensioner (**1**) and the rear tensioner. The tensioners must be adjusted so that the trash discharge conveyor is evenly tensioned and runs centrally.

ADVICE

The tension of the trash discharge conveyor must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the trash discharge conveyor is too loose, it will slip and may cause damage to the machine.

7.11 Collection box

ATTENTION

All rollers of the collection box must be checked daily for operational function and damage. Blocked or damaged rollers must be immediately exchanged for new rollers. Discharge conveyor of the collection box and rollers must also be cleaned daily of jammed stones and other foreign objects.

7.11.1 Adjusting tension and synchronism

(1) Collection box front tensioner
(2) Collection box rear tensioner

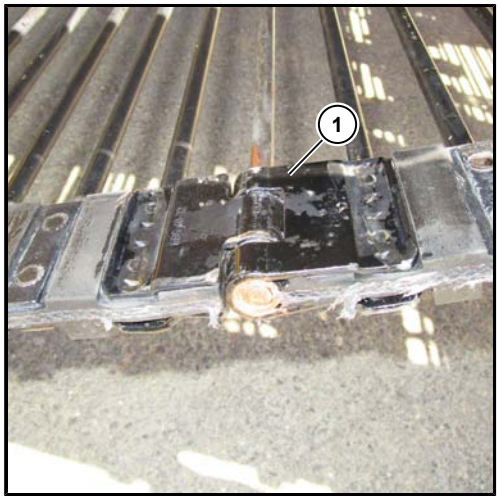
The discharge conveyor of the collection box is directly driven by an oil motor with rubber-coated friction wheels. To prevent the discharge conveyor of the collection box from slipping on the drive wheels, the discharge conveyor of the collection box must be kept tensioned.

The tension and even running of the discharge conveyor of the collection box are adjusted with a front tensioner (**1**) and a rear tensioner (**2**). The tensioners must be adjusted so that the discharge conveyor is evenly tensioned and runs centrally.

ADVICE

The tension of the discharge conveyor of the collection box must be checked at intervals. The belts will stretch over time due to ageing and continuous operation. If the discharge conveyor of the collection box is too loose, it will slip and may cause damage to the machine.

7.12 Locks



(1) Sieve conveyor 1 lock connection with connecting rod
(2) Pintle belt 3 lock connection with connecting bolt

In the standard model sieve conveyor 1 (**1**), pintle belt 1, pintle belt 2, pintle belt 3 (**2**), pintle belt 4, the picking conveyor, the trash conveyor, the trash discharge conveyor, the dirt discharge conveyor and the discharge conveyor of the collection box are fitted with a lock. They make work easier for operators in many ways. Replacement of belts is made easier and maintenance and replacement of drives and rollers is simplified.

The locks consist of the riveted lock halves on the two ends of the belts and the inner and other lock bushings. The leading side is always the male part and the trailing side is always the female part. This forms a strong connection in combination with the recessed connecting rod or connecting bolt with locking ring, depending on the design.

ATTENTION

Risk of damage to belts and chains.

Bushings and rods must be checked for wear and replaced in good time. This will ensure that the lock will remain functional and costs will be reduced. If the replacement is too late the lock will be damaged and may also need replacement.

7.13 Bunker

The bunker (all steel plates and the walking floor) must be checked daily for accumulated dirt and must be cleaned as required. Accumulated soil reduces the capacity of the bunker and unnecessary increases the weight of the machine!

7.13.1 Ultrasound sensor

(1) Ultrasound sensor
(2) Bunker filling conveyor rod

The ultrasound sensor (**1**) must be cleaned with a moist cloth as required. The ultrasound sensor must be perfectly clean for optimum operation of the sensor.

Make sure that the ultrasound sensor (**1**) is always adjusted vertically to the bunker walking floor. If the bunker filling conveyor is raised or lowered, the ultrasound sensor (**1**) is always kept vertical to the bunker walking floor by the bunker filling conveyor rod (**2**). The rod must move easily and must not be bent.

7.13.2 Bunker walking floor

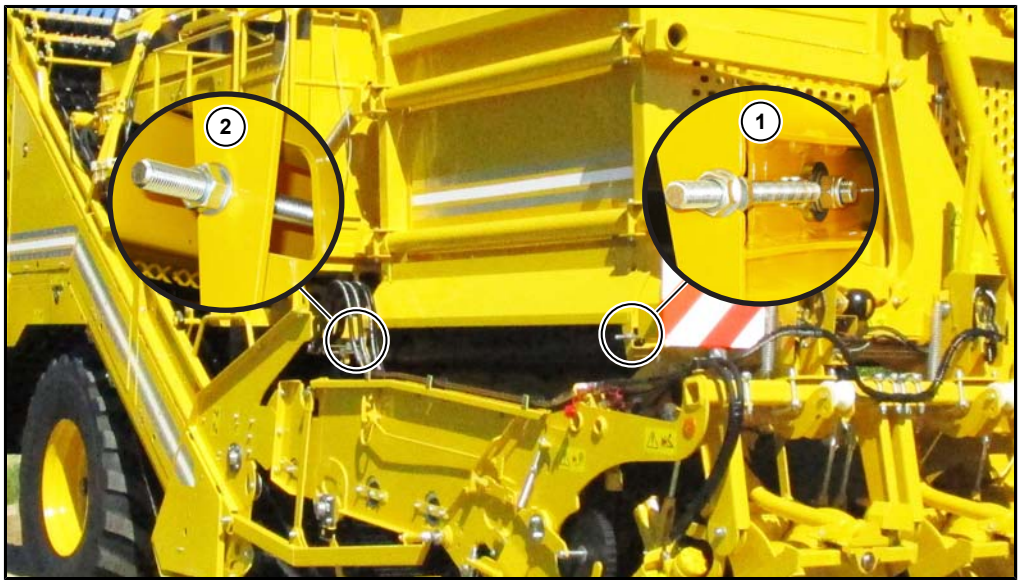
(1) Bunker walking floor chain front
(2) Bunker walking floor
(3) Bunker walking floor chain rear

The bunker walking floor (**2**) in the standard model consists of a cloth floor, which has 8 separate walking floor cloth segments. The walking floor cloth must not have any tears. If the walking floor cloth (**ROPA item no. 520045400**) is worn, the segments can be replaced separately.

ADVICE

The front (**1**) and rear bunker walking floor chain (**3**) must be oiled or greased as required.
We recommend a synthetic chain oil on ester basis according to FDA purity requirements of the guideline 21 CFR 178.3570, which is suitable for the occasional, technically unavoidable contact with food (**Ropa item no. 435015100**), for oiling the bunker walking floor chains.
The data sheet can be obtained upon request.

7.13.2.1 Tension of bunker walking floor chains



(1) Bunker chains tensioner front
(2) Bunker chains tensioner rear

ATTENTION

Check the tension of the bunker walking floor chains regularly. Incorrectly tensioned bunker walking floor chains may cause serious damage to the machine.

The tension of the chains of the bunker walking floor must be set so the chains will not break during folding and unfolding. The folding mechanism shortens the bunker walking floor chain slightly during folding and unfolding the bunker and is slightly longer at the end positions of the bunker, completely folded or unfolded.

If the chain tension is too loose, the bunker walking floor chains will grind and may skip. The bunker walking floor may run off track.

7.13.2.2 Drive chains

The two drive chains of the bunker walking floor drives must be oiled or greased and the tension must be checked after 100 operating hours.

(1) Front drive chain guard cover screws
(2) Drive chain tensioning block front

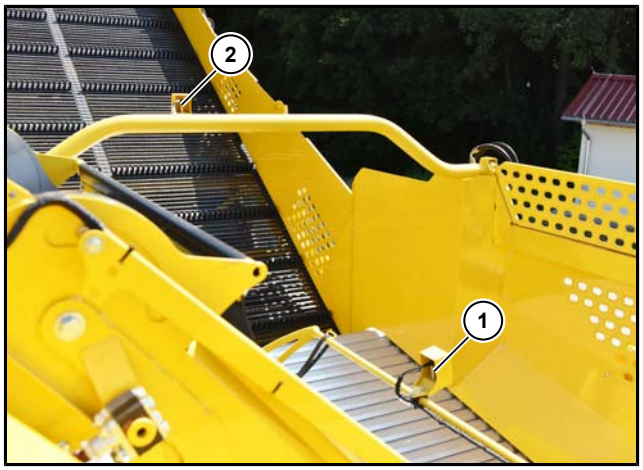
Tensioning bunker walking floor drive chains

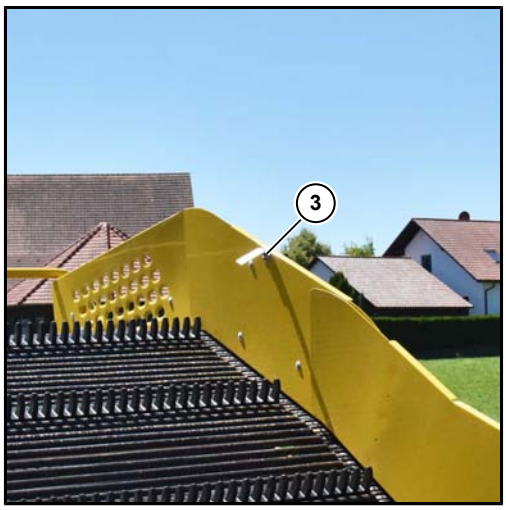
– Fold the bunker into working position, switch off the tractor engine, secure the tractor to prevent restart and set chocks to prevent movement of the machine.
– Loosen the screws on the front (**1**) and rear drive chain guard cover and remove the guards.
– Check the tension of the drive chains, adjust as necessary and grease the chains as required.
– To retighten the drive chains, loosen the fixing screw of the front and rear plastic tensioning block (**2**). Move the tensioning block so the drive chain is tightly tensioned once more. Retighten the fixing screw.
– Replace the guard covers on both sides and fasten them down with the screws.
– Conduct a test run of the bunker walking floor.

7.14 Overloading bunker

The overloading bunker (all steel plates and the walking floor) and the unload conveyor must be checked daily for accumulated dirt and must be cleaned as required. Accumulated soil reduces the capacity of the overloading bunker and unnecessary increases the weight of the machine!

7.14.1 Ultrasound sensors



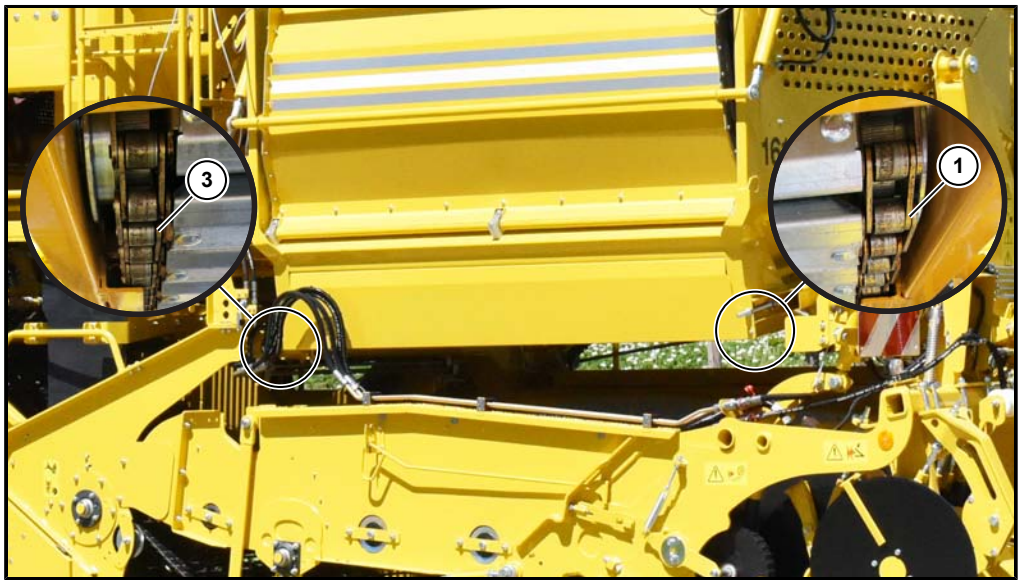


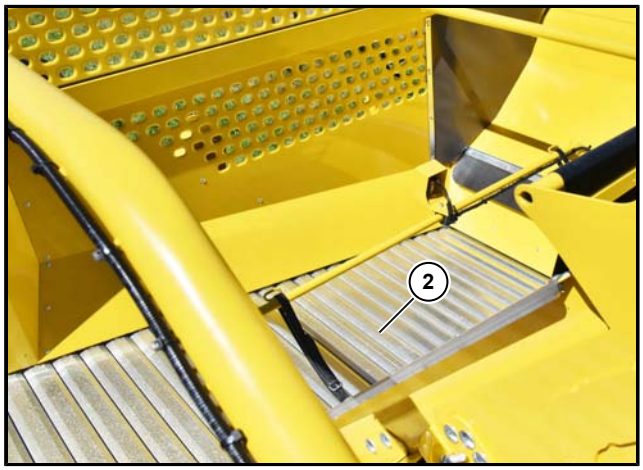
(1) Bunker filling conveyor ultrasound sensor
(2) Bunker trough ultrasound sensor
(3) Unloading conveyor ultrasound sensor

The ultrasound sensors must be cleaned with the wet cloth if they are soiled. The ultrasound sensor must be perfectly clean for optimum operation of the sensor.

Make sure that the ultrasound sensor of bunker filling conveyor (**1**) and the ultrasound sensor of bunker trough (**2**) are always adjusted vertically to the walking floor. If the bunker filling conveyor is raised or lowered, the ultrasound sensor of bunker filling conveyor (**1**) is always kept vertical to the walking floor by the bunker filling conveyor rod. The rod must move easily and must not be bent. The support arm at the bunker trough ultrasound sensor (**2**) may not be bent. The bracket plate at the unload conveyor ultrasound sensor (**3**) must be clean and may not be bent.

7.14.2 Walking floor





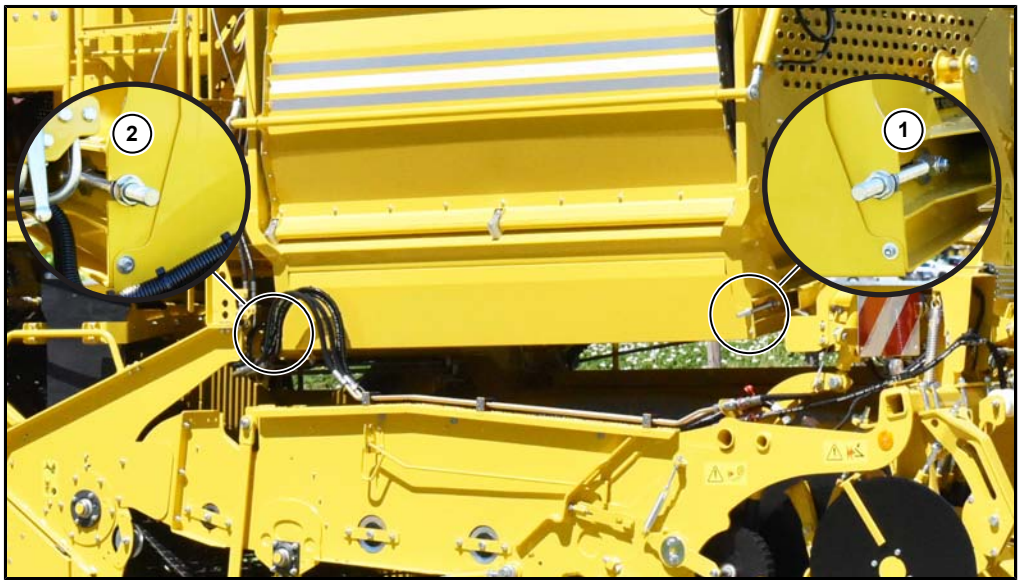
(1) Bunker walking floor chain front
(2) Overloading bunker walking floor
(3) Bunker walking floor chain rear

In standard version, the overloading bunker walking floor (**1**) consists of metal walking floor strips. If the walking floor strips are worn, they can be replaced separately.

ADVICE

The front (**1**) and rear bunker walking floor chain (**3**) must be oiled or greased as required.
We recommend a synthetic chain oil on ester basis according to FDA purity requirements of the guideline 21 CFR 178.3570, which is suitable for the occasional, technically unavoidable contact with food (**Ropa item no. 435015100**), for oiling the bunker walking floor chains.
The data sheet can be obtained upon request.

7.14.2.1 Walking floor tensioning



(1) Bunker chains tensioner front
(2) Bunker chains tensioner rear

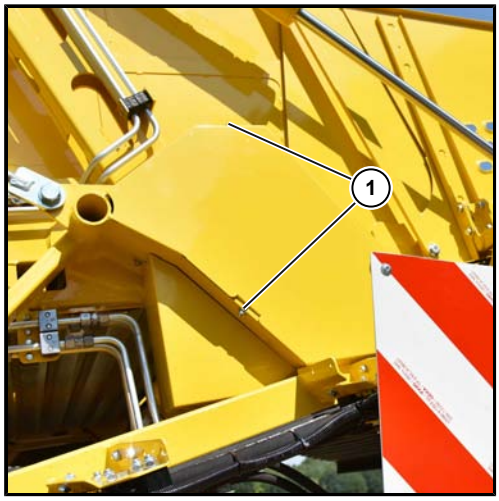
ATTENTION

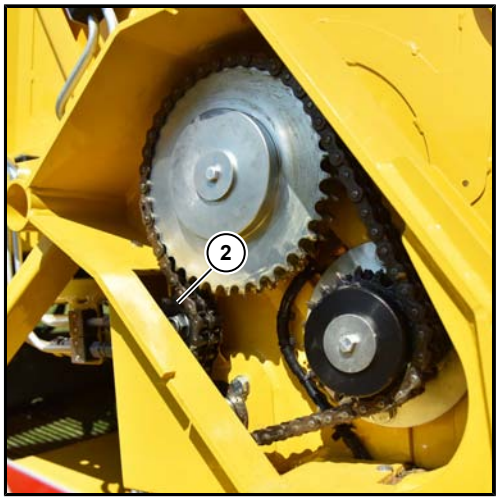
Check the tension of the bunker walking floor chains regularly. Incorrectly tensioned bunker walking floor chains may cause serious damage to the machine.

The walking floor chains must be tensioned so that they cannot skip.

7.14.2.2 Walking floor drive chain

The drive chain of the walking floor must be oiled / greased and checked for the correct chain tension after each 100 operating hours.



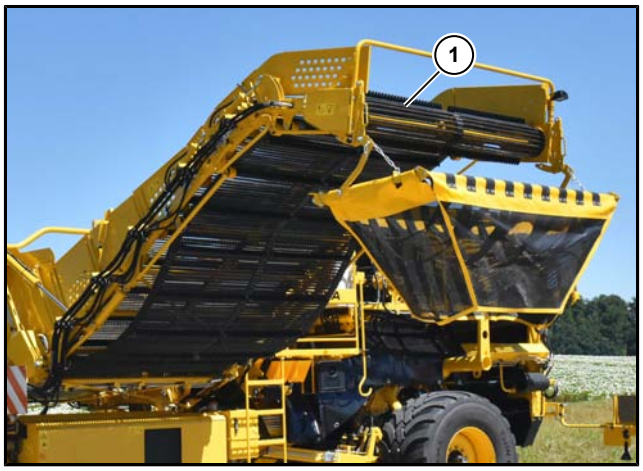


(1) Drive chain guard cover screws
(2) Gear wheel drive chain tensioning

Retensioning of walking floor drive chain

– Switch off the tractor engine, secure the tractor to prevent restart and set chocks to prevent movement of the machine.
– Loosen the screws on the drive chain guard cover (**1**) and remove the guard cover.
– Check the tension of the drive chain, adjust the drive chain if necessary and grease the drive chain as required.
– To re-tighten the drive chain, loosen the respective fixing screw of the gear wheel drive chain tensioning (**2**). Move the gear wheel so the drive chain is tightly tensioned once more. Retighten the fixing screw.
– Attach the guard cover and fix it with the screws.
– Perform a test run of the walking floor.

7.14.3 Unloading conveyor



(1) Overloading bunker unloading conveyor

The unloading conveyor (**1**) consists of a rubberised chain with carriers. The unloading conveyor keeps itself under tension due to its own weight.

7.14.3.1 Setting synchronism of the unloading conveyor

If the unloading conveyor runs unevenly on the left or right, the synchronism must be adjusted immediately, otherwise the unloading conveyor becomes subject to increased wear.

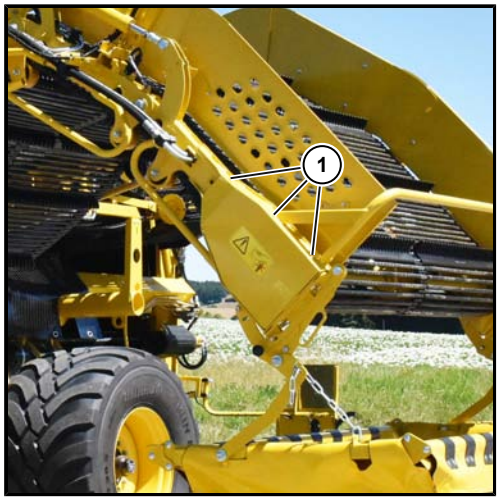
(1) Synchronism adjustment rear
(2) Synchronism adjustment in the centre

Proceed as follows:

– Loosen the screws on the guard cover rear and remove the guard cover.
– Loosen the nuts on the synchronism adjustment in the centre (**2**) and the lock nut on the synchronism adjustment rear (**1**).
– Adjust the synchronism rear (**1**) on the screw and then secure it with the lock nut.
– Tighten the nuts of the synchronism adjustment in the centre (**2**). Make sure that the drive shaft is not distorted.
– Attach the guard cover and fix it with the screws.
– Perform a test run of the unloading conveyor.

7.14.3.2 Unloading conveyor drive chain

The drive chain of the unloading conveyor must be oiled / greased and checked for the correct chain tension after each 100 operating hours.



(1) Drive chain guard cover screws
(2) Gear wheel drive chain tensioning

Retensioning of unloading conveyor drive chain

– Fold the unloading conveyor all the way down, switch off the tractor engine, secure the tractor to prevent restart and set chocks to prevent movement of the machine.
– Loosen the screws on the drive chain guard cover (**1**) and remove the guard cover.
– Check the tension of the drive chain, adjust the drive chain if necessary and grease the drive chain as required.
– To re-tighten the drive chain, loosen the respective fixing screw of the gear wheel drive chain tensioning (**2**). Move the gear wheel so the drive chain is tightly tensioned once more. Retighten the fixing screw.
– Attach the guard cover and fix it with the screws.
– Perform a test run of the unloading conveyor.

7.15 Shutdown for an extended period

In case the machine has to be shut down for more than four weeks, then the following work must be performed:

– Thoroughly wash the machine. Avoid directly spraying the bearings and supporting rollers.
– Clean the pickup thoroughly from below and clean the shafts, e.g. drive shafts, thoroughly from all sides with the pressure cleaner.

ATTENTION

We would expressly like to point out that in case of damage to the machine caused by dried soil sticking to the strainer wheel drum, neither warranty coverage nor goodwill repairs will be performed.

– Drain condensing water at the compressed air reservoir.
– Lubricate all lubricating points of the machine.
– Spray the complete machine with corrosion-inhibiting oil. Make sure that no oil or grease touches the tires.
– Grease all piston shafts and the collars of the hydraulic cylinders.
– Park the machine in a dry and weather-protected place, if possible, in a hall.

7.16 Dismantling and disposal

If the machine is not disposed of properly at the end of its service life, it can lead to accidents and damages to environment.

Hazard may come from:

- Hydraulic oil
- Lubricants/process materials
- Media/pressure accumulator under pressure
- Residual energy
- Moving parts

– Now the machine can be disassembled and disposed of by an appropriate disposal company in accordance with applicable laws, directives and standards.
– Observe national safety regulations for disassembly of machines.
– Wear personal protective equipment.
– Render the system depressurised before all work on the hydraulic system or on the pressure reservoirs.

8 Malfunction and remedies

Your attention is visually drawn to malfunctions and hazardous situations by warning indications on the tractor terminal and acoustically by warning sounds. Some functions may be blocked in case of hazardous situations.

Malfunctions, causes and remedies are described in the tractor terminal, chapter 6.

8.1 Safety circuits

The machine provides the greatest possible safety to operator and materials. Because the machine depends on the tractor that tows it, when leaving the tractor always shut off the machine and lock it to prevent restart (remove ignition key). If a function cannot be performed from the tractor cabin or if switches are blocked, first check that the tractor emergency stop switch or the sorting platform emergency stop switch are not pressed.

If the malfunction cannot be remedied, then refer to the respective sections of this operating manual for the components or non-functional components. You will find hints on safety circuits and possible reasons for a malfunction there.

WARNING

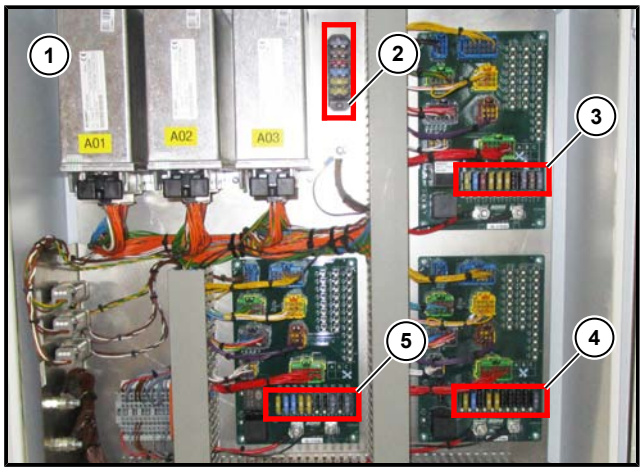
Hazard of extreme injuries or damage to the machine.

- Never defeat safety installations, safety locks or safety circuits. This may have the consequence of extreme injuries.
- Never perform functional tests, if you are not fully informed about the scope and consequences of such a test.
- Make sure that when searching for the cause of the malfunction or when remedying malfunctions, in case of need, a second, reliable person is present who is sufficiently familiar with the machine that he is able to shut down the machine immediately in case of emergency.
- In case of the slightest doubt, call in specialist personnel trained accordingly or enquire with service personnel from ROPA.
- Do not perform any repairs on the machine if you do not have the required specialist knowledge and experience.

If you are able to contact your dealer or the manufacturer by radio or cell phone, then more extensive fault diagnostics is possible using specific diagnostic menus on the tractor terminal. For safety reasons, individual menus are blocked for the operator. In case of improper handling, hazards to life may occur, or the machine may be heavily damaged, which would cause costly repairs.

8.2 Electrics

8.2.1 Safety fuses



(1) Central electrical system
(2) Reserve fuses
(3) Fuses PCB A
(4) Fuses PCB B
(5) Fuses PCB C

The fuses for the electrical system are in the central electrical system box (**1**) on the left sorting platform. Commercially available, flat plug-in fuses and self-resetting electronic fuses are primarily used on the machine.

Imprints on the PCBs label the fuses. See the inside of the switch cabinet door for a sticker showing a general overview of the fuses.

If the light emitting diode (LED) on a fuse lights, the fuse is faulty. Check the circuit and replace the faulty fuse with a new fuse of the same type.

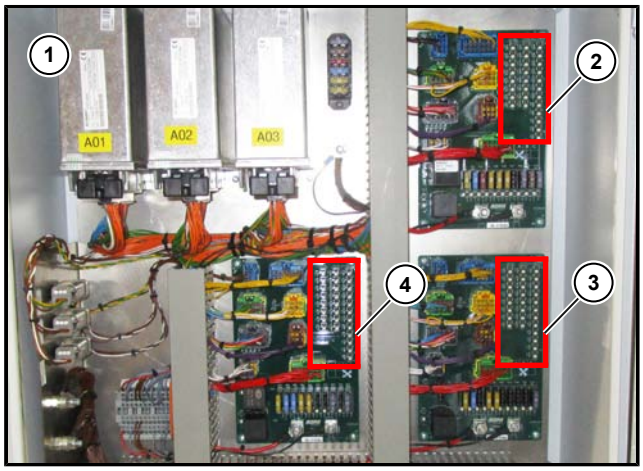
8.2.2 List of fuses (melting fuses)

Central electrics inside

No.	Ampere	Function
PCB A		
F01.A	20	Pin 30 computer ESR A (A01)
F02.A	15	Pin 30 computer ESR A (A01)
F03.A	10	K02.A rotating beacon relay (optional)
F04.A	20	M554 height triple deflector roller 1
F05.A	20	M556 height twin deflector roller 2
F06.A	20	M558 height twin deflector roller 3
F07.A		not used
F08.A	3	K01.A, K01.B, K01.C machine emergency shutdown
F09.A	5	Feed sensors 12 V
F10.A	3	Pin 30 processor ESR A (A01)
PCB B		
F01.B	20	Pin 30 computer ESR B (A02)
F02.B	15	Pin 30 computer ESR B (A02)
F03.B	5	K02.B relay central greasing (optional)
F04.B	20	M559 height rotating finger comb 1
F05.B	20	M560 height rotating finger comb 2
F06.B		not used
F07.B	10	Lighting protective roof (option)
F08.B		not used
F09.B		not used
F10.B	3	Pin 30 processor ESR B (A02)
PCB C		
F01.C	20	Pin 30 computer ESR C (A03)
F02.C	15	Pin 30 computer ESR C (A03)
F03.C	15	K02.C relay LED working floodlights (optional)
F04.C	20	M551 height leaf scraper 1
F05.C	20	M552 height leaf scraper 2
F06.C		not used
F07.C		not used
F08.C	3	Sorting platform terminal
F09.C		not used
F10.C	3	Pin 30 processor ESR C (A03)
		ROPA item no. 3550566GB

The fuses F01.A to F10.A, F01.B to F10.B and F01.C to F10.C are identified by the fuse identification on the PCB and the PCB identification for the computer. There are 3 computers on the machine and the computers are identified as A, B and C.

8.2.3 Electronic fuses



(1) Central electrical system
(2) Self-resetting electronic fusesPCB A
(3) Self-resetting electronic fusesPCB B
(4) Self-resetting electronic fusesPCB C

Fuses Fr01.A to Fr28.A, Fr01.B to Fr28.B and Fr01.C to Fr28.C are self-resetting electronic fuses. If the light emitting diode (LED) of a self-resetting electronic fuse is lit, then the fuse is overloaded and power supply to the connected component interrupted.

8.2.4 Fuses list of self-resetting electronic fuses with LED

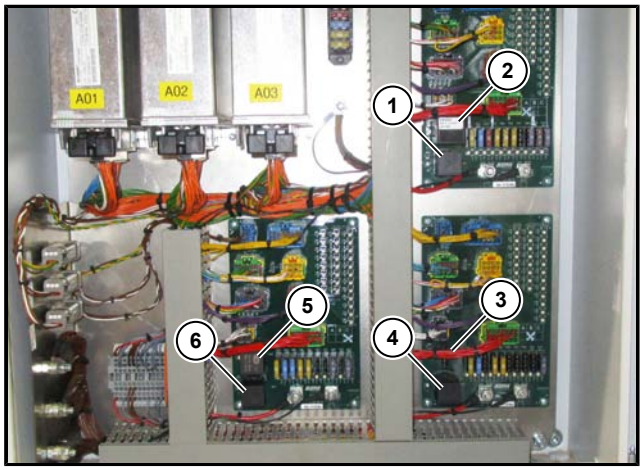
No.	Ampere	Function	
PCB A			
Fr01.A	100 mA	B64 Lifting depth right	8.5 V
Fr02.A	100 mA	B65 Lifting depth left	8.5 V
Fr03.A	100 mA	B561 Pintle 1/2 incl.	8.5 V
Fr04.A	100 mA	B562 Pintle 4 incl.	8.5 V
Fr05.A	100 mA	B94 Pickup height	8.5 V
Fr06.A	100 mA	not used	8.5 V
Fr07.A	100 mA	not used	8.5 V
Fr08.A	100 mA	not used	8.5 V
Fr09.A	100 mA	B15 PTO shaft speed PDG input	8.5 V
Fr10.A	100 mA	not used	8.5 V
Fr11.A	100 mA	not used	8.5 V
Fr12.A	100 mA	not used	8.5 V
Fr13.A	100 mA	not used	8.5 V
Fr14.A	100 mA	not used	8.5 V
Fr15.A	100 mA	not used	not used
Fr16.A	100 mA	not used	not used
Fr17.A	100 mA	not used	not used
Fr18.A	100 mA	not used	not used
Fr19.A	100 mA	not used	not used
Fr20.A	100 mA	not used	not used
Fr21.A	100 mA	not used	12 V
Fr22.A	100 mA	B167 Wheel motor rpm	12 V
Fr23.A	100 mA	B84 PS traction drive backward	12 V
Fr24.A	100 mA	B26 PS traction drive forward	12 V
Fr25.A	100 mA	B07 PS ridge pressure regulation left	12 V
Fr26.A	100 mA	B08 PS ridge pressure regulation right	12 V
Fr27.A	100 mA	B69 PS ridge pressure relief left	12 V
Fr28.A	100 mA	B68 PS ridge pressure relief right	12 V
			ROPA item no. 3550750GB

No.	Ampere	Function	
PCB B			
Fr01.B	100 mA	B575 Bunker flap (bunker) B575 unload conv. artic. 1 (truck conv.)	8.5 V
Fr02.B	100 mA	B35 fold/unfold bunker (bunker) B35 fold/unfold unload conveyor (truck conv.)	8.5 V
Fr03.B	100 mA	B570 Bunker fill conv. height	8.5 V
Fr04.B	100 mA	B573 Axle swing angle	8.5 V
Fr05.B	100 mA	B572 Axle telescope	8.5 V
Fr06.B	100 mA	B578 Picking conv. speed set value	8.5 V
Fr07.B	100 mA	B120 Unload conv. artic. 2 (truck con.)	8.5 V
Fr08.B	100 mA	not used	8.5 V
Fr09.B	100 mA	B524 Rpm pintle belt 1	8.5 V
Fr10.B	100 mA	B525 Rpm pintle belt 2	8.5 V
Fr11.B	100 mA	B526 Rpm pintle belt 3	8.5 V
Fr12.B	100 mA	B47 Driving speed	8.5 V
Fr13.B	100 mA	B527 Rpm pintle belt 4	8.5 V
Fr14.B	100 mA	not used	8.5 V
Fr15.B	100 mA	not used	not used
Fr16.B	100 mA	not used	not used
Fr17.B	100 mA	not used	not used
Fr18.B	100 mA	not used	not used
Fr19.B	100 mA	not used	not used
Fr20.B	100 mA	not used	not used
Fr21.B	100 mA	not used	12 V
Fr22.B	100 mA	not used	12 V
Fr23.B	100 mA	B586 Ultrasound unload conv. (truck conv.)	12 V
Fr24.B	100 mA	B154/B155 Inclination sensor	12 V
Fr25.B	100 mA	B504 Pr. sensor pintle belt 1	12 V
Fr26.B	100 mA	B505 Pr. sensor pintle belt 2	12 V
Fr27.B	100 mA	B58 Pr. sensor bunker unload. (bunker)	12 V
Fr28.B	100 mA	B36 Bunker fill conv. ultrasound	12 V
			ROPA item no. 3550751GB

No.	Ampere	Function	
PCB C			
Fr01.C	100 mA	B04 Drawbar position	8.5 V
Fr02.C	100 mA	B05 Ridge centering left	8.5 V
Fr03.C	100 mA	B02 Axle wheel angle	8.5 V
Fr04.C	100 mA	B34 Bunker height (bunker) B34 Unload conv. height (truck conv.)	8.5 V
Fr05.C	100 mA	B06 Ridge centering right	8.5 V
Fr06.C	100 mA	B521 Rpm sieve conveyor 1	8.5 V
Fr07.C	100 mA	B522 Rpm sieve conveyor 2	8.5 V
Fr08.C	100 mA	B531 Rpm swath pickup	8.5 V
Fr09.C	100 mA	B587 Picking conv. height (truck conv.)	8.5 V
Fr10.C	100 mA	B523 Rpm leaf chain	8.5 V
Fr11.C	100 mA	B588 Axle swing angle (safety)	8.5 V
Fr12.C	100 mA	B27 Additional axle	8.5 V
Fr13.C	100 mA	B589 Axle wheel angle (safety)	8.5 V
Fr14.C	100 mA	not used	8.5 V
Fr15.C	100 mA	not used	not used
Fr16.C	100 mA	not used	not used
Fr17.C	100 mA	not used	not used
Fr18.C	100 mA	not used	not used
Fr19.C	100 mA	not used	not used
Fr20.C	100 mA	not used	not used
Fr21.C	100 mA	not used	12 V
Fr22.C	100 mA	not used	12 V
Fr23.C	100 mA	B584 Return pressure sensor	12 V
Fr24.C	100 mA	B506 Pr. sensor sieve conv. 2	12 V
Fr25.C	100 mA	B550 Press. sensor gear pump	12 V
Fr26.C	100 mA	B45 Bunker trough ultras. (truck conv.)	12 V
Fr27.C	100 mA	B501 Pr. sensor sieve conv. 1	12 V
Fr28.C	100 mA	not used	12 V
			ROPA item no. 3550752GB

The fuses Fr01.A to Fr28.A, Fr01.B to Fr28.B and Fr01.C to Fr28.C are identified by the fuse identification of the self-resetting electronic fuse on the PCB and the PCB identification for the computer. There are 3 computers on the machine and the computers are identified as A, B and C.

8.3 Relay list



(1) Relay K01.A
(2) Relay K02.A (optional)
(3) Relay K02.B (optional)
(4) Relay K01.B
(5) Relay K02.C (optional)
(6) Relay K01.C

No.	Designation	Position in the machine	Comments	ROPA item no.
K01.A	Relay emergency stop shutdown PCB A	Central electrical system PCB A bottom relay	Load relay, power 50 A, 12 V	320088200
K02.A	Rotating beacon relay (optional)	Central electrical system PCB A top relay	Step-on step-off relay, power 15 A, 12 V	320086200
K01.B	Relay emergency stop shutdown PCB B	Central electrical system PCB B bottom relay	Load relay, power 50 A, 12 V	320088200
K02.B	Relay central lubrication system (optional)	Central electrical system PCB B top relay	Relay, power 20 A, 12 V	320017600
K01.C	Relay emergency stop shutdown PCB C	Central electrical system PCB C bottom relay	Load relay, power 50 A, 12 V	320088200
K02.C	Relay working floodlights (optional)	Central electrical system PCB C top relay	Relay, power 20 A, 12 V	320017600

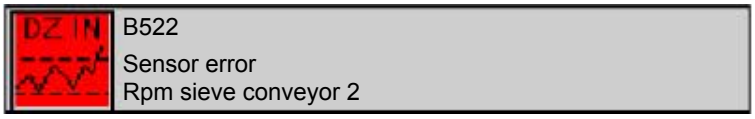
The relays K01.A, K02.A, K01.B, K02.B, K01.C and K02.C are identified by the relay identification on the PCB and the PCB identification for the computer. There are 3 computers on the machine and the computers are identified as A, B and C.

8.4 Colour codes for electric wiring

brown	Earth
red	Pin 30 (continuous current)
pink	Pin 15 (simulated ignition current)
yellow	8.5 Volt
violet	12 Volt
blue	Digital signal lines (ON/OFF)
green	Analogue signal lines (changing sensor values)
grey	All lamps “E” light bulbs and “H” warning devices (buzzer)
white	Electrical motors and internal wiring, miscellaneous
orange	Control lines for all valves and solenoids (all „Y“)

Feature: twisted cables
yellow (twisted) = I-CAN-high
green (twisted) = I-CAN-low
twisted together = I-CAN-BUS (ISOBUS) data line
white (twisted) = F-CAN-high
brown (twisted) = F-CAN-low
twisted together = F-CAN-BUS data line
white (twisted) = MA-CAN-high
brown (twisted) = MA-CAN-low
twisted together = MA-CAN-BUS data line

8.5 Troubleshooting with the tractor terminal



Some malfunctions are indicated on the tractor terminal by warning icons. In case of electrical or electronic problems, the components concerned are displayed including the designation of the component.

Example:

= Tractor emergency stop activated!

= Sorting platf. emerg. stop is on!

= Communication problem with control device.

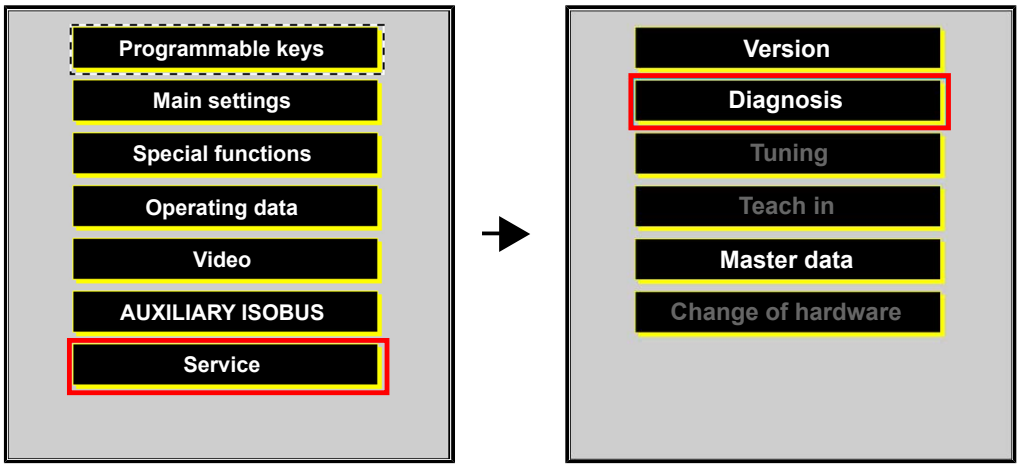
= Analogue signal out of range.

= Line break or short circuit found.

= Internal memory fault EEPROM.

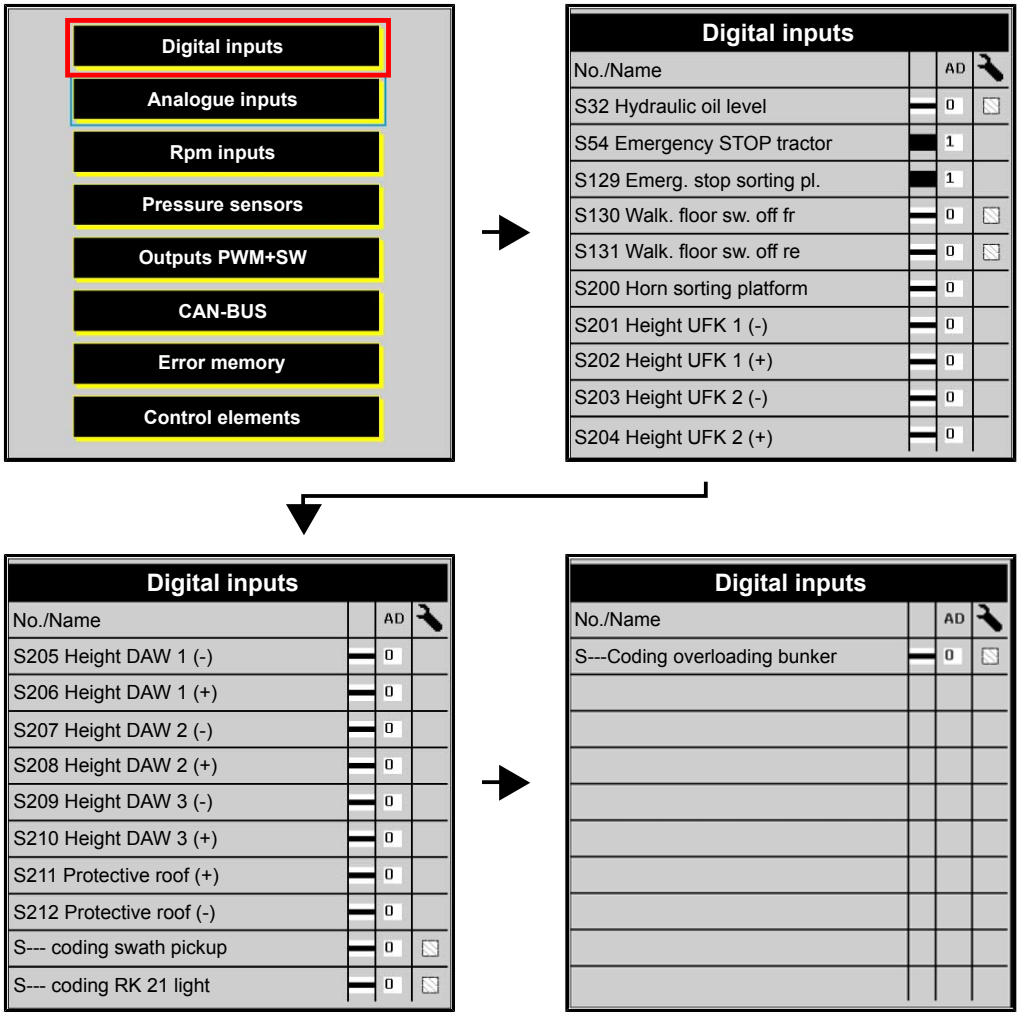
DIN	Part	Position in the machine	Comments	Item No.
A01	Computer ESR A	in the central electrics	Computer A	320078100
A02	Computer ESR B	in the central electrics	Computer B	320078100
A03	Computer ESR C	in the central electrics	Computer C	320078100
A07	Tractor terminal	in tractor on right	Standard (till year of constr. 2016) or touch (from year of constr. 2017)	320085000 or 320086400
A10	Lifter control panel	in tractor on right	Functions for lifting	320085300
A12	Sorting platform terminal	sorting platform centre	operation of sorting platform	320085100
A20	Bunker control element	in tractor on left	functions for unloading	320085200
A30	Freely assignable control element right	in tractor on right	functions can be assigned as desired	320087700
A40	Freely assignable control element left	in tractor on left	functions can be assigned as desired	320087700
A44	Video switch box	in tractor cabin	automatic video picture switchover	320101600

8.5.1 Overview of diagnostic menus

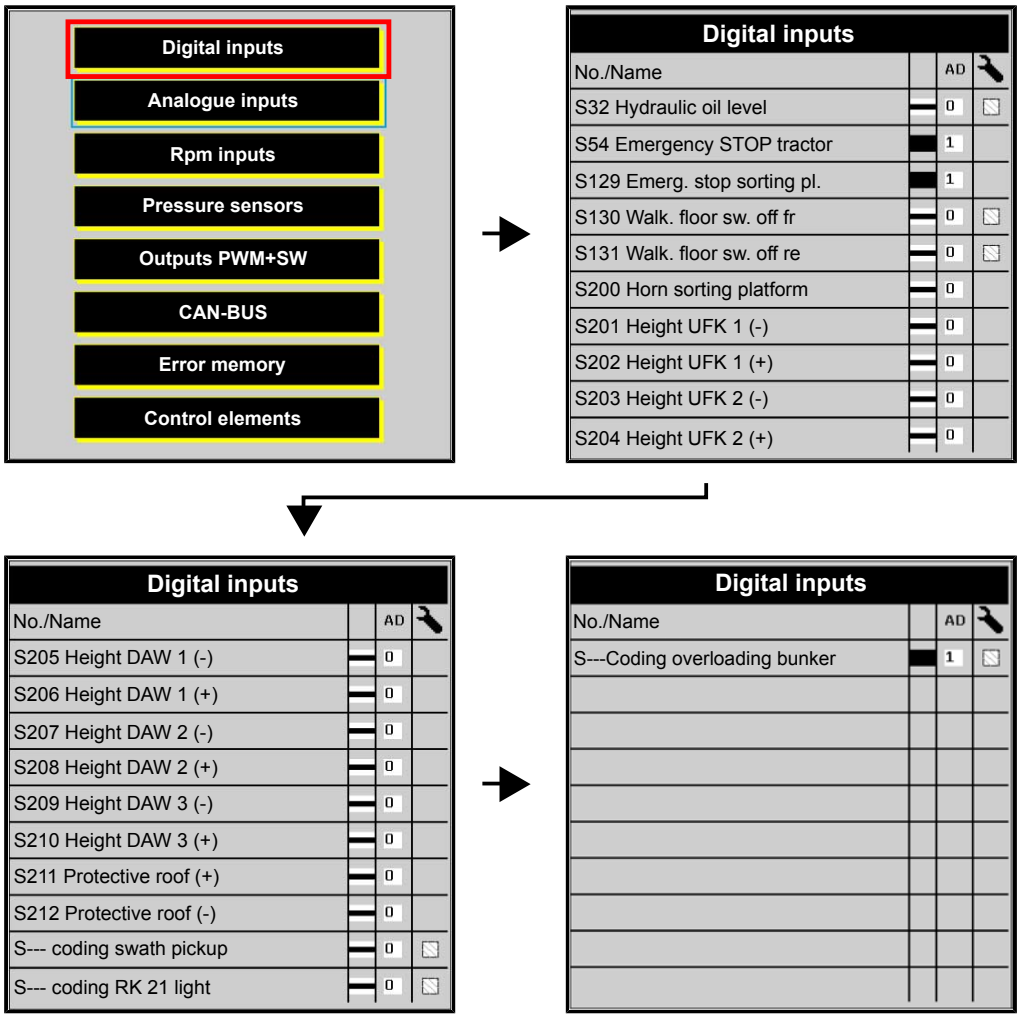


See below for illustrations of the available diagnostics menus on the tractor terminal. They facilitate malfunctions diagnostics for service personnel, if you call up the corresponding menu items after being requested by service personnel and notify the values or icons displayed to service personnel.

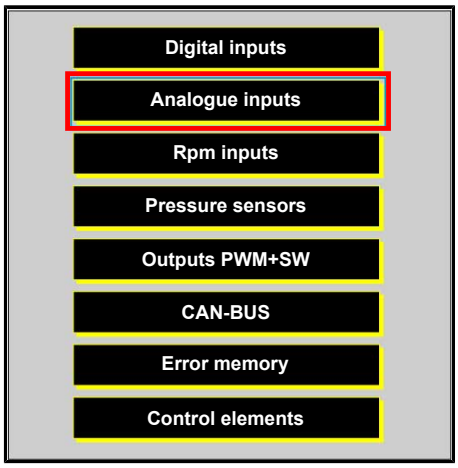
8.5.1.1 Digital inputs at bunker machine



8.5.1.2 Digital inputs at overloading bunker machine



8.5.1.3 Analogue inputs at bunker machine



Analogue inputs

No./Name	AD
B02 Axle	464
B04 Drawbar	216
B05 Ridge centering left	464
B06 Ridge centering right	514
B27 Additional axle	181
B34 Bunker height	755
B35 Fold bunker in/out	241
B36 Ultrasound filling web	757
B40 Hydraulic oil temp.	793
B64 Lifting depth R	381

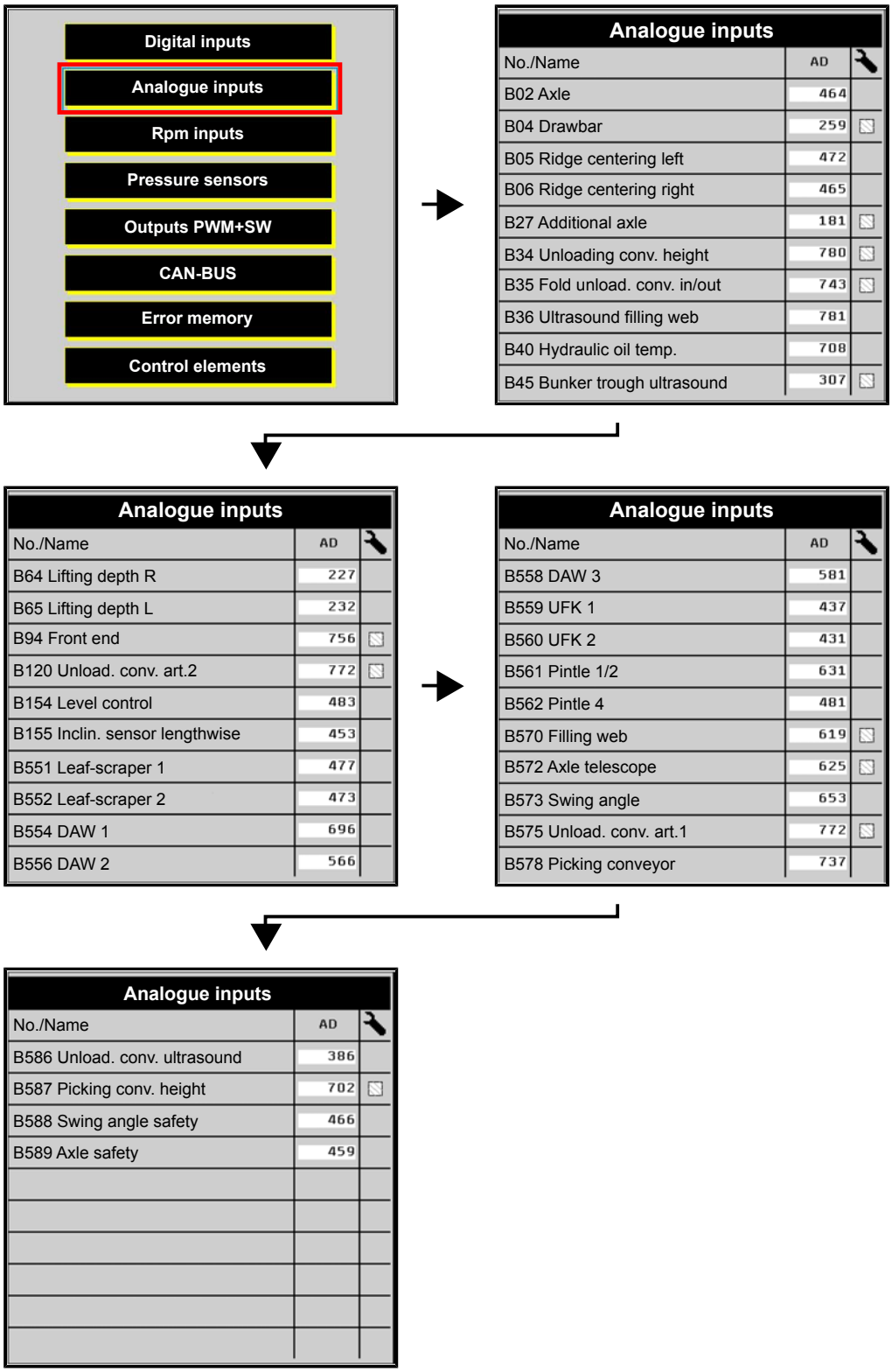
Analogue inputs

No./Name	AD
B65 Lifting depth L	407
B94 Front end	729
B154 Level control	523
B155 Inclin. sensor lengthwise	415
B551 Leaf-scraper 1	718
B552 Leaf-scraper 2	697
B554 DAW 1	392
B556 DAW 2	460
B558 DAW 3	421
B559 UFK 1	580

Analogue inputs

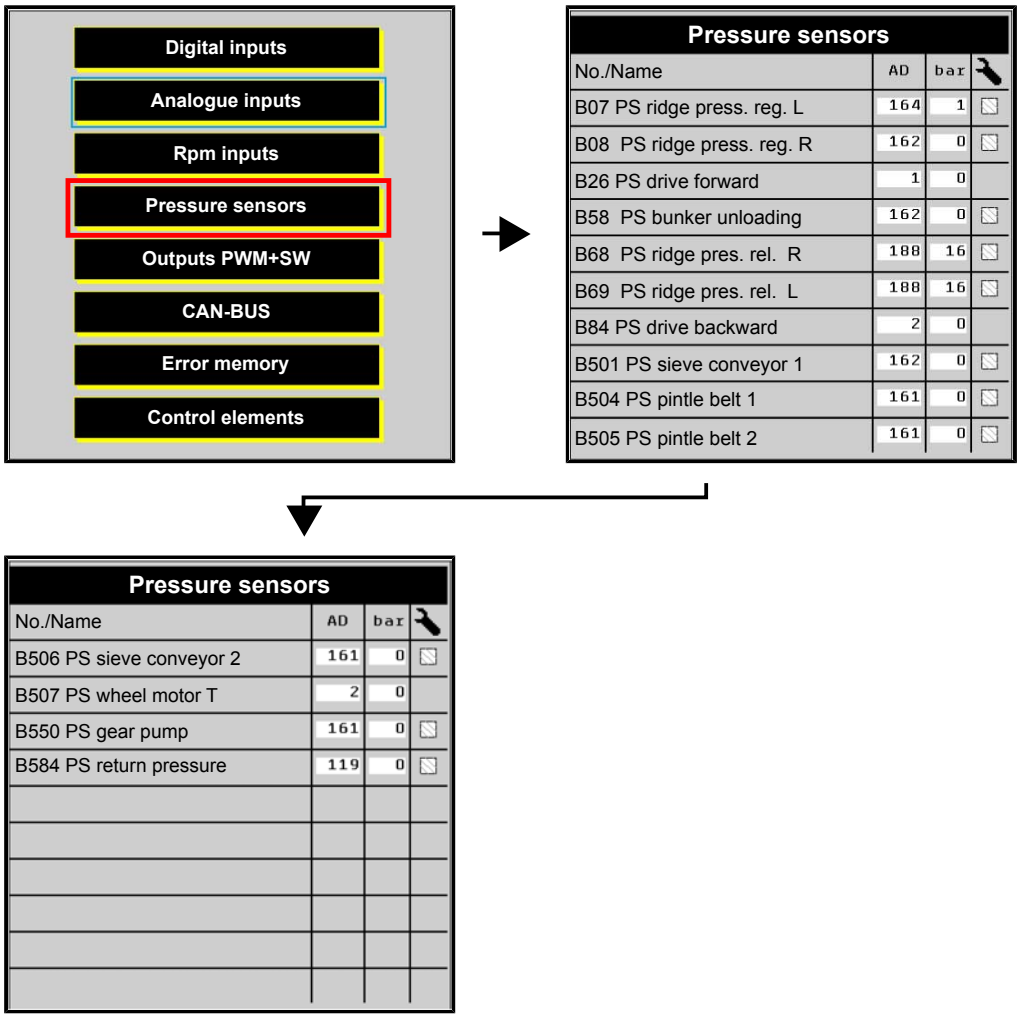
No./Name	AD
B560 UFK 2	415
B561 Pintle 1/2	229
B562 Pintle 4	737
B570 Filling web	220
B572 Axle telescope	591
B573 Swing angle	543
B575 Bunker flap	237
B578 Picking conveyer	484
B588 Swing angle safety	418
B589 Axle safety	459

8.5.1.4 Analogue inputs at overloading bunker machine

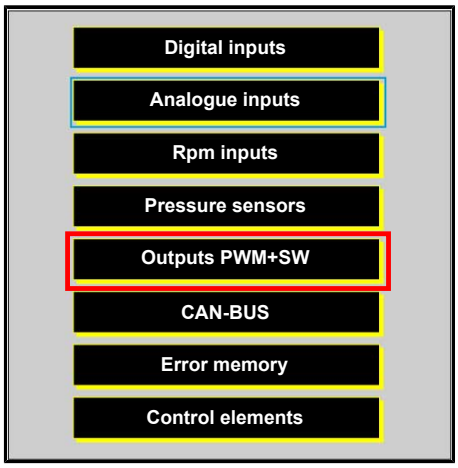


8.5.1.5 Rpm inputs

8.5.1.6 Pressure sensors



8.5.1.7 PWM + SW outputs at bunker machine



Outputs PWM+SW

No./Name	%	mA
Y10 Trac. pump forward	0	0
Y11 Trac. pump backw.	0	0
Y14 Lower pickup R	0	0
Y15 Lower pickup L	0	0
Y16 Hydr. oil fan	83	1398
Y18 Relief right	0	0
Y19 Relief left	0	0
Y22 Axle right	0	0
Y23 Axle left	0	0
Y26 Drawbar steering R	0	24

Outputs PWM+SW

No./Name	%	mA
Y27 Drawbar steering L	0	0
Y37 Trash conveyor	0	0
Y38 Picking conveyer	0	0
Y39 Walking floor	0	0
Y40 Walking floor speed 2	0	0
Y41 Pump sieve conveyor 1	0	0
Y42 Pump leaf/sieve ch 2	0	0
Y43 Pump pintle 1	0	24
Y44 Pump pintle 2/3/4	0	0
Y52 Lifting depth right	0	0

Outputs PWM+SW

No./Name	%	mA
Y53 Lifting depth left	0	0
Y62 Bypass leaf chain	0	0
Y63 Bypass pintle belt 3	0	0
Y64 Bypass pintle belt 4	0	0
Y66 Fold bunker	0	0
Y72 Shaker	0	0
Y73 Drive UFK 1/2	0	0
Y77 Coulter/swath pickup	0	0
Y80 Bypass UFK 2	0	0
Y92 Circuit line A	0	24

Outputs PWM+SW

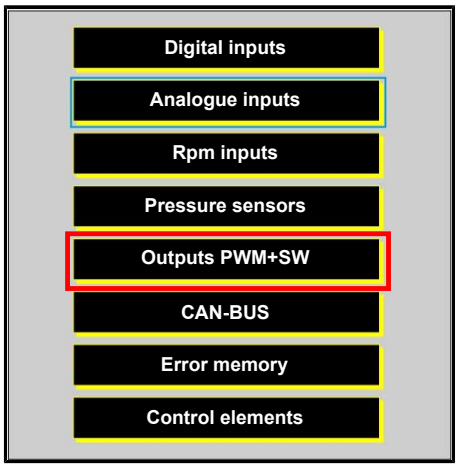
No./Name	%	mA
Y93 Flow line B	0	0
Y94 Raise bunker	0	0
Y95 Lower bunker	0	0
Y96 Axle incline	0	0
Y114 Raise pickup R	0	0
Y115 Raise pickup L	0	0
Y151 Articulate bunker	0	0
Y152 Tray filler	0	0
M551 Leaf-scraper 1	46	0
M552 Leaf-scraper 2	46	0

Outputs PWM+SW

No./Name	%	mA
M554 DAW 1 height	46	0
M556 DAW 2 height	46	0
M558 DAW 3 height	46	0
M559 UFK 1 height	47	0
M560 UFK 2 height	47	0
Y561 Pintle 1/2 incl.	0	0
Y562 Pintle 4 incl.	0	0
Y570 Filling web	0	0
Y571 Stone catching box	0	0
Y572 Telescope axle	0	0

Outputs PWM+SW			
No./Name	%	mA	
Y574 Bunker fill. soft fl.	0	0	
Y575 Bunker flap	0	0	
Y582 Protective roof	0	0	
Y583 Door frame	0	0	
Y585 Coupl. bl./feed pr.	0	0	
Y586 Coupling block	0	0	
K2.A Rotating beacon	0	0	
K2.B Central lubrication	0	0	
K2.C Working floodlights	0	0	

8.5.1.8 PWM + SW outputs at overloading bunker machine



Outputs PWM+SW

No./Name	%	mA
Y10 Trac. pump forward	0	0
Y11 Trac. pump backw.	0	0
Y14 Lower pickup R	0	0
Y15 Lower pickup L	0	0
Y16 Hydr. oil fan	83	1398
Y18 Relief right	0	0
Y19 Relief left	0	0
Y22 Axle right	0	0
Y23 Axle left	0	0
Y26 Drawbar steering R	0	24

Outputs PWM+SW

No./Name	%	mA
Y27 Drawbar steering L	0	0
Y37 Trash conveyor	0	0
Y38 Picking conveyor	0	0
Y39 Walking floor	0	0
Y40 Raise unload conv.	0	0
Y41 Pump sieve conveyor 1	0	0
Y42 Pump leaf/sieve con.2	0	0
Y43 Pump pintle 1	0	24
Y44 Pump pintle 2/3/4	0	0
Y52 Lifting depth right	0	0

Outputs PWM+SW

No./Name	%	mA
Y53 Lifting depth left	0	0
Y62 Bypass leaf chain	0	0
Y63 Bypass pintle belt 3	0	0
Y64 Bypass pintle belt 4	0	0
Y66 Fold unload conv.	0	0
Y72 Shaker	0	0
Y73 Drive UFK 1/2	0	0
Y77 Coulter/swath pickup	0	0
Y80 Bypass UFK 2	0	0
Y92 Flow line A	0	24

Outputs PWM+SW

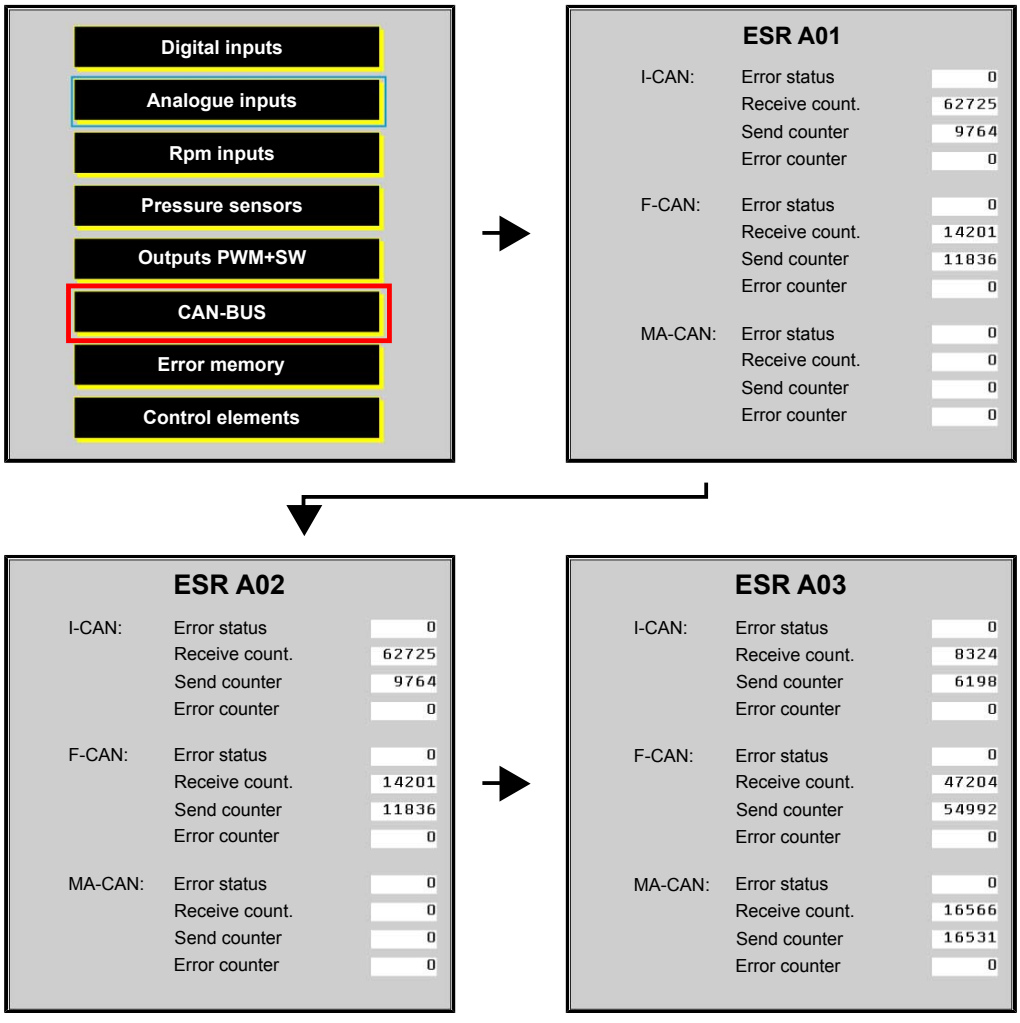
No./Name	%	mA
Y93 Flow line B	0	0
Y94 Unloading conv. drive	0	0
Y95 Lower unload conv.	0	0
Y96 Axle incline	0	0
Y114 Raise pickup R	0	0
Y115 Raise pickup L	0	0
Y151 Raise unl. con. art.1	0	0
Y152 Lower unl. con. art.2	0	0
M551 Leaf-scraper 1	46	0
M552 Leaf-scraper 2	46	0

Outputs PWM+SW

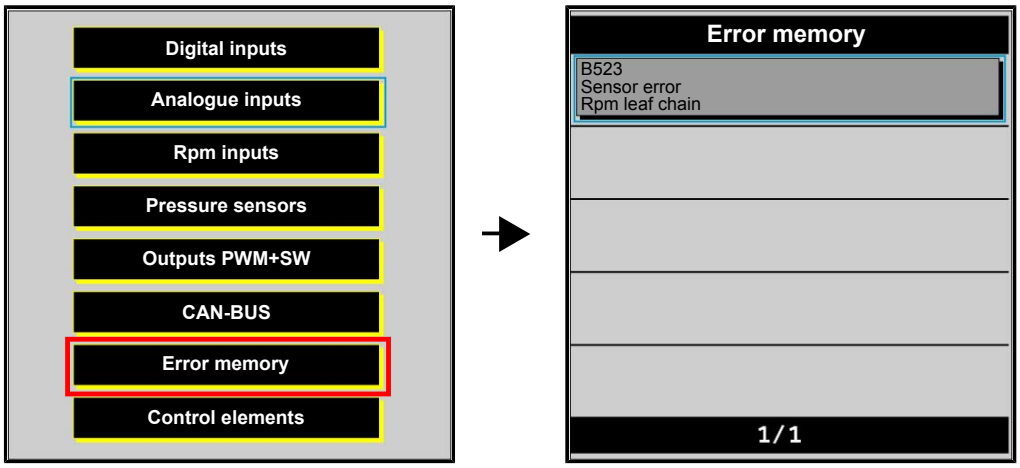
No./Name	%	mA
M554 DAW 1 height	46	0
M556 DAW 2 height	46	0
M558 DAW 3 height	46	0
M559 UFK 1 height	47	0
M560 UFK 2 height	47	0
Y561 Pintle 1/2 incl.	0	0
Y562 Pintle 4 incl.	0	0
Y570 Filling web	0	0
Y571 Stone catching box	0	0
Y572 Telescope axle	0	0

Outputs PWM+SW			
No./Name	%	mA	
Y574 Raise unl. con. art.2	0	0	
Y575 Lower unl. con. art.1	0	0	
Y582 Protective roof	0	0	
Y583 Door frame	0	0	
Y585 Coupl. bl./feed pr.	0	0	
Y586 Coupling block	0	0	
Y587 Picking con. up/down	0	0	
K2.A Rotating beacon	0	0	
K2.B Central lubrication	0	0	
K2.C Working floodlights	0	0	

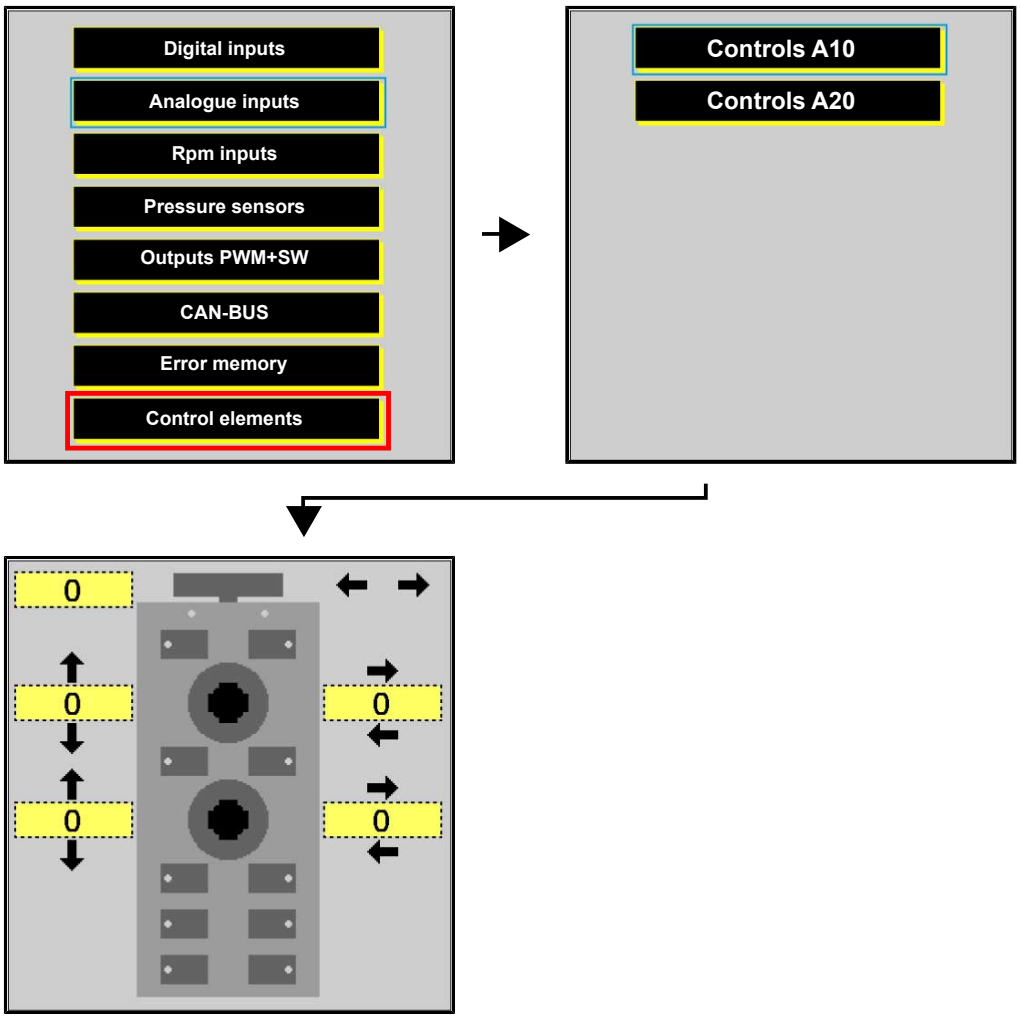
8.5.1.9 CAN-BUS



8.5.1.10 Error memory

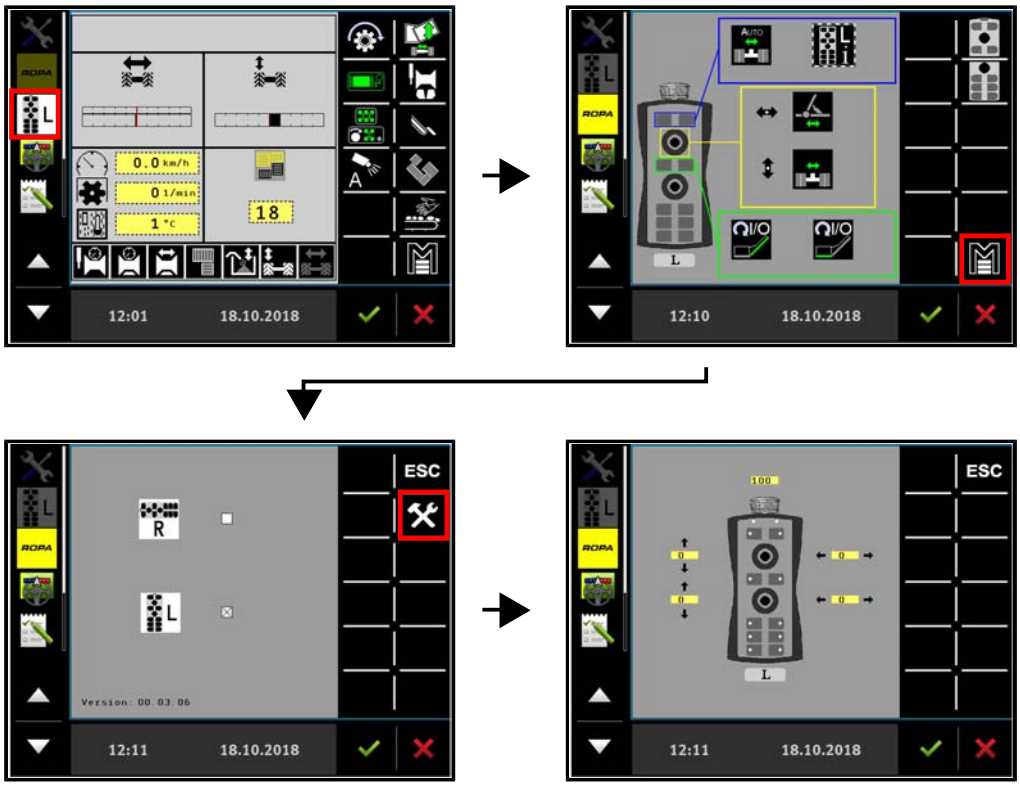


8.5.1.11 Controls A10 and A20



8.5.2 Diagnostic menus "Freely assignable control element"

The diagnostic menus of the freely assignable control element are identically structured for all three variants of this control element.
Here you can see an example of the left control element on the overloading bunker machine.



8.6 Welding on the machine

When welding on the machine the ISOBUS connection to the tractor must be disconnected (pull out ISOBUS plug). The ground cable of the welding transformer must be connected as close as possible to the welding position.

ATTENTION

Danger of machine damage.

Welding on the machine may only be performed by people sufficiently qualified for the respective work under the regional regulations. Welding on structural parts or parts with a safety function may only be performed after enquiry with ROPA, to the extent as it is admissible under the respective applicable regulations. All welding works may only be performed as per applicable standards and the recognized rules of engineering. Always observe the increased fire hazard when welding near combustible parts or liquids (fuel, oils, greases, tyres, etc.). We expressly point out that ROPA will not assume any warranty for damage to the machine caused by improper welding.

8.7 Jacking up for wheel change

DANGER

Hazard of fatal injuries!

– For safety reasons, the machine must be always jacked up on one axle and on one side only.
– In order to jack up the machine hang it in the pulling jaw of the tractor and secure. The machine may never be parked for jacking up on the support foot!

– To jack up park the machine on even and sufficiently stable ground.
– Secure the machine from movement by setting the parking brake and placing wheel chocks. Place both wheel chocks at the front and rear on the opposite side to the wheel that is being changed.
– Use a jack with sufficient load capacity to lift the machine.
– To jack up the left side of the machine, position the jack under the inner left side of the axle. To jack up the right side of the machine, position the jack under the inner right side of the axle.
– Once the machine is lifted, it must also be secured with solid wood blocks or similar materials to prevent its falling from the jack.

8.8 Releasing the brake manually

Working on the brake system is dangerous and may only be performed by people trained for this work and familiar with working on brake systems.

DANGER

Hazard to life due to the machine inadvertently rolling away.

– Before releasing the brake secure the machine against rolling away with both wheel chocks.
– Work on the vehicle brakes may only be performed by specialist personnel with corresponding training (e.g. motor vehicle mechanics, agricultural machinery mechanics, brake service, etc.) in compliance with the applicable safety regulations.

8.8.1 Pneumatic deactivation of brake

(1) Outlet valve/drainage valve

DANGER

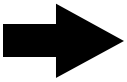
- Never park the vehicle unsecured if the parking brake is released and the compressed air reservoir is empty.
- Secure the vehicle against rolling away using sufficiently large wheel chocks.
- Put in the driver's field of vision a distinctive sign with the inscription: "Danger! Machine has no functional brakes! Brakes are released.
- Keep the tractor ignition key in a secure place.

- Switch off tractor engine and secure it against inadvertent starting.
- Secure the vehicle against rolling away using the two wedges.
- Disconnect the air brake line from the tractor.
- Vent the compressed air reservoir by the drain valve or water drain valve (**1**) until the reservoir is completely depressurised.
- Check that the parking brake is completely released.
- The brake is released, the machine has no functional brakes.
- The machine may be towed to the next workshop or a secure parking place under compliance with the corresponding safety regulations.

Once the repair work is completed, the brake must be activated as follows:

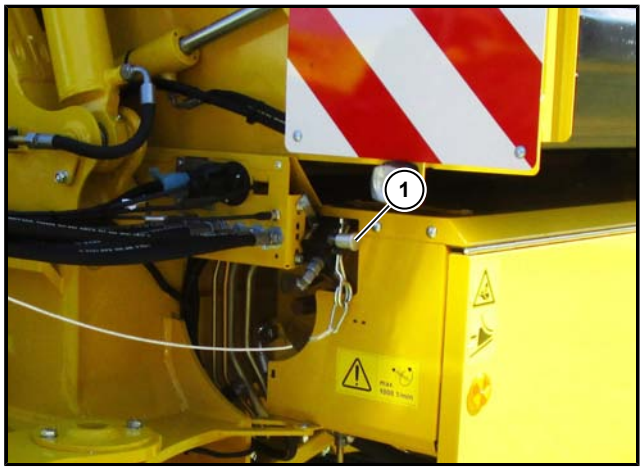
- Connect the air brake lines to the tractor.
- Start the tractor and wait until the brake pressure is at least 5 bar at the tractor.
- After completing all work, perform a brake test.

ADVICE



The basic setting of the brake is not affected by the emergency release process!

8.8.2 Hydraulic deactivation of brake



(1) Hydraulic brake hand pump

DANGER

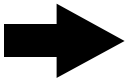
- Never park the vehicle unsecured if the parking brake is released and the pressure in the hydraulic brake line is without pressure.
- Secure the vehicle against rolling away using sufficiently large wheel chocks.
- Put in the driver's field of vision a distinctive sign with the inscription: "Danger! Machine has no functional brakes! Brakes are released.
- Keep the tractor ignition key in a secure place.

- Switch off tractor engine and secure it against inadvertent starting.
- Secure the vehicle against rolling away using the two wedges.
- Disconnect the hydraulic brake line from the tractor.
- Depressurise the brake line with hand pump (**1**) until the brakes are completely released.
- Check that the parking brake is completely released.
- The brake is released, the machine has no functional brakes.
- The machine may be towed to the next workshop or a secure parking place under compliance with the corresponding safety regulations.

Once the repair work is completed, the brake must be activated as follows:

- Connect the hydraulic brake line to the tractor.
- Start the tractor and wait until the hydraulic system on the tractor has started.
- After completing all work, perform a brake test.

ADVICE



The basic setting of the brake is not affected by the emergency release process!

8.9 Hydraulic valves

Most of the hydraulic valves are electrically controlled. Problems with solenoid valves may be detected using special test cables. These test cables may only be connected to the solenoid valves by trained and instructed specialist personnel.

Should an electrically controlled valve malfunction, then in any case, without exception, call in a specialist. Never try to shake the solenoid valve concerned to remedy possible contact problems or a possible line break. If the valve is suddenly opened during such tries, then the person concerned may suffer deadly injuries.

WARNING

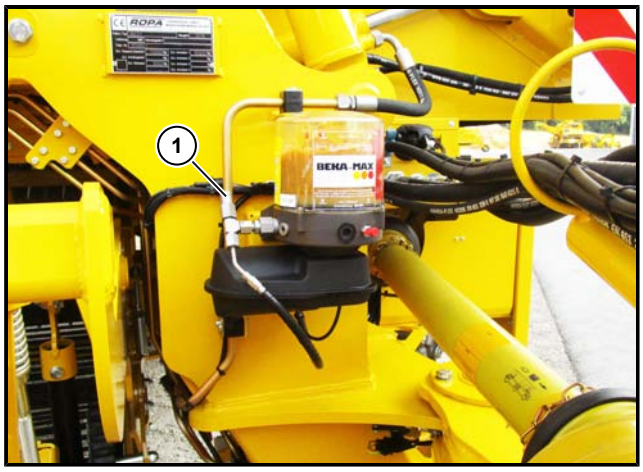
Searching and remedying malfunctions on all components of the hydraulic system is exclusively the task of trained specialists. We expressly warn of tries to repair or self-performed tests on hydraulic valves under electro-magnetic control. If during such tests or tries to repair, parts of the hydraulic system are suddenly put under pressure, then this may trigger unwanted machine movement. This may pinch or even crush people or body parts.

8.10 Central lubrication system – bleeding and removal of blockages

During all work on the central lubrication system, make sure of utmost cleanliness. In no case should dirt enter the lubrication system.

Should the grease reservoir inadvertently have been run empty, then the grease pump must be bled. For this purpose, remove the main pipe from main distribution and switch on the pump for so long until air-free grease emits from the main pipe. Screw a lubricating nipple into the input of the main distributor and using the grease gun, pump grease into the main distributor for so long until grease emits at the bearings. Then, reconnect all pipes.

If the pipe system is blocked, then the grease will be pressed out at the safety valve (**1**) (directly at the pipe output of the pump). To remove this block, proceed as follows:



(1) Safety valve

- Search for the blocked spot in the pipe system. Go along the stiffer grease pipe from the lubricating pump through to the main distributor (the blocked pipe is stiffer because it is under pressure) further to the corresponding sub-distributor and from there to the blocked lubricating point. You can find a detailed plan in chapter 9.
- Disconnect the pipe from the distributor and screw a lubricating nipple into the corresponding (sub) distributor.
- Try to loosen the block strongly pressing grease into the distributor using the hand lever grease gun.
- Proceed systematically: from the grease pump to the main distributor, from there to the sub-distributor, etc..

Lubricating pump	→	Main distributor	→	Sub-distributor	→	Lubricating point

- Once you determine that the line is permeable again, connect the line with the consumer. Check the free passage by performing an intermediate lubrication. (*See Page 337*)
- Shouldn't the method prescribed here lead you to any success, please contact your ROPA service station.

Some distributors are provided with a lubricating nipple. This lubrication nipple is used to simplify troubleshooting.
All lubrication points of the sub-distributor can be supplied with grease via this lubricating nipple, as a check valve is situated in the outflow of the main distributor.
There is no check valve between the lubricating pump and the main distributor.
If you feel only a low resistance when pumping grease into the lubrication nipple on the main distributor the grease can flow easily into the grease supply tank of the central lubrication pump. In this case the wing in central lubrication pump must be turned by approx. 120° via manual intermediate lubrication.

8.11 Checklist for optimising the lifting quality/storage quality

- Tubers damaged during placement may contribute the spread of bacteria, fungal diseases and damage during unloading. This can be alleviated by heating the seed potatoes at at least 10°C and keeping the potatoes dry. At the same time safety can be increased by sorting the seed potatoes.
- The field should be clear of vegetation during harvest and the temperature of the tubers should not be below 10°C. The sensitivity of the variety must be considered. The divided harvesting process enable light potatoes with low damage and a longer storage life.
- The driving speed of the lifter should as high as sufficient for smooth operation of the separating equipment and to allow requirements for cleanliness to be maintained.
- The rotary speeds of the sieving and separating equipment should be as low as possible. The potatoes should be rolled with the trash as little as possible.
- The potatoes must never jump around on the sieve conveyors. Careful operation of the shaker equipment is very important, the more so the steeper the sieve conveyor, the more stones are present and less accuracy possible with the shaker equipment.
- The correct adjustment and presence of protective equipment should be checked frequently during lifting.
- The fall height should not exceed 25 cm wherever potatoes are transported singly or in small quantities. If the fall heights are greater, the potatoes must fall on padded material or other potatoes.
- Every variety of freshly lifted and cold potatoes may cause further damage and will affect storage capacity.
- External damage in the form of loose skins, cracks and flesh damage along with overventilation and uncontrolled movement of air will cause increased drying of tubers in storage. This will cause pressure points that may result in internal discoloration during preparation. Adequate heating may reduce this effect.
- All impact points must be padded to keep the fall stages and fall height as low as possible. The best case is potatoes falling on other potatoes.

9 Lists/Tables/Plans/ Diagrams/Maintenance Verification

9.1 Lubricating and operating supplies

Component	Lubricant type	Fill. volume in litres	Intervals
Pump distributor gears	**Gear oil** API GL 5, SAE 90	approx. 3.2	annually
Hydraulic system	**Hydraulic fluid HVLP 46** (containing zinc) ISO-VG 46 as per DIN51524 part 3	approx. 63	
Hydraulic disc coulter gears	**Gear oil** API GL 5, SAE 90	approx. 0.6	
Bunker drive chains, unload conveyor drive chains	Gear oil or grease		every 100 operating hours
Bunker walking floor chains	**Chain oil** FDA guideline 21 CFR 178.3570		daily if required
Lubricating points	**Grease** as per DIN 51825, NLGI Class 2, Type: KP2K-20, at low outside temperatures KP2K-30		according to lubricating plan

The oil level control bolts and inspection glasses are decisive for the filling volumes!

Note the standards and approvals in our recoding table (*See Page 448*).

9.2 Maintenance table

Maintenance work	before starting harvest	daily	after the first 50oper. hrs.	Maintenance interval every 50 oper. hrs.	when needed	annually
Pump distributor gears						
Check oil level	X	X				
Change oil	X		X			X
Hydraulic disc coulter gears left and right						
Check oil level	X	X				
Change oil	X		X			X
Hydraulic system						
Clean hydraulic fluid cooler	X	X			X	
Check oil level	X	X				
Change machine hydraulic fluid	X					X
Clean intake sieves inside the fluid tank	every 2 years					
Change return filter	X		X		X	X
Change tractor hydraulic system pressure filter element	X		X		X	X
Exchange filling cap hydraulic fluid tank (ventilation and bleeding filter)	every 2 years					
Drive wheel suction filter element	X		X			X
Check hydraulic lines for damage and chafe marks	X		X			X
Pneumatics						
Drain water from the air reservoir				X		
Sieve conveyor 1						
Check status of drive rollers		X				
Check condition of rubber paddle roller		X				

Maintenance work	before starting harvest	daily	after the first 50oper. hrs.	Maintenance interval every 50 oper. hrs.	when needed	annually
Check condition of support rollers, deflector rollers and wipers		X				
Check condition of bushings and locks				X		
Retension sieve conveyor 1					X	
Sieve conveyor 2						
Check status of drive rollers		X				
Check condition of support rollers, deflector rollers and wipers		X				
Retension sieve conveyor 2					X	
Leaf chain and dirt discharge conveyor						
Check status of drive rollers		X				
Check condition of support rollers, deflector rollers and wipers		X				
Retension leaf chain and dirt discharge conveyor					X	
Pintle belt 1 with deflector roller 1						
Check status of drive rollers		X				
Check status of support rollers and deflector rollers		X				
Check condition of bushings and locks				X		
Retension pintle belt 1 (till YOM 2017)					X	
Pintle belt 2 with deflector roller 2						
Check status of drive rollers		X				
Check status of support rollers and deflector rollers		X				
Check condition of bushings and locks				X		
Pintle belt 3 with deflector roller 3						

Maintenance work	before starting harvest	daily	after the first 50oper. hrs.	Maintenance interval every 50 oper. hrs.	when needed	annually
Check status of drive rollers		X				
Check status of support rollers and deflector rollers		X				
Check condition of bushings and locks				X		
Retension pintle belt 3					X	
Pintle belt 4 with UFK						
Check status of drive rollers		X				
Check status of support rollers and deflector rollers		X				
Check condition of bushings and locks				X		
Retension pintle belt 4 and UFK					X	
Picking conveyor, trash conveyor and trash discharge conveyor						
Check status of drive rollers		X				
Check status of support rollers and deflector rollers		X				
Check condition of bushings and locks				X		
Retension picking conveyor, trash conveyor and trash discharge conveyor					X	
Bunker walking floor and unload conveyor						
Check tension walking floor chains, tighten if necessary	X			X		
Check tension drive chains, possibly tighten	every 100 oper. hrs.					
Oil/grease drive chains	every 100 oper. hrs.					
Check and oil/grease bunker walking floor chains		X			X	
Check condition of unload conveyor support rollers and deflector rollers		X				
Bunker walking floor, all chains/belts, rest of machine						

Maintenance work	**before starting harvest**	**daily**	**after the first 50oper. hrs.**	**Maintenance interval**		
				every 50 oper. hrs.	**when needed**	**annually**
Remove soiling and sticking dirt		X			X	
Grease lubricating points	according to lubricating plan					
Retighten wheel bolts 510 Nm	after the first 10, then after the first 50 and then every 50 oper. hrs.					
Check tyre pressure	X			X		

9.3 Lubricating plan (lubrication with grease gun)

Lubricating point	Number of nipples	every oper. hour
Drawbar		
Drawbar eye ball	1	8
Drawbar cylinder	2	40
Drawbar pin	2	40
Drawbar drive shaft	2	40
Axle		
Inclination cylinder	2	40
Push rod	2	40
Telescope	2	40
Stub axle left	4	40
Stub axle right without drive axle	4	40
Stub axle right with drive axle (option)	2	40
Steering cylinder	2	40
Bearing point	3	40
Transfer shaft	2	40
Pickup		
Lifting cylinder	2	Annually
Ridge roller bearing	4	Annually
Swath pickup with lifting shaft and cover belt	2	40
Sieving channel/leaf separation		
Shaker bearing	2	100
Shaker drive	3	100
Drive shaft sieve conveyor 1	1	100
Drive shaft sieve conveyor 2	1	100
Drive shaft leaf chain	1	100
Leaf separation drive shaft transfer shaft (from YOM 2018)	1	100
Separation		
Pintle belts drive shafts (till YOM 2017)	4	100
Pintle belts drive shafts (from YOM 2018)	5	

Lubricating point	Number of nipples	every oper. hour
Dirt discharge conveyor drive shaft	1	100
Rotating finger comb drive shafts	2	100
Picking conveyor drive shaft	2	100
Drive shaft trash conveyer	1	100
Trash discharge conveyor drive shaft	1	100
Collection box (option)	2	100
Bunker		
Drive shaft walking floor	2	100
Bunker coupling	8	as required
Cylinder raise bunker	4	Annually
Cylinder fold bunker	4	Annually
Cylinder bunker articulation (optional)	4	Annually
Overloading bunker		
Walking floor drive shaft	2	100
Transfer roller drive shaft	2	100
Unload conveyor drive shaft	3	100
Unload conveyor articulation 1	4	40
Unload conveyor articulation 2	4	40
Raise / lower unload conveyor	6	40
Open / close unload conveyor	4	40

ADVICE

All lubricating points must also be lubricated after each washing of the machine. After washing of the machine, the central lubrication system must also be lubricated using at least 2 intermediate lubrication cycles.

Grease ROPA item no. 435006200

as per DIN 51825, NLGI-class 2, type: KP2K-20,

at low outdoor temperatures KP2K-30.

No lubricating greases containing solid lubricants may be employed. Biologically degradable greases are also admissible.

9.4 Lubricant recoding table

Status: **2019-02-20**	**Hydraulic oil HVLP 46** (containing zinc) ISO-VG 46 as per DIN 51524 part 3	**Gear oil** API GL 5, SAE 90	**Grease** as per DIN 51825, NLGI-class 2, type: KP2K-20, at low outdoor temperatures KP2K-30	**Chain oil** FDA directive 21 CFR 178.3570
ROPA marking **ROPA item no.:** Container size:	**ROPA hydroFluid HVLP** **435001210** = 20 l **435001230** = 208 l **435001240** = 1000 l	**ROPA gearOil GL5 90** **435002010** = 20 l **435002020** = 60 l **435002030** = 208 l	**435006200** = 18 kg **435002300** = 25 kg	**435015100** = 5 l
	Designation of manufacturer			
Aral	No approval for this manufacturer's products! No zinc-containing oils.	Hyp SAE 85W-90	Aralub HLP 2	
Agip/Eni	Agip ARNICA 46	Agip ROTRA MP	Agip GR-MU/EP	
Avia	AVIA FLUID HVI 46	AVIA HYPOID 90 EP	AVIALITH 2 EP	AVIAFOOD CHAIN E 150
BP	Energol SHF- HV 46	Energear Hypo90	Energrease LS-EP2	
Castrol	Hyspin AWH-M 46	Axle EPX 85W-90	Spheerol EPL 2	
Fuchs	Renolin B 46 HVI	TITAN GEAR HYP SAE 90	RENOLIT MP	
LIQUI MOLY	Hydraulic oil HVLP 46	Hypoid gear oil (GL 5) SAE 85W-90	Roller bearing grease KP2K-30	
Mobil	Univis N46	Mobilube HD-A 85W-90	Mobilux EP 2	
Shell	Tellus S2 VX 46	Spirax S3 AD 80W-90	Gadus S2 V220 2	
Total	Equivis ZS 46	EP-B 85W-90	Multis EP 2	
Rhenus			r. grea Norlith MZP 2	

9.5 Filter cartridges

Hydraulics	ROPA item no.
Return filter in oil tank	270071500
Tractor hydraulic system high-pressure filter element Including O-ring 79*3, ROPA item no. 412045500	270043000
Filling lid with integrated ventilation/bleeding filter	270070000
Suction filter in oil tank 1/2" AS 010-00	270000900
Suction filter in oil tank 1 1/4" AS 060-01	270007600
Suction filter in oil tank 1 1/2" AS 080-01	270054700
Drive wheel suction filter element	270081800

9.6 Torque table for screws and nuts (Nm)

Metric thread DIN 13				
Dimension	**6.9**	**8.8**	**10.9**	**12.9**
M4	2.4	3.0	4.4	5.1
M5	5.0	5.9	8.7	10
M6	8.5	10	15	18
M8	21	25	36	43
M10	41	49	72	84
M12	72	85	125	145
M14	115	135	200	235
M16	180	210	310	365
M18	245	300	430	500
M20	345	425	610	710
M22	465	580	820	960
M24	600	730	1050	1220
M27	890	1100	1550	1800
M30	1200	1450	2100	2450

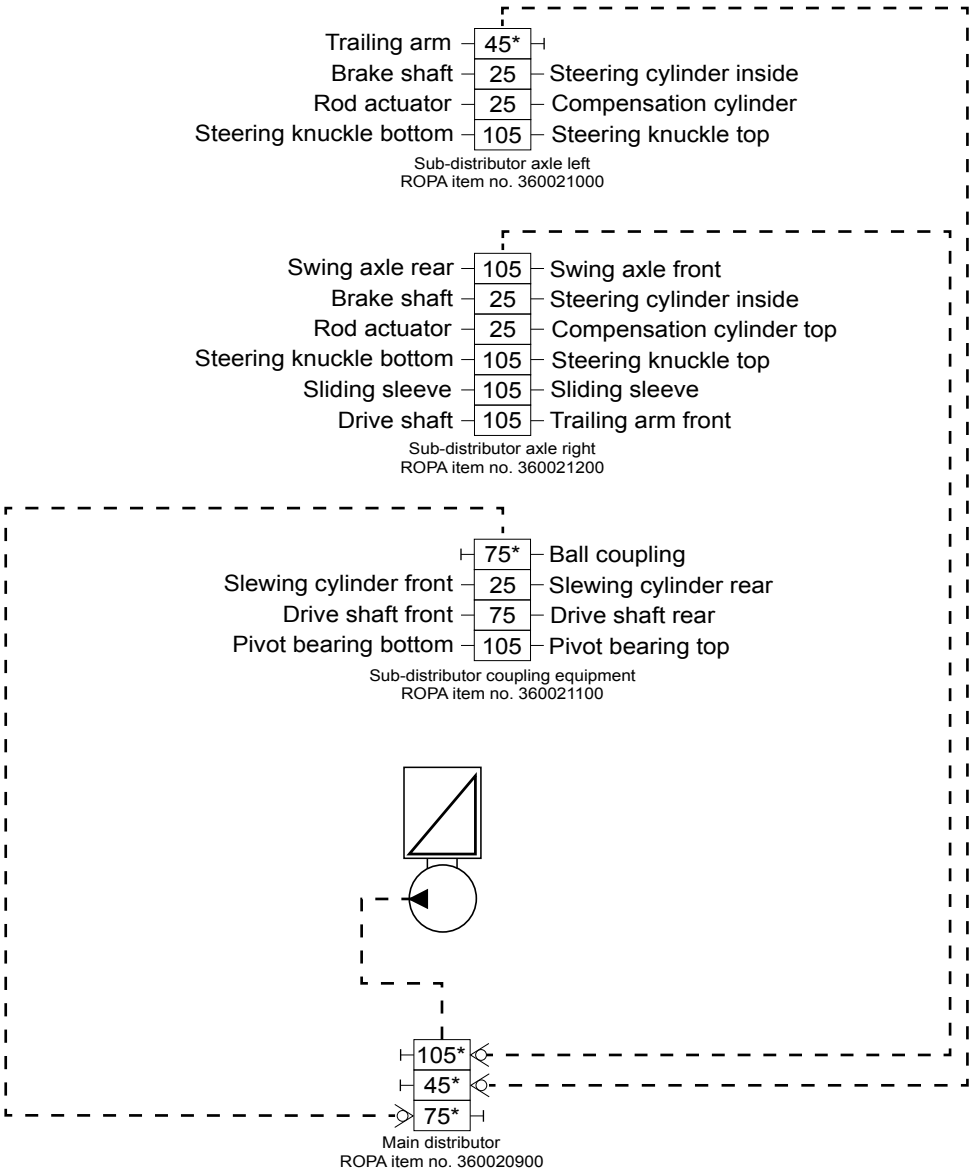
Metric fine thread DIN 13				
Dimension	**6.9**	**8.8**	**10.9**	**12.9**
M8x1	23	27	39	46
M10x1	43	52	76	90
M12x1,5	76	89	130	155
M14x1,5	125	145	215	255
M16x1,5	190	225	330	390
M18x1,5	275	340	485	570
M20x1,5	385	475	680	790
M22x1,5	520	630	900	1050

Tightening torque wheel nuts

Wheels	510 Nm

9.7 Lubricating plans

9.7.1 Central lubrication (optional)



9.8 Maintenance verification

9.8.1 Maintenance verification oil change + filter exchange

	Date:	**Date:**	**Date:**	**Date:**	**Date:**
	Oper.hrs.	**Oper.hrs.**	**Oper.hrs.**	**Oper.hrs.**	**Oper.hrs.**
	ok	**ok**	**ok**	**ok**	**ok**
Pump distributor gears					
Gear oil					
Hydraulic disc coulter gears					
Gear oil					
Hydraulic oil					
Hydraulic oil					
Tractor hydraulic system pressure filter element					
Return filter element					
Intake sieves inside the fluid cleaned					

9.8.2 Maintenance confirmation

Maintenance after

Plan 50 oper. hrs.

May only be performed by ROPA Service Team be

1st customer service ROPA machine

completely performed on:

performed by:

Signature: _____

9.8.3 Software updates

Version	Date	Name

9.9 Confirmation about instructions given to the driver

Mrs/Mr ..... date of birth .....

Last name and first name

Was instructed on .....

☐ about safe handling of the machine

☐ about maintenance of the machine

from ..... by.

Last name and first name

Has demonstrated the required knowledge

☐ for safe handling of the machine

☐ for maintenance of the machine

by presenting the following documents:

Certificate/testimonial of (date)

Certificate/testimonial of (date)

She/he was given instructions by (last name and first name) ..... on (date) .....

about the specific obligation of safe driving of the machine and the associated requirements. Subjects of these instructions were: The chapter driving on roads of the operating manual of the machine, the applicable safety regulations and the specific requirements of the road traffic authority, in whose jurisdiction the machine is to be moved.

I hereby confirm that I have given the above mentioned instructions to their full extent:

Signature

I hereby confirm that I have received the above mentioned instructions for their full extent and have understood them:

Signature of the operator

I have received, read and understood the operating instructions:

Place and date .....

Signature of the vehicle owner ..... Signature of the operator .....

9.10 Safety instructions

Even though all ROPA machines are engineered and manufactured with safety in mind, there are generally certain danger zones on all potato harvesters, where people are not permitted to be present under any circumstances during operation. The operator is strictly obliged to immediately cease operation of the machine as soon as people enter these hazard zones.

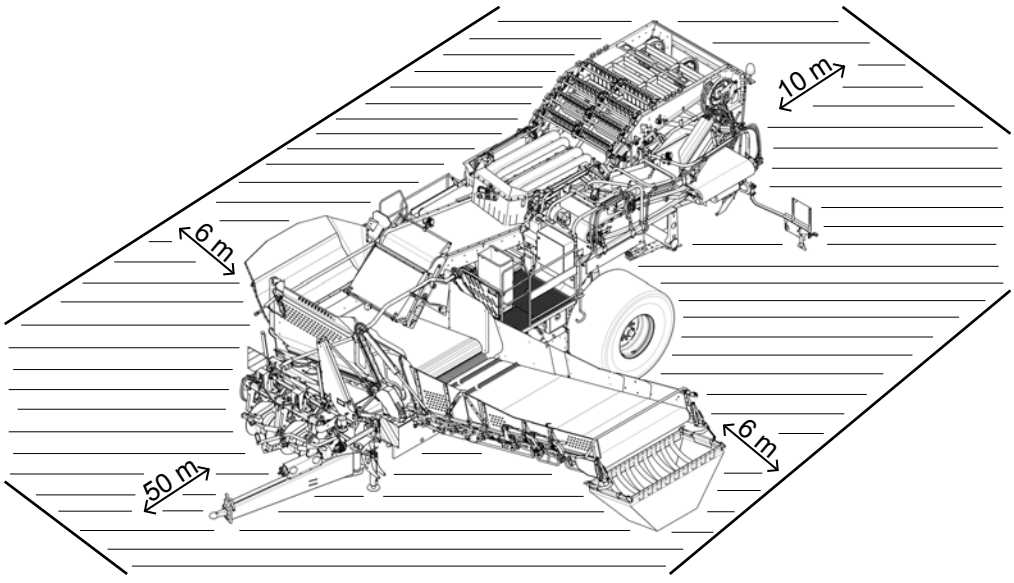
WARNING

When people enter the zones around the ROPA **Keiler 2**, that are designated as danger zones in the following illustration while the machine is lifting, they are at risk of very serious injury or or even fatal injury. The illustration below shows these zones shaded.

- In any case, follow the instructions of the machine operator.
- Never enter the hazard zones!
- Should you have entered a hazard zone by mistake, then immediately and speedily leave this hazard zone, but without excessive haste.
- Keep minors and senior citizens away from the operating machine.

In detail, the following areas are deemed hazard zones:

- To the left and right up to a distance of **6 meters** from the outside edges of the machine.
- Behind the machine, **10 meters** from the rear edge of the machine.
- Front **50 metres** from the front of the tractor.



Example of overloading bunker machine hazard zone

Please always make sure that during lifting there are no persons in front of the operating machine. Also observe chapter "Safety", section "Hazard zone" (*See Page 27*).

Statement

I (last name and first name) _____

have been informed about the danger zones of the Keiler during lifting by the owner. I have completely received this information and understood it. I oblige not to enter the hazard zones as long as the machine is running in lifting operation. I have been informed that I must immediately leave these hazard zones when I am directly requested to or by horn signals of the machine operator.

_____

Date/signature

Please copy this form before completing it!

9.11 ROPA Handover confirmation

ROPA Fahrzeug- und Maschinenbau GmbH, Sittelsdorf 24, D-84097 Herrngiersdorf

Support point address:	Chassis number:
	Type:
	Sub device no.:
	Type:
	Sub device no.:
	Type:
	Sub device no.:
	Type:
	Sub device no.:
	Type:
Client's address:	
	Owner:
	E-mail:
	Phone:
	Mobile phone:

Handover confirmation: First use date:

No deficiencies were found during the test run. The safe operation and maintenance were explained to me. The following items were handed to me together with the machine:

Document number:	**Designation:**	**Software:**

☒

Date/Signature of client or his representative

Support point or representative for machine delivery:

The machine has been handed over to the client in perfect condition. The handover has been executed correctly.

☒

Date / Signature of support point or representative for machine delivery

Voluntary data processing consent:

I agree that the above personal data as well as further information about me, which becomes known in connection with business relations, for purposes of customer service, customer survey and related to me as a customer (by phone, e-mail or via an Internet entry page), as well as for any other advertising, consulting and information purposes (written, by phone or e-mail) about products and services can be received by the ROPA support point and/or ROPA, or passed on to ROPA, as well as stored, processed and used. The non-granting of the consent does not effect on the delivery of the purchased item or services. You can, if desired, partially strike out this consent. Your consent can be revoked at any time in writing to the ROPA support point or the company ROPA.

Date/Signature of client or his representative

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