

Translation of the Original Operating Manual Haulm topper

Edition 2

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ROPA

Translation of the Original Operating Manual

Imprint

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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

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D-84097 Herrngiersdorf

Phone Customer Service + 49 – 87 85 – 96 01 203

Phone Spare Parts + 49 – 87 85 – 96 01 202

Fax + 49 – 87 85 – 566

Internet www.ropa-maschinenbau.de

Email Customer Service Kundendienst@ropa-maschinenbau.de

Email Spare Parts Bestellung@ropa-maschinenbau.de

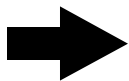
Important information

- 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.

- 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 serial number of the machine for any orders of spare parts and technical inquiries. You will find the serial number on the name plate and on the vehicle frame above the draw-bar.
- 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 authorised 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.

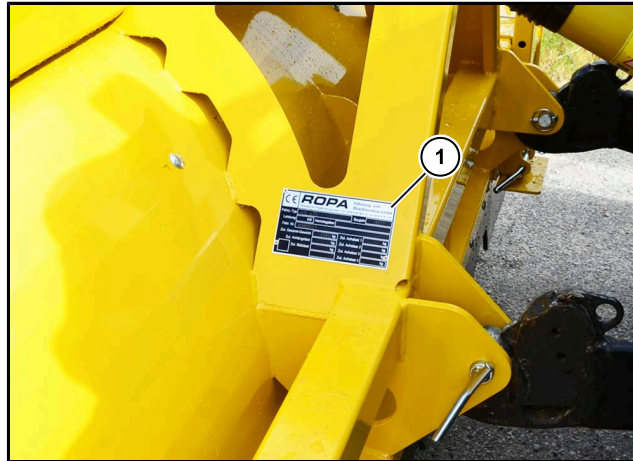
ADVICE



This operating manual has been written in compliance with the EU Regulation 1322/2014 and the ISO Standard 3600:2015.

1.1 **Name plate and important data**

The name plate (1) of the machine is located on the right side of the three-point for rear attachment to the tractor.



On machines with an end tow kit, the serial number (2) is located on the frame above the drawbar.




Preface

Name plate and important data

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

| | | | | | | | | | | | |
|---|--|---|--|--|--|-------------------------|--|-----------------|--|-------------------------|--|
|  | | ROPA | | Fahrzeug- und Maschinenbau GmbH | | | | | | | |
| Sittelsdorf 24 • D-84097 Herrngiersdorf • Tel. +49 (0) 8785/9601-0 • Fax +49 (0) 8785/566 | | | | | | | | | | | |
| Fahrz.-Typ | | <input type="text"/> | | Baujahr | | <input type="text"/> | | | | | |
| Leistung | | <input type="text"/> kW | | Homologation | | <input type="text"/> | | | | | |
| Fabr. Nr. | |  | | | | <input type="text"/> | | | | | |
| Zul. Gesamt-Gewicht | | | | | | <input type="text"/> kg | | Zul. Achslast 1 | | <input type="text"/> kg | |
| Zul. Anhängelast | | | | | | <input type="text"/> kg | | Zul. Achslast 2 | | <input type="text"/> kg | |
| Zul. Stützlast | | | | | | <input type="text"/> kg | | Zul. Achslast 3 | | <input type="text"/> kg | |
| | | <input type="text"/> | | Zul. Achslast 4 | | <input type="text"/> kg | | | | | |

Name plate up to 2021 year of constr.




| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|----------------------|---|----------------------|----------------------|--|----------------------|-----|-----|----------------------|----------------------|----------------------|-----|----------------------|----------------------|----------------------|-----|----------------------|----------------------|----------------------|-----|----------------------|----------------------|----------------------|----------------------|--|
| ROPA | | Fahrzeug- und Maschinenbau GmbH Sittelsdorf 24 • 84097 Herrngiersdorf Tel.: +49 (0) 8785 / 96 01-0 | | |  | | | | | | | | | | | | | | | | | | | | |
| <input type="text"/> | | <table><tr><td></td><td>T-1</td><td>T-2</td><td>T-3</td></tr><tr><td>B-1</td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td>B-2</td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td>B-3</td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td>B-4</td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td></tr></table> | | | T-1 | T-2 | T-3 | B-1 | <input type="text"/> | <input type="text"/> | <input type="text"/> | B-2 | <input type="text"/> | <input type="text"/> | <input type="text"/> | B-3 | <input type="text"/> | <input type="text"/> | <input type="text"/> | B-4 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| | T-1 | | | T-2 | T-3 | | | | | | | | | | | | | | | | | | | | |
| B-1 | <input type="text"/> | | | <input type="text"/> | <input type="text"/> | | | | | | | | | | | | | | | | | | | | |
| B-2 | <input type="text"/> | | | <input type="text"/> | <input type="text"/> | | | | | | | | | | | | | | | | | | | | |
| B-3 | <input type="text"/> | | | <input type="text"/> | <input type="text"/> | | | | | | | | | | | | | | | | | | | | |
| B-4 | <input type="text"/> | <input type="text"/> | <input type="text"/> | | | | | | | | | | | | | | | | | | | | | | |
| <input type="text"/> | | <input type="text"/> | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="text"/> | | <input type="text"/> | | | | | | | | | | | | | | | | | | | | | | | |
| A-0: <input type="text"/> kg | | | | | | | | | | | | | | | | | | | | | | | | | |
| A-1: <input type="text"/> kg | | | | | | | | | | | | | | | | | | | | | | | | | |
| A-2: <input type="text"/> kg | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maschine: | | <input type="text"/> | | | | <input type="text"/> | | | | | | | | | | | | | | | | | | | |
| Fabr. Nr.: | | <input type="text"/> | | | | | | | | | | | | | | | | | | | | | | | |

Name plate from 2022 year of constr.

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 name plate.

| | | | | | | | | | | | |
|---|--|------------|--|------|-----|---------------------|-------------------|---------|--------------------|-----------|---|
|  |  | | | | | | | | | | |
| <h3>EG-Konformitätserklärung</h3> <p>im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anhang II, 1. A</p> | | | | | | | | | | | |
| <p>Hersteller:</p> <p style="margin-left: 40px;">ROPA Fahrzeug- und Maschinenbau GmbH Sittelsdorf 24 DE - 84097 Herrngiersdorf</p> | | | | | | | | | | | |
| <p>In der Gemeinschaft ansässige Person, die bevollmächtigt ist, die relevanten technischen Unterlagen zusammenzustellen:</p> <p style="margin-left: 40px;">Alexander Daller ROPA Fahrzeug- und Maschinenbau GmbH Sittelsdorf 24 DE - 84097 Herrngiersdorf</p> | | | | | | | | | | | |
| <p>Beschreibung und Identifizierung der Maschine:</p> <table border="0" style="width: 100%;"><tr><td style="width: 30%;">Produkt:</td><td>gezogener Krautschläger</td></tr><tr><td>Typ:</td><td>RKS</td></tr><tr><td>Handelsbezeichnung:</td><td>KS 475 und KS 490</td></tr><tr><td>Modell:</td><td>ROPA Krautschläger</td></tr><tr><td>Funktion:</td><td>Entfernen von Kartoffelkraut oder Kraut von ähnlichen Feldfrüchten.</td></tr></table> | | Produkt: | gezogener Krautschläger | Typ: | RKS | Handelsbezeichnung: | KS 475 und KS 490 | Modell: | ROPA Krautschläger | Funktion: | Entfernen von Kartoffelkraut oder Kraut von ähnlichen Feldfrüchten. |
| Produkt: | gezogener Krautschläger | | | | | | | | | | |
| Typ: | RKS | | | | | | | | | | |
| Handelsbezeichnung: | KS 475 und KS 490 | | | | | | | | | | |
| Modell: | ROPA Krautschläger | | | | | | | | | | |
| Funktion: | Entfernen von Kartoffelkraut oder Kraut von ähnlichen Feldfrüchten. | | | | | | | | | | |
| <p>Es wird ausdrücklich erklärt, dass die Maschine allen einschlägigen Bestimmungen der folgenden EG-Richtlinien bzw. Verordnungen entspricht:</p> <table border="0" style="width: 100%;"><tr><td style="width: 30%;">2006/42/EG</td><td>Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) Veröffentlicht in L 157/24 vom 09.06.2006</td></tr></table> | | 2006/42/EG | Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) Veröffentlicht in L 157/24 vom 09.06.2006 | | | | | | | | |
| 2006/42/EG | Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) Veröffentlicht in L 157/24 vom 09.06.2006 | | | | | | | | | | |
| <p>Ort: Sittelsdorf</p> | <p>Datum: 01.10.2021</p> | | | | | | | | | | |
| <p>Unterschrift:</p> |  | | | | | | | | | | |
| <p>Name und Position im Unternehmen:</p> | <p>Hermann Paintner Geschäftsführer</p> | | | | | | | | | | |

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 |
|-----------------|------------------|------------------------------------|
| Walterscheid | Cardan shafts | Operating manual for car-dan shaft |

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

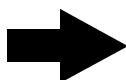
This signal word warns you of a possibly dangerous situation which may lead to serious injury or to death. This hazard may always occur if the operating or working instructions are not or only imprecisely observed.

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:

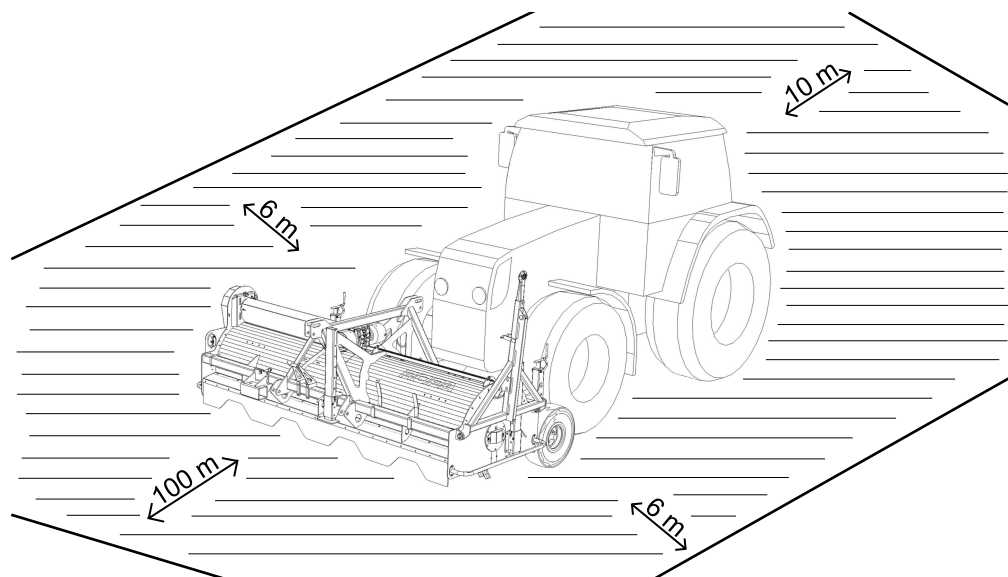
- removal of potato haulm or haulm of similar crops.

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.

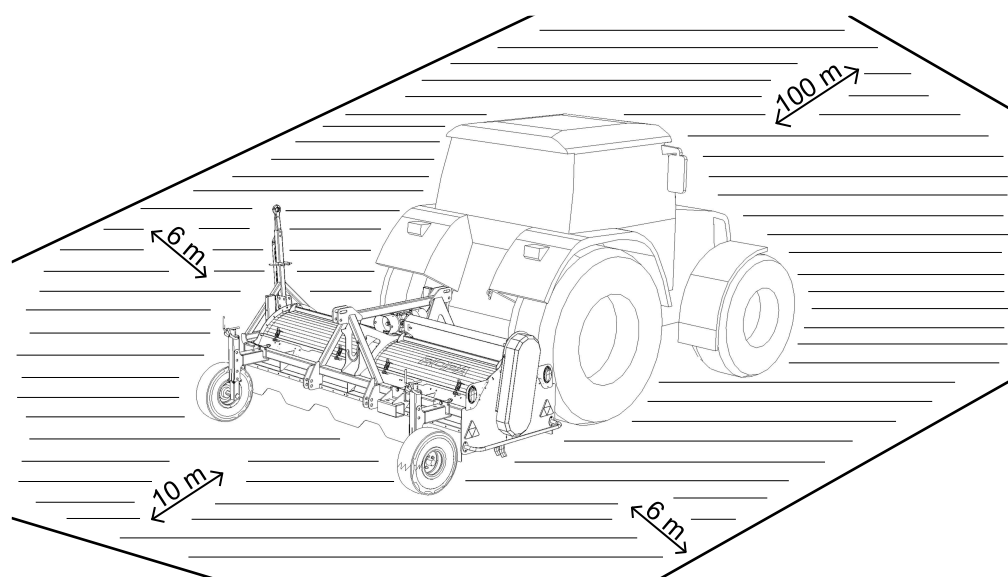
2.4.1 Foreseeable misuse

We would like expressly to point out that this machine is not be used for hilling of potato ridges.

2.5 Hazard zone



Hazard zone front attachment



Hazard zone rear attachment

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 persons concerned to leave the hazard zone immediately. He may only restart the machine when there are no more persons in the hazard zone.

Persons, who want to approach the machine during its operation, must clearly communicate their intentions to the operator (e.g. by calling or by agreed hand signals) to avoid misunderstanding. During topping, strips up to 6 m left and right from the outer edge of the machine, 100 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 there are no more persons in the hazard zone.

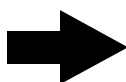
Only especially authorised people after exact agreement with the operator may enter the hazard zones for maintenance or monitoring work. These people must be pre-

cisely informed about possibly occurring hazards before entering the hazard zones. All activities between the operator and these people must be exactly agreed before beginning these activities. All maintenance, adjusting and monitoring work on this machine must – to the extent technically possible – always be performed with the machine standing totally still and the tractor engine shut off. In this case, the operator of the machine is responsible for ensuring that unauthorised persons do not operate the machine either inadvertently or contrary to prior agreements.

DANGER

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

- The operator is obliged to immediately shut down the machine as soon as people or animals enter the hazard zone or reach into the hazard zone with objects.
- It is expressly prohibited to place haulm that has not been caught 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 strongly recommend that the operator of the machine informs all persons present during topping 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.

Safety stickers on the machine



Safety stickers on KS 490



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.



355045400

Caution! Risk of cuts! Never step under the haulm toppler.



355090900

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



355006700

Never step in the hazard area between the tractor and the machine.



355007600

Only touch machine parts when they have come to a complete stop.



355006300

Hazard from parts being flung away when the machine is running. Keep a sufficient safety distance!

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

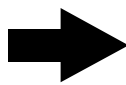
The independent operation and maintenance of the machine is restricted exclusively to persons who are of age and:

- 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 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.

2.10 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.

2.11 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.

2.12 Hazards caused by mechanical influences

DANGER

During operation of the machine, there is life-threatening danger due to uncovered rotating machine parts (cardan shaft, topper shaft etc.) and overhanging parts.



Rotating machine parts and breaking attached parts may cause serious injuries such as contusions, loss of body parts, broken bones. These injuries can be fatal in especially severe cases. During topping, within a 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 maintaining a sufficient safety distance, by constant attention and by wearing suitable protective clothing.
-

2.13 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.

2.14 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)

2.15 Hazards from gear oil

WARNING



Gear oil may cause irritation of the skin. Leaking gear oil can be harmful for the environment. High temperatures partially prevail in the angular gear. Gear oil escaping under pressure, in case of defective venting of the angular gear, may enter the body through the skin and cause scalding. Inappropriate manipulations with the angular gear may cause damage to tools or machine parts and result in serious injuries.

Protection

- Check the condition of the angular gear on a regular basis and have the damaged parts exchanged immediately by qualified personnel.
- Works on the angular gear may be performed only by specially trained personnel.
- Before any works on the angular gear, switch off the machine! Avoid any skin contact with gear oil.

2.16 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.

2.17 Risks due to drive shafts

- Follow the operating manual of the shaft manufacturer.
- Only shafts that meet the specifications of the manufacturer may 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 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.

2.18 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 head-gear 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.

2.19 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.

2.20 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 or hydraulic safety and control devices in order to bypass or put them out of operation.

ADVICE



Modifications and alterations of the machine must be approved by the manufacturer, as these may lead to the loss of the registration, permission or EU type approval.

2.21 Safety and protective equipment

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

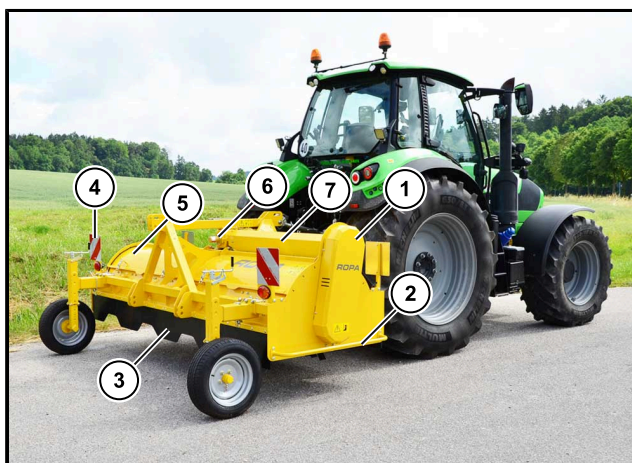
The safety equipment of the machine consists of:

- guards, protective cover;
- protective rubber;
- protection bars;
- warning signs.

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

The illustration shows KS 475

- (1) Belt drive guards
- (2) Guard rail
- (3) Protective rubber
- (4) Warning sign
- (5) Protective cover
- (6) Guard cone
- (7) Cardan shaft guards

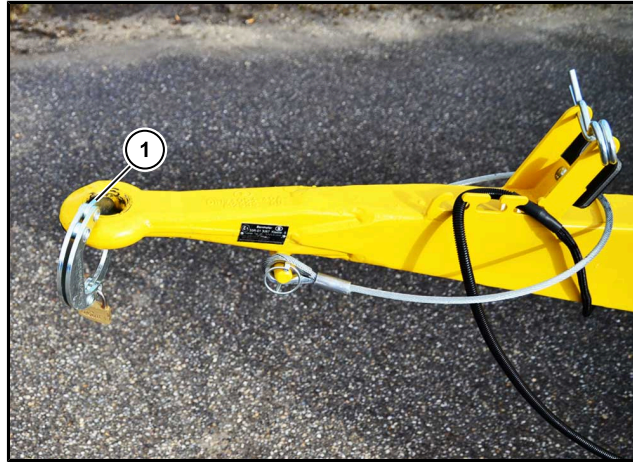
ADVICE

We expressly point out that the warning signs and the lighting device for the crosswise driving device may only be installed for specific countries where they have been approved.

Check beforehand whether the machine is allowed for road travel with the crosswise driving device. The latter is country-specific.

2.22 **Immobiliser**

Mechanical guards are provided to prevent coupling with the tractor. These are locked by means of a padlock. If the lock together with the guard is removed, the machine can be coupled to the tractor.



(1) Immobiliser

3 General View and Specifications

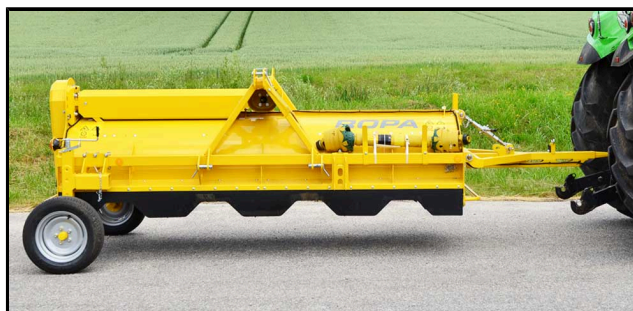
3.1 General overview

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



- (1) Drawbar eye
- (2) Angular gear
- (3) Belt drive
- (4) Support wheel right
- (5) Three-point attachment
- (6) Support wheel left
- (7) Drawbar

Machine ready for driving on roads



General View and Specifications

General overview



3.2 Technical data

| Designation: | KS 475 | KS 490 |
|--|-----------------------------|----------------------|
| Maximum speed with end tow kit: | 25 km/h, 30 km/h or 40 km/h | |
| Permitted total weight without end tow kit (without EU type approval): | 1180 kg | 1500 kg |
| Permitted total weight with end tow kit (without EU type approval): | 1250 kg | 1600 kg |
| Permitted axle load with end tow kit (without EU type approval): | 850 kg | 1,000 kg |
| Permitted axle load with end tow kit (with EU type approval): | 650 kg to 850 kg | 800 kg to 1,000 kg |
| Tyres with end tow kit axle option: | 185/65 R 14 | |
| Length (position driving on roads): | 4,700 mm to 5,000 mm | 5,200 mm to 5,500 mm |
| Width (road travel position): | 1,900 mm to 2,300 mm | |
| Height (road travel position): | 1,400 mm to 1,700 mm | |

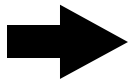
Requirements for tractor

| Designation: | KS 475 | KS 490 |
|---|--|--------------------|
| Permitted support load (without EU type approval): | minimum 400 kg | minimum 600 kg |
| Permitted support load (with EU type approval): | from at least 300 kg up to 1,000 kg | |
| Power: | from 50 kW (68 HP) | from 55 kW (75 HP) |
| PTO shaft speed (depending on the option installed in the machine): | max. 540 rpm max. 750 rpm max. 1,000 rpm | |
| System voltage (with factory-installed vehicle lighting): | 12 V | |

3.3 Tyre pressure

| | Tyre type | Minimum pressure bar / psi | Recommendation bar / psi |
|--------|---------------------------------|-------------------------------|-----------------------------|
| 1 | Support wheels 185/65 R 14 | 3.4 / 49.3 | 3.4 / 49.3 |
| Others | | Recommendation bar / psi | |
| 2 | Firming wheels 24x12.00 - 12 | 0.7 / 10.2 | |

The tyre pressure of the support wheels is intended for the road drive.

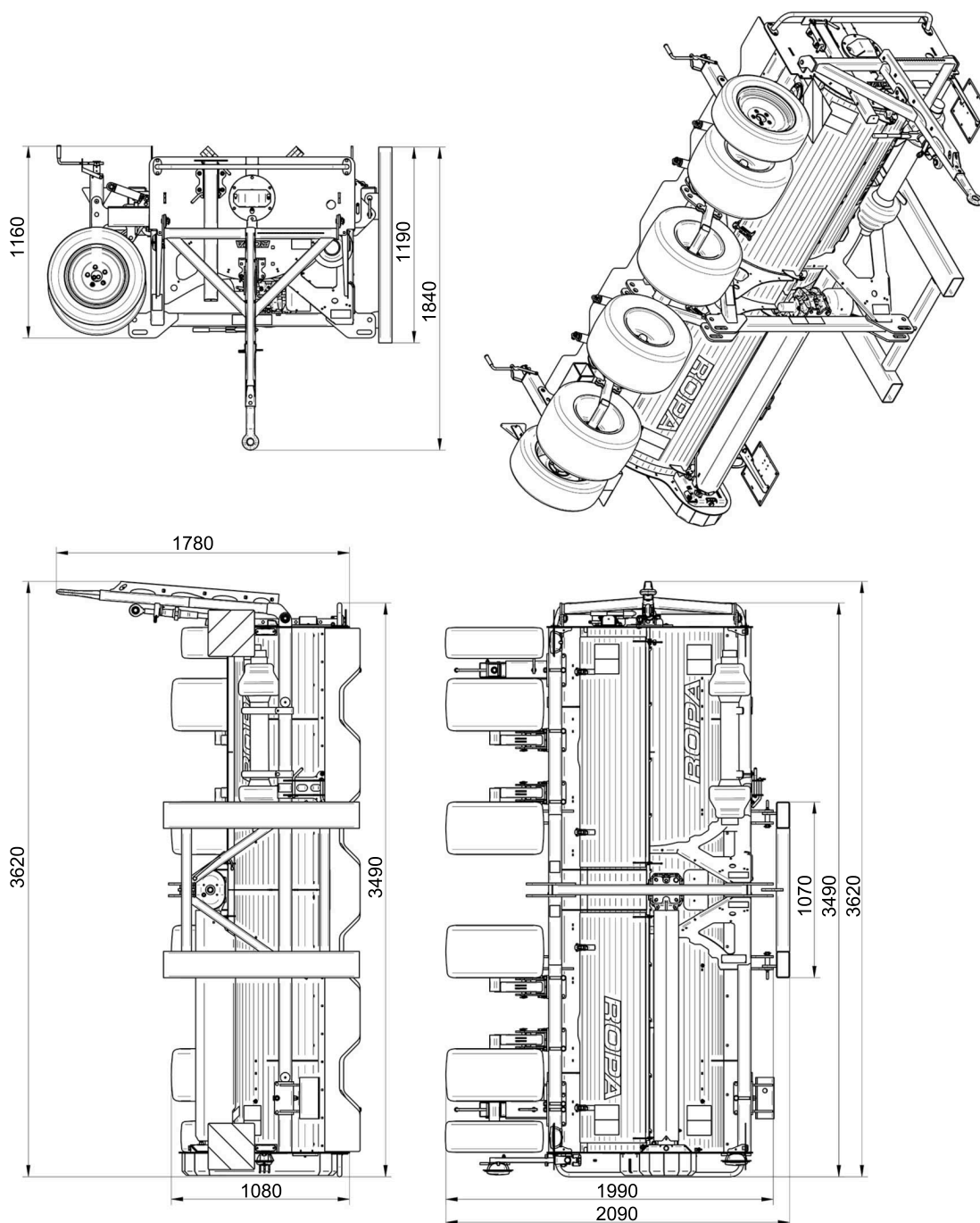
ADVICE

We expressly point out that tyre damage caused by insufficient tyre pressure is neither subject to warranty nor goodwill claims!

3.4 Transport draft for truck transport of the machine

| Tyre sizes: | | | |
|-----------------|---------------|-------|-------------|
| Right: | 185/65 R 14 | Left: | 185/65 R 14 |
| Firming wheels: | 24x12.00 - 12 | | |

KS 475 in transport frame:

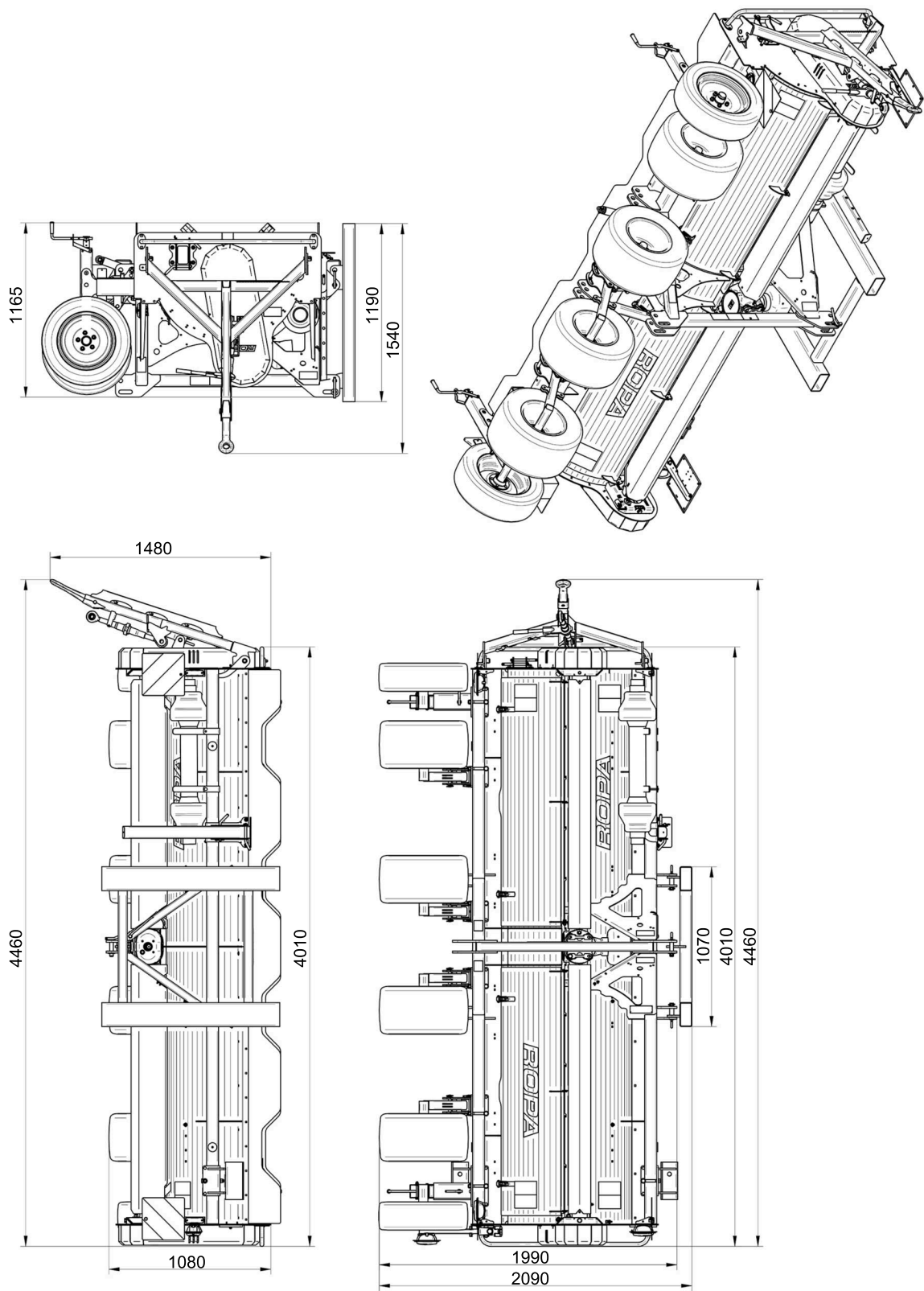


All data in mm.

General View and Specifications

Transport draft for truck transport of the machine

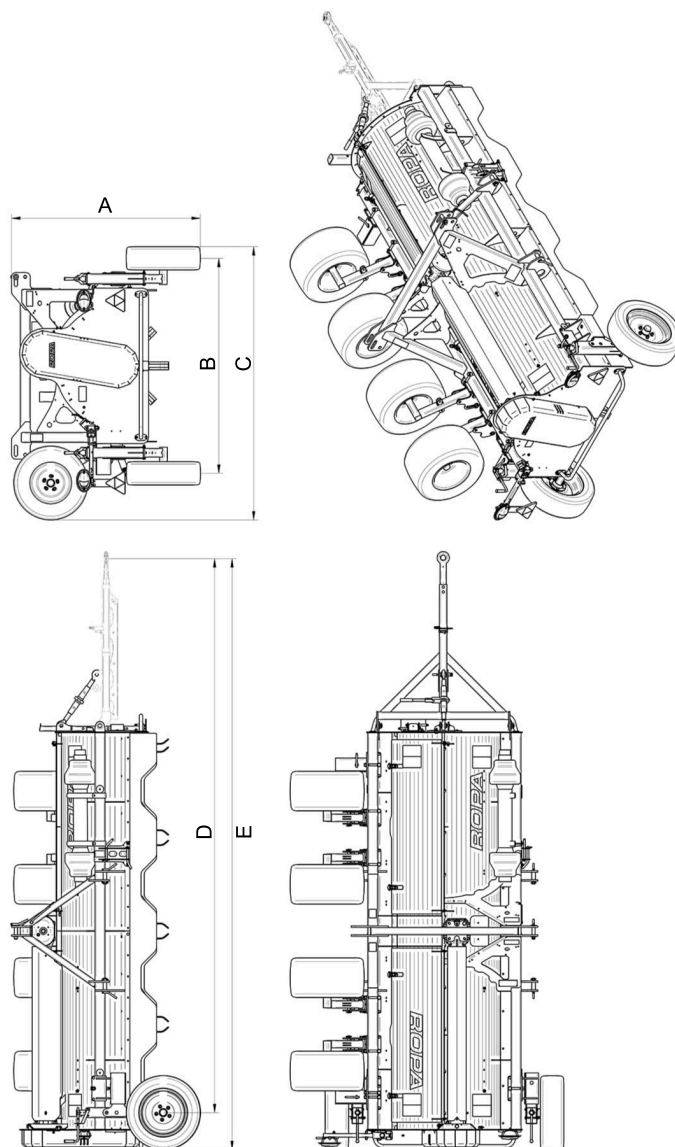
KS 490 in transport frame:



All data in mm.

3.5 Transport draft for road travel

KS 475 in road travel position:

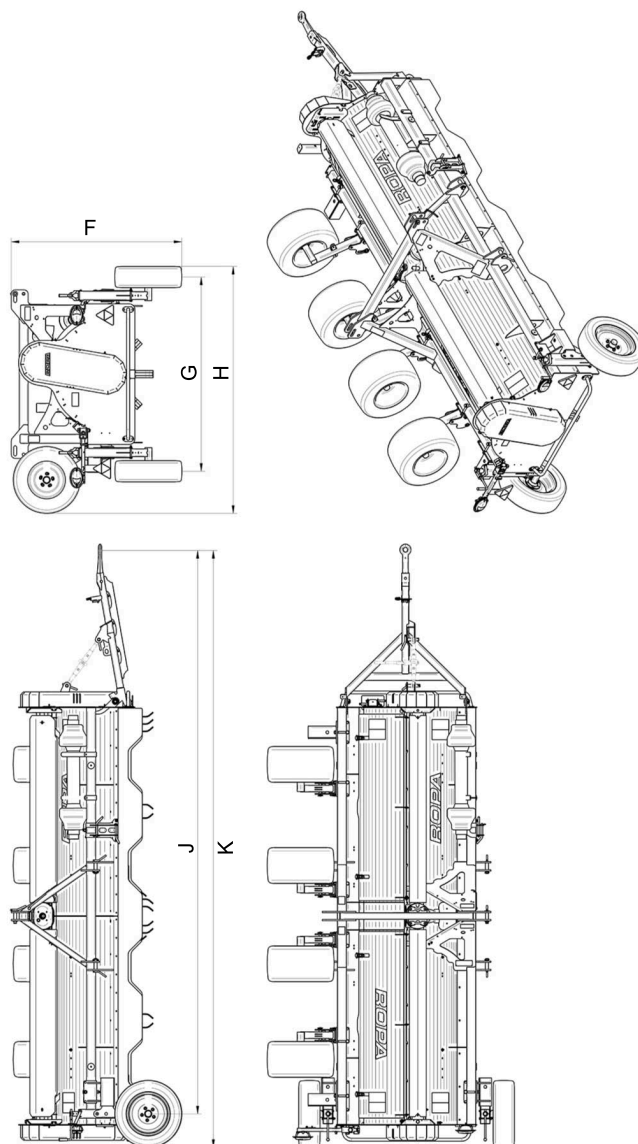


| | Designation | Minimum | Maximum |
|---|--|----------|----------|
| A | Machine height | 1,400 mm | 1,700 mm |
| B | Track width | 1,700 mm | 1,800 mm |
| C | External width of machine | 1,900 mm | 2,300 mm |
| D | Length from coupling midpoint to axle midpoint | 4,400 mm | 4,650 mm |
| E | Length from coupling midpoint to rear part | 4,650 mm | 4,950 mm |

General View and Specifications

Transport draft for road travel

KS 490 in road travel position:

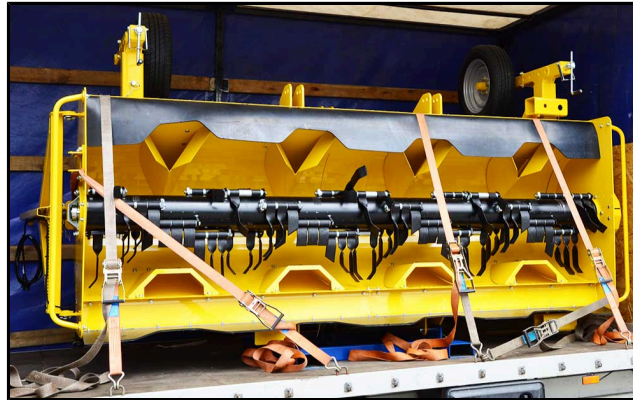


| | Designation | Minimum | Maximum |
|---|--|----------|----------|
| F | Machine height | 1,400 mm | 1,700 mm |
| G | Track width | 1,700 mm | 1,800 mm |
| H | External width of machine | 1,900 mm | 2,300 mm |
| J | Length from coupling midpoint to axle midpoint | 4,900 mm | 5,150 mm |
| K | Length from coupling midpoint to rear part | 5,150 mm | 5,450 mm |

3.6 Lashing eyes for truck transport/ship transport

There are no eyelets on the machine by which it can be tied down to the load platform. There is a special transport frame for the machine which allows the machine to be transported on a truck in a space-saving way.

All 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.



Haulm topper properly secured in the transport frame

The machine has no attachment points by which it can be lifted. The machine can be lifted in a transport frame, e.g. by a forklift.

General Description

4 General Description

General Description

4.1 Function

The machine is an attached device designed for potato haulm topping. The chopped potato haulm is deposited at the bottom of the ridge between the rows with the help of the guide plates.

Depending on the machine configuration, it can work on 4 potato ridges with a row spacing of 75 cm, 80 cm, 85 cm or 90 cm.

The machine is driven via the tractor's PTO shaft. Please note, that the maximum permissible PTO shaft speed of the machine is 540 rpm, 750 rpm or 1,000 rpm depending on the configuration.

The machine can be attached to the front and rear of the tractor without additional equipment. It is important to ensure that the machine is guided horizontally by the tractor during operation.

The machine is optionally equipped with road lighting for a crosswise driving device or with an end tow kit with road lighting to meet country-specific requirements for road transport.

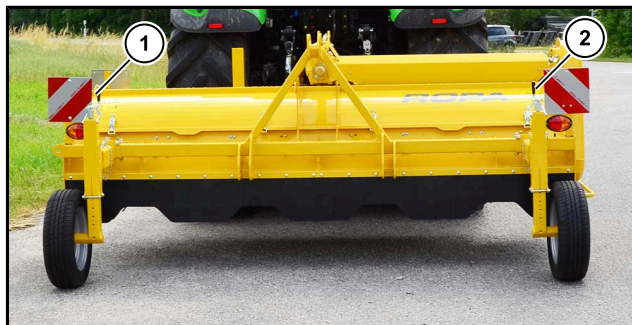
4.2 Scope of delivery

The scope of delivery of the machine includes:

- 1 translation of the original operating manual for the haulm topper;
- 1 original spare parts list for the haulm topper;
- 1 cardan shaft;
- 1 bleeding screw for the angular gear.
- 1 immobiliser.

5 Operating Components

5.1 Overview of machine controls



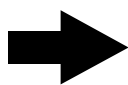
- (1) Control element left support wheel ([See Page 73](#))
- (2) Control element right support wheel



- (3) Upper link arm with ratchet ([See Page 74](#))

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 in any way serve as instructions for potato haulm topping or replace driver training for driving on roads. Preconditions for operation of this machine and for optimum topping results are, besides first use instructions offered by the manufacturer, solid basic agricultural knowledge and some experience with growing potatoes and the associated work processes. This chapter informs you about operating procedures and interrelationships during machine operation. 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".

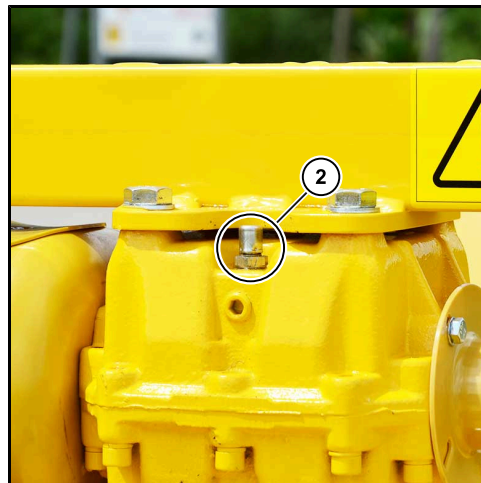
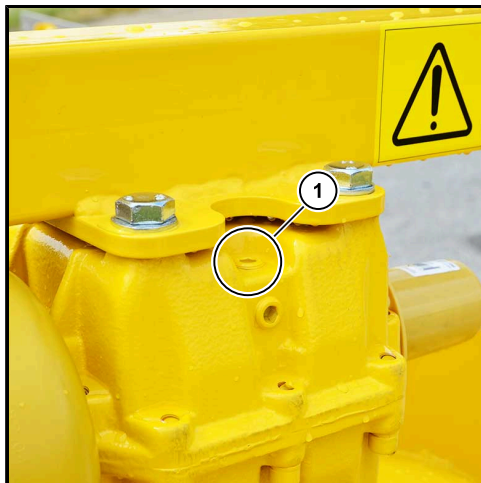
ADVICE

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 unauthorised comes close to the hazard zones.

6.1 First startup

For safety reasons check all oil levels. Otherwise, all work and actions that must be performed for daily operation are also required for the first 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. Possibly existing leaks must be repaired immediately.



- (1) Gears without bleeding screw
- (2) Gears with bleeding screw

Please mount the supplied bleeding screw to the gears before the first startup.

ATTENTION



Hazard of damage to the machine!

Risk of severe damage to the gears if the bleeding screw is not mounted.

6.1.1 Adjusting the cardan shaft

The length of the cardan 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 cardan shaft must be checked. An operating manual from the manufacturer of the cardan shaft (1) is delivered with the machine. Follow the instructions to adjust the length of the cardan shaft.



(1) Cardan shaft

The shaft guard must always be locked to prevent it from rotating with the shaft. For this purpose, engage the torsion lock and attach the chain.

6.1.2 Number plate

In accordance with the regionally applicable regulations, a number plate must be attached to the rear of the machine below the number plate light. The number plate may have a maximum size of 255 mm x 165 mm.

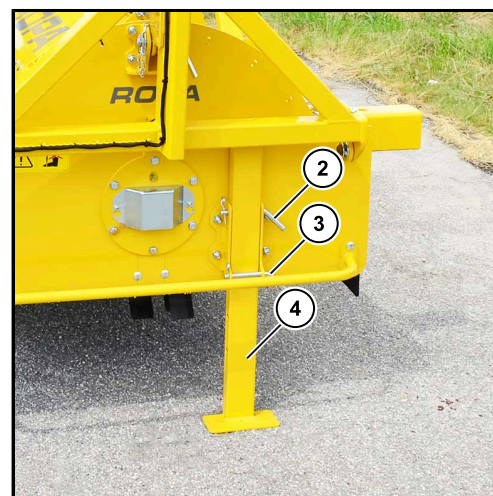
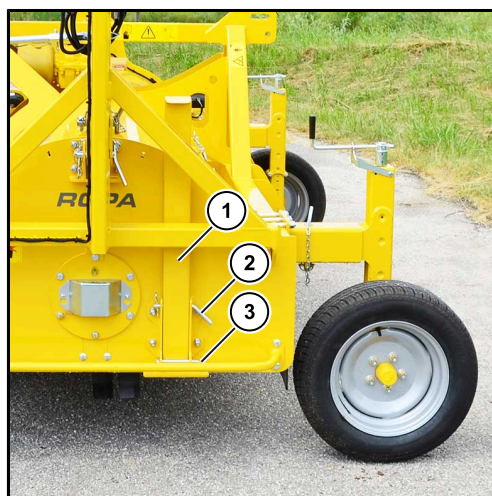


(1) Number plate 255 mm x 130 mm in Germany

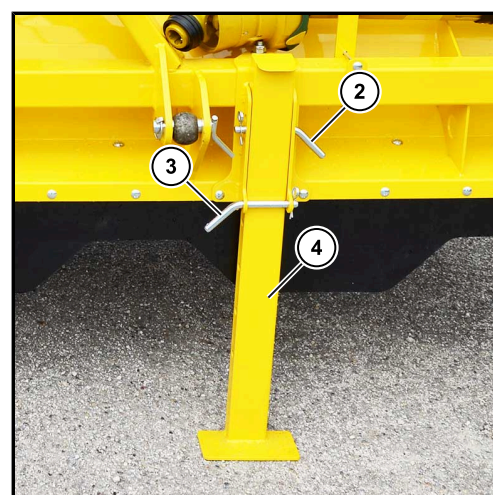
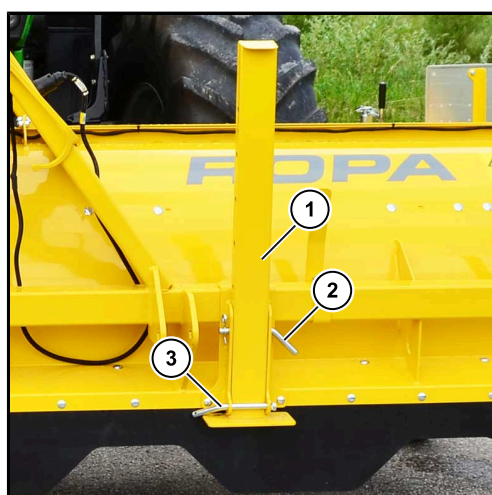
6.2 Safety regulations during operation of the machine

- Before starting work, familiarize yourself with the machine and the control elements of the tractor. 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.
- 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.
- 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, please comply with the applicable laws and regulations for your own benefit.
- 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 (smartphones) 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 on slopes and hillsides, always make sure that the machine is sufficiently stable.

6.3 Support foot



Illustrations show support foot with end tow kit on KS 475



Illustrations show support foot with crosswise driving device on KS 475

- (1) Machine support foot in operating position
- (2) Support foot safety pin with circlip
- (3) Support foot guide pin with circlip
- (4) Machine support foot park position

The machine is fitted with a mechanical support foot. It is designed for safe parking of the machine.

Depending on the machine configuration, positioning of the support foot differs on the machine for the end tow kit or for the crosswise driving device.

The support foot must be brought into 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. Always use the support foot safety pin with circlip (2). The support foot guide pin with circlip (3) may not be adjusted when coupling or uncoupling.

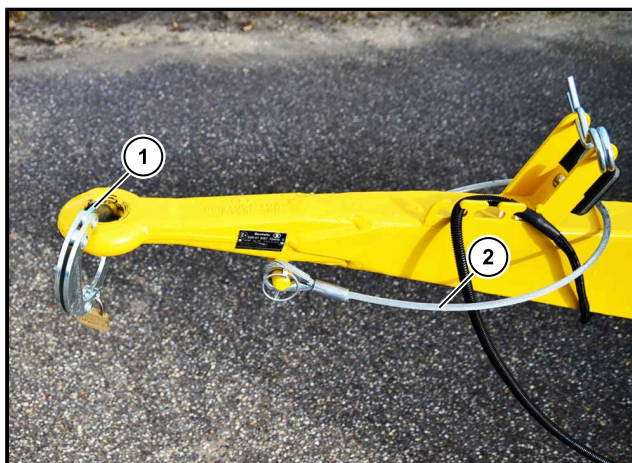
The machine must not be parked on the support foot (4) until it has been secured against rolling away.

6.4 Coupling and uncoupling the machine

6.4.1 Coupling the machine

Proceed as follows to couple the machine with the end tow kit to a suitable tractor:

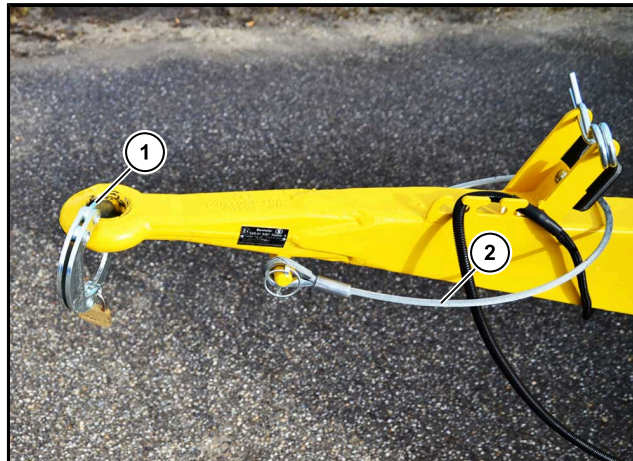
- Move the drawbar from working position to transport position. For the transport position, lock the drawbar using the upper link arm with ratchet, then secure it using safety pin with circlip.
- Reverse the tractor to the coupling point of the machine and stop shortly before it.
- Dismantle the immobiliser (1) from the drawbar eye and put it away.
- Open the pulling jaw of the tractor.
- Adjust the drawbar to a suitable height for the pulling jaw of the tractor using the upper link arm with ratchet.
- Push back with the tractor until the drawbar eye engages in the tractor's pulling jaw, then secure the tractor's pulling jaw.
- Secure the machine to the tractor with the locking rope (2).
- Relieve the support foot of the machine using the upper link arm with ratchet until the support foot can be retracted completely mechanically. Then, secure the support foot using safety pin with circlip.
- Fold the optional firming wheels into the transport position and secure them.
- Connect the vehicle lighting and check it.
- Disconnect the cardan shaft from the machine and stow it in the storage place.



6.4.2 **Uncoupling the machine**

Proceed as follows to uncouple the machine with the end tow kit from a tractor:

- Park the machine on level ground and secure it against rolling away.
- Disconnect the machine electrics from the tractor.
- Mechanically extend the support foot of the machine as far as possible, possibly using the upper link arm with ratchet to adjust the height of the drawbar slightly so that the support foot can be secured at the appropriate height with a safety pin and a circlip.
- Then relieve the drawbar using the upper link arm with ratchet on the pulling jaw of the tractor until the pulling jaw of the tractor can be opened.
- Dismantle the locking rope and attach it for storage position (2).
- Drive the tractor forward until the drawbar of the machine is completely free.
- Then fold the drawbar from transport position into working position. To do this, loosen the guard of the upper link arm on the topper housing, fold the upper link arm forward into the storage position and secure it. Then, fold the drawbar upwards and secure it using safety pin with circlip.
- Secure the machine with immobiliser (1) against unauthorised use.



6.5 Attachment/detachment of the machine

6.5.1 Attachment of the machine

Proceed as follows to attach the machine to the three-point suspension at the front or rear to a suitable tractor:

- In order to attach the machine to the three-point suspension at the front or rear to a tractor, first of all prepare the three-point suspension. The lower link arms of the three-point suspension at the tractor must be adjusted at the correct distance to the machine suspension. Both balls for the lower link arms and the ball for the upper link arm must be prepared according to the tractor manufacturer's specifications.

CAUTION

We expressly point out that attachment of the haulm topper without suitable balls for the lower link arms and the upper link arm is strictly prohibited. Attachment to the three-point suspension of the machine with bolts only is strictly prohibited.

This may result in human injuries and damage to the machine.

-
- Make sure that there is enough space on the machine side to which the tractor is to be attached. It is important to attach the machine to the tractor the right way round. The support wheels of the machine always run behind when the machine is attached correctly.

ADVICE

If the machine is attached incorrectly, the freewheel in the machine engages and the topper shaft stands still.

ADVICE

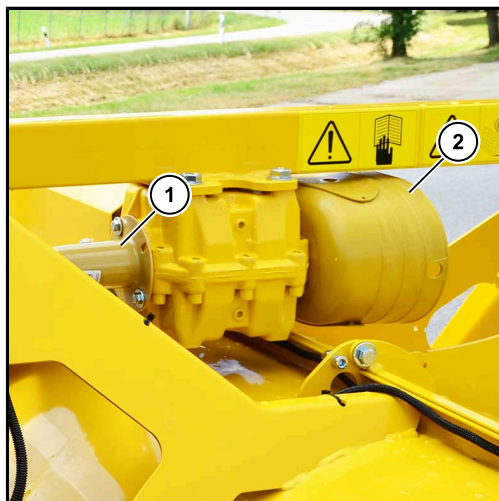
Please observe the enclosed instructions from the cardan shaft manufacturer and adjust the length of the cardan shaft according to the instructions.

ADVICE

With the optional firming wheels, the machine can be attached only to the rear of a suitable tractor. The front attachment of the machine is not possible.

-
- Prepare machine with the end tow kit as described in the chapter "Uncoupling the machine" ([See Page 63](#)).

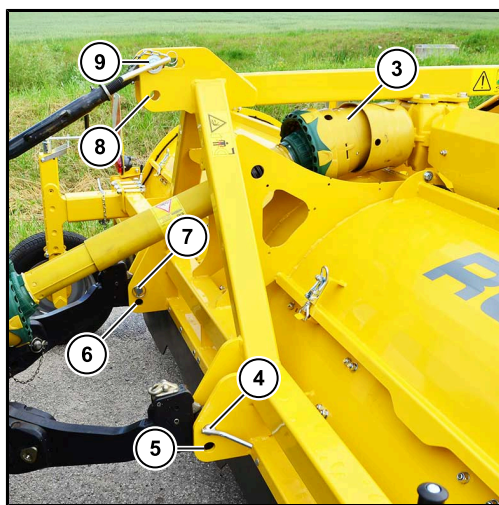
Tractor front attachment



The illustration shows KS 475

- (1) Angular gear guard cone
- (2) Angular gear protective cap

- Check whether the guard cone (1) and the protective cap (2) are installed correctly on the KS 475. If not, dismantle both parts and mount them again on the correct side of the gear.
- For the KS 490, check whether the angular gear is installed correctly. If not, dismantle the angular gear and mount it again correctly.



The illustration shows KS 475

- (3) Cardan shaft
- (4) Top hole lower link arm right
- (5) Bottom hole lower link arm right
- (6) Bottom hole lower link arm left
- (7) Top hole lower link arm left
- (8) Hole upper link arm for transport position
- (9) Slot upper link arm for working position

- Connect the cardan shaft to the machine.
- Drive the tractor forward and fit the machine correspondingly into the two upper holes or the two lower holes for the lower link arms. Use the balls for the lower link

Operation

Attachment/detachment of the machine

arms and secure them using both pins with circlip. The mounting position on the machine depends on the tractor.

- Mount the cardan shaft on the tractor side and secure it with the anti-twist chain.
- Mount the upper link arm with the ball to the tractor. While doing so, mind your next actions with the machine. Use the lower hole (8) for transport, and the upper slot (9) for the working position. Then secure it using pin with circlip.
- Lift the machine using the front hydraulic of the tractor, retract the support foot of the machine completely and secure it using the safety pin with circlip.
- Plug in and check the vehicle lighting for the crosswise driving device.

Tractor rear attachment



The illustration shows KS 475

- (10) Guard cone
- (11) Protective cap

- Check whether the guard cone (10) and the protective cap (11) are installed correctly on the KS 475. If not, dismantle both parts and mount them again on the correct side of the gear.
- For the KS 490, check whether the angular gear is installed correctly. If not, dismantle the angular gear and mount it again correctly.



The illustration shows KS 475

- (12) Slot upper link arm for working position
- (13) Hole upper link arm for transport position

(14) Hole lower link arm right

(15) Hole lower link arm left

- Connect the cardan shaft to the machine.
- Drive the tractor backward and fit the machine correspondingly into both holes for the lower link arms. Use the balls for the lower link arms and secure them using both pins with circlip.
- Mount the cardan shaft on the tractor side and secure it with the anti-twist chain.
- Release the support foot using the lower link arms. Then, retract the support foot completely and secure it using safety pin with circlip. Lower the lower link arms again until the haulm topper is in a horizontal position.
- Mount the upper link arm with the ball to the tractor. While doing so, mind your next actions with the machine. Use the lower hole **(13)** for transport, and the upper slot **(12)** for the working position. Then secure it using pin with circlip.
- Plug in and check the vehicle lighting for the crosswise driving device.
- Check the position of the optional firming wheels. ([See Page 75](#))

Specific feature of the end tow kit

The illustration shows KS 475

- (16) Right support wheel in road position
- (17) Left support wheel in road position
- (18) Right support wheel holder for field position
- (19) Left support wheel holder for field position



The illustration shows KS 475

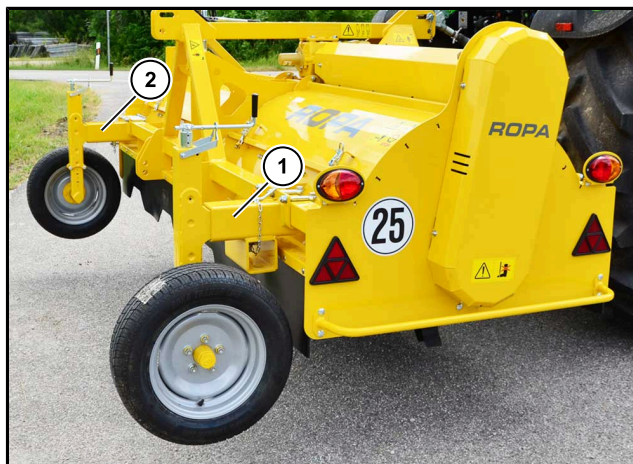
- (20) Right support wheel in field position
- (21) Left support wheel in field position

- On the machine with an end tow kit, the support wheels must be moved from the road position to the field position after the machine has been attached to the tractor. To do it, loosen the safety pins with circlip. The left support wheel must be moved from the road position (17) to the field position (21), and the right support wheel must be moved from the road position (16) to the field position (20).
- After conversion, secure the support wheels using pin with circlip.

6.5.2 Detachment of the machine

Proceed as follows to detach the machine from the three-point suspension at the front or rear of a suitable tractor:

Specific feature of the end tow kit



The illustration shows KS 475

- (1) Right support wheel in field position
- (2) Left support wheel in field position



The illustration shows KS 475

- (3) Right support wheel in road position
- (4) Left support wheel in road position
- (5) Right support wheel holder for field position
- (6) Left support wheel holder for field position

- On the machine with an end tow kit, the support wheels must be moved from the field position to the road position before the machine has been detached from the tractor. To do it, loosen the safety pins with circlip. The left support wheel must be moved from the field position (2) to the road position (4), and the right support wheel must be moved from the field position (1) to the road position (3).
- After conversion, secure the support wheels using pin with circlip.

Tractor front detachment

- Disconnect the vehicle lighting for the crosswise driving device.
- Lift the machine using the front hydraulic until the support foot can be mechanically extended to the correct length to park the machine. Then, secure the support foot using safety pin with circlip.
- Lower the machine until it stands on the support foot. Dismantle the upper link arm of the tractor from the machine side and the cardan shaft from the tractor side.
- Dismantle the lower link arms, then drive the tractor away from the machine area.
- Dismantle the cardan shaft from the machine side and stow it in the storage place on the machine.

Tractor rear detachment

- Disconnect the vehicle lighting for the crosswise driving device.
- Lower the machine using the rear part hydraulics until it stands on the ground with both support wheels. Dismantle the upper link arm of the tractor from the machine side and the cardan shaft from the tractor side.
- Lift the machine using the lower link arms of the tractor until the support foot can be mechanically extended to the correct length to park the machine. Then, secure the support foot using safety pin with circlip.
- Lower the machine until it stands on the support foot. Then dismantle the lower link arms and drive the tractor away from the machine area.
- Dismantle the cardan shaft from the machine side and stow it in the storage place on the machine.

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 alone responsible for compliance with the respective regulations and conditions of the competent road traffic authorities.

Generally applicable for the Federal Republic of Germany:

Driving on public roads is only permitted with the end tow kit and road lighting.

Before driving on public roads:

- the machine must be coupled to a suitable towing vehicle as described in the chapter "Coupling the machine" ([See Page 62](#));
- the two support wheels must be set at the same height, thereby make sure that ground clearance is sufficient;
- the optional firming wheels must be folded into the transport position and secured;
- check the operating and traffic safety of the machine;
- the machine must be sufficiently cleaned.

Further requirements for operating the machine:

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

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

Requirements for machines without EU type approval:

As a towed agricultural machine with a maximum speed of 25 km/h the machine must neither be registered nor carry the registration plates. Furthermore, the machine must be insured against damage from vehicle owners' third-party liability according to the locally applicable regulations.

Requirements for machines with EU type approval:

In general, the machine with EU type approval does not require registration within Germany. Only an operating licence is required. The COC (certificate of conformity) is an operating licence! You therefore do not have to visit the licensing office.

As a towed agricultural machine with the actual maximum speed of 25 km/h, 30 km/h or 40 km/h, the machine must carry registration plates (for trailers in Germany). 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 paths 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 required, the existing and valid exemption permit.
- Safety vests, first aid kit and warning triangle must be carried in the tractor.
- 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 106](#)). 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 has been prescribed are subsequently modified, then the "General type approval" lapses and a new "General type approval" must be applied for with the authorities in the country of operation.

6.7 Chassis

6.7.1 Support wheels



KS 475 road position with end tow kit

- (1) Height adjustment of left support wheel end tow kit
- (2) Height adjustment of right support wheel end tow kit



KS 475 field position

- (3) Height adjustment of left support wheel for field position
- (4) Height adjustment of right support wheel for field position

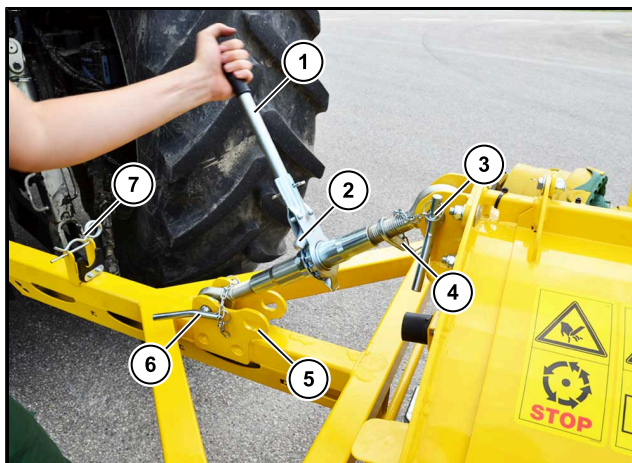
The support wheel height adjustment sets the minimum height of the machine to the ground. Always make sure that the same height is set for the support wheels on both sides.

It is important to have sufficient ground clearance, when driving on roads. The machine must be in a horizontal position, when driving on roads.

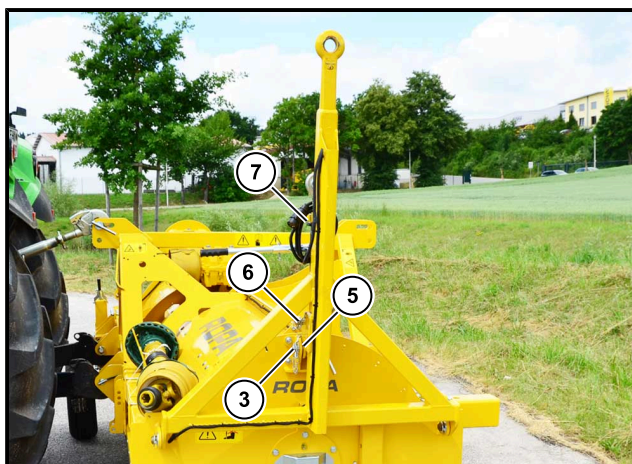
On machines with end tow kit, the support wheels must be repositioned from road mode to field mode or from field mode to road mode and secured.

6.7.2 Drawbar

When driving on roads, the drawbar must be adjusted in height to the pulling jaw of the tractor. The drawbar must engage centrally in the pulling jaw of the tractor without being jammed. Make sure that the machine is in a horizontal position, when driving on roads.



KS 475 drawbar in road position

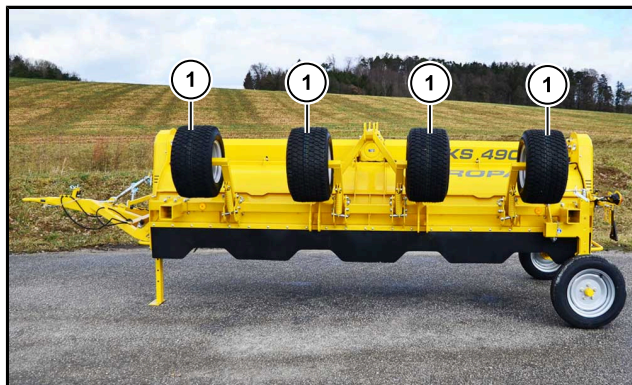


KS 475 drawbar in working position

- (1) Upper link arm with ratchet
- (2) Upper link arm rotation direction adjustment
- (3) Rear safety bolt
- (4) Upper link arm anti-twist device
- (5) Eyelet drawbar working position
- (6) Front safety bolt
- (7) Safety bolt drawbar working position

Loosen the upper link arm anti-twist device (4) to adjust the drawbar. The adjustment for the upper link arm rotation direction (2) determines whether the upper link arm is to be shortened or extended by means of the ratchet (1). Once the upper link arm is adjusted to the correct length, secure it with the upper link arm anti-twist device (4). Always secure the safety bolts front (6) and rear (3) with a circlip. The upper link arm is folded into the working position and secured with the safety bolt for drawbar working position (7). After that, the drawbar must be folded upwards and secured with the eyelet for drawbar working position (5) and the rear safety bolt (3).

6.8 Firming wheels



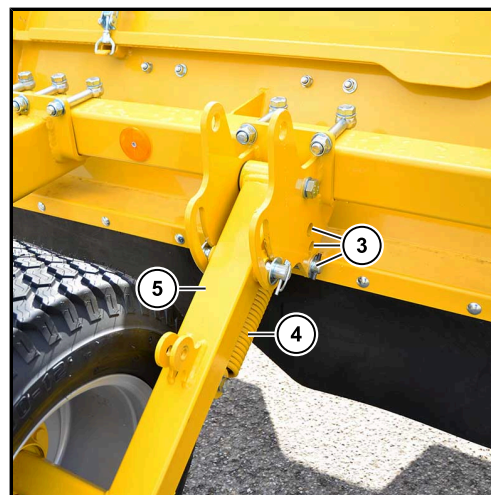
The illustration shows KS 490 model

(1) Firming wheels in transport position

Optionally, the machine can be equipped with the firming wheels (1). The firming wheels follow the topper. They press the ridge after topping in order to close any cracks in it. The machine can be operated with the firming wheels only in the rear attachment to the tractor.



The illustration shows KS 490 model in transport position



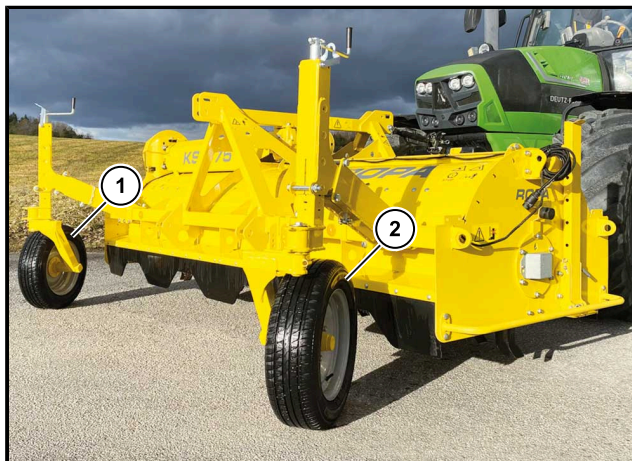
The illustration shows KS 490 model in working position

- (2) Parking/transport position
- (3) Tension spring prestress positions
- (4) Firming wheel tension spring
- (5) Operating position

The firming wheels can be folded into parking/transport position (2), when not required in the field or during road travel. In this position both bolts, i.e. the bolt on the firming wheel stem and the bolt for tension spring pre-tensioning, must be secured with circlips.

In the working mode, the firming wheel tension spring (4) can be pre-tensioned in three different positions (3). Secure the bolt with a circlip each time you reposition it. In this way, it is possible to adapt the system to different soil conditions.

6.9 Swing support wheels

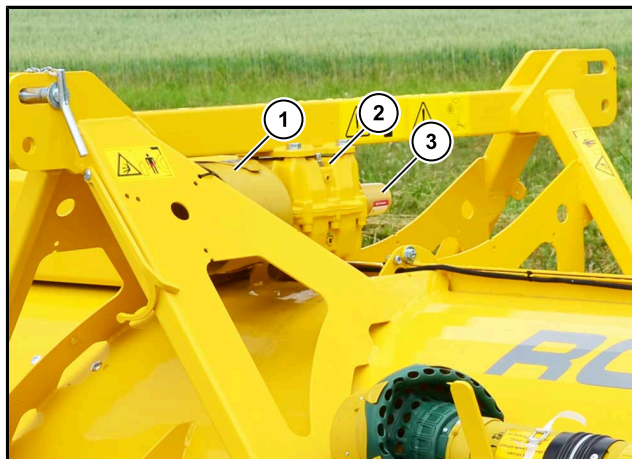


The illustration shows KS 475 model

- (1) Right swing support wheel
- (2) Left swing support wheel

Optionally, the machine can be equipped with swing support wheels. The height of the right swing support wheel (1) and the left swing support wheel (2) can be adjusted separately.

6.10 Angular gear



The illustration shows KS 475

- (1) Protective cap
- (2) Angular gear
- (3) Guard cone

The angular gear (2) is flanged directly to the cardan shaft, which is connected to the tractor PTO shaft drive and transfers the tractor engine power via another cardan shaft on the belt drive to the topper shaft of the machine. The angular gear is located at the top centre of the machine.

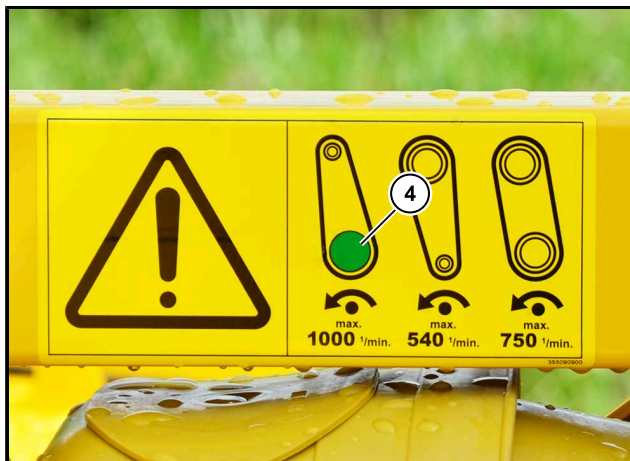
On the KS 475, the protective cap (1) and guard cone (3) must be installed, depending on the attachment of the machine to the tractor, i.e. front or rear attachment. On the KS 490, rotate the gear to connect the machine if the machine is to be attached to the front of the tractor.

ADVICE



The highest allowed angular gear input speed to the machine drive may not be exceeded at any time – not even for a short time. The maximum speed depends on the installed V-belt transmission ratio.

Maximum speed: 540 rpm, 750 rpm or 1,000 rpm



(4) Maximum permissible input speed indication

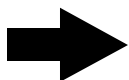
The maximum permissible input speed is indicated on the safety sticker **(4)** above the angular gear on the right (in driving direction).

6.11 Shutdown

Park the machine so that nobody is impeded or endangered. Also make sure of a sufficient safety distance to freely suspended power lines.

- Switch off tractor engine and secure it against inadvertent starting.
- Disconnect the cardan shaft and the automotive cable from the machine.
- Traverse support foot mechanically so that the machine can be uncoupled from the tractor.
- Detach the machine from the tractor and secure it against rolling away.
- Move tractor away from machine.
- Secure the machine with immobiliser against unauthorised use.

ADVICE



Please, in case of need, consider additional protection for children.

7 Maintenance and service

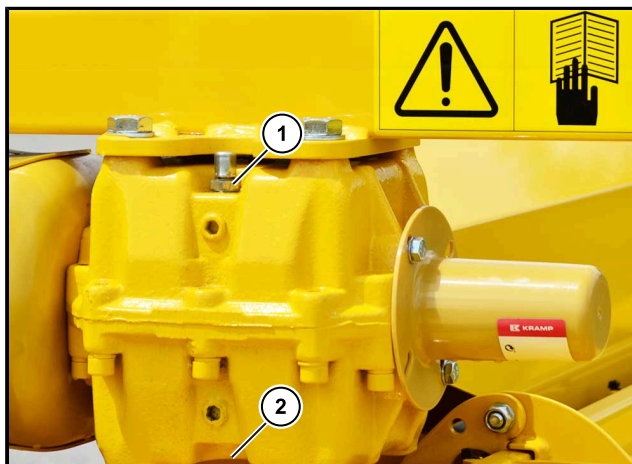
WARNING

During all maintenance work, there is a risk of serious or fatal injury and of damage to the machine.

- During all maintenance work, make sure that nobody can inadvertently start the machine (remove the ignition key, lock the tractor cabin and always carry the tractor ignition key with you).
 - 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 needlessly endanger yourself, other people and the environment. You may also lose your insurance cover.
 - Always lower the machine completely, if it is hitched to the tractor three-point suspension, or secure it against unintentional lowering, if any maintenance work must be carried out in the lower area of the machine.
-

7.1 Angular gear

The angular gear is located at the top centre of the machine and transmits the PTO shaft power of the tractor via a cardan shaft further to the topper drive.



The illustration shows KS 475

- (1) Oil filling screw with venting
- (2) Oil drain screw in the centre below the gear

Check the angular gear for leaks before switching on the tractor PTO shaft every day. If any perspiration appears on the angular gear, call a service technician.

The first oil change is required after 50 operating hours, further oil changes must be performed annually.

When changing, oil proceed as follows:

- before changing oil, clean a wide area around the angular gear;
- change oil only with gears warm after operation. Dismantle the gear unit from the machine if necessary. To do this, dismantle both cardan shafts and loosen four screws above the gear;
- put an oil-resistant collecting vessel of sufficient size underneath;
- open the oil drain plug (2) and the oil filling screw (1), let the gear oil flow out;
- reinsert the oil drain screw (2);
- pour some fresh oil into the filler opening;
- screw on the oil filling screw (1) again;
- conduct a test run and then check the angular gear for leaks.

Prescribed oil types:

Gear oil API GL 5, SAE 90

Filling volume KS 475:

approx. 1.2 litres

Filling volume KS 490:

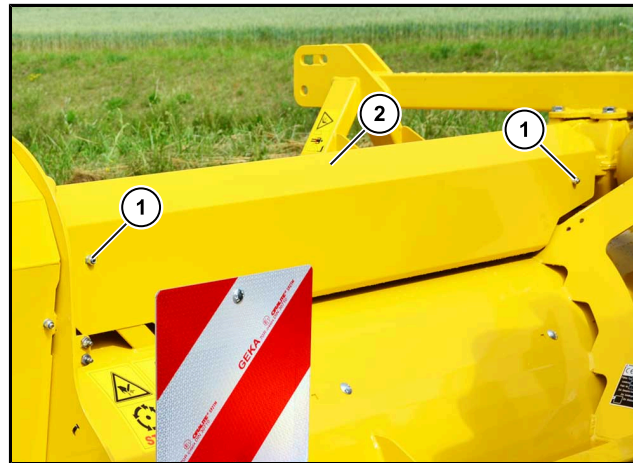
approx. 1.7 litres

7.2 Cardan shaft above topper shaft

The maintenance work on the cardan shaft of the KS 475 or the cardan shafts of the KS 490 can be performed above the topper shaft only if the protective casing(s) are dismantled.

Proceed as follows:

- Lower the machine when attaching it to the tractor until it stands on the support wheels. Switch off the tractor and secure it from accidental rolling away and restart.



The illustration shows KS 475

- (1) Safety screws front
- (2) Cardan shaft protective casing

- Loosen both front safety screws (1) and both rear safety screws and pull the protective casing (2) off upwards.



The illustration shows KS 475

- (3) Cardan shaft profile
- (4) Joint fork clamping screw
- (5) Knuckle joints
- (6) Cardan shaft freewheel

- Carry out work required on the cardan shaft, e.g. according to the lubrication schedule. ([See Page 102](#))
- Then mount the protective casing (2) and secure it with four safety screws. Perform a test run.

ADVICE



Lubricate the profile of the cardan shaft (3) along its entire length annually. To do this, loosen the clamping screw on the joint fork (4) and pull out the inner profile half. After lubrication, put the profile halves back together and fix them to the angular gear with the joint fork clamping screw (4).

7.3 V-belts and V-belt pulleys

ATTENTION



Hazard of damage to the machine.

Incorrectly tensioned V-belts as well as worn V-belts and V-belt pulleys cause damage to the machine. Always check whether the V-belts are tensioned correctly and replace worn parts in advance.

7.3.1 V-belt tension

Check the V-belt tension on the machine every 50 operating hours. V-belts that are not tensioned enough are subject to greater wear and may cause damage to the machine.

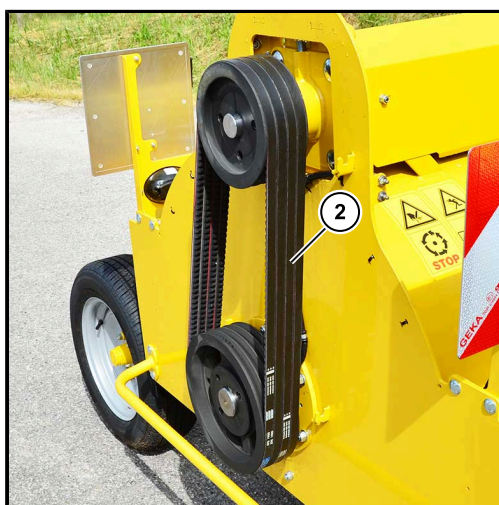
Proceed as follows in order to check the V-belt tension:

- Switch off the machine and prevent it from restart.



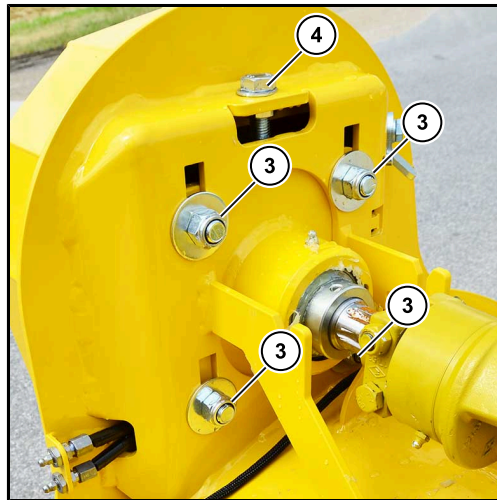
The illustration shows KS 475

- Dismantle the protective cover from the V-belt drive. To do this, loosen four nuts (1) and pull the cover upwards.



The illustration shows KS 475

- Check tension of the four V-belts (2). For this purpose, apply a load of 8 kg sideways to each V-belt in the centre between the pulleys, using a special scale. If the tension is correct, the belt deflection is approx. 10 mm.



The illustration shows KS 475

- If the V-belts are too loose or too tight, loosen the four safety screws (3) on the upper V-belt pulley and tighten or release the V-belts using the adjusting screw with lock (4).
- Then retighten the adjusting screw and the four safety screws on the upper V-belt pulley.
- Check tension of the four V-belts again. If tension of the V-belts is still not correct, repeat the process.
- Once the tension of the V-belts is correct, mount the protective cover again and carry out a test run.

7.3.2 Replacement of V-belt pulleys

The V-belt pulleys of the machine must be visually inspected for damage every 50 operating hours. If the V-belt pulleys are damaged, replace them in good time.

If the machine is to be operated with a different PTO speed of the tractor, the V-belt pulleys must be adjusted beforehand according to the desired PTO shaft speed. On the KS 475: 540 rpm, 750 rpm or 1,000 rpm. On the KS 490: currently only the variant with an input PTO shaft speed of 1,000 rpm.

DANGER



Risk of fatal injury and damage to the machine.

If the haulm topper is driven with the PTO shaft speed set too high, there is a risk of parts flying away from the machine.

Always ensure that the maximum permissible input PTO shaft speed of the machine is not exceeded.

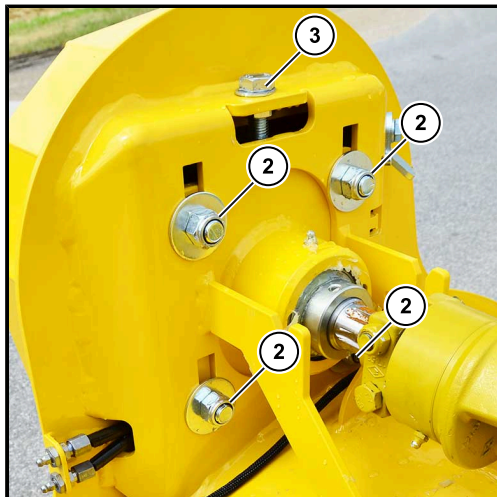
In order to replace the V-belt pulleys, proceed as follows:

- Switch off the machine and prevent it from restart.



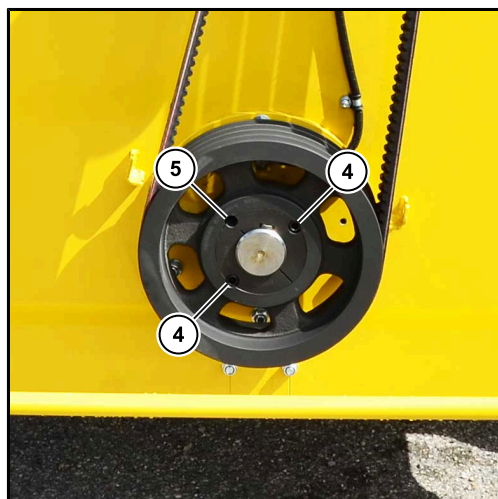
The illustration shows KS 475

- Dismantle the protective cover from the V-belt drive. To do this, loosen four nuts (1) and pull the cover upwards. Then check the V-belt pulleys visually.



The illustration shows KS 475

- In order to replace the V-belt pulleys, first dismantle the V-belts. To do this, loosen four safety screws (2) on the upper V-belt pulley and release the V-belts using the adjusting screw (3). Remove the V-belts.



The illustration shows KS 475

- The V-belt pulleys are fastened to the shafts with the taper lock bushes. In order to dismantle the V-belt pulleys, first loosen the threaded rod bolts (4) and screw them out completely.
- Then screw one of the two threaded rod bolts into the bore (5). Tighten this threaded rod bolt evenly until the clamping bush comes out of the hub.
- The washer moves freely now, the bush and the washer can be removed from the shaft.
- Check whether the new V-belt pulley is correct and not damaged before fitting it. The mounting area must be cleaned and degreased.
- Insert the clamping bush into the hub so that all holes overlap. Screw in the threaded rod bolts (4) only by two threads at first, do not tighten them yet.
- Insert the feather key into the groove, then push the V-belt pulley with taper lock bush into the desired position on the shaft. Make sure that both V-belt pulleys are aligned with each other and do not rub against the protective cover after final assembly.
- Now tighten the threaded rod bolts (4) step by step with a tightening torque of 92 Nm. Mount four V-belts and adjust the tension of V-belts ([See Page 84](#)) correctly.
- Fit the protective cover and carry out a test run. After a running time of 30 to 60 minutes, check the tightening torque of the taper lock bushes.



The illustration shows KS 475

ADVICE



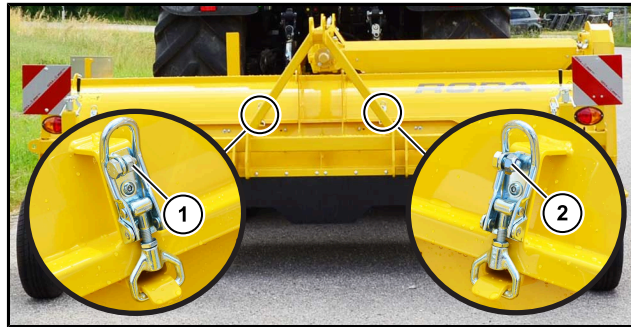
Once the transmission ratio of the V-belt pulleys has been changed, the marking **(6)** on the safety sticker for the maximum PTO shaft speed must be changed according to the set speed!

7.4 Topper shaft and flails

The condition of the topper shaft and flails must be checked every day. Worn topper flails, fixing bolts and securing materials, e.g. roll pins, must be replaced timely.

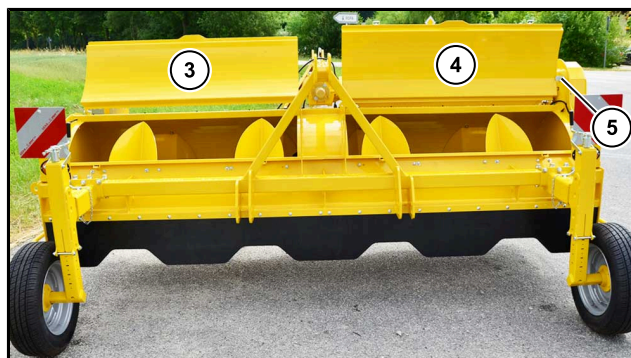
Proceed as follows:

- Switch off the machine and prevent it from restart.



The illustration shows KS 475

- Open both covers left and right. To do this, open the safety screws left (1) and right (2) and all four clamp closures.

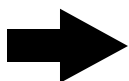


The illustration shows KS 475

- On the KS 475, fold the left cover (3) all the way forward and secure the right cover (4) with the tab (5). On the KS 490, secure both covers with the tabs.
- Clean the area of the topper shaft and check visually the shaft, the flails and the securing materials. Replace the worn parts in good time.
- Close both covers and lock them with four clamp closures. Secure each side with the left safety screws (1) and the right (2) on the inner clamp closures.
- If any parts have been replaced in the area of the topper shaft, a test run must be performed.

7.5 Lubricating points of cardan shaft

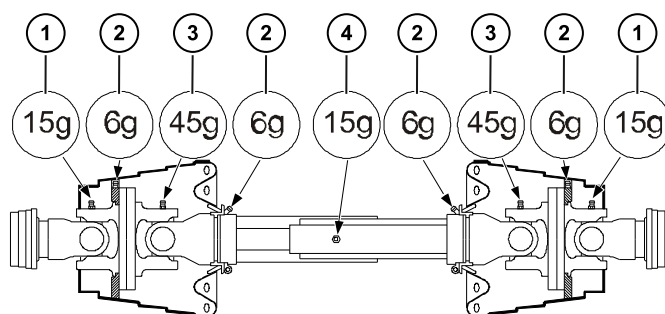
ADVICE



Please refer to the operating manual of the cardan shaft manufacturer.

Before operation, each user must carefully read and follow the instruction of the operating manual of the cardan shaft manufacturer. Follow all instructions for maintenance and care of the cardan shafts.

Cardan shaft type "PWZ":



All data in grams

- (1) Lubricating nipple of knuckle joint
- (2) Lubricating nipple of protection bearing
- (3) Lubricating nipple of knuckle joint with wide-angle joint
- (4) Lubricating nipple of profile tube

The cardan shaft from tractor to the machine is of a "PWZ" type.
All lubricating nipples must be greased every 40 operating hours.

7.6 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:

- Wash the machine thoroughly. Avoid direct spraying on the bearings.
- Clean the topper shaft 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 machine, neither warranty coverage nor goodwill repairs will apply.

- Lubricate all lubricating points of the machine.
- Spray the complete machine with corrosion-inhibiting oil. Make sure that no oil or grease touches the tyres.
- Park the machine in a dry and weather-protected place, if possible, in a hall.
- Secure the machine with immobiliser against unauthorised use.

7.7 Dismantling and disposal

If the machine is not disposed of properly at the end of its service life, it can lead to accidents and be harmful to the environment.

Hazard may come from:

- Oil
- Lubricants/process materials
- Residual energy
- Moving parts
- The machine can only 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.

8 Malfunction and remedies

8.1 Safety circuits

The machine provides the greatest possible safety to the operator and materials. Due to the fact that 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 the malfunction cannot be remedied, then refer to the respective sections of this operating manual for the components concerned or the non-functional components. You will find information about safety circuits and possible reasons of a malfunction.

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 a 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 the service team of ROPA.
- Do not perform any repairs on the machine if you do not have the required specialist knowledge and experience.

8.2 Colour codes for electric wiring

| | |
|--------------|--|
| Brown | ground |
| Grey | all lamps "E" light bulbs and "H" warning devices (buzzer) |

8.3 Welding on the machine

The machine must be detached from the tractor before welding work. The ground cable of the welding transformer must be connected as close as possible to the welding position.

ATTENTION



Risk of machine damage.

Welding on the machine may only be performed by people sufficiently qualified for the respective work under the regional regulations. Welding work on supporting parts or parts with safety functions may only be carried out after prior agreement with ROPA, to the extent that such work is permissible in accordance with the applicable regulations. All welding work may only be performed in accordance with the applicable standards and the acknowledged technical rules. 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.

8.4 Jacking up of the vehicle

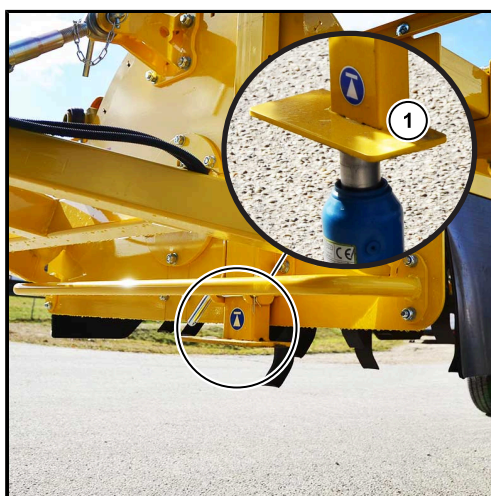
DANGER



Hazard of fatal injuries!

- For safety reasons, the vehicle must be always jacked up on one of the marked jacking points.
- The vehicle has no brakes and must be secured against rolling away before jacking up.

The vehicle can be jacked up at the marked points.



- (1) Jacking point drawbar
- (2) Left jacking point in road position
- (3) Right jacking point in road position

- To jack up park the vehicle on even and sufficiently stable ground.
- Secure the vehicle against movement using wheel chocks. Place two wheel chocks under the wheel from front and rear on the side of the axle not to be jacked up.
- Use a jack with sufficient load capacity to lift the vehicle.
- To jack up the drawbar, position the jack in front under the drawbar coupling **(1)**.
- To jack up the left side of the machine, position the jack under the left side **(2)**.
- To jack up the right side of the machine, position the jack under the right side **(3)**.
- Once the vehicle is lifted, it has to be additionally secured with massive load bearing timbers or similar materials against crashes.

9 Lists/Tables/Plans/ Diagrams/Maintenance Verification

9.1 Lubricating and operating supplies

| Component | Lubricant type | Fill. volume in litres | Intervals |
|---------------------|---|------------------------|-------------------------------|
| Angular gear KS 475 | Gear oil API GL 5, SAE 90 | approx. 1.2 | annually |
| Angular gear KS 490 | | approx. 1.7 | |
| Lubricating points | Grease as per DIN 51825, NLGI Class 2, Type: KP2K-20, at low outside temperatures KP2K-30 | | according to lubricating plan |

Note the standards and approvals in our recoding table ([See Page 103](#)).

9.2 Maintenance table

| Maintenance work | before harvest start | daily | after the first 50oper. hrs. | Mainte- nance interval | when needed | annually |
|--|-------------------------------|-------|------------------------------------|------------------------------|----------------|----------|
| | | | | every 50 oper. hrs. | | |
| Angular gear | | | | | | |
| Visual inspection of gear hous- ing for leaks | X | X | | | | |
| Change oil | X | | X | | | X |
| Topper shaft with flails | | | | | | |
| Check condition of topper flails | X | X | | | | |
| Check condition of topper flails mounting | X | X | | | | |
| Drive and bearing topper shaft | | | | | | |
| Check condition of V-belts and V-belt pulleys | X | | | X | | |
| Rest of machine | | | | | | |
| Remove soiling and sticking dirt | | X | | | X | |
| Grease lubricating points | according to lubricating plan | | | | | |
| Check tyre pressure | X | | | X | | |

9.3 Lubricating plan (lubrication with grease gun)

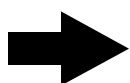
KS 475

| Lubricating point | Number of nipples | every oper. hours |
|--|--|-------------------|
| Cardan shaft tractor to angular gear | see attached manual of the cardan shaft manufacturer and (See Page 90) | |
| Freewheel cardan shaft above topper shaft | 1 | 8 |
| Knuckle joints cardan shaft above topper shaft | 4 | 8 |
| Profile tube cardan shaft above topper shaft | none | annually |
| Bearing cardan shaft above topper shaft | 1 | 8 |
| Bearing top V-belt pulley | 1 | 8 |
| Bearing topper shaft right and left | 2 | 8 |

KS 490

| Lubricating point | Number of nipples | every oper. hours |
|---|--|-------------------|
| Cardan shaft tractor to angular gear | see attached manual of the cardan shaft manufacturer and (See Page 90) | |
| Freewheel cardan shafts above topper shaft | 2 | 8 |
| Knuckle joints cardan shafts above topper shaft | 8 | 8 |
| Profile tubes cardan shafts above topper shaft | none | annually |
| Bearing cardan shafts above topper shaft | 2 | 8 |
| Bearing upper V-belt pulleys | 2 | 8 |
| Bearing topper shaft right, left and central | 4 | 8 |

ADVICE



All lubricating points must also be lubricated after each washing of the machine.

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: 2019-03-06 | Gear oil API GL 5, SAE 90 | Grease as per DIN 51825, NLGI-class 2, type: KP2K-20, at low outdoor temperatures KP2K-30 |
| ROPA marking ROPA item no.: Container size: | ROPA gearOil GL5 90 435002010 = 20 l 435002020 = 60 l 435002030 = 208 l | 435006200 = 18 kg 435002300 = 25 kg |
| Designation of manufacturer | | |
| Aral | Hyp SAE 85W-90 | Aralub HLP 2 |
| Agip/Eni | Agip ROTRA MP | Agip GR-MU/EP |
| Avia | AVIA HYPOID 90 EP | AVIALITH 2 EP |
| BP | Energear Hypo90 | Energear LS-EP2 |
| Castrol | Axle EPX 85W-90 | Spheerol EPL 2 |
| Fuchs | TITAN GEAR HYP SAE 90 | RENOLIT MP |
| LIQUI MOLY | Hypoid gear oil (GL 5) SAE 85W-90 | Roller bearing grease KP2K-30 |
| Cell phone | Mobilube HD-A 85W-90 | Mobilux EP 2 |
| Shell | Spirax S3 AD 80W-90 | Gadus S2 V220 2 |
| Total | EP-B 85W-90 | Multis EP 2 |
| Rhenus | | r. grea Norlith MZP 2 |

9.5 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 |

9.6 Maintenance verification

9.6.1 Maintenance verification oil change

| | Date: | Date: | Date: | Date: | Date: |
|---------------------|-----------|-----------|-----------|-----------|-----------|
| | Oper.hrs. | Oper.hrs. | Oper.hrs. | Oper.hrs. | Oper.hrs. |
| | ok | ok | ok | ok | ok |
| Angular gear | | | | | |
| Gear oil | | | | | |

9.6.2 Maintenance confirmation

1st customer service ROPA machine

Maintenance performed after: _____ hours

Required: 50 oper. hrs.

Maintenance performed on: _____
Date

Maintenance performed by: _____
Signature/stamp

The maintenance may only be performed by ROPA-Service staff.

9.7 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

9.8 Safety instructions

Even though all ROPA machines are engineered and manufactured with safety in mind, there are generally certain hazard zones on all haulm toppers, where nobody is allowed to stay under any circumstances during operation. The operator is strictly obliged to immediately cease operation of the machine as soon as someone enters these hazard zones.

WARNING

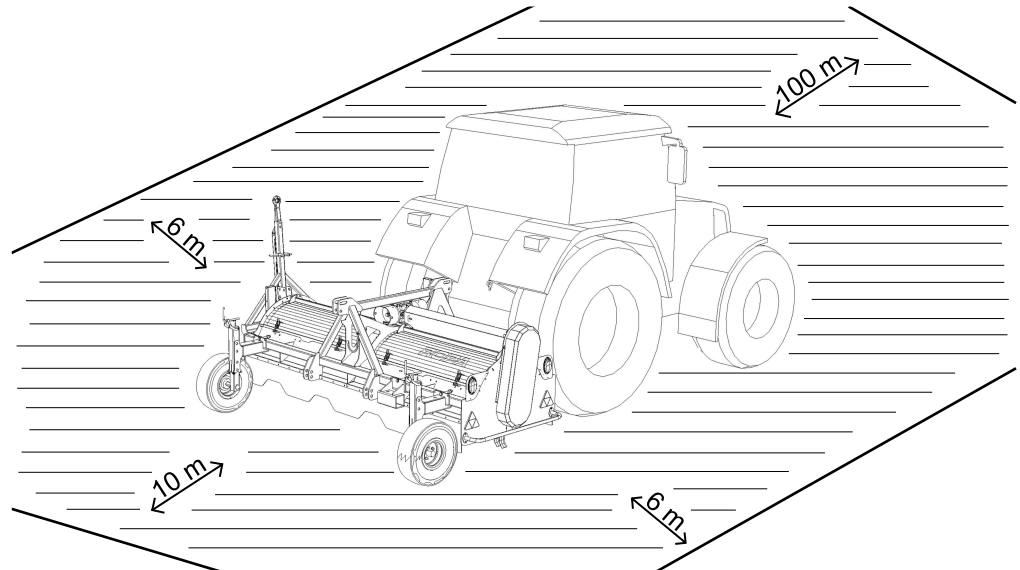


Should the areas around the ROPA **haulm topper**, which are designated as hazard areas in the following draft, be entered by persons while the machine is topping, there is a risk of serious physical or even fatal injuries for these persons. The draft below shows these zones shaded.

- In any case, follow the instructions of the machine operator.
- Never enter the hazard zones!
- If you have accidentally entered a hazard zone, leave it immediately and quickly, but without excessive haste.
- Keep minors and seniors 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 metres** from the outside edges of the machine.
- Behind the machine, **10 metres** from the rear edge of the machine.
- Front **100 metres** from the front of the tractor.



An example of KS 475 in rear attachment

Please always make sure that there are no persons in front of the operating machine during operation. Also observe chapter "Safety", section "Hazard zone" ([See Page 21](#)).

Statement

I, (last name and first name) _____
have been informed by the owner about the danger zones and safety aspects of the haulm topper during operation. I have completely received this information and understood it. I agree not to enter the hazard zones as long as the machine is running during topping. 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!

9.9 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:

Email:

Telephone:

Mobile phone:

Handover date:

No deficiencies were found during the test run. The safe operation and maintenance were explained to me. I was informed about the chapter safety in the operating manual. The following items were handed to me together with the machine:

Document number:

(operating manual item no.)

Designation:

(operating manual title)

Software:

(version)



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

9.10 ROPA First Use Record

ROPA Fahrzeug- und Maschinenbau GmbH, Sittelsdorf 24, D-84097 Herrngiersdorf

ROPA partner:

Customer / site of operation:

Chassis No.:

Operating hours:

Machine type:

Lifting/loading hours:

Software version:

Harvested area:

First use date:

Record:

Any customer complaints:

The safe operation and maintenance were explained to the customer.

The customer was informed about the chapter safety in the operating manual.

Date

Signature of mechanic

Signature of customer

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