



Operating instructions

*North Star**

0408

Corn header

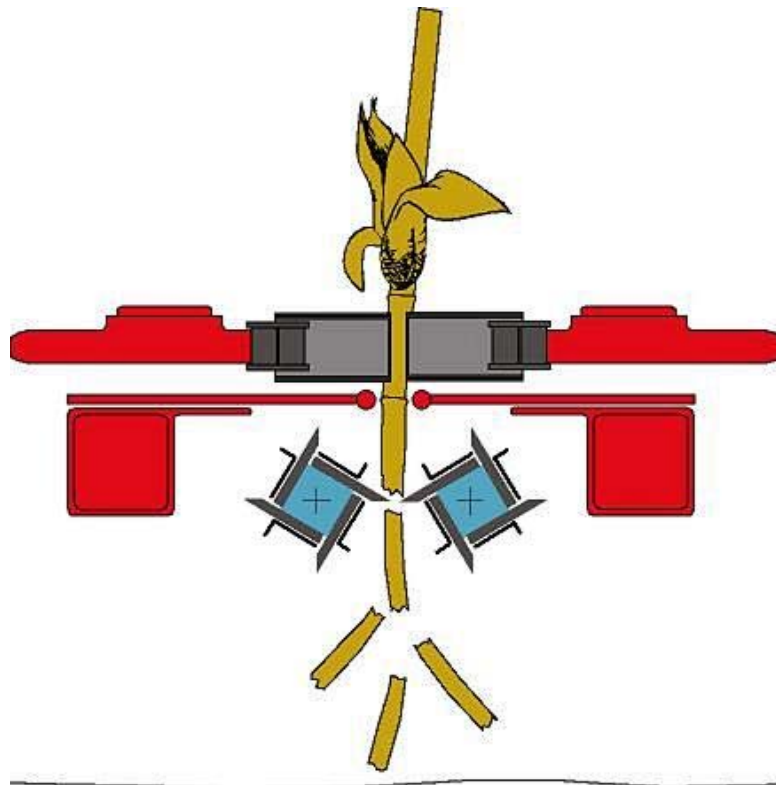
Corn Header

NorthStar 

NorthStar

BY GERINGHOFF

We reserve the right of making modifications for the sake of progress.



Sizes and weights are approximate values and refer to standard versions of different header types. Due to the great number of header models and combines this list cannot show all the possible different variations. For this reason, we hope you will understand the general sense of the wordings. A general knowledge of the basic machine is required.

General

General safety arrangements	01 / 020
Introduction	01 / 001
To the customer	01 / 010
Warning label (pictograms)	01 / 030

Corn header

Crown gear - speed change	09 / 600
Couplers between the stripping plates	09 / 645
Corn Header Mounting	09 / 120
Corn header drive	09 / 160
Corn Header Unpacking	09 / 000
Adapting system / Cross conveying auger drive	09 / 725
Cross conveying auger / Feeding	09 / 760
Cut-off block	12 / 080
Divider noses – fitting	09 / 321
Drive coupler folding corn headers	09 / 280
Gathering chains	09 / 520
Hydraulic connections - fitting	09 / 200
Hydraulic function of folding corn headers	09 / 240
Mounting arrangements to combine	09 / 080
Operation and function of monitor	09 / 441
Overload protections and sliding clutches	09 / 815
Stripping plate adjustment	09 / 480
Trial run	09 / 695
Transmission – oil control	09 / 590
Weights	09 / 060
Working angle adjustment	09 / 850
Variable speed gear	35 / 012

*North Star** Corn header

Stripping rolls	12 / 005
Rotor bearing	12 / 040
Stripping unit	12 / 080

Maintenance and Care

Maintenance and care	12 / 400
Disassembly of the row unit gearbox	12 / 615

Help in case of malfunctions

Cross auger	10 / 915
Drive	12 / 905
Hydraulics	12 / 900
Stripping unit	10 / 910

Special equipment

Change of speeds – Gearboxes	35 / 013
Bodywork Extension	35 / 015
Sunflower harvest kit passive	35 / 000
Sunflower harvest kit active	35 / 507
Lodged corn augers	35 / 600
Chain tension – loosening - tool	36 / 000
Starting torque for screws	36 / 100
Puller for rotor bearing	36 / 000

Wiring diagrams etc.

Wiring diagram hydraulics folding headers	36 / 300
---	----------

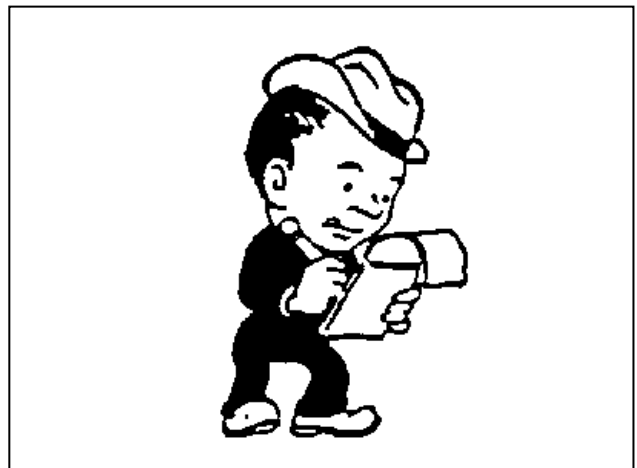
Introduction

These operating instructions describe the most essential working steps for safe handling and use of the Geringhoff products.

Read these instructions and observe the safety notes.

Regular maintenance and care will help maintain the value of the product and ensure a trouble-free use over many years.

Tell us about your experience. A partnership with our customers is very important to us and will contribute to our common success.



Note!

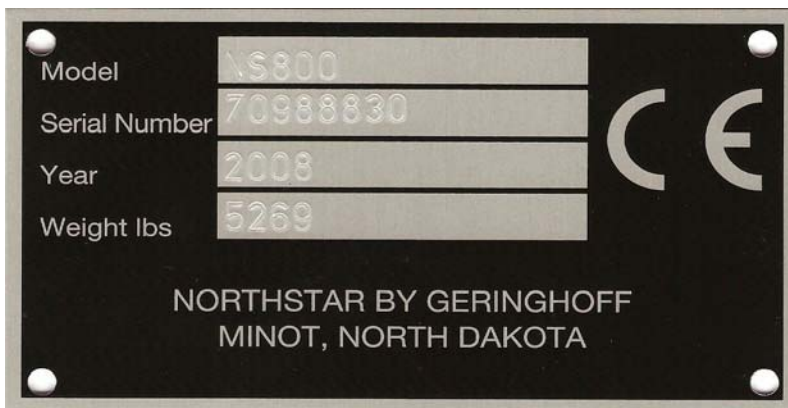
Some illustrations in these operating instructions are not identical with the machine supplied. In these situations the instructions refer to all Geringhoff corn head models.

All information and instructions provided in this manual are important to avoid danger and promote trouble free operation of the machine.

We thank you for the confidence placed in us when you made the decision to purchase this Geringhoff cornheader.

On this page you'll find some important information for the use of these operating instructions:

- When using the operating instructions, we recommend also using the spare part catalogue. These documents will provide an in-depth understanding of essential details.
- Note the specific identification of your machine in the fields provided below. This information will make it easier for your dealer or Geringhoff to provide assistance.



Model: _____

Serial Number.: _____

Key-Code: _____

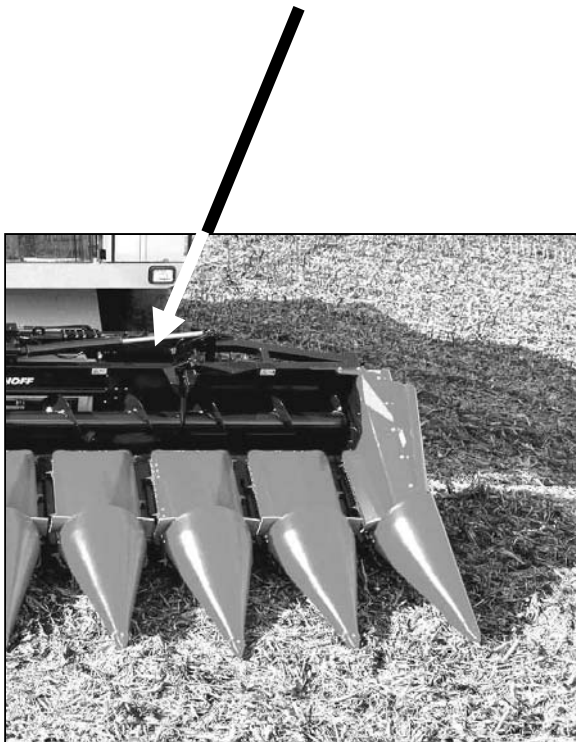
Year of construction: _____

Row distance: _____

Working width/ Number of row units: _____

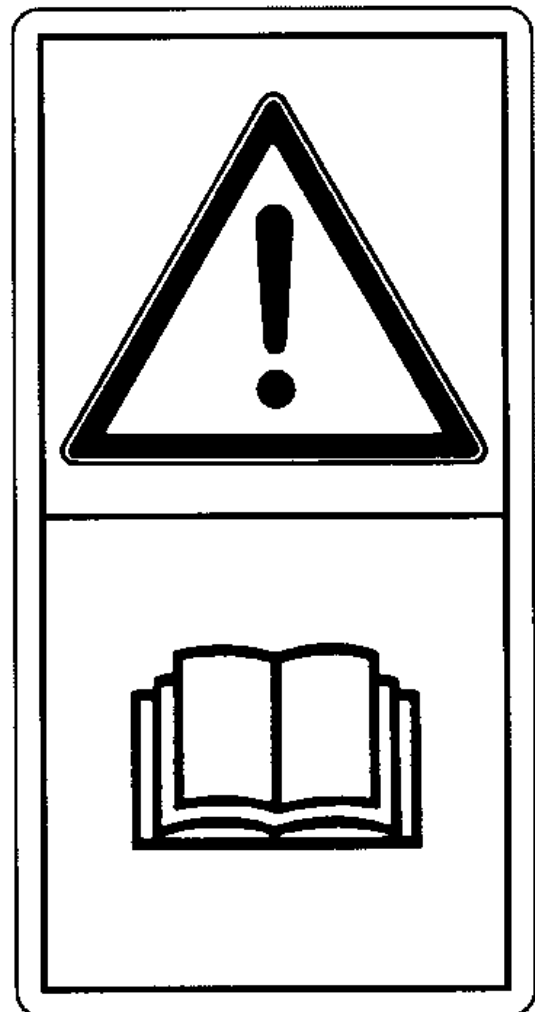
Combine Brand/Model.: _____

- The machine information plate is on the left side of the machine frame
- The operating instructions contain the international standard SI-measures.
- Right and left always indicates towards travel and/or working direction.
- If you are in need of spare parts, keep the required data available and get in touch with your dealer.
- Only us original Geringhoff spare parts.
- Ensure that the completed Warranty Registration document is sent to the manufacturer. This information is very important for potential claims. Failure to register warranty documents may void warranty claims.
- **Do not make any modifications of important, load-bearing and safety-relevant elements.** The manufacturer does not assume any guarantee for damages or injury resulting from unauthorized modification



To prevent accidents, strictly follow these operating instructions and **WARNINGS** on the machine.

- Before starting the machine, CHECK for operational dependability and traffic safety!
- In addition to these operating instructions, also follow the current safety instructions.
- The warning signs and labels give important notes for the safe operation of the machine, - thus serving the health and well-being of yourself as well as others.
- Prior to operating the machine make yourself familiar with all operating elements, safety procedures and functions. Ensure that all who will operate or come into close vicinity of the machine also have this knowledge.
- Check the driving characteristics, steering and braking behaviour of any vehicle that will make use of or tow this machine.
- Load rating of the tires is to be checked and sufficient load capacity ensured.
- Sufficient hydraulic lifting power and stability of the lines is to be ensured.
- When working on the machine the provided supporting devices must be used.
- Admissible axle loads and total weight must consistently be observed.
- Before start-up all guards and maintenance holes must be in position and closed.
- While the machine is running be respectful of dangerous areas and adhere to warning labels at all times
- Maintenance and repair work is to be performed only with engines shut down and drive lines disengaged
- On public roads the legal provisions must be observed.
- If required, additional headlights for the road transport must be mounted.
(see local road transport licensing regulations)
- The instructions of the combine manufacturer must be observed as they pertain to operation of headers.
- The transport and operation of all machines including customized ones is made at your own risk.





CAUTION

- The following are general farm safety precautions that should be part of your operating procedure for all types of machinery.
- Protect yourself.



When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that COULD be necessary for the job at hand. Don't take chances.

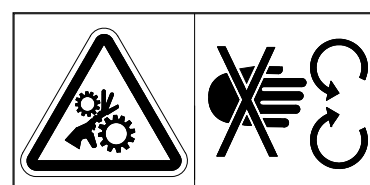
You may need:

- a hard hat.
- protective shoes with slip resistant soles.
- protective glasses or goggles.
- Heavy gloves.
- wet weather gear.
- respirator or filter mask.
- hearing protection. Be aware that prolonged exposure to loud noise can cause impairment or loss of hearing. Wearing a suitable hearing protective device such as ear muffs (A) or ear plugs (B) protects against objectionable or loud noises.
- Provide a first-aid kit for use in case of emergencies.
- Keep a fire extinguisher on the machine.

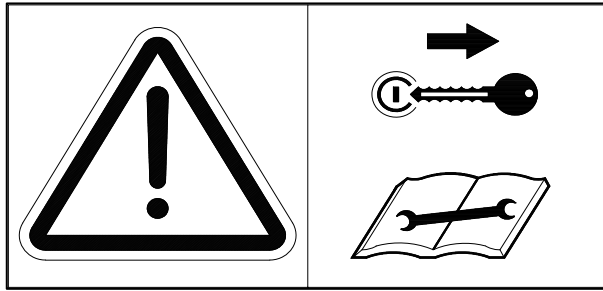
Be sure the extinguisher is properly maintained and be familiar with its proper use.

- Keep young children away from machinery at all times.
- Be aware that accidents often happen when the operator is tired or in a hurry to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.

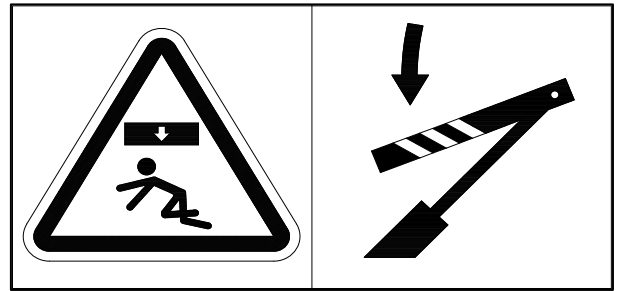
- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep hands, feet, clothing and hair away from moving parts. Never attempt to clear obstructions or objects from a machine while the engine is running.
- Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.
- Do not modify the machine. unauthorized modifications may impair the function and/or safety and affect machine life.
- Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.
- Keep the area used for servicing machinery clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Use adequate light for the job at hand.
- Keep machinery clean. Straw and chaff on a hot engine are a fire hazard. Do not allow oil or grease to accumulate on service platforms, ladders or controls. Clean machines before storage.
- Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover sharp or extending components to prevent injury from accidental contact.



ISO 11684



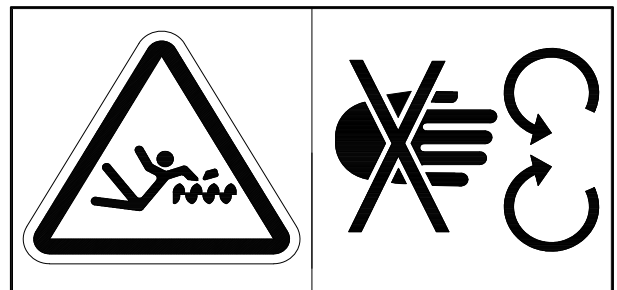
Prior to performing maintenance and repair work, turn off the motor and withdraw the key



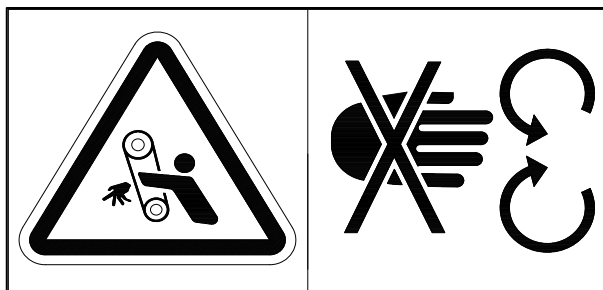
Insert lifting cylinder safety latches before entering dangerous areas



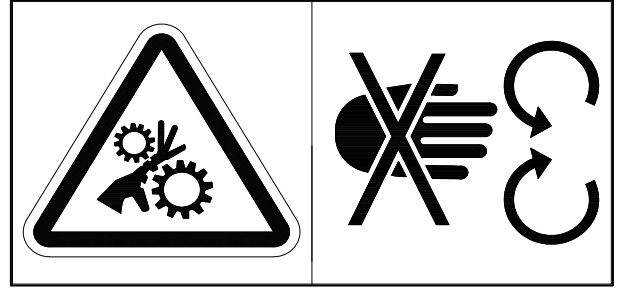
Keep away from danger zones between the header and machine!



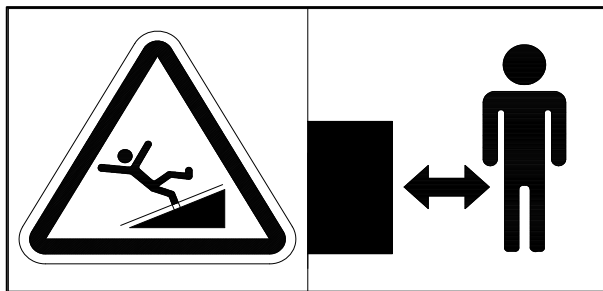
Keep clear of operating machinery.



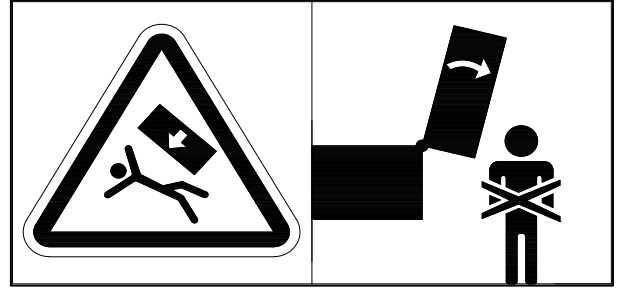
While the motor is running, never allow guards to be removed.



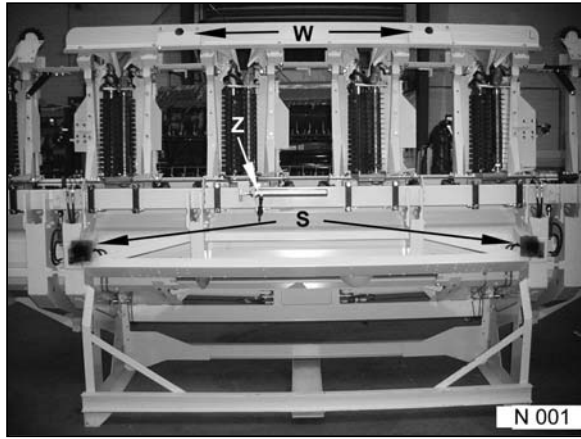
While the machine is in operation, keep away from moving components.



Keep a sufficient safety distance to the header. Prior to maintenance works or clearing of clogged header, switch off motor and remove key. Keep clear of machine during operation to avoid flying debris.



Never go into the operational range of the machine.



Scope of supply

Subject to model, type and dealer discretion, the header is supplied in horizontal position or upright on a shipping rack. Each item should be accompanied by a detailed and type-referred packing list.

Remove the packages attached to the header. Ensure all required items are supplied.

Check the distance configuration between rows.



Ensure the machine is standing safely

Remove the shipping rack.

Extend the supports (S). Move the hoist to the lower side of the header.

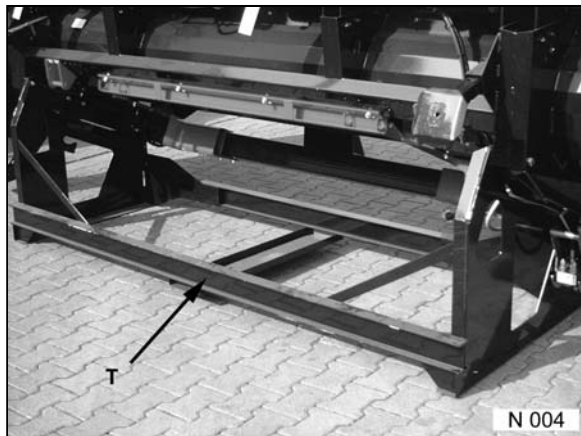
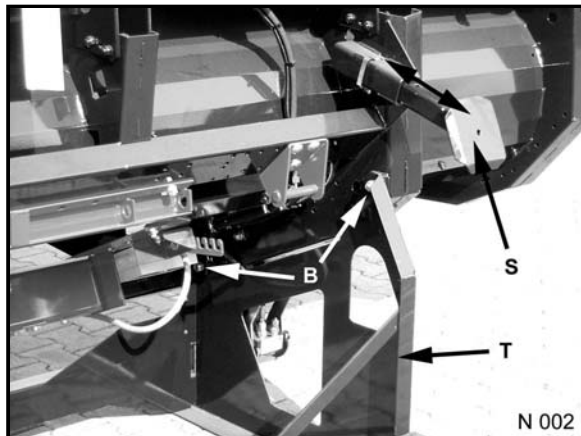
Attach suitable chains or ropes to the drawbar eyes (W), and slightly lift the header while slowly moving the hoist away from the header.

Lower the header carefully, considering the tilting angle.



Use a hoist which is strong enough. Keep out of the hoists working area. Follow the instructions for hoists.

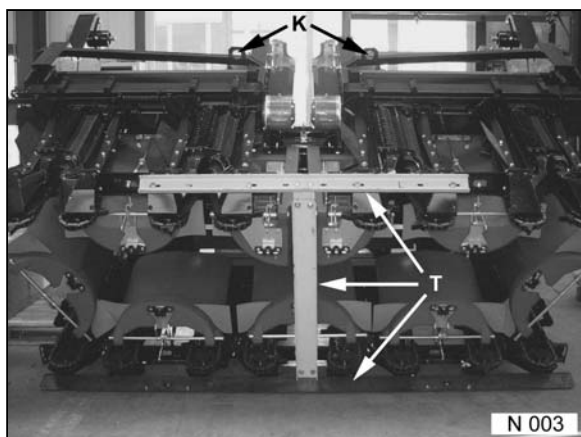
Remove screws (B) and shipping rack.



Further use of the shipping rack.

The rack (T) is recommended to be stored for later use.

After season maintenance work can be performed easier with the machine standing in upright position.



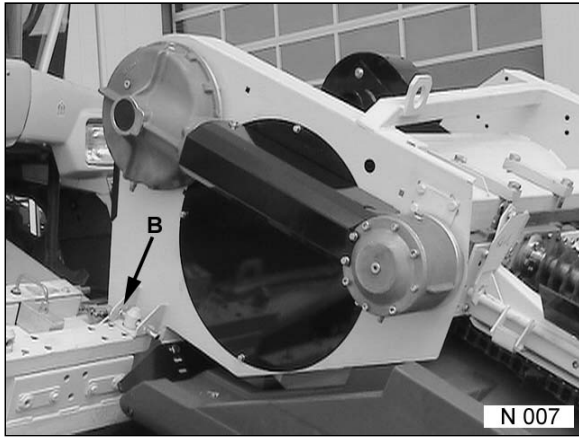
Folding corn headers lifted by a crane

Folding headers are possibly supplied without a shipping rack (T) and are in the folded-up position.

For moving the header with a hoist use only the provided lift points and the facility provided on the front transport angle (S). If necessary, remove the transport protection.

Before mounting the header to the combine, transport protection must be removed (S).

Protection is to be removed only when the header stands on firm ground.



Transport protection folding corn headers

Apart from the transport protection as shown in picture N 003, folding corn headers from 8 rows upwards are fitted with an additional protection (B) on the frame.



Bolts (B) must not be removed before the header has been firmly put down and the hoist has been removed

When using the hoist again, locking bolt (B) must be replaced as before.

Corn header	Approximate weight in lbs
4-rows	3000
6-rows	4000
8-rows	5000
12-rows	7500
16-rows	See type plate
18-rows	See type plate
24-rows	See type plate
Folding option	Plus 800-1500

Use a hoist that is strong enough

The approximate weight of different header models can be determined from the opposite table.

Follow the instructions for the use of hoists.

The exact weight of the different headers is indicated on the type plate of each machine located on the left side of the main frame.

Assembly preparations on the combine



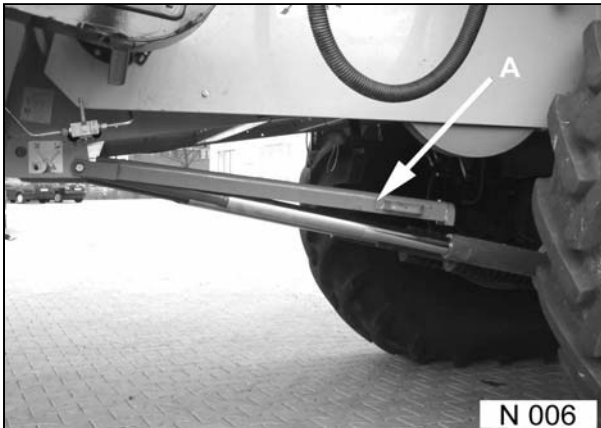
Front protection on row-units

The standard front protection (S) on top of the feeder house chains and the stripping angles (A), in front of the row units must be dismantled.

The corn header itself is fitted with a special front protection.



When working on the combine or the header the engine must be turned off.



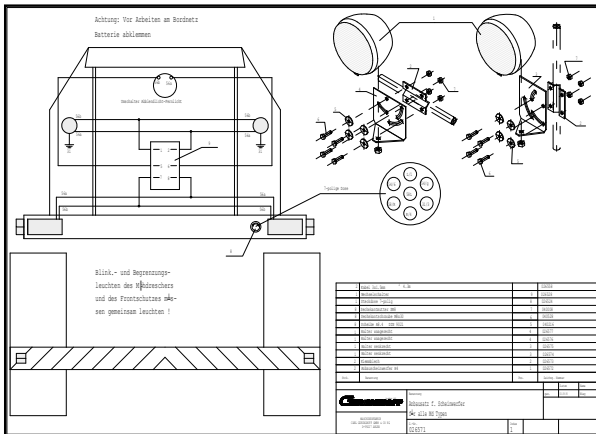
Assembly preparations on the combine feeder house housing

The feeding chain, its tension and the distance to the infeder housing bottom is to be adjusted according to the instructions of the combine manufacturer. (See combine manual)

Prior to the first mounting of the header, the anti-lowering safety device (A) of the infeder housing must be checked. Never to perform any work on the header without engaging safety devices.



Safety devices must be engaged prior to all assembly or service



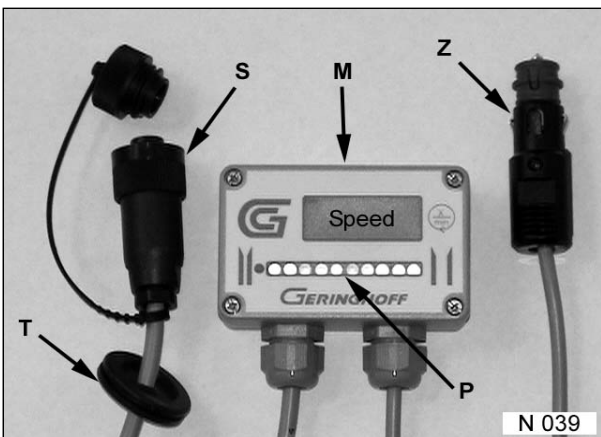
Additional headlights

Some combine models require the fitting of additional headlights for travelling on the road, see the scope of supply of the header.

A wiring diagram is enclosed with the headlight set. A position switch must be used for changing between standard and additional headlights!

Observe the legal requirements and instructions of your local jurisdiction.

General terminal connecting diagram on page 36 / 500



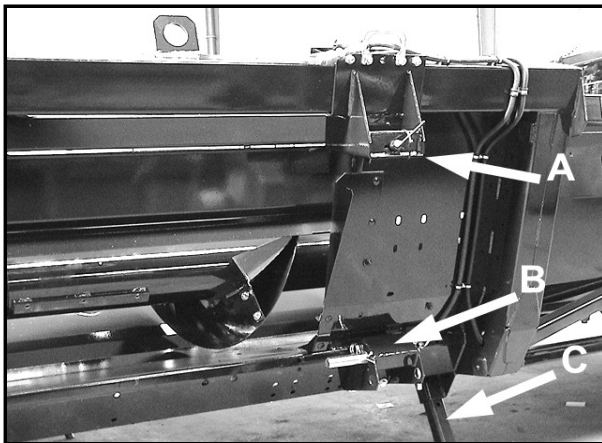
Monitor

Display unit (M) must be fitted so as to be easily read and without visual obstruction on top of the fittings.

The 12 V current is supplied independent of the ignition lock via the plug (Z). (fuse max. 10 Amp.).

Connecting cable (S) with seal (T) right below, must lead out of the cabin bottom. Ensure that the cable is long enough outside of the cabin.

The monitor reads both the speed of the header and the position of the stripping plates (P) via a changing number of diodes.



Adaptation to the combine

The corn header is to be placed down on the supports (C). Check the correctness of the adaptation parts. For further information see spare part catalogue 3061000 from picture table 60/.. onwards.

The combine is driven to the header.

Prior to lifting the header with the combine feeder house the Correct fit of the adaptation parts (A) must be checked.



No Persons are allowed to stay between combine and header during the mounting process.



Locking Corn header to the combine feeder housing.

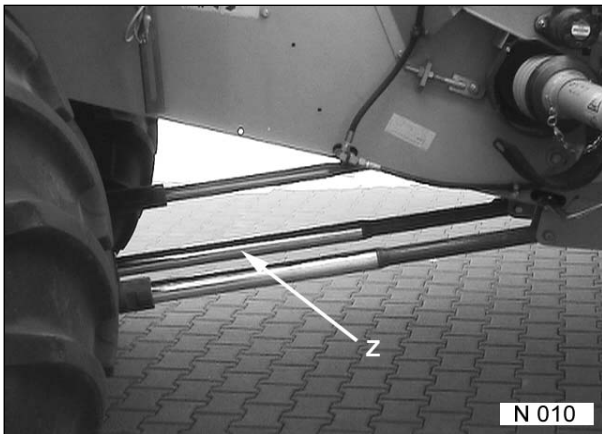


Secure Corn header against unwanted lowering by applying the locking mechanism on the hydraulic cylinders!

The header (R) must be mounted to the points and devices of the combines as provided.

Always lower Corn headers slowly to the ground to keep unwanted forces away from the locking devices.

Follow the instructions of the combine manufacturer



Additional lifting cylinder

Subject to the size and weight of the corn header, one or two additional hydraulic cylinders (Z) may be required.

The combine manufacturer generally keeps the corresponding kits readily available for the dealer

Subject to the design of the corn header and carrying capacity of the different combines, the steering axle may require the fitting of additional weights and the rear tires might need to be filled with water.

Follow the instructions of the combine manufacturer.



Additional counterweights

Subject to the weight of the mounted corn header, additional loading weights may be required for the steering axle of the combine.

The dimensions of these additional weights are to be learnt from the combine operators manual



The road transport licensing regulations must be followed.

Corn header drive



Drive with PTO-shaft

Straight (Not folding) corn heads are driven by a simple PTO-shaft on the right-hand side.

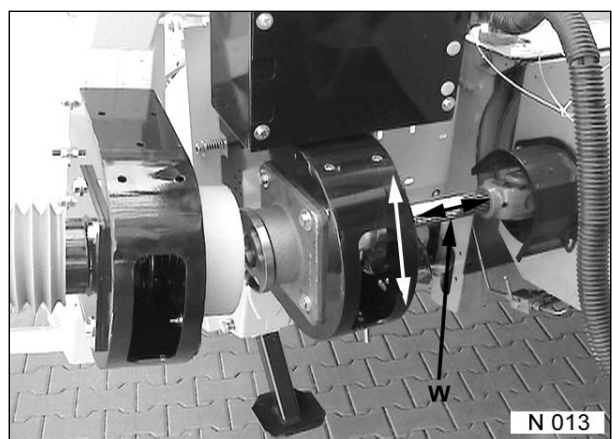
Subject specific models, headers can also be driven on the left-hand side, e.g. machines > 8 rows.

The PTO-shaft is protected, via a chain (K) to prevent it from turning.

If the combine is fitted with a pivoting shield, check for overlapping in the extended state.



Protection devices (S) are to be installed prior to start-up. Do not remove them during operation.



Folding headers with PTO-shaft coupler

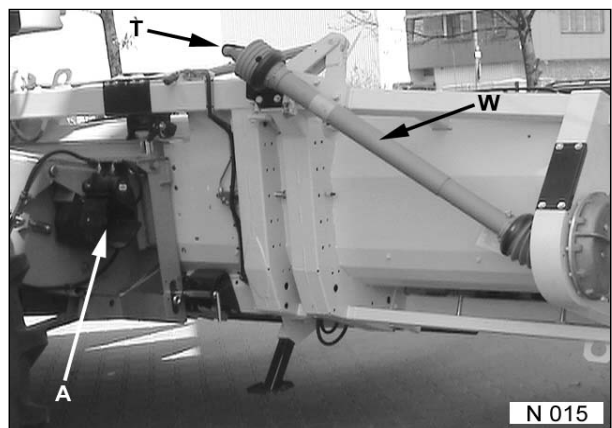
Check the PTO-shaft between coupler and trough connection for sufficient overlapping. If required, actuate pivoting shield.



The Reel compensation of some models are required to be blocked.

On certain folding or dual side drive headers with PTO-shaft coupler, the pivoting shield must be blocked (follow the instructions). e.g. to John Deere series 20... / 22...

Hillside combines cannot be operated with automatic PTO-shaft coupler.



Drive for hillside combines

All hillside combines are directly driven by PTO-shafts (W) These have to be slipped on by hand.

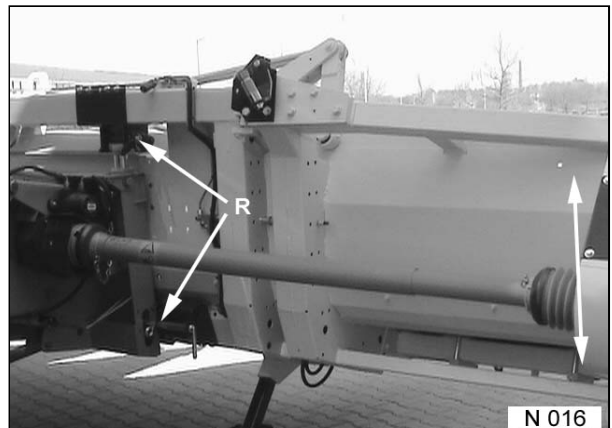
Certain combine-header combinations require wide angle or even special PTO-shafts.

Instructions must be strictly followed and PTO-shaft design must be considered.



Prior to start up, check pivoting range and PTO-shaft length. Check for sufficient overlapping.

The fastening (T) of the PTO-shaft is for transport.



Use of the pivoting shield (reel compensation)

On principle, the pivoting shield of the combine can be used in combination with the majority of the corn headers without any limitation, unless otherwise specified.

Follow the instructions of the combine manufacturer.

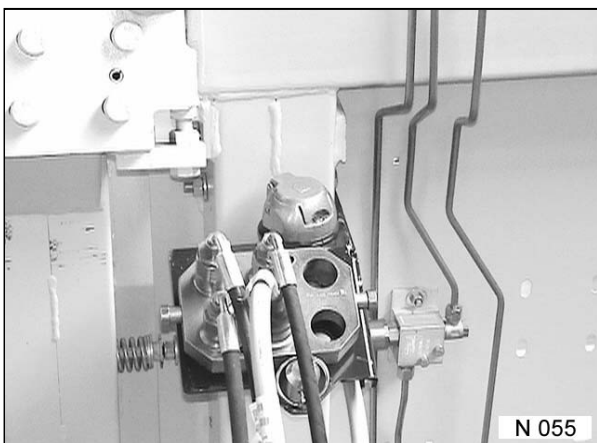
The PTO-shaft length id to be checked in all positions.

If required, special locks (R) are to be fitted to upper adapter frame and secured.

Always conduct a trial run.

Instructions for PTO-shaft drives must be observed.

Hydraulic connections



Multicoupler

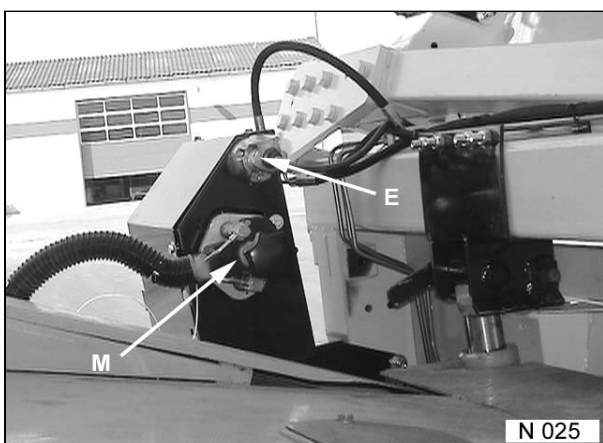
If the combine is fitted with a multicoupler (optional), the header should be fitted as well.

The suitable coupler (optional) can be ordered by your dealer.

All operation is to be made according to the instructions of the combine manufacturer.



When checking the functions, keep away from the dangerous areas. Check tightness of all connections for fluid leaks. Respect the environment.



Connection via control valve coupler

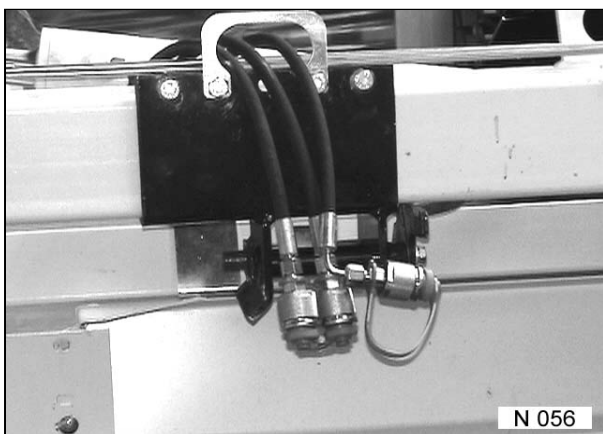
Some combines require the use of a control valve coupler (M) for connecting the header.

The respective headers are fitted accordingly as required.

All operations are to be made according to the instructions of the combine manufacturer.



When checking all functions keep clear of danger zones. Check tightness in case of fluid leaks. Respect the environment.



Connection via simple screw and/or slip-on couplers

If only simple slip-on and/or screw couplings are available, first mark the double and single-acting lines.

The single-acting line is to connect to the line of the stripping plate adjustment.

The double-acting lines serve to control the folding process of the respective headers.

Establish a safe connection to allow the oil to flow.

Mark the lines and always connect them immediately so that the working arrangement remains unchanged.



Keep away from danger zones during functionality checks. Check tightness of fittings in case of leaks. Respect the environment.

Hydraulic actuation of the folding process

Reel:

"Lifting and lowering" = stripping plates "open and close"

Reel horizontal adjustment: (optional)

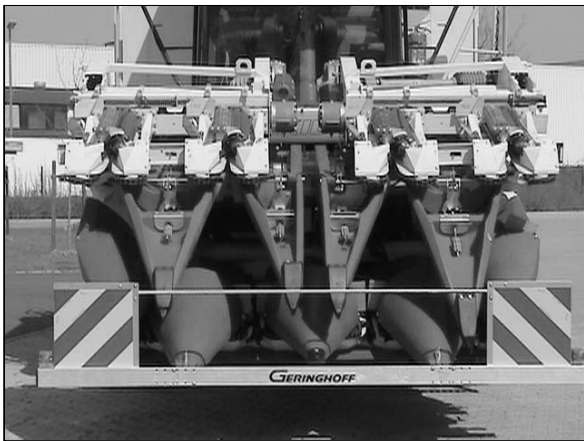
"forward and backward" = folding process "open and close"

Attention

Some combine makes are fitted with a separate electrical operating device in driver stand.

Check the hydraulic oil quantity in combine storage tank.

Hydraulic functions of folding corn headers



Folding process (from transport to working position)

Operate until header has reached its working position

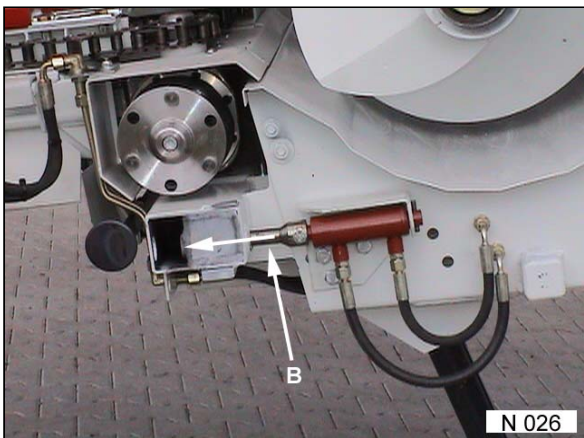


Keep away from danger zones.

Keep out of the working range of the header.

Continue to actuate open/close valve for 10 seconds after the cover shields have completely closed (to assure the locking function).

Run the machine in idle to engage drive coupler.



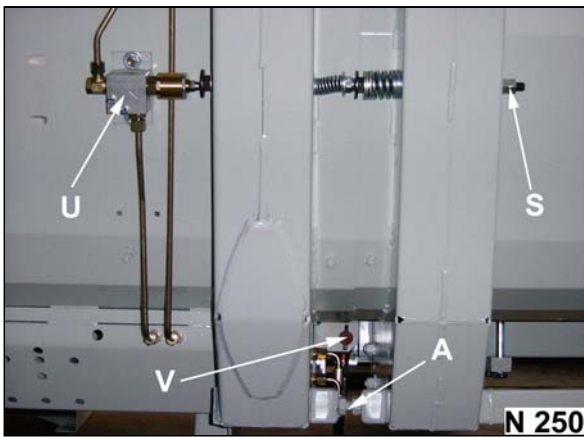
Locking

Once the header is completely open and in working position, the locking bolt (B) is automatically activated.

If the header is not completely open in working position, you must troubleshoot as there are possibly foreign substances hindering the function, (seek help in case of malfunctions page 10 / 900)

Bolt (B) must be completely extended in the locked position.

Check drive coupler! Cams are spring-loaded and do not function if cam and opening in drive plate are not in line!

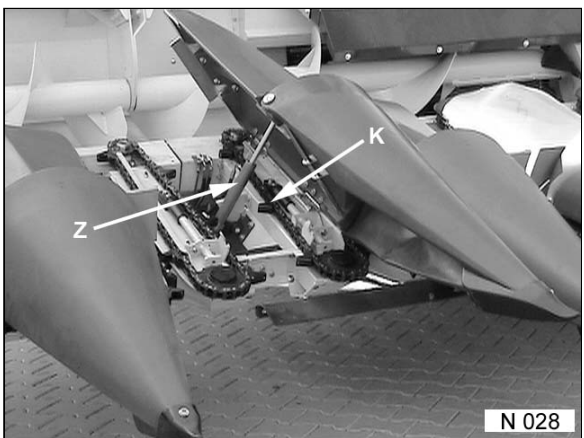


Control valve for locking

The locking (V) is triggered by the valve (U) and closes only if the header has reached the working position.

If the locking is not activated despite exact bordering of the stop screws (A), adjust the drive of the on-off valve (U) by slightly adjusting nuts (S).

The stop screws (A) on the bottom frame are factory-set and may not be readjusted.



Automatically closing cover shields

Cover shields close only after complete extension of the locking bolt. Troubleshooting may required upon failure.

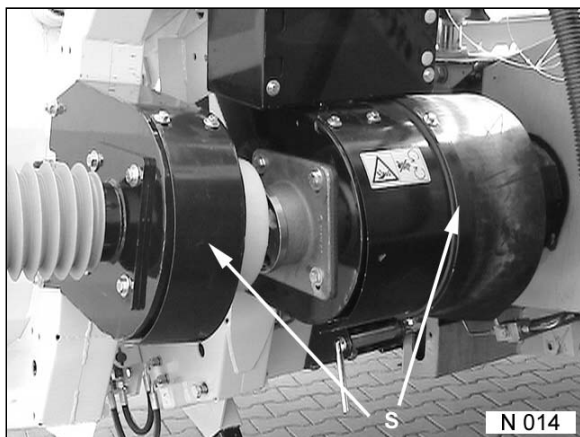
Factory adjustment has been checked. Corrections are generally not required.

The folding process is not finished until the cover shields are completely closed.

Attention!

Machine MUST NOT run with opened shields. Hydraulic cylinder (Z) will contact the gathering chain.

Drive coupler folding headers



Drive coupler folding headers

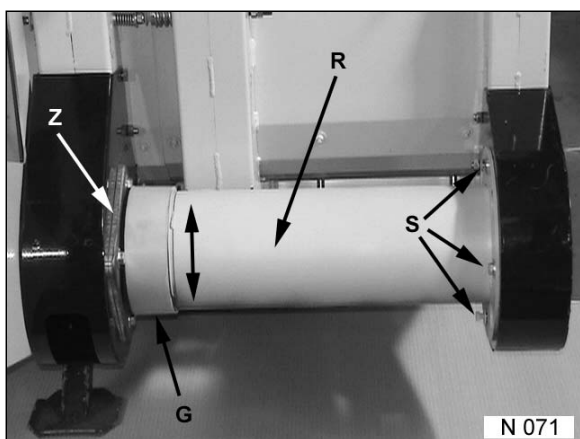
The drive coupler ensures an automatic coupling of the PTO-shaft drive.

Prior to start-up and then in regular intervals, check the correct position of the coupling halves.

Check the protective devices (S) for correct fitting with the machine in idle mode.



Keep away from danger zones



Drive coupler 6-row folding headers

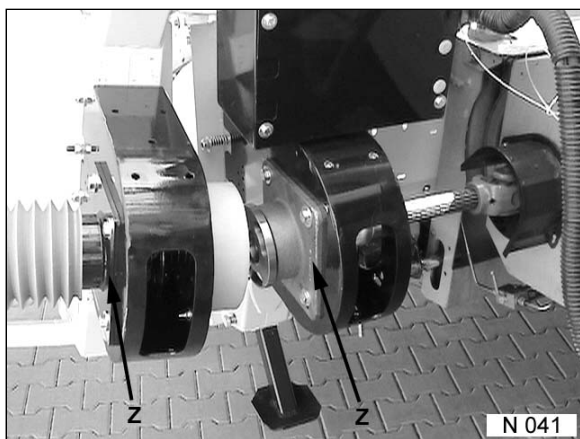
The coupling half mounted to the folding element is adjusted only via the protective tube (R).

If the coupling halves must be readjusted, loosen screws (S) and re-set protective tube accordingly.

Parallel fitting of the coupling halves is absolutely necessary.

The coupling halves are axially regulated only via spacers (Z) below the bearing.

Ensure the correct fitting of the protective ring (G)



Header with drive couplers on both sides

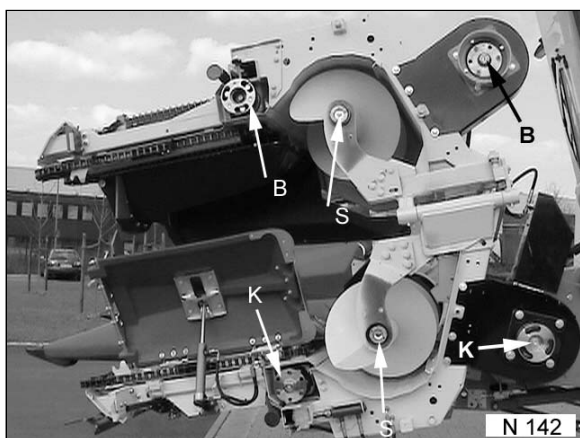
From a certain number of rows onwards the headers are fitted with a drive from both-sides.

If the coupling halves require an axial regulation, appropriate spacers (Z) are only to be used on the marked positions.

The radial adjustment is made on the bearing points by moving the bearings into the bores provided.

Ensure the exact parallel fitting of the coupling halves.

Ensure to mount shaft protection.
(removed for photo purposes in illustration)



Maintenance and care

Coupling washers (S + B + K) are to be slightly greased at regular intervals.

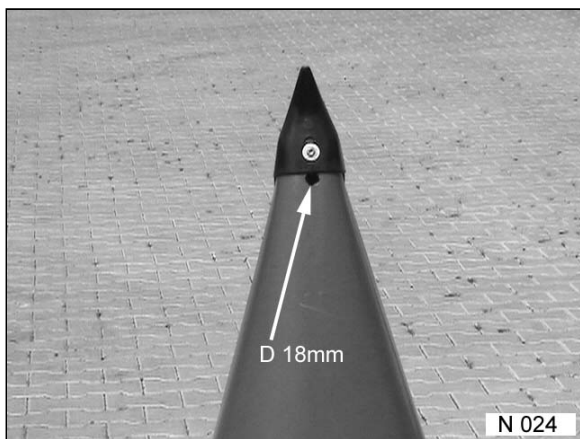
Sliding parts of the respective coupling halves must be dismounted prior to harvesting season and the sliding parts must be greased.

Carefully tighten axial fastening screw with standard torque.
(see page 36 / 100)



Header drive MUST NOT be engaged if the header is folded or not fully opened. ACCIDENT RISK!

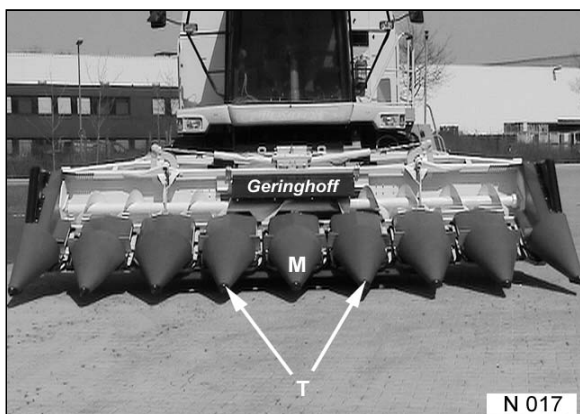
Mounting Dividers



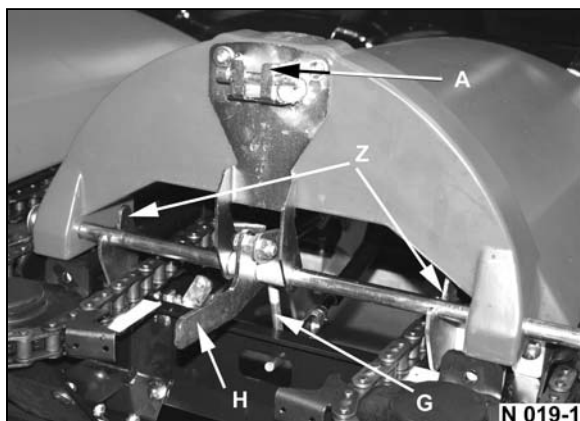
Assembling divider noses

Divider noses with mounting hole (D)

Mount the divider tip to hole D.



Lift the Corn header and lock the lifting cylinders against unwanted lowering!



Mounting of the center dividers

Open the shield by lifting the lever (H) and press slightly upwards from the center towards the stop of the gas pressure spring.



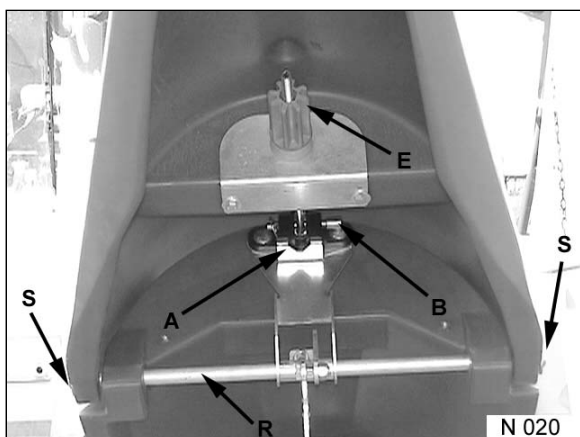
Shields may jump upwards by action of pressurized lift cylinder

Remove tube (R) after unscrewing the axial screws (S). Push Tube in the provided holes of the divider nose and shield.

Re-fit and tighten the axial screws

Lift divider nose and hook setting bar (E) into the support (A). Fit safety bolt (B) and secure by cotter pin.

Press down shield forcefully and check that hook on lever locks. With lever (H) shield must close with moderate stress. Otherwise locking hook must be adjusted.

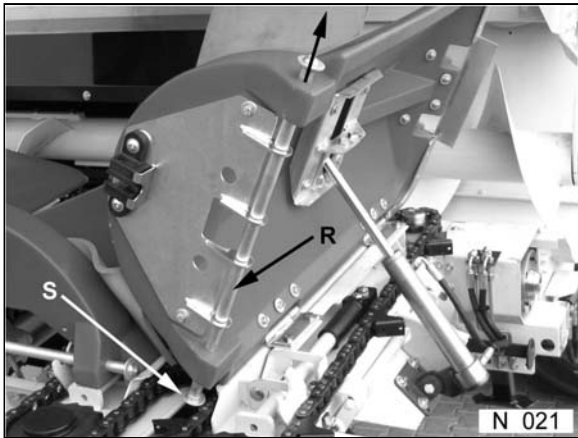


Mounting of outer divider

The same procedures as with the center dividers. The divider noses are height-adjusted via the screw (E).



Be aware of pressure caused by lift cylinders



Fitting of centre dividers to folding shields

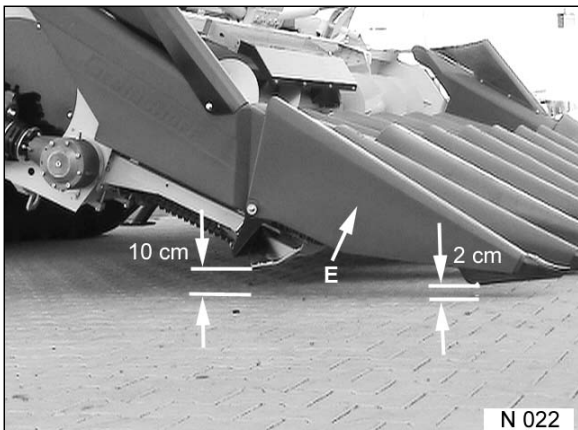
Only possible when head is in unfolded position.
If folding shields are open stop procedure.

**Always switch off engine
Secure corn header against
unwanted lowering!**



Mounting procedure of the dividers is the same as for the other center noses.

The divider noses are adjusted via the screw (E).



Adjustment of the dividers

Remove protection against lowering of corn header.

Lower header to about 2 cm. above the ground on an even surface.

Adjust divider noses with screw (E) so that their distance to the ground is one inch (normal adjustment).

When harvesting lodged corn and when the combine sinks deep into the ground, the dividers are to be lowered further.

Attention

In case of an extremely low adjustment, ensure that the dividers do not make contact with the gathering chains.



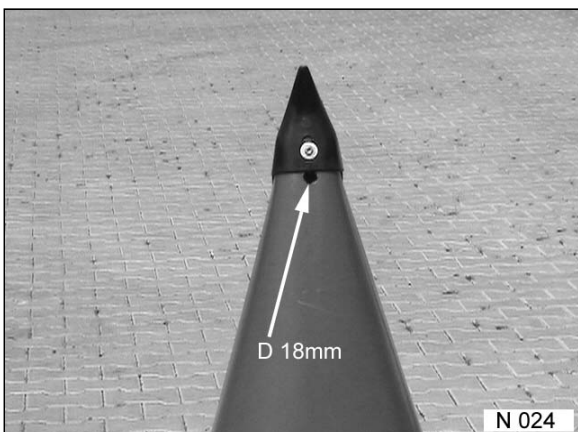
Fitting of the increased side shield

In order to minimize transport dimensions, the side shield is often supplied un-mounted. This shield is to be mounted to the outer bodywork in the provided threaded holes (G).

Attention

Tighten all screws to plastic parts with only normal tension, to prevent the threaded holes from being damaged.

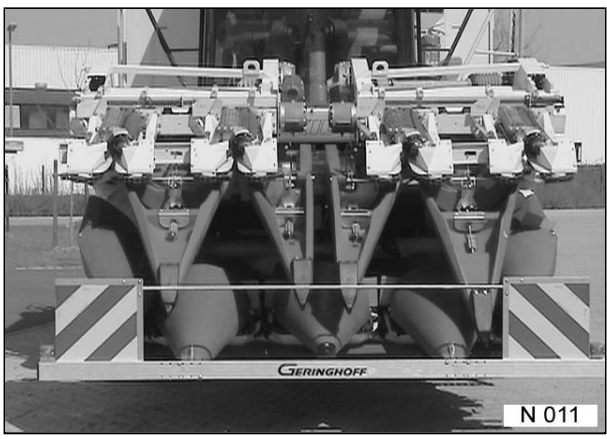
Harvest can be made completed without these side shields at your discretion.



Optional tips

Your dealer can provide a variety of tip options to accommodate extreme lodged corn conditions.

Road transport



Front protection

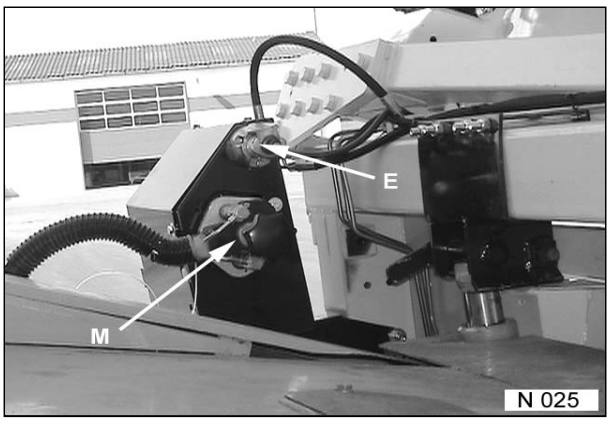
Non-folding headers up to a transport width of 3,0 m are fitted with an unlit transport protection.

All foldable headers up to a transport width of 3,3 m are fitted with a lighted transport protection.

The connection is made via a standard socket which, if not available, must be mounted on or below the driver platform.

The outer non-folding centre divider noses are provided with holes for locking of the transport protection.

(see page: divider noses to mount, page 09 / 321)



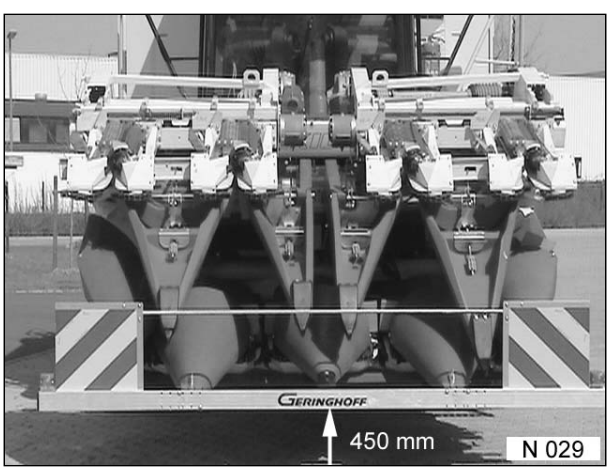
Front protection with lighting connection

(on multi coupler and/or control valve unit)

In certain combine makes the lighting connection for the front protection is integrated into the general supply line (M) to the header.

- The front connection is then connected to the socket (E).
- If required, the front protection is connected via another individual connection.

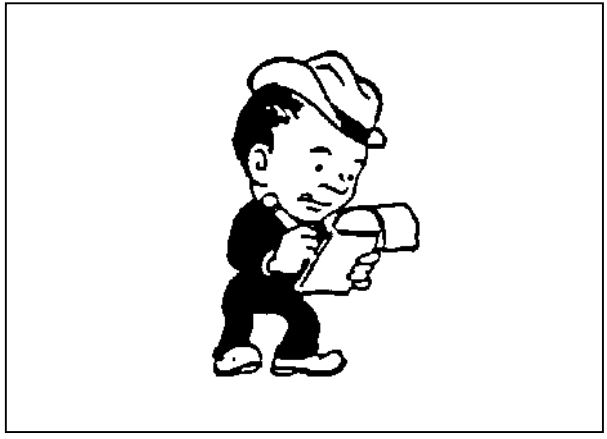
Follow the instructions of the combine manufacturer



Transport on public roads

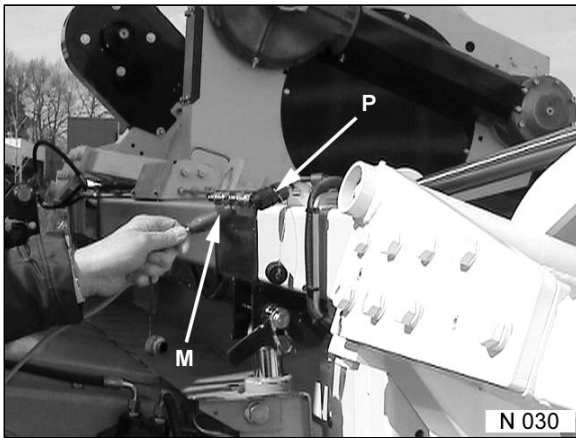
It's not allowed to transport the corn header on public roads without transport protection.

The maximum admissible height of the corn header for transport on public roads is about 0,45 m as measured on the front protection (H) and is determined for each machine in the separate licensing documents.



Transport licensing and Road-regulations as well as instructions of the combine manufacturer must be observed strictly.

Operation and function of monitor



Connect monitor to the header

The plug-type connector of the monitor cable coming from the driver cabin must be connected to the right-hand side of the header coupler.

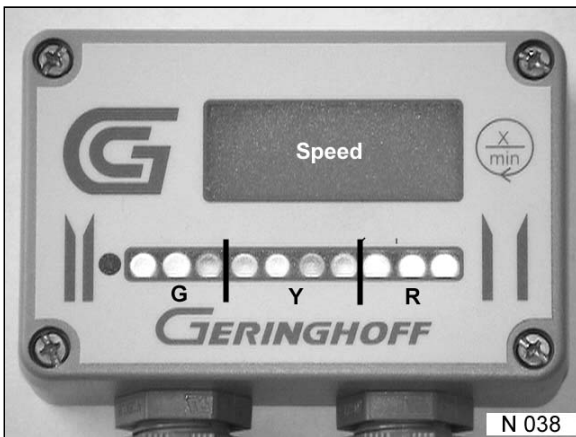
Supply electric current as described on page 09 / 080

Speed indication on monitor reads "0" when machine idles

At operational conditions a value of approx. 720 - 750 r/min is indicated.

The speed indication allows the operator to reliably evaluate the state and load of the combine drive supplying the corn head with power.

Dropping speeds signal either an insufficient belt tension or overload of the combine drive.



Stripping plate adjustment

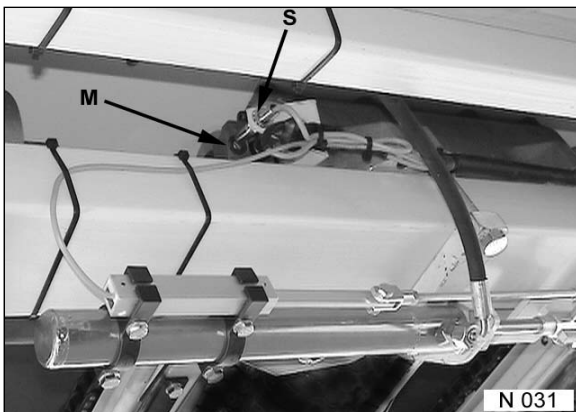
Subject to the position of the stripping plates, a certain number of green (G), yellow (Y) or red (R) diodes light up.

The further the stripping plates are open, the more diodes light up.

The number of the flashing diodes is only to be seen as an indication. Before start-up, determine the proportion of the flashing diodes to the position of the stripping plates in relation to the harvest conditions.



**Prior to checking turn engine off.
Keep your hands off stripping plates.**

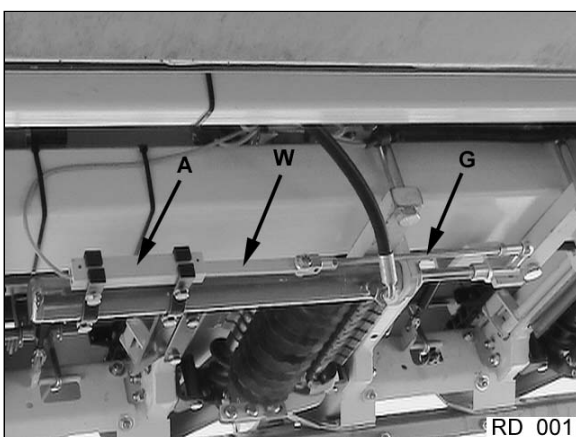


Recording tachometer

The recording tachometer (S) is located between two rows on the drive connection claw of the centaflex-coupler.

The distance between the magnetic switch (S) to the magnet (M) and/or claw should at least be 1,5 mm and at max. 2,5 mm.

Indication: ERR - 1 = short circuit in position sensor cable
ERR - 2 = sensor cable not clipped on or position sensor cable interrupted



Rheostat of stripping plate adjustment

The rheostat (A) and the slider (W) should be cleaned at regular intervals.

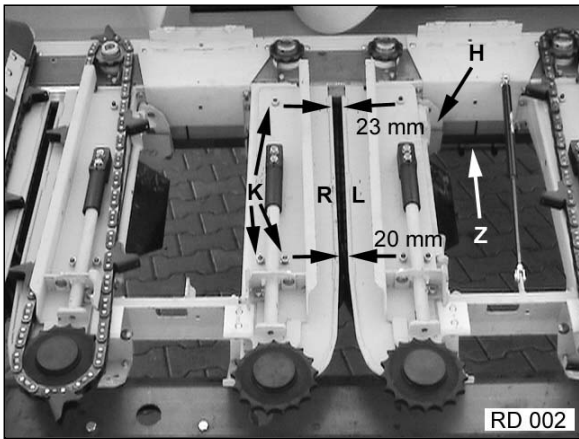
Via the axial adjustment of the spindle (G) and by displacing the position of the rheostat (A), the indication of the diodes can be changed individually.

Electric supply lines are to be checked at regular intervals.



**Prior to checking turn engine off.
Secure header against unwanted lowering!**

Stripping plate adjustment



Function and basic adjustment

The basic front adjustment is 20 mm and the rear one 23 mm in position "narrow". That means, the stripping plates are pushed together as far as possible.

The wedge-shaped adjustment is required for the function of the header.

These values are set via the screwed down stripping plate (R) and the screws (K).

For the harvest, the stripping plates are set hydraulically via "reel lift and lower" control.

The average corn cob diameter is important for the setting of the stripping plate distance. For this reason, the plates should be opened just as far as possible so as to prevent cob losses.



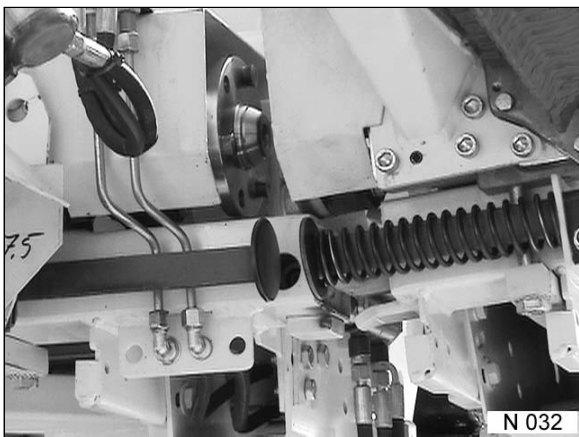
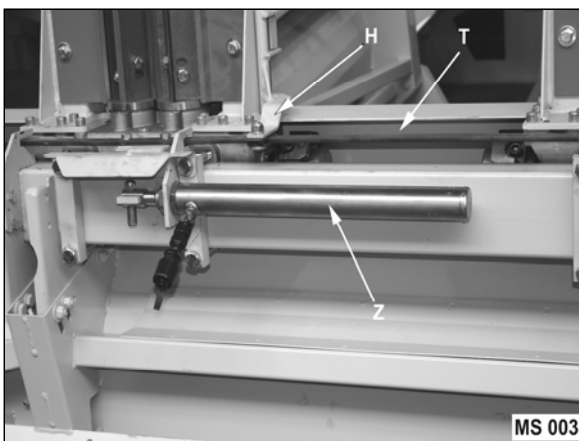
Always turn off engine when checking. Secure header against unwanted Lowering.

The left stripping plates are opened by the shifting cylinder (Z), the sliding bar (T) and lever (H). The plates are closed again by one or several retracting springs.

The regulation of the uniform setting of all stripping plates on the different rows is made by shifting the levers (H) on the sliding bar (T).

It is recommended to make re-adjustment only if the prior basic adjustment "20 mm front, 23mm rear" was carried out.

(Form and design of stripping plates might deviate from the photos)



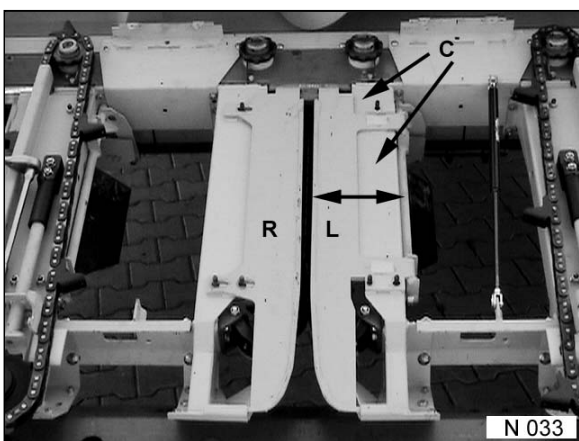
Stripping plate adjustment folding headers

The function and layout is identical to the non-folding machines.

The stripping plates on the folding parts are actuated via the spring-loaded sliding bar contact. Additional, right and left mounted restoring springs open the plates upon activation of the folding process.

Pressure plates should overlap.

Adjustment and setting is to be made in working position and with adequate component locking only.



Maintenance and care of the stripping plate adjustment

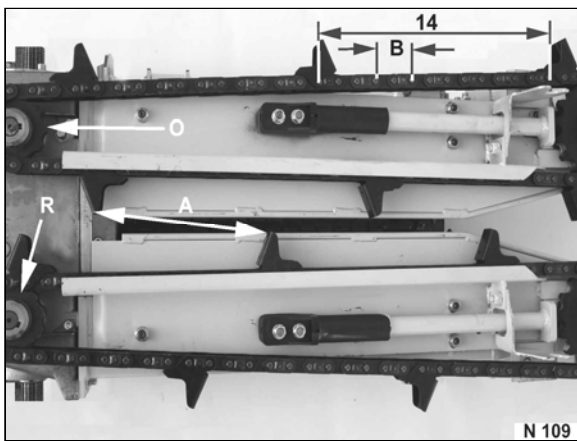
At least once daily the stripping plates (L) must be opened and closed several times to assure free floating and to remove impurities.

Grease joints every 100 hours and clean retracting springs.

After harvest season clean the surfaces (C) of the adjustable stripping plate (L) and protect against corrosion using adequate means.

(Form and design of stripping plates might deviate from photos)

Gathering chains



Gathering chains

Special "slipping" sprockets (R) drive the gathering chains and react when obstructive matter enters the corn head.

The position of the gathering chain fingers (A) to each other is continually changing, even during normal harvesting operation due to the function of the slipping sprockets.

When noticing a stretched chain (ill. N 107), it is permissible to shorten the chain by one outer and inner link plate (B). The shortening is to be made in area (14) = 14 links distance from one finger (A) to the next finger (A).

The plastic protective rings (O) beneath the slipping wheels must be checked regularly to ensure permanence.

Chain tensioner

The maintenance-free gathering chains are automatically tensioned via constant spring pressure.

The preset chain tension also regulates the driving torque of the gathering chain and thus the efficiency of the slipping sprockets.

When to change the gathering chains?

A = 83 mm chain in new state

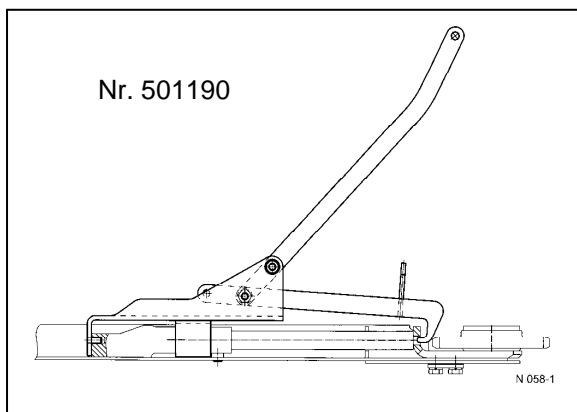
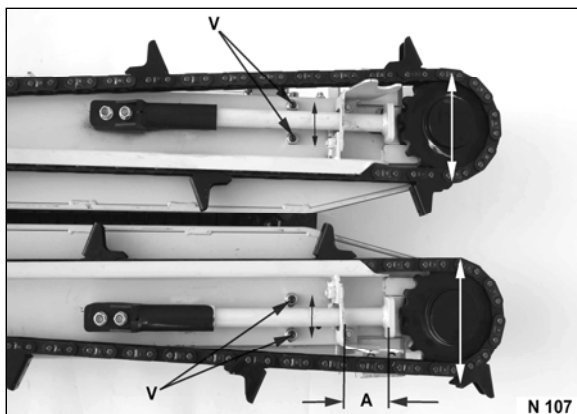
A = 113 mm chain worn-out, replacement required.

Attention

Consider wear proportion of the front reversing wheels when determining the chain stretching.

According to the requirements, the distance of the chains to each other can be adjusted via the setting option (V) from wide to narrow. **Standard setting is "wide"**.

In narrow position the drivers catch more aggressively and force the plant into the cut-off block more aggressively.



Removal of the gathering chains

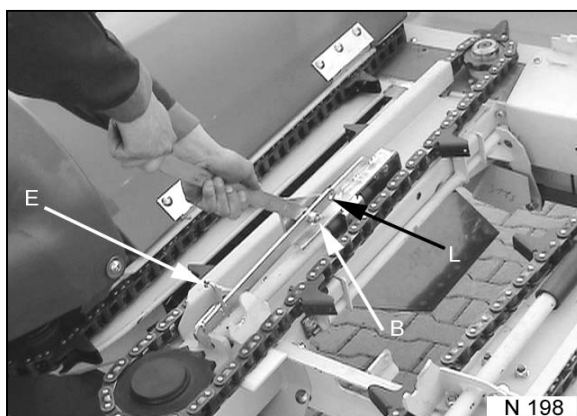
The chains can be removed with ease by using a special tool, (part no. 501190) which is supplied with the header.



Prior to working on the machine, turn off the engine.

Special tool may release quickly when under pressure load

It is recommended to re-position gathering chains once a year from right to left and vice versa to ensure uniform wear.



Removal of front chain idler.

Place the special tool for chain removal to position (B) as shown in illustration N 058 and N 198 and pull closed. Secure lever under hook (E).

The removal of the front chain idler sprocket is done in the same way. Change the assembly of the Special tool by fitting the lever to position (L). Secure lever under hook (E). Dismount the front idler sprocket and release the lever of the Special tool slowly and carefully.



Caution- chain removal tool may release quickly when under load.

Transmission – oil control (maintenance intervals)



Row unit transmission



Lift Corn header to a height of about 1 m to allow the lowering protection to engage. Switch off combine engine!

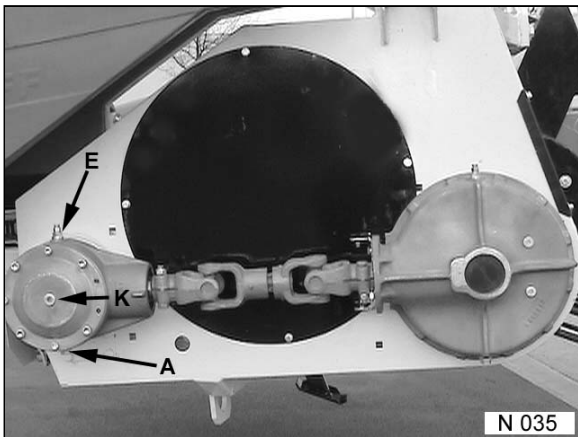
The oil level is controlled by a standard dip stick on the oil filling plug.

Position when checking: Header lifted to about 1 m.

Fill qty.= 2.0 litres gear oil SAE 90 (commercial quality)

Changing interval: 50 hours from start-up, then once before each harvesting season but the latest after 500 hours.

Oil drain plug (not visible) is fitted with a magnet which must be cleaned at each oil change.



Angular transmission

The oil level is controlled via central gauge plug (K).

Fill qty.= 1.5 litres gear oil SAE 90 (commercial quality)

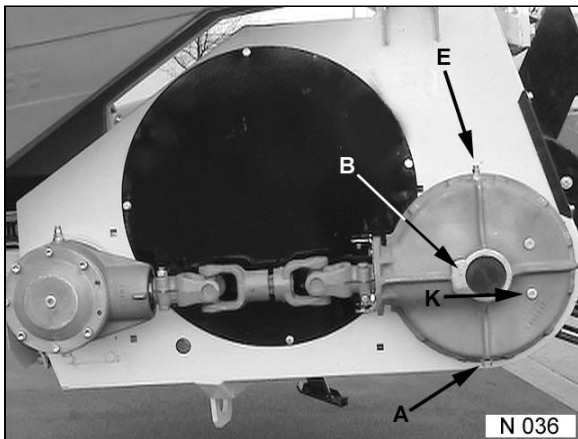
Fill to level of the gauge plug (K).

Changing interval: 50 h from start-up, then once before each harvesting season but the latest after 300 h.

Oil drain plug (A) is fitted with a magnet which must be cleaned at each oil change.

On folding headers, in folded state, ventilation plug (E) must be checked for possible leakage at regular intervals.

All oil levels should be checked at regular intervals



Crown Gear Gearbox

The oil level is controlled via central gauge plug (K).
(below Gearbox center)

Fill qty.= 1.5 litres for Crown gear-type Z= 37 - 64 teeth

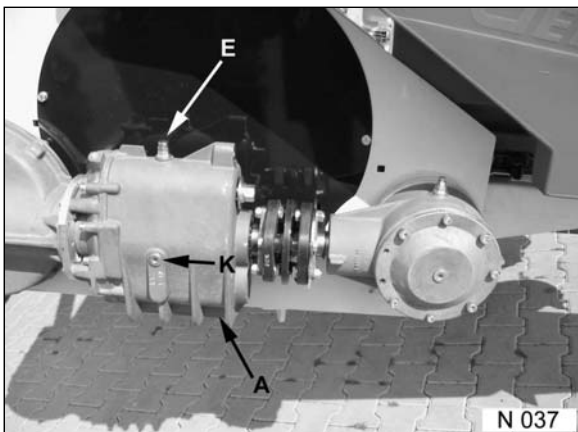
Fill qty.= 2.0 litres for Crown gear-type Z= 32 - 34 teeth

Fill with gear oil SAE 90 to level of oil level plug (K)

Crown gear-type (# of teeth) is marked on surface (B)

Change oil after first 50 working hours and before each new harvesting season, but the latest after 200 working hours. Oil drain plug (A) is fitted with a magnet which must be cleaned at each oil change.

Test Breather-Plug (E) frequently for leakage, in folded-up position on fold-up headers



Speed-change Gearbox 2, 3 or 5 gears (optional)

Oil level control via gauge plug (K).

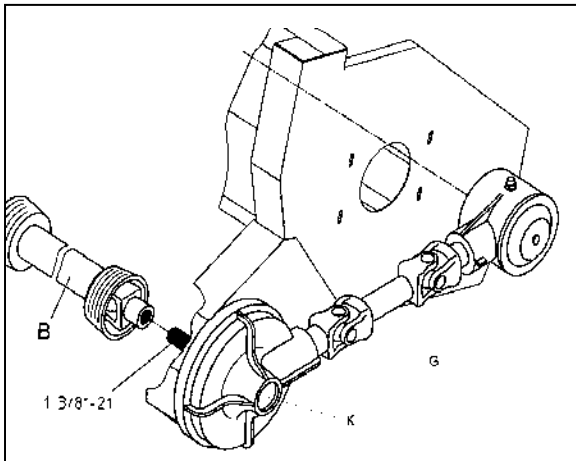
Fill qty.= 1.5 litres gear oil SAE 90 (commercial quality)

Fill to level of the gauge plug (K).

Change oil after first 50 working hours and before each new harvesting season, but the latest after 200 working hours. Oil drain plug (A) is fitted with a magnet which must be cleaned at each oil change.

All oil levels should be checked at regular intervals.

Contrate gearing speed change



When nominal speed is not reached

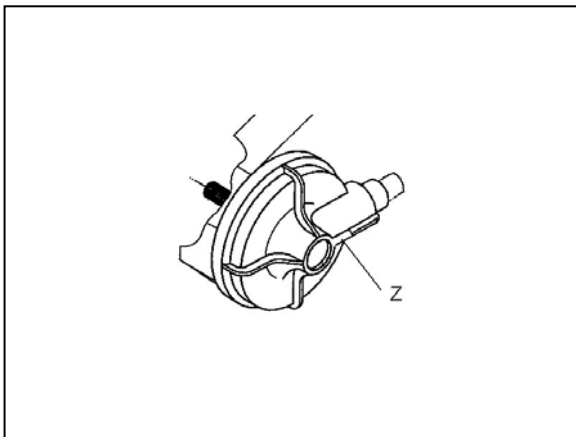
The nominal speed of the header is approx. $n = 780 - 800$ U/min. If not obtained, the speed can be corrected by changing the crown gear within the transmission (K).

First check whether the speed of the combine on the PTO-shaft connection (B) in question is in line with the Combine specifications. Check Combine Operators Manual.

On the transmission box a number is marked at position (Z) showing the number of teeth on the crown gear.

The following formula allows you to calculate the speed:

$$\text{Combine speed} \times (\text{teeth number of crown gear} / 16) \times 32 = \text{header speed}$$



Changing crown gear

Remove PTO-shafts (B+G) .

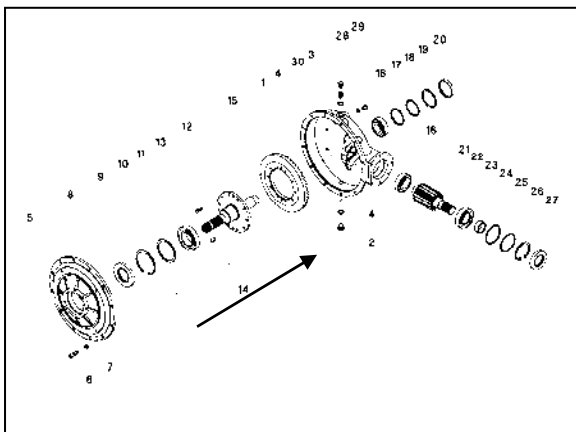
Remove the Screws on the backside holding the transmission and lift off the complete crown gear transmission from the header.

Obtain new crown gear from the manufacturer or dealer.

Attention

The crown gears are available only in certain graduations. If intermediate speeds are required or wanted an optional speed-change gearbox must be mounted (page 35 / 011).

Mark the new number of crown gear teeth on the gear box.



Opening of the Crown gear transmission

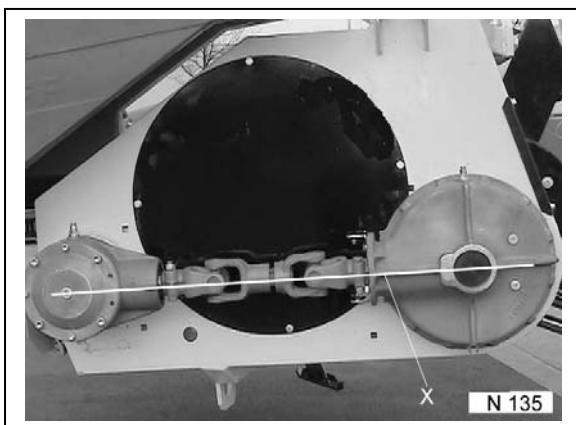
Put down transmission horizontally to avoid oil losses.

Remove Screws (6).

Loosen gearbox cover by knocking with an adequate tool and remove. Shaft (12) with bearing (11) remains in the cover (5).

Drive shaft (12) out of the box cover (5) in the direction of the arrow.

Remove Screws (13) and crown gear (15) for replacement.



Refitting of crown gear transmission to the header

Loosely fit crown gear transmission to the mounting holes provided with required PTO-shafts.

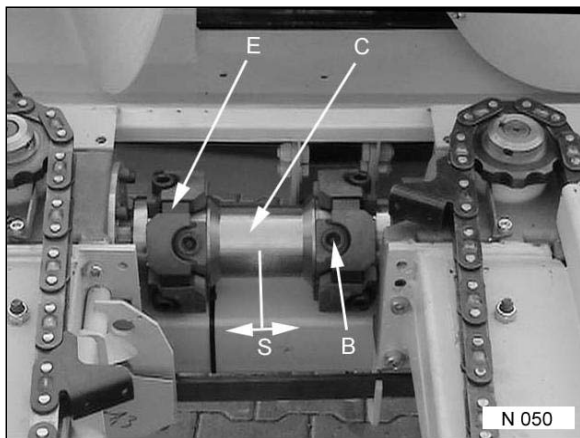
Slightly tighten the mounting screws while maintaining the alignment of the transmission (see white line X).

Only original screw length (6) must be used. **Longer screws will destroy the transmission housing.**

Refit guards and conduct a trial run. Check the speed.

Check Oil level.

Couplings between the row units



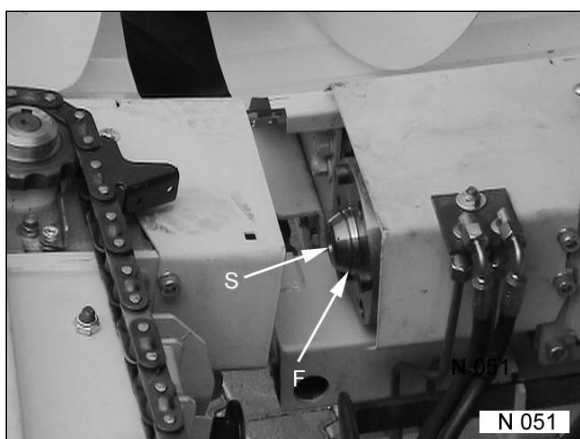
Centaflex-couplers

Centaflex-couplers (C) are to be checked at regular intervals. Inspect the conditions of the flexible elements (E) and engaging brackets.

Worn parts must be replaced immediately.

Maintain an axial clearance (S) of 2 mm for the center hub (C).

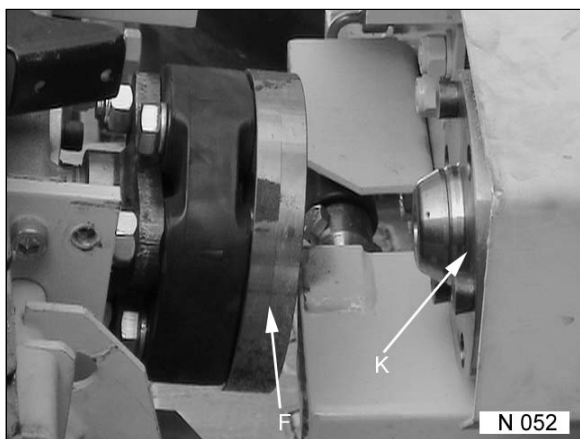
Hexagon socket screws (B) should be tightened to 140 Nm. (use Loctite- blue)



Row unit drive connections (folding mechanism)

The axial flexibility of the coupling half (F) is to be checked at regular intervals by pressing same inwards with a lever.

If required, axial safety bolt (S) must be unscrewed and the coupling half removed. Splined shaft section must be cleaned and greased.



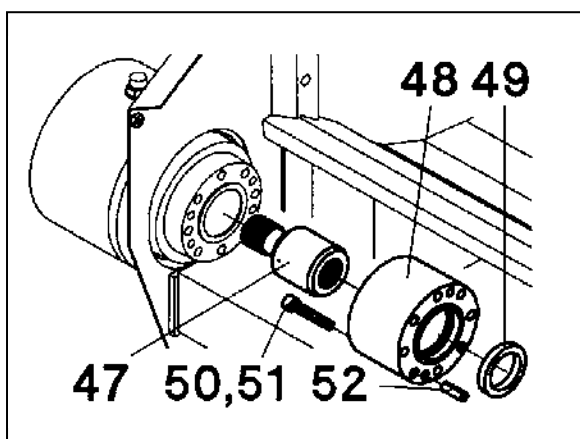
With engine switched off and clutch engaged, the parallel position of the cam plate (K) towards the punched disk (F) must be checked at regular intervals.

Axial adjustments are made with shims between gearbox bearing and hardy disc carrier-flange.

Radial differences are to be compensated by readjustments made on the pivot of the folding mechanism.



Drive clutches must be engaged only at minimum speeds.



Corn header with shaft extension (optional)

Corn headers with certain row distances can be fitted with a shaft extension (47) on the drive side.

Flange (48) and intermediate shaft (47) are arranged between the angular gear and the row unit gear.

The intermediate shaft does not require maintenance.

Trial run

Combines with Variable speed drive for headers

Speed

If the combine is fitted with a variable speed drive for headers, urgent attention is to be paid to the speed indicated on the monitor

Do not fall below the rotational speed of $n = 680$ r/min and do not exceed $n = 800$

The rotational speed drops so quickly below 680 r/min that reliable operation cannot be assured. Exceeding the rotational speed of 800 r/min results in an unintended torque change of the safety friction clutches.

Warranty may be refused for consequential damages caused by falling below or exceeding the speed range.



First trial run



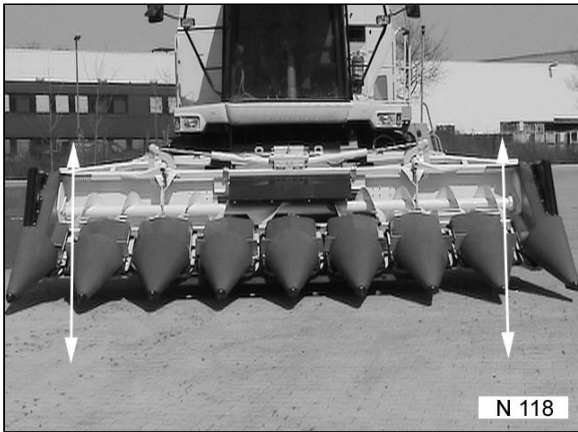
The header must be lowered near to the ground. Keep away from danger zones. All guards must be closed!

Initially run machine at idling speed only.

Check for smooth running – no noise.

In case of trouble turn off immediately. Troubleshoot.

Check the working speed on the monitor. ($n = 780-800$ r/min)



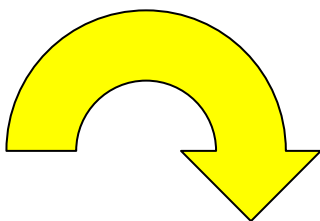
Test of the lateral compensation

Prior to start-up the pivoting shield function of the combine is to be checked in conjunction with the corn header.

- Check PTO-shaft length and for sufficient overlapping.
- Check slope steering. (optional)



Keep away from danger zones while the machine is running.

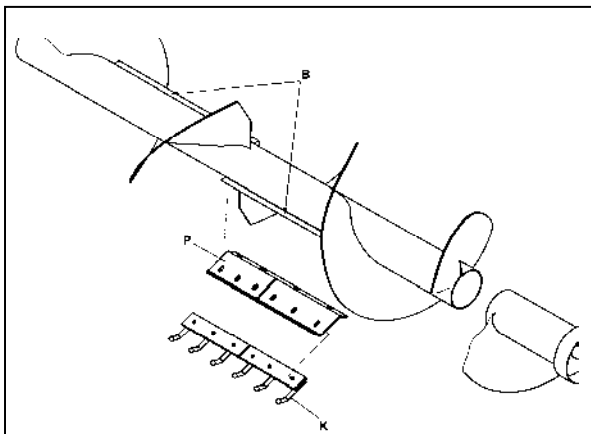


Reversing

All modern combines are fitted with a standard reversing device for the header drive.

This device allows the machine to run in reverse and can be used for cleaning the header without limitation.

Cross conveying auger/ Feeding



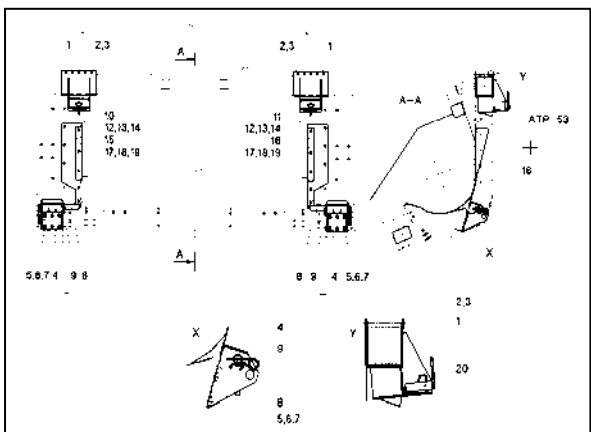
Variable arrangement of the conveying auger

The cross conveyor augers are designed with fastening irons (B) in the area of the feeder house opening. Claws are mounted for the transport of the harvest material.

The number of claws (K) and their width varies with different header models and the width of the respective combine.

It is important to mount the conveying claws only in front of the feeder house opening.

Optional rubber plates can be mounted instead of conveying claws.



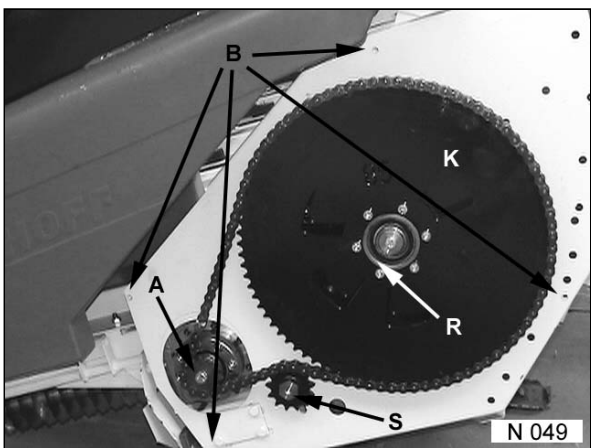
Feeder house opening of the corn header

Mounting brackets are specified to accommodate the individual requirements of different brands and models of combines

The exact opening width and components can be determined from drawings in the spare part catalogue.

For standardization reasons, slight variations from the specified drawings are allowed.

Proper feeding of harvest material is of particular importance when harvesting on slopes to ensure even presentation to the combine feeder house.



Auger drive up to 9 row units

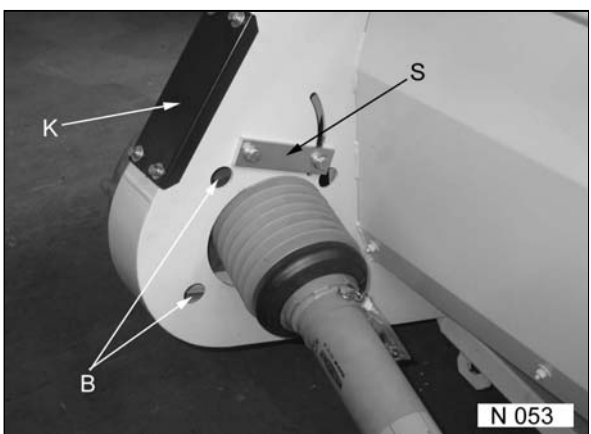
The auger is driven from the side opposite the main drive. The speed is subject to the main shaft of the header and is preset.

Check chain tension at regular intervals. If adjustment is required readjust the idler (S).

Oil the auger drive chain at regular intervals. Clean the protection box at regular intervals.



Always remount and close protective covers before operating the header



Auger drive for 12+ row unit headers

The auger is driven from the feed shaft of the contrate gear transmission and is not subject to the speed of the header.

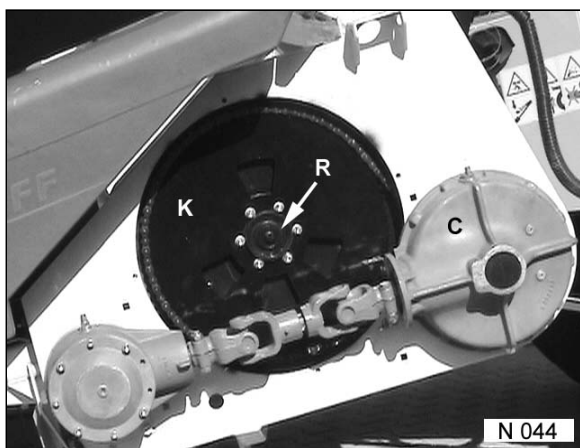
Maintenance and care of the chain drive is to be made via access flap (K)

The chain tension is adjusted by shifting the tension lever (S) downwards.

All bearings of the cross conveying auger are maintenance-free.

The bores (B) are used to fasten the contrate gear transmission.

Cross conveying auger / Feeding



Sliding clutch cross conveying auger

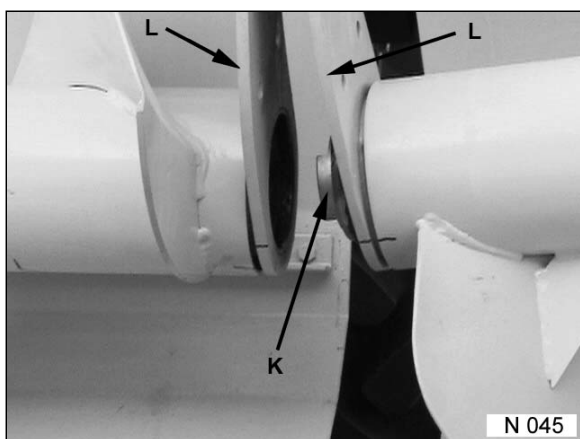
All auger drives are fitted with a maintenance-free and non adjustable slip clutch.

If the slip clutch reacts, immediately turn the machine off and troubleshoot.

Insufficient clutch torque is not the sole cause when the clutch slips. Check for obstructions.

In case of overfeeding, the reversing device of the combine might allow a successful re-feeding.

Grease the chain drive and check tension at regular intervals.



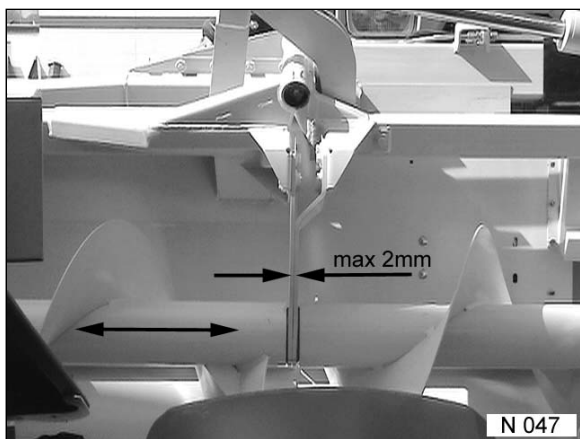
Drive clutch cross conveying auger-folding headers

The coupling halves (K) in the folding auger elements are spring-loaded and mounted on a splined shaft section. These are designed to engage automatically after the folding process.

The axial spring load of the clutch (K) should be checked regularly during the harvest season by simply pressing it in.

The screw joint of the bearing holders (L) allows adjustment of the auger elements.

Upon successful setting remove the screws.



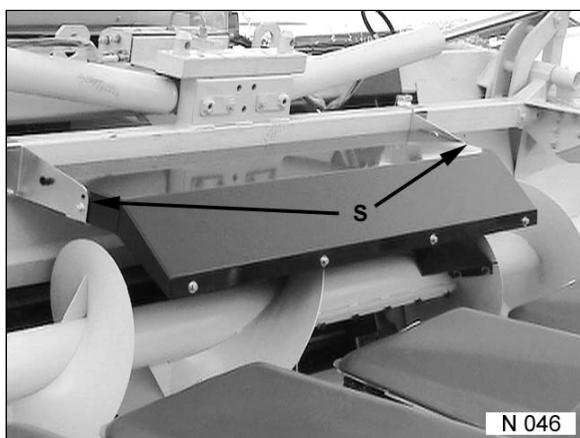
Setting of the cross conveying auger

The cross auger is factory-mounted in the ideal position and no provision is made for modification.

Visible setting facilities only serve the assembly of the cross conveying auger.

Bearing holders (L) must be parallel in working position and must be close to each other (max. 2 mm distance).

If the bearing holders (L) are too far apart from each other, the corresponding auger element can be regulated by axial displacement. Loosen the respective bearing of the locking ring to make adjustment.



Covering cap-cross conveying auger

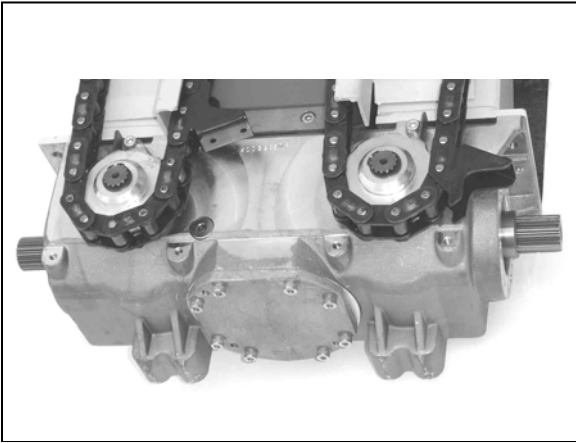
The height adjustment of the covering cap is made via the setting screws (S).

The distance between auger and cap should be as large as possible to ensure free passage of husks, leaf and stalks.



Turn off the combine engine prior to working on the header

Overload protections and slipping clutches



Basic equipment of all headers

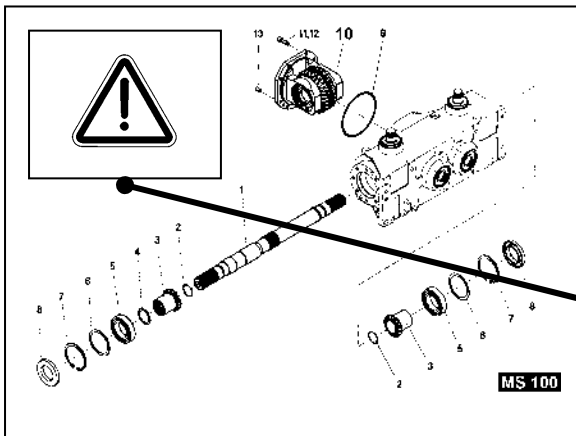
A number of overload protections and slipping clutches are provided for the safe operation of the machine.



If these devices respond, the header must be disengaged immediately. Turn off the combine engine. Secure the header against unwanted lowering.

Troubleshoot and rectify the problem.

Never rely solely upon switch the header on and off to overcome slip clutch activation.



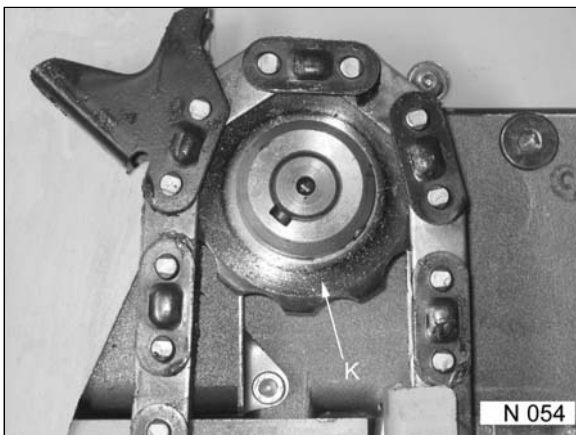
Sliding clutch in the row unit gearbox

One maintenance-free and wear-resistant cam clutch (10) is fitted within each row-unit gearbox. If it responds, there is a problem beyond the normal operational conditions.

It has been established that a foreign body caused the cam-clutch to slip, use the reversing device of the combine in attempt to remove lodged material. The internal slip clutch must not run hot.

Attention (see page 12 / 615)

The slip clutch should only be dismantled by an authorized repair facility. Gather necessary information and use the tools specified by the manufacturer.



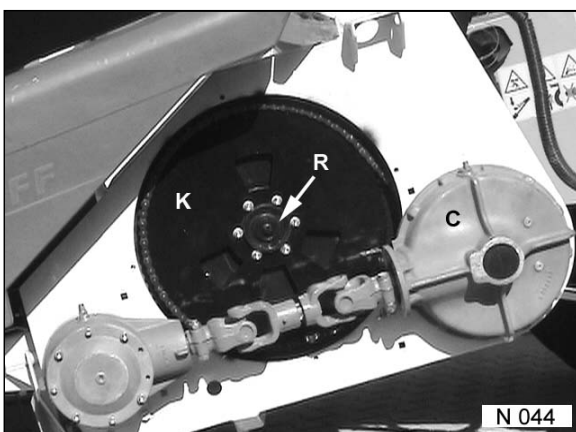
Bevelled sprockets driving the gathering chains

See also page 09 / 520

The special tooth form of the drive sprockets (K) combined with the automatically tensioned gathering chains provide a well-balanced driving torque of the gathering chain drive.

In case of overload or foreign bodies, the drive sprocket turns within the gathering chain without advancing it. This design ensures that damage is prevented and foreign bodies are kept away from the combine.

Never change the chain tension using inadequate tools.



Slip clutch in the cross auger drive

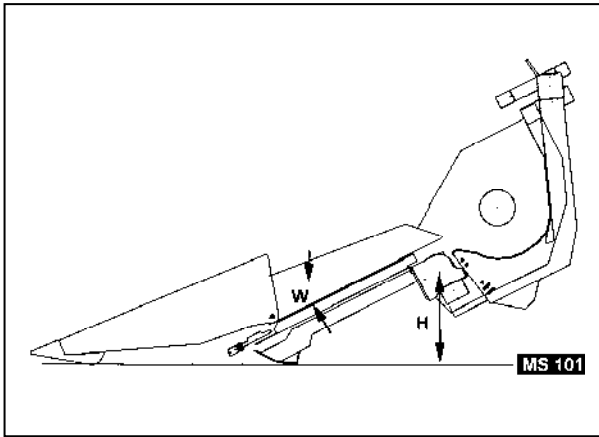
A non-adjustable cam clutch is mounted on the drive side of the auger shaft.

If it responds, there is a problem outside the normal operational conditions.

Find the problem and correct it.

Once it has been established that a foreign body did not cause the behaviour, the reversing device of the combine might allow the header action to be reversed thus removing the lodged harvested material.

Working angle adjustment



Working angle (basic position)

A working angle of (W) 22° is factory-set. If the combine is fitted with larger or smaller tires, differing from standard equipment, we recommend checking the working angle (W). The same applies if drive tracks are fitted.

The actual angle (W) is easily established determining the angle between "level" and adjustable angle on the stripping plates in working position.

This check should be made under real working conditions in the field, with the header at the usual working height.

When the header just makes ground-contact and is set at an angle of 22°, a distance of about ~ 393 mm will be measured from the centre of the front angle-drive (H) to the ground.



Adjustment of the working angle

With the corn header mounted to the combine lower the header into working position on a level surface.

All connections from the top of the trough (A) to the outer bodywork must be removed.

Remove guard (C) of the gear drive.

On foldable headers, it is very important to lock the header in the working position, (see 09/240).

Header, must rest completely relieved but firmly on the ground and remain connected to the combine!



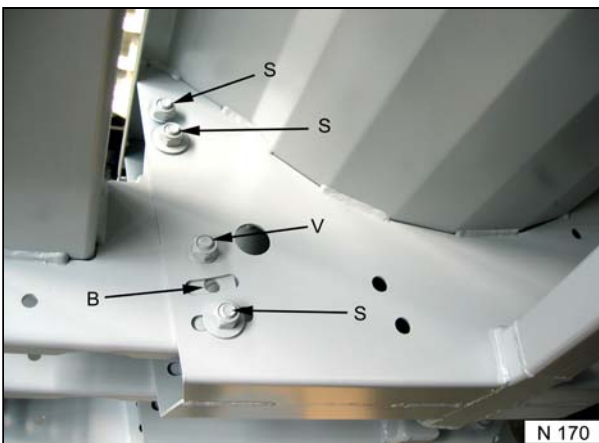
Adjusting device

After the machine has been put down, remove the screws (V) from all frame connections and put them into holes (B).

Slightly loosen all screws (S) on all frame connections and on the sidewalls to allow the various sections to be moved.

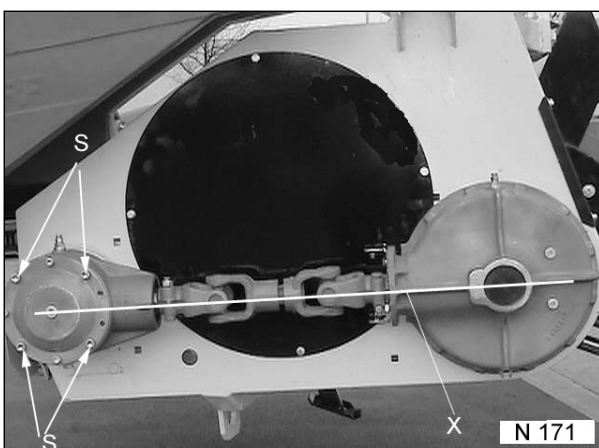
The combine must now lift, or lower, the header to obtain the required working angle.

Tighten all screws of the frame connection after the header has been softly lowered to the ground.



Combines with cutting angle adjustment

If the combine is fitted with a mowing table cutting angle adjustment, the setting angle can also be set by this device (see combine manual)



Drive gear alignment.

Lift header with the infeder housing and secure against unwanted lowering.

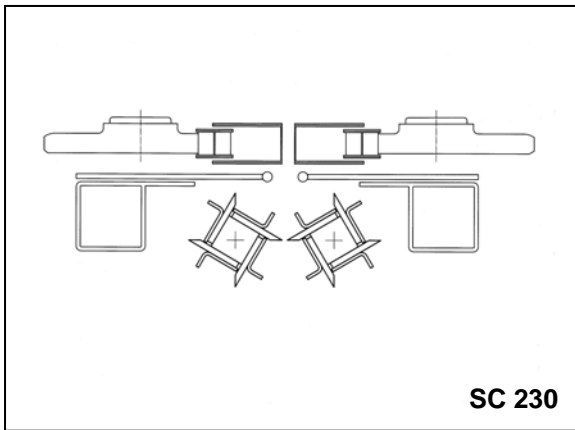
Only the four screws (S) of the angular gearbox and the four screws on the rear-side of the crown wheel gear must be slackened. Both gearboxes must be turned until reaching the exact alignment (see line X).

Tighten both gearboxes and remount the guard.

Re-connect outer framework to the trough. If required, fit spacers to compensate for longer distances.

(Illustration shows drive left-hand side)

Stripping rollers



Adjustment of stripping rollers

The parallel setting of the stripping rollers of the NorthStar header is not adjustable.

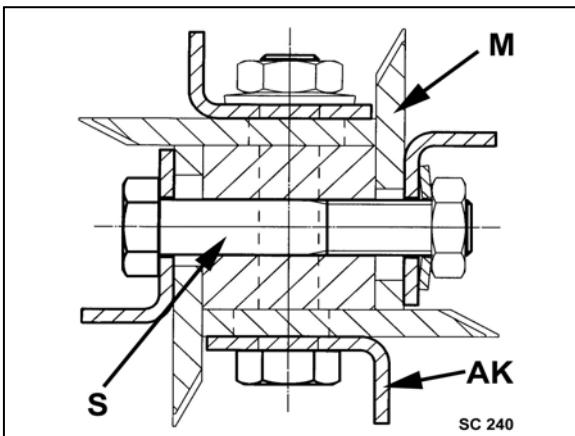
Only the stripping knives on the square stripping shafts fitted with oblong holes allow adjustment

The distance (A) should be at maximum 2 mm in front and 0.5 mm at the rear. Stripping rollers are always to be mounted as shown in the illustration.



Turn off engine before working on header and secure header against unwanted lowering.

SC 230



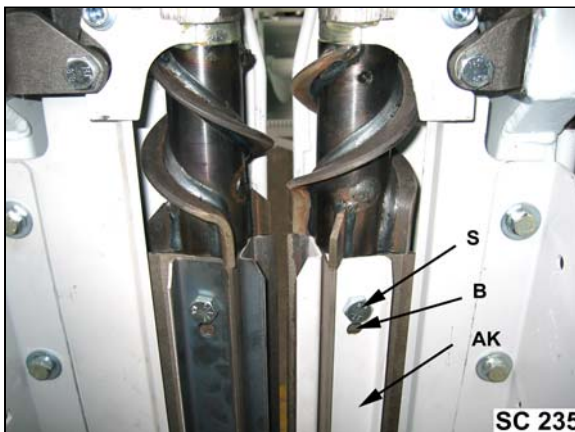
Additional working angles

The additional working edges (AK) serve to improve the plant gathering if the harvest material is humid or not completely ripe.

The round hole bores in the additional working edges (AK) prevent a displacement in case the knives (M) must be readjusted.

Screws (S) must be tightened according to the instructions given on page 36 / 100

SC 240



Changing additional working edges

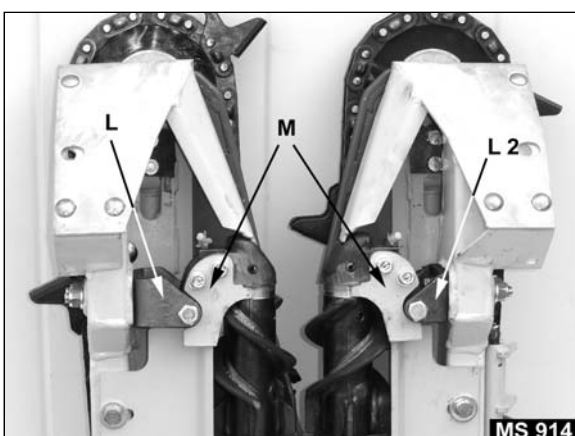
Due to the extreme stress and dependent operation, the working edges (AK) may require changing.

Use original spare parts and new screws, screw locking elements and nuts (S)

Separate designs for right and left. Bore (B) is required for screwing staggered by 90°.

If commercial screws are used an excessive length causes risk of wrapping. It is also possible that the header shaft might suffer consequential damage.

SC 235



Front stripping roller

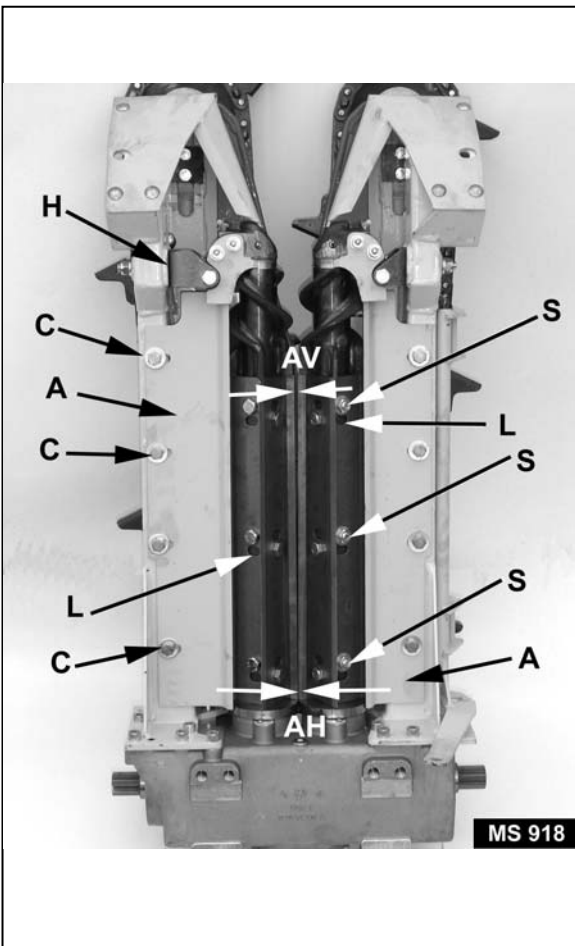
The stripping rollers are screwed down left (L2) and right (L). They are not designed to be adjusted.

The shackles L + L2 differ and cannot be exchanged for each other.

The vine stripping plates (M) on front part of the stripping auger are adjustably mounted on the bearing holders.

It is important that the stripping plates are set closely to the augers on the stripping rolls. This distance should be less than 0.5 mm.

MS 914



Adjustment of the stripping knives.

Adjustments are made on the stripping rollers by loosening screws (S). The oblong holes (L) in the stripping knives allow adjustment.

Adjustment of the stripping rollers might require the adjustment of stripping plates (A)

The stripping roller knives must be set at a distance (AV) of 2 mm in front and 0.5 mm in the rear (AH).

Tighten the screws according to the values given on page 36 / 100.

Stripping knives-keeping rotors clean.

The stripping plates (A) are to be adjusted to a maximum distance of 0.5 mm below the stripping roller knives.

Make the adjustments after loosening screws (C).

The stripping knives prevent the rotors from being clogged especially when the corn stalks are humid and still green

Before operating header, the machine must be turned by hand to check the stripping plates for clearance

**Risk of injury by sharp tools.
Take protective measures.**



Safety instructions

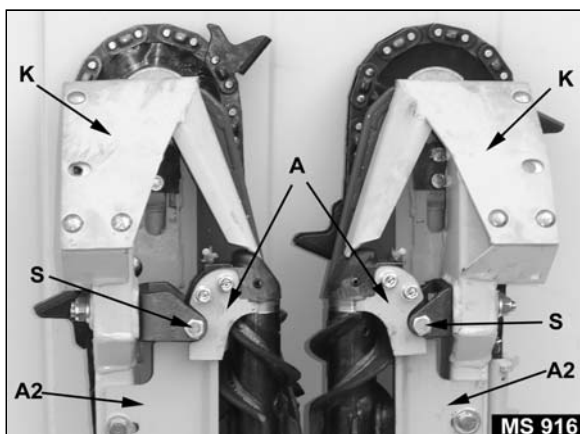
**Wear protective gloves for all work in the area of the stripping roller knives.
Secure stripping rollers against unintended slipping.**



Safety instructions

When working on the machine, turn off the combine engine and lower protective shields.

Stripping roller bearing



Dismounting of Stripping roller

Remove the, skids (K).

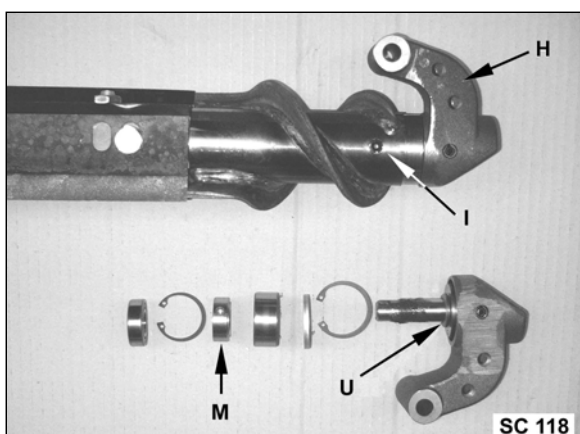
Remove stripping plates and stripping roller (A2 and A). Also remove screws (S).

The complete stripping roller is removed from the row gear box with the bearing bracket attached. Use a tire lever to remove.

Prevent damage to the aluminium gearbox housing



When working on the machine, switch the combine engine off and activate the lowering protection.



Removing the bearing bracket from the rotor

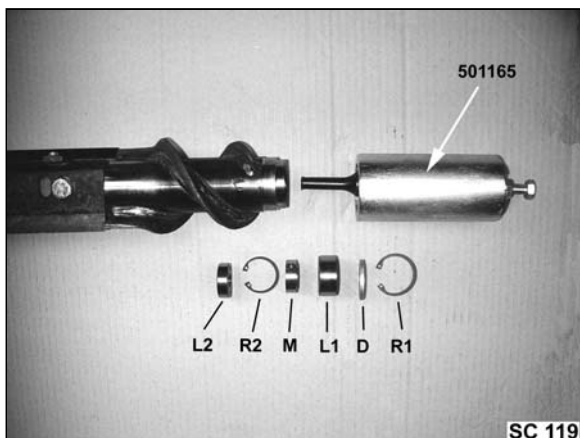
Remove hexagon socket srew (I)

Revolve bearing holder until hexagon socket screw SW3 becomes visible in securing nut within the stripping rotor..

Loosen stud screw (SW3) with one counter clockwise turn.

Rotate bearing holder by 180° until adjusting ring (M) becomes visible.

Block securing nut against stripping rotor by means of a 6mm rod and turn bearing block counter clockwise until the securing nut is free.



Remove bearing from rotor

Remove circlip (R1).

Pull off front bearing and packing ring using Geringhoff's special tool, part-no. 501165.

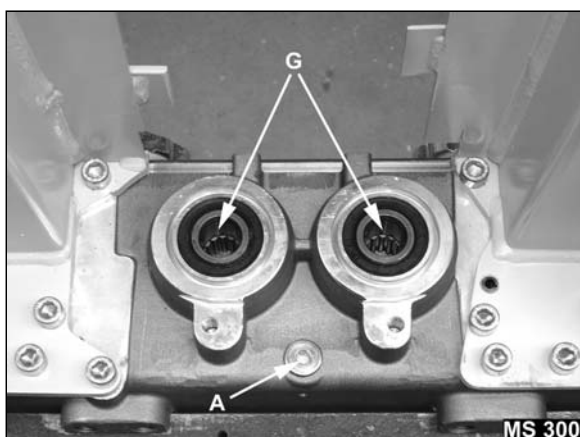
Remove circlip in front of the rear bearing (R2).

Pull off rear bearing using the special tool.

Remount in reverse order.

Attention

Special nut (M)- the nose must point towards the front bearing (L1)



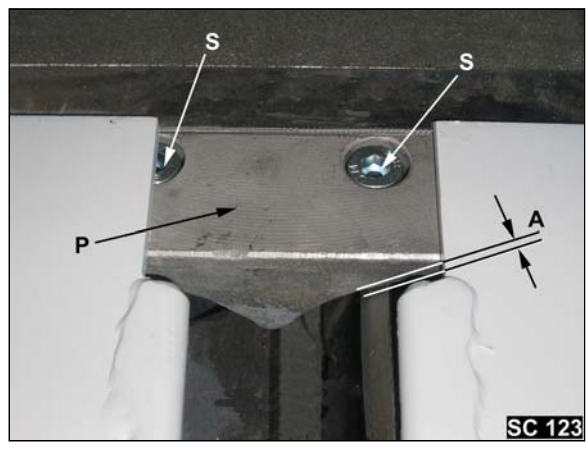
Row unit gearing-gearbox

View of gearbox from below without stripping rollers.

Hollow shafts for stripping roller location (G)

Oil drain plug (A)

Row unit



Cut-off block

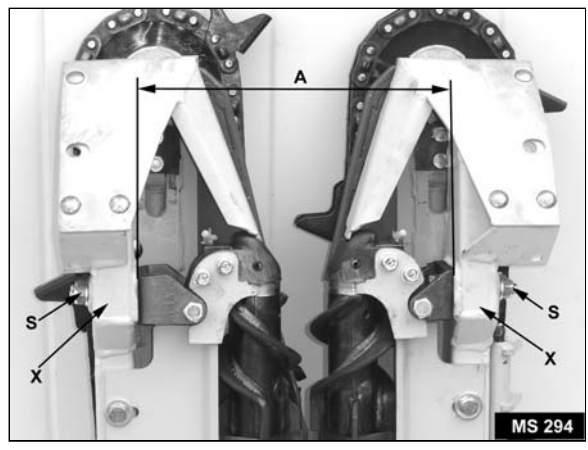
With 2 screws (S) the cut-off block (P) is mounted below the stripping plates in front of the gear box.

Spacers are fitted between the cut-off block (P) and the row unit gearbox for adjusting a maximum distance (A) of 1 mm to the rotors if required.

If the distance is more than 1 mm the rotor could be clogged in this area, particular in humid conditions.



When working on the machine, turn off the engine and engage lowering protection.



Control dimension-row unit frame

The exact frame carrier distance (A) in the front area is of special importance for the function of the corn header.

This distance may be changed due to collisions. In particular the brackets in the outer rows are sensitive to being bent since they cannot be supported from a connecting row.

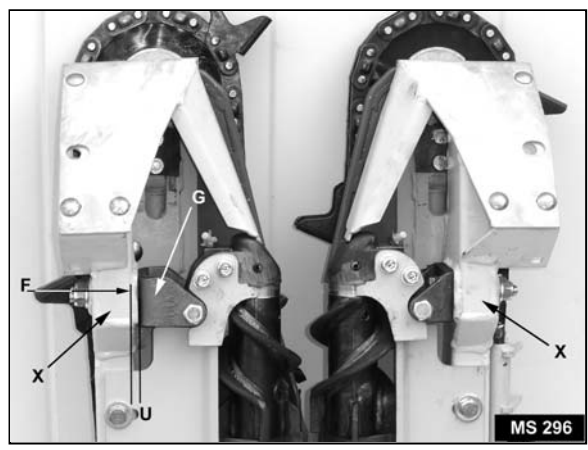
If such a collision has occurred or a row unit shows a malfunction, the distance (A) $317,5 \pm 0.5$ mm must be checked. This measurement must be maintained.

In order to find out which bracket (X) is bent, loosen the screws (S) and after the the row unit has been cleaned from any harvest material, turn the unit by hand at least once. The resulting gap (U), will show which side side is bent. Minor differences up to 4 mm can be compensated by distance plate part No. 501249 placed between fork (G) and area (F).

Attention

If a shim is placed under fork (G), the respective stripping plate must be separately adjusted for re-establishing the reference setting (see page 09 / 480).

In the event of major changes the bracket in question must be aligned or replaced.



Breaking bars

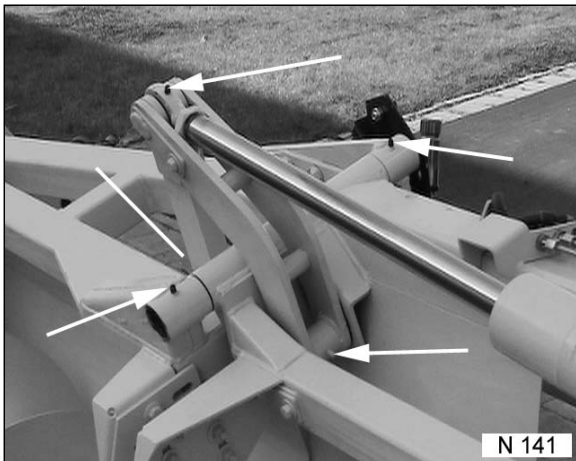
An evident sign for a negative change in the alignment of the row unit brackets is if the breaking bars are no longer in the ideal position, i.e. 2 mm in front (AV) and 0.5 mm at the rear.

In such a case the row unit requires immediate attention. A visual control of the position of the rotor stripping knives for finding a possible mis-alignment is not sufficient



When working on the machine, turn off the engine. Engage header lowering restrictor.

Maintenance and care

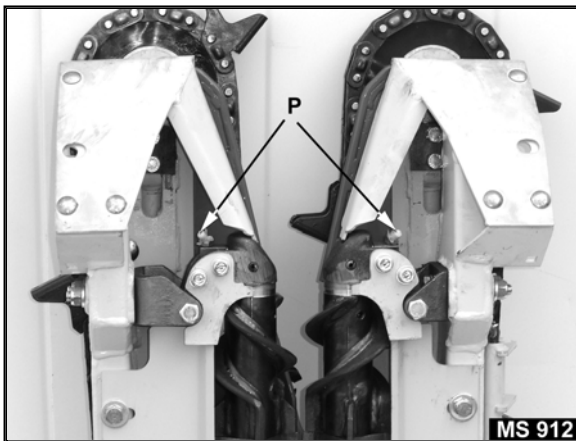


Cleaning after the harvest season

After a dry harvest season, a dry cleaning is recommended using only compressed air.

If the machine was exposed to humidity and became very dirty, a high-pressure cleaner should be used.

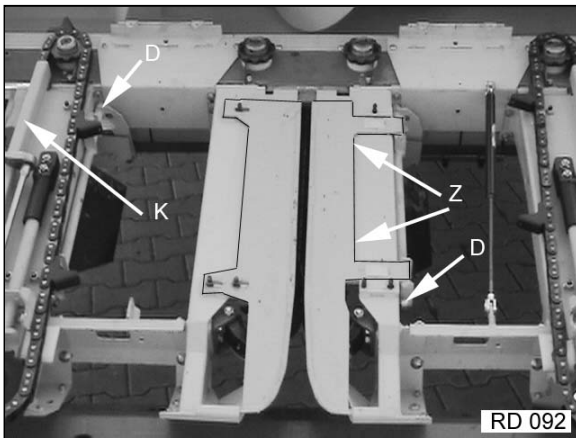
The shields and gathering chains must be removed and all bearings should be lubricated.



Greasing points

<u>Grease Point</u>	<u>Location</u>	<u>Frequency</u>
Stripping rows (P):	on front bearing	15 hours
PTO-shafts:	general	100 hours
PTO-shafts:	tubes and sliders	200 hours
Folding mechanisms:	joints and pivots	100 hours
Shaft coupler:	sliders / flange	200 hours

After each end of season cleaning, the machine should be greased again and run for short time.

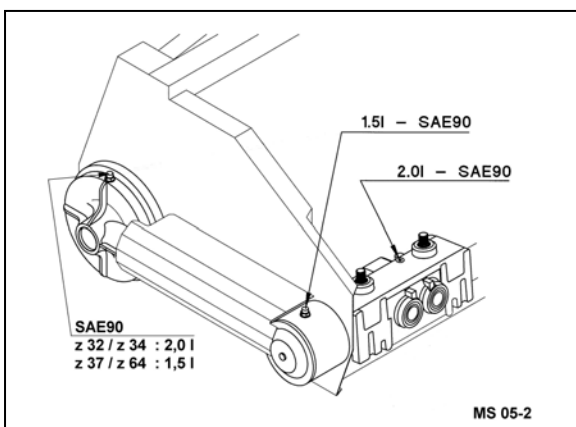


Stripping plates

When cleaning the machine, the stripping plates must be opened and closed several times in order to remove dust and corn debris from the pushing channels (Z).

If the machine is cleaned with water, the chain guides (K) must be removed and the pushing area (Z) of the stripping plates be cleaned and protect against corrosion with grease.

The pivots (D) should be oiled or greased.



Gearboxes (see also page 09 / 590)

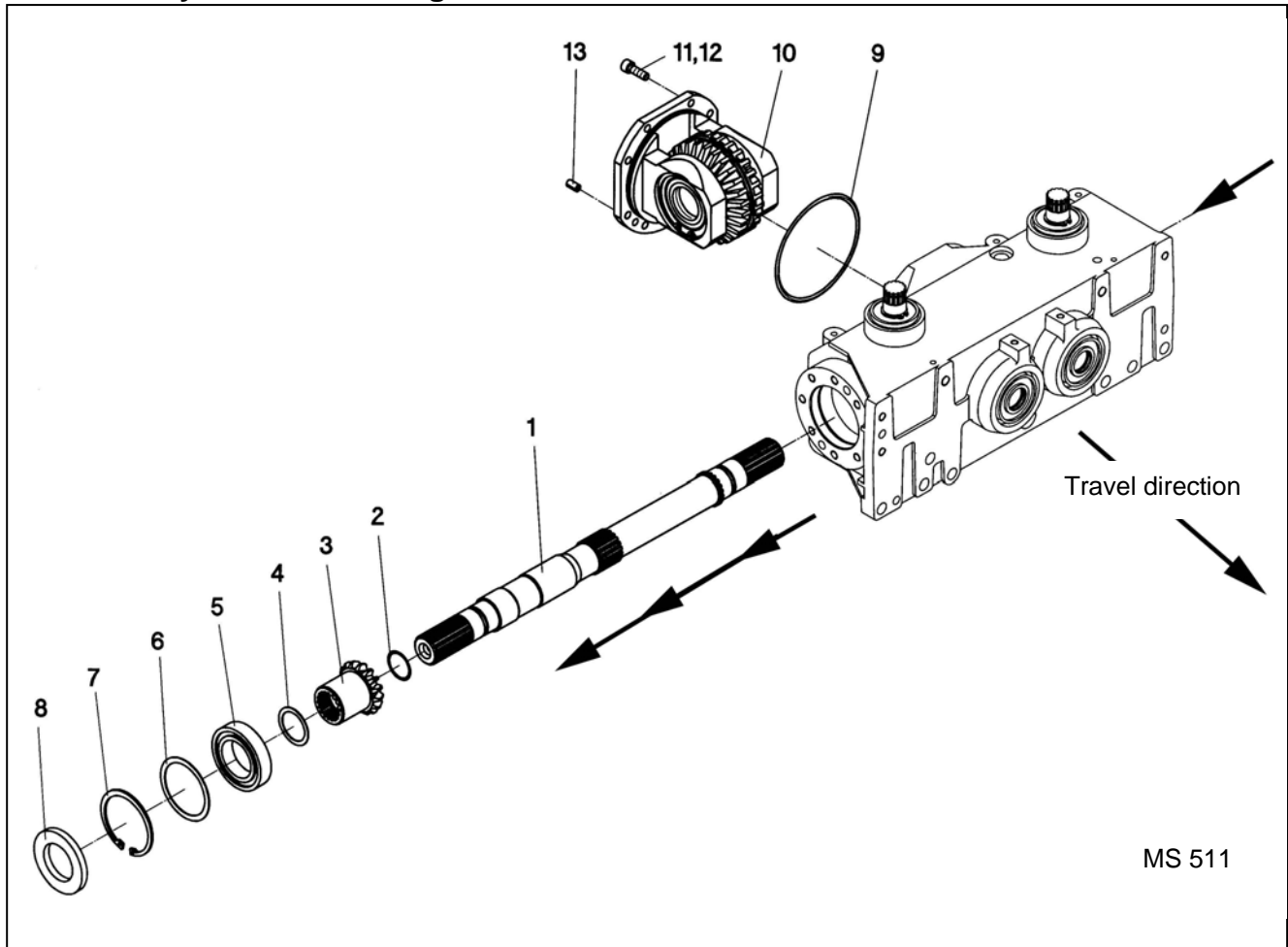
Row Units filling quantity = 1.5 litres
 Crown Gears (37 - 64 teeth) = 1.5 litres
 Crown Gears (32 - 34 teeth) = 2.0 litres

Fill up to the level of level-plug and/or according to the dip stick-marking. Use SAE 90 oil (commercial quality)

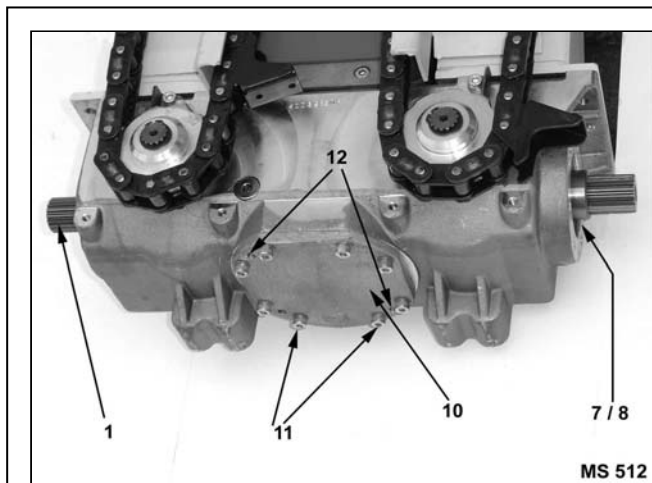
Change intervals: 50 h from start-up, then once before each harvest, but at the latest after 200 hours of use

Oil drain plug (A) is fitted with a magnet which must be cleaned on each oil change.

Prior to storing the header, make sure that the breather-screws on the folding elements are tight and not leaking.



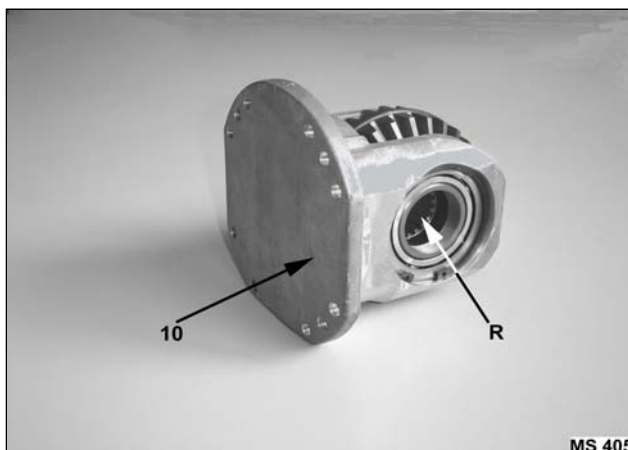
MS 511



MS 512

Disassembly of the row unit gearbox

- Drain & Collect oil. Remove dipstick. (Observe environmental guidelines)
- Remove retaining ring (8). This ring is damaged during disassembly and must be replaced. (Photo is in direction of travel)
- Remove retaining ring (7) as above. Also replace.
- Remove shaft (1) from the gearbox from left to right using a suitable tool.
- Remove all screws (11) of the plug-in unit (10).
- The box cover (10) is fitted with two threaded bores to be used for extracting the plug-in unit. Turn screws (11) uniformly into the plug-in unit until the plug-in unit can be removed by hand.
- The plug-in unit (10) is fitted with the safety clutch (R) located within the bevel gear wheel.
- If the friction clutch (R) requires replacement, the plug-in unit (10) is completely replaced.
- When remounting the plug-in unit (10) pay attention so that the sealing ring (9) is undamaged and the right position of the stripping rollers as described on page 12 / 645 are followed.



MS 405

Further gear box disassembly is only possible by using special tools. Detailed information must be gathered before disassembly. Geringhoff recommends this work to be performed by an authorized dealer only.

Hydraulics

Trouble:	Cause:	Remedial action:	Page:
Corn header cannot be lifted	Insufficient hydraulic oil reserve	Add Oil	09/200
	Lifting force too low	Additional lifting cylinder required	09/120
Hydraulic functions of the header do not work	Poor flow of oil through hydraulic connections	Check connections / couplers	09/200
	Transport protection blocks folding process	Remove transport protection	09/080
	Optional: Control valve does not work	Check control valve.	09/200
	Insufficient pressure of the hydraulic system	Check pressure, if allowed increase pressure.	Combine manual
	Locking is restricted	Readjust locking and/or reversing valve	09/240
	Insufficient hydraulic oil reserve	Add Oil.	09/200
Folding header does not close on point of separation	Foreign bodies hinder folding process	Remove foreign bodies or corn residue.	09/240
Folding shields do not close	Locking not made	Adjust locking and/or reversing valve.	09/240
Folding shields open automatically	Control valve does not close reliably	Check control valve, correct operation to secure functioning.	09/200
Folding process is not quick enough	Combine is possibly fitted with a restrictor in the reel horizontal adjuster	If allowed, remove restrictor. Check hydraulic pump.	Combine manual

Drive

Trouble	Cause:	Remedial action:	Page:
---------	--------	------------------	-------

Drive is turned on but does not turn	PTO-shaft	Check PTO-shaft.	09/160
	PTO-shaft coupler does not engage	No locking occurred. Check coupling halves for complete engagement.	09/160 09/240
	Driver of the drive coupler defective	Check drivers.	09/645
	Coupler does not engage	Check alignment. Ensure slider moves freely.	09/645 09/280
Header stops during operation	V-belt not tensioned on combine	Check drive.	Combine manual
	Overload	Adapt working speed.	

Trouble: Cause: Remedy: Page:

Stripping unit Part 1 of 2

Header stops during the harvest	Header pulls to heavy.	Check header for any blockage.	12/005 12/025
	Drive belts on Combine slip.	Check belt tension on combine	09/441
	Harvesting speed too high.	Adapt forward speed.	Combine manual
Rotors are blocked	Rotor knife screws too long	Set knives correctly Fit original screws	12/005 12/025
Rotors are wrapping	Stripping blades are incorrectly set, or blunt.	Sharpen and/ or reset to required gap.	12/005
Slipping clutch of the row unit does react	Foreign bodies wedged in row unit	Remove foreign bodies. Check for general wear.	09/815
	Overload	Reduce harvesting speed.- Check RPM of header.	09/600
Excessive amounts of straw	Stripping plates	Open stripping plates as far as possible	09/520
	Working speed	Adapt working speed to the conditions	Combine manual
Clogging within the row unit	Incorrect parallel of stripping plates	Adjust stripping plates.	09/480
	Gathering chains slip	Shorten chains or replace chains.	09/520
	Foreign body in row unit	Remove foreign body	09/815
	Speed too low	Check via monitor	09/441
	Cut-off block	Missing or defective, or incorrectly set.	12/080
Cob losses on row units	Header speed too high	Check RPM and reduce, if necessary	09/441 09/600
	Cob-saver rubbers on divider noses worn or missing, or allowing insufficient material flow	Replace, or in heavy crop increase gap.	35/040
	Add Cob saver	Additional equipment.	35/040
	Working speed	Increase considerably.	
	Heightened outer bodywork	Optional attachment	35/015
	Row distance	Row units spacing might not correspond to the actual conditions.	09/000
Corn losses	Stripping plates	Set them narrower.	09/480
	Speed (RPM)	Reduce, if required	09/600
	Return-feeding from Combine intake chain.	Check setting of combine intake chain,- lower guard above cross auger.	Combine manual 09/760
	Working speed	Increase until header is being sufficiently filled with material.	Combine manual

Trouble: **Cause:** **Remedy:** **Page:**

STRIPPING UNIT Part 2 of 2

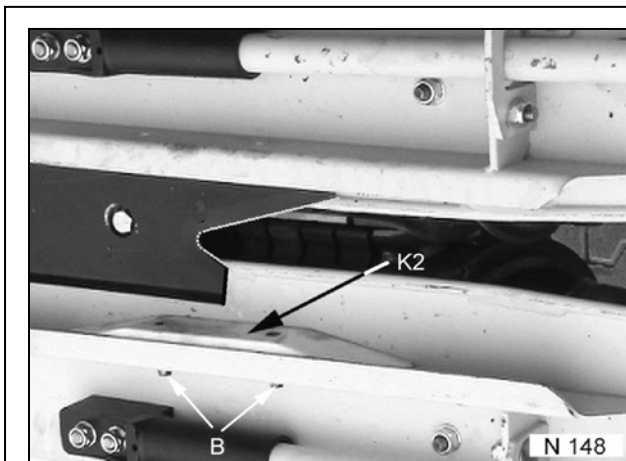
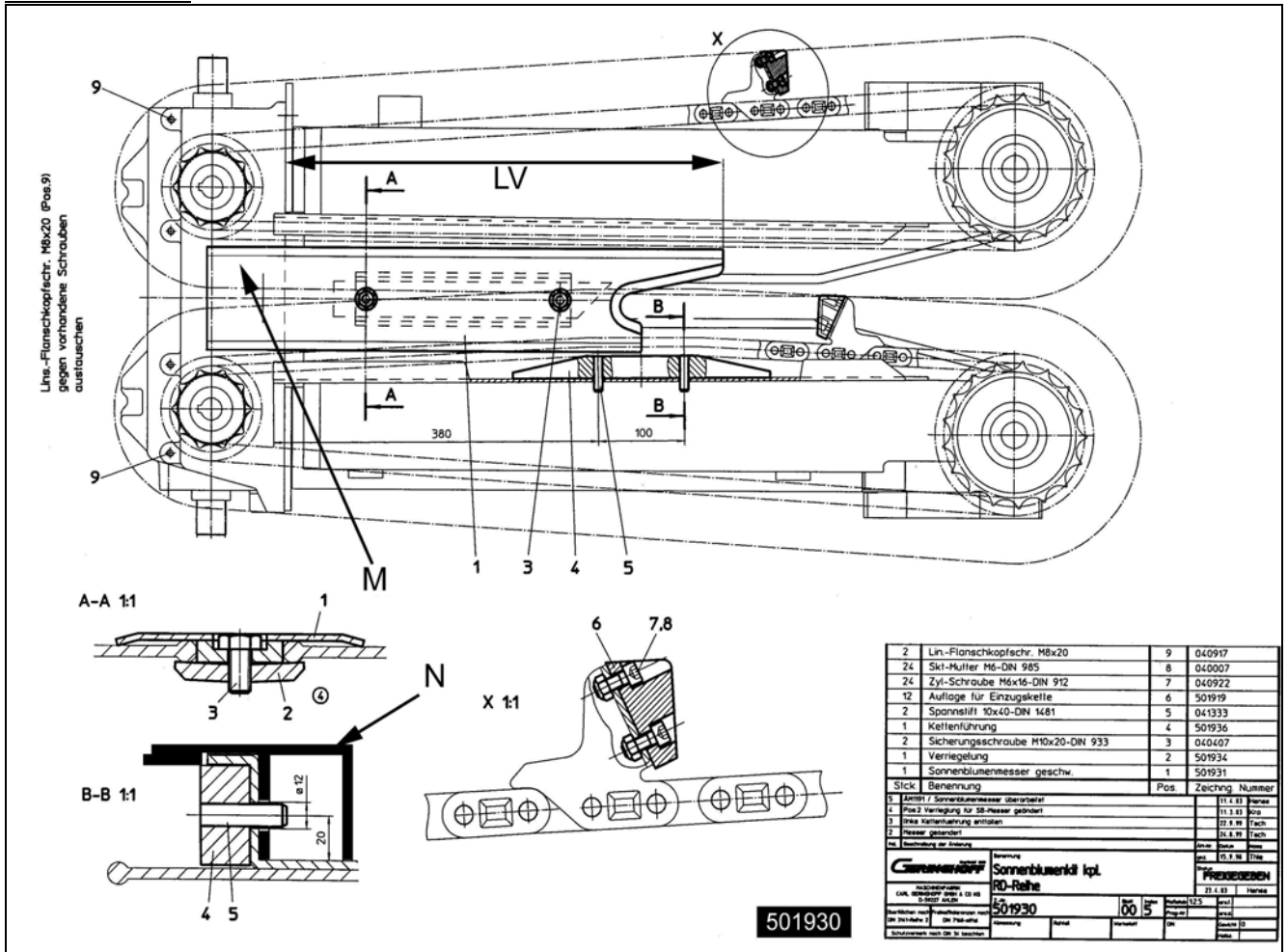
Stripping plates do not move	Dirty	clean mechanism, open and close plates several times daily	12/400
	Throttle in shifting cylinder	clean	09/480
	Hydraulic supply line	check flow	09/200
	Restoring spring	clean and/or readjust	09/480
	Basic adjustment	check	09/480

Trouble: **Cause:** **Remedy:** **Page:**

Cross conveying auger

Cross conveying auger stops during operation	Overloaded	Reduced material quantity Chaff portion too high	
	Sliding clutch responds	Remove foreign bodies. Check setting of Strippers behind auger	09/815
	Drive	Check chain and clutch.	09/725
	Original combine splashboard mounted in front of the gathering channel	Adjust splashboard higher or remove	09/080
Auger half of folding header stops	Driving clutch	Check adjustment of engagement and functioning of spring-loaded half (lubrication)	09/760
	Locking of the header	Make sure of exact locking.	09/240
Auger ejects corn cobs out of the machine	Speed	Check speed on monitor	09/441
	Position of the conveying aids	Check Position on the table	09/725
	Insufficient feeding	Increase harvesting speed.	

Sunflower equipment-passive



Mounting cutter

Release right-hand gathering chain and fit plastic block (K2) Pos.(4) .

Install pin on restricting device for gathering chain (see illustration)

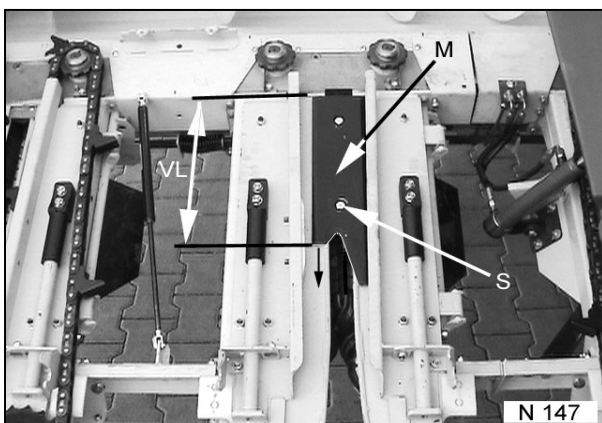
Open stripping plates so far that pre-mounted knife (M) can be pushed in, see above graph (ill. A-A) and also illustration N 147 (M).

Measurement (LV) in above graph, min. 510 mm, max. 600 mm, allows for an individual axial knife setting. The more the knife is pushed rearwards the stronger the rotors start pulling the sunflower through. Consequently, the knife ought to be pushed forward so far that the sunflower head won't be pushed downwards excessively.

Ensure that the sunflower head does not contact the chains before the stalk has been sheared off.

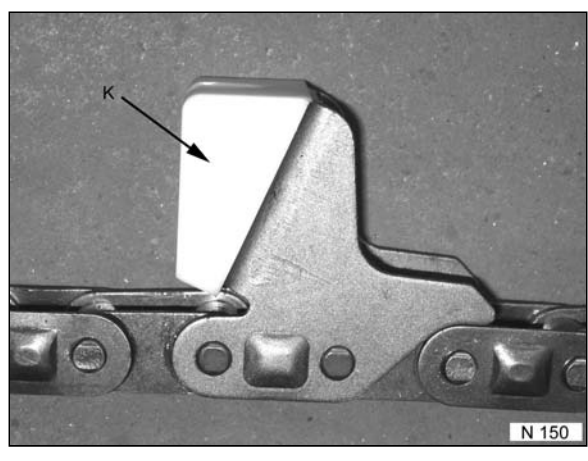
Close the stripping plate and tighten screws (S) .

Restriction device for gathering chain is not shown on the photos.



Prior to working on the machine turn off engine.

Sunflower equipment –passive and active



Plastic finger extensions

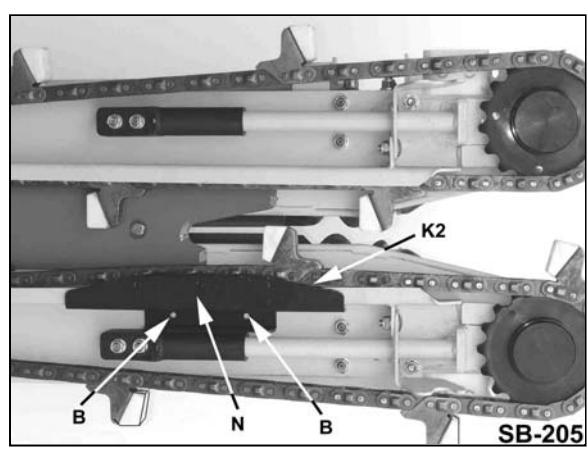
To improve the material transport and to obtain a better feeding angle, the plastic blocks (K) as shown in the illustration, must be mounted on all chain fingers with the screws included

Attention!

For the harvest of corn and sorghum the plastic blocks (K) must be removed.



Prior to working on the machine turn off engine.



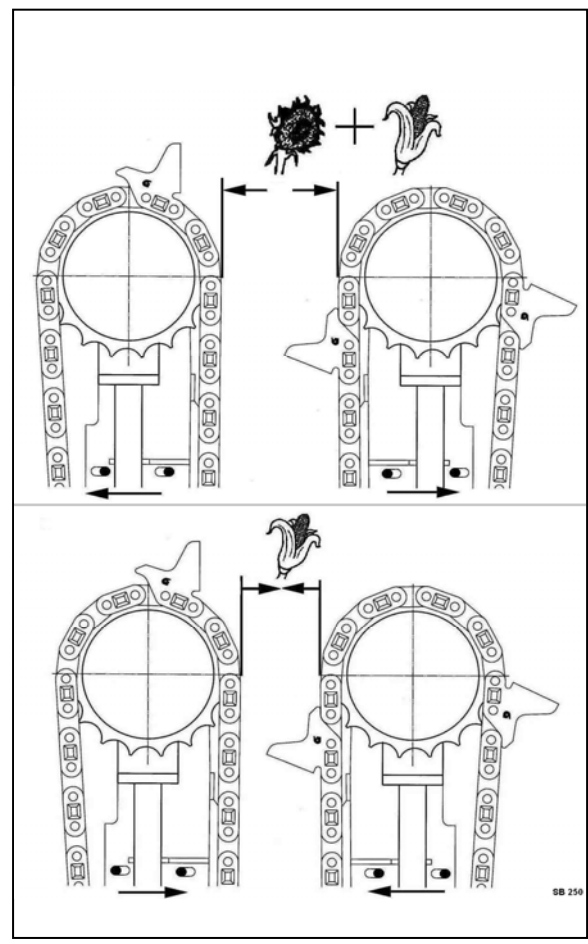
Stripping row for the sunflower harvest

The restricting device (N) for the gathering chain is not shown on opposite illustration.

Prior to mounting the plastic block (K2), first the restricting device (N) (see graph on page 35 / 000) is installed behind the chain guide so that the pins (B) of the plastic block also secure the restricting device (N).

Attention!

For the harvest of corn, the plastic blocks (K), the plastic block (K2) and the holding down device (N) must be removed.



Position of the gathering chains

The standard setting of the gathering chains for the harvest of corn and sunflowers is „WIDE“; see opposite graph with the symbol. +

For references to the adjustment see page 09 / 520.

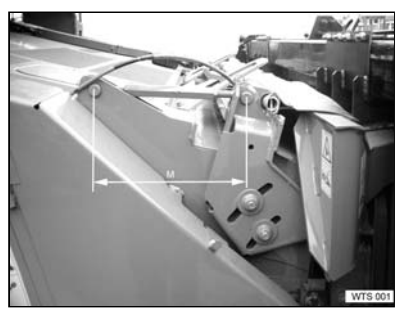
The setting “NARROW” with the symbol can only be used for the corn harvest.

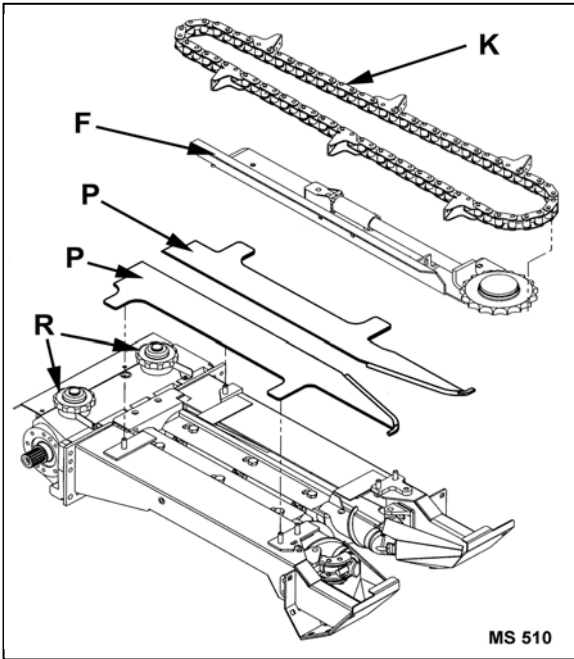
Reduce the setting angle of the header

The function mode of the corn header for the harvest of sunflower is improved when setting the angle as flat as possible.

Combines are very often fitted with a cutting angle adjustment which allows achieving this adjustment with ease.

The angle can also be changed directly on the header (see page 09 / 850). However, this adjustment is very time consuming.





Mount sunflower cutters



Prior to working on the machine turn off the engine and secure header against unwanted lowering

Remove gathering chains (K), see page 09 / 520, chain guide (F) and stripping plates (P) right and left.

The chain slip wheels (R) are to be removed using an adequate puller (remove shaft protection first)

Mount the sprocket wheels of the sunflower kit using grease and oil. (replace shaft protection when mounted).

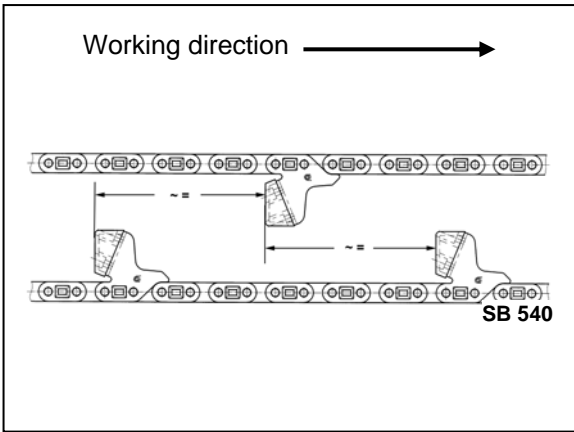
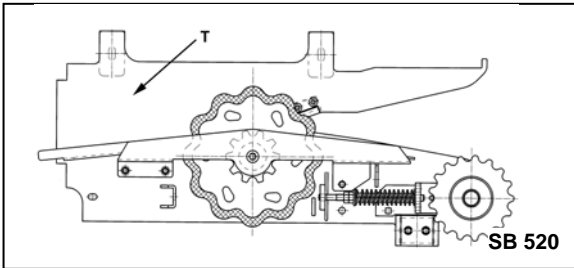
Attention!

For corn harvest, the original slip wheels (R) must be remounted to prevent consequential damages and for safety purposes.

Mount knife holders

Sunflower cutting knife holders (T) are to be placed in the position of dismantled stripping plates (P)

Left chain guide (F) and gathering chain (K) with mounted plastic blocks (K) are to be installed and tensioned as described on page 09 / 520. (see illustration N 150)



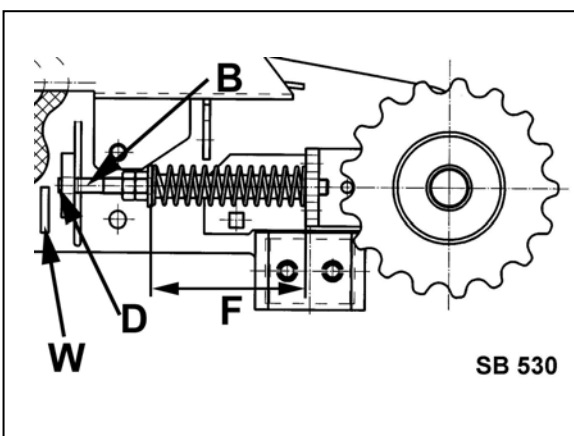
Arrangement of the gathering chains for the harvest of sunflowers

Other than for corn harvest, the position of the gathering chain drivers is important.

According to ill. no. SB 540, the gathering chains are more or less to be mounted in an **even-staggered** way.

It is of importance to fit them with plastic blocks in order to considerably increase the conveying efficiency.

Subject to the consistency of the sunflower stalks, the work could be done with one plastic-coated gathering chain but at the expense of the efficiency and performance.

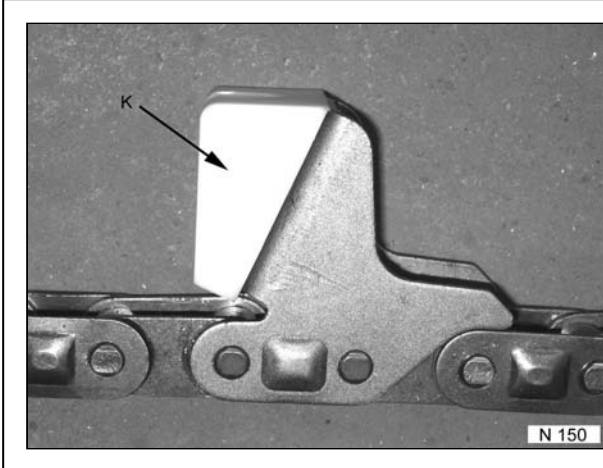


Tensioning of the gathering chain

Mount chain using the chain wrench. Ensure that chain is properly placed on all sprocket wheels.

The right chain of each sunflower set must be tensioned by hand and re-tensioned from time to time.

Apply pressure in the direction of travel between counter flange (W) and bolt by using an adequate mounting lever until cotter pin can be installed into the bore (B) of the bolt (D). Apply tension to chain by turning the nuts on the bolt (D) until obtaining a spring length of 130 mm.

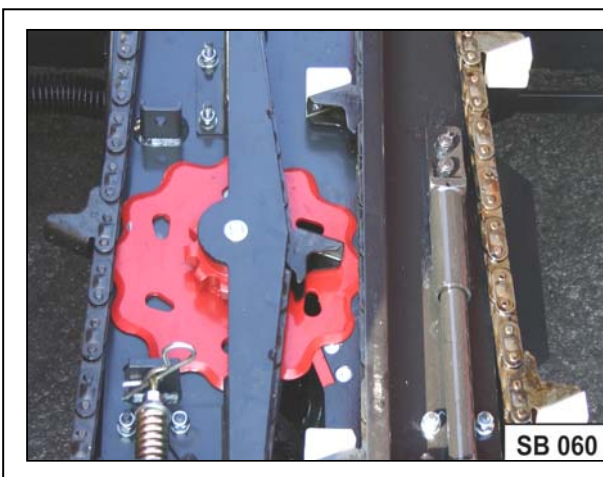


Gathering chain with plastic block

For achieving a better conveyance and a more efficient output, the plastic blocks must be mounted.

For intensive sunflower harvesting works and activities it is recommended to use a second set of chains with these plastic blocks in order to avoid the assembly and disassembly of these components.

Attention!
For corn harvest only chains without plastic blocks may be used.



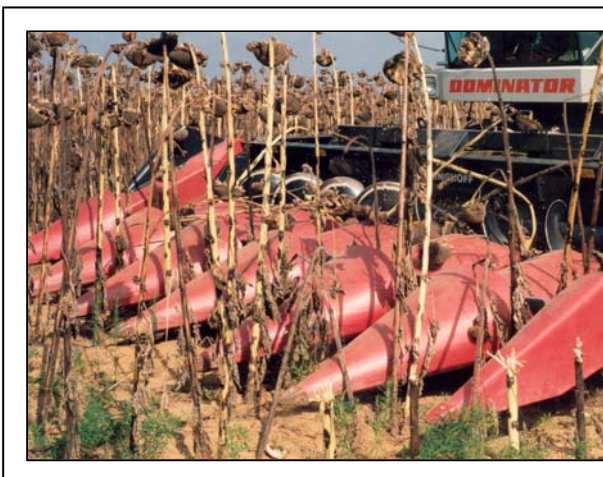
Mode of operation of the cutting knife

The self-sharpening knives of the sunflower set are carbide-tipped. Adjustments or readjustments are not required and cannot be made.

Attention is to be paid to both knife surfaces. They should run without residue and within close tolerance to each other to achieve an efficient cutting performance.



Prior to working on the machine turn off the engine and secure the header against unwanted lowering.

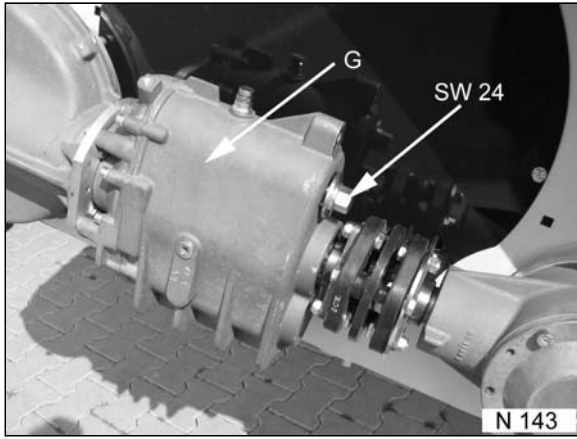


Operating speed

On normal conditions, in ripe stocks the operating speed is recommended to be set high enough so as to make the sunflower heads fall down due to their dead weight immediately after the cut towards the cross conveyor screw. Following these guidelines will minimize the risk of crop loss.

A fast operating speed is essential to achieving a clean and efficient functioning of all components

In general the capacity of most combines allow this system to function with ease.



Variable speed gear for speed reduction

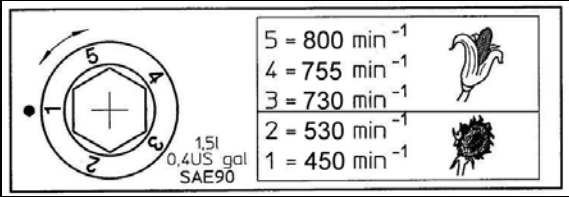
3 different variable speed gears (G) are available for combines that do not come pre-equipped

Occasionally, certain harvests and harvest material is improved by changing the header speed.

- 5 – speed for corn or sunflowers
- 3 – speed for corn harvest only

Information on sunflower harvesting starts on page 35 / 000

(In illustration N 143, guard is removed)

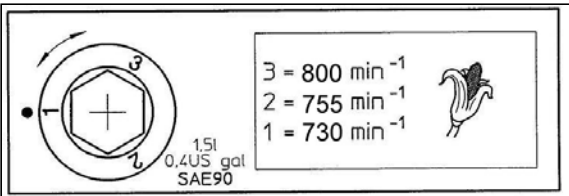


Variable speed gear corn and sunflowers

5 - speed

The speed is selected via a commercially available wrench SW 24.

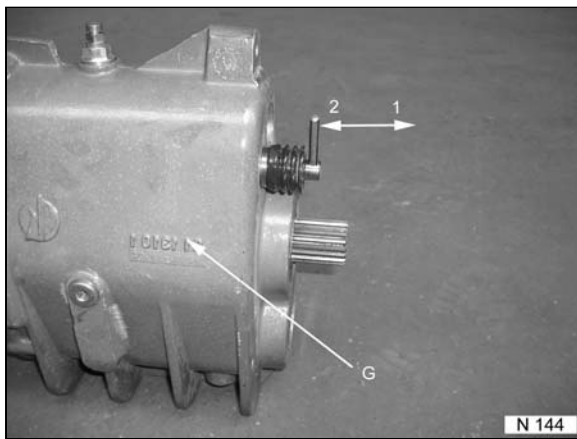
Attention! The sunflower speeds must not be used for corn harvest.



Variable speed gear corn

3 - speed

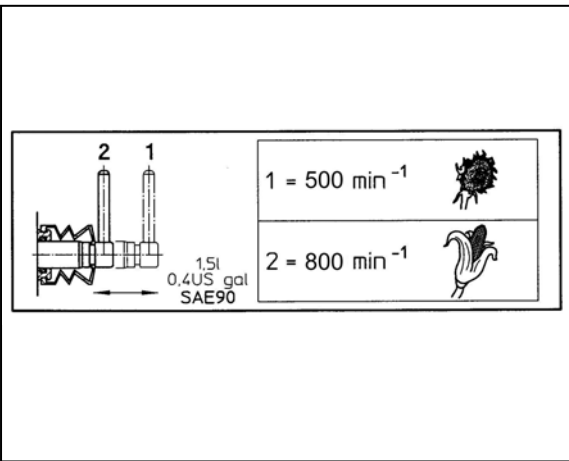
Attention! Shift gears during idle speed only.



Variable speed gear - corn and sunflowers

The 2-speed gear (G) has a fixed speed each for corn and sunflowers.

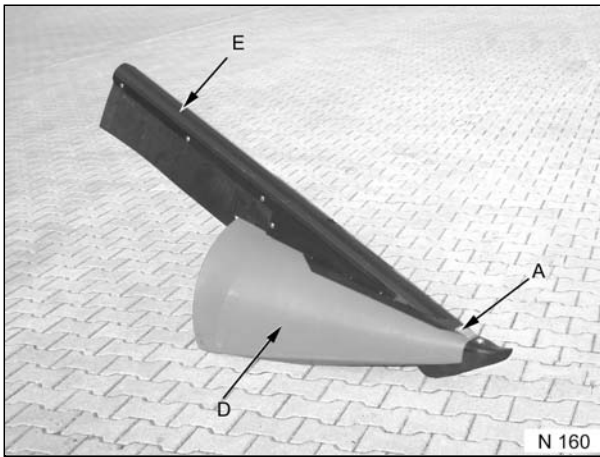
The speed is selected by shifting the lever 2 ↔ 1.



Attention! The sunflower speeds must not be used for corn harvest.

Attention! Shift gear at idle speed only!

Bodywork increase (lateral, optional equipment)

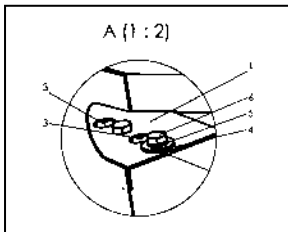
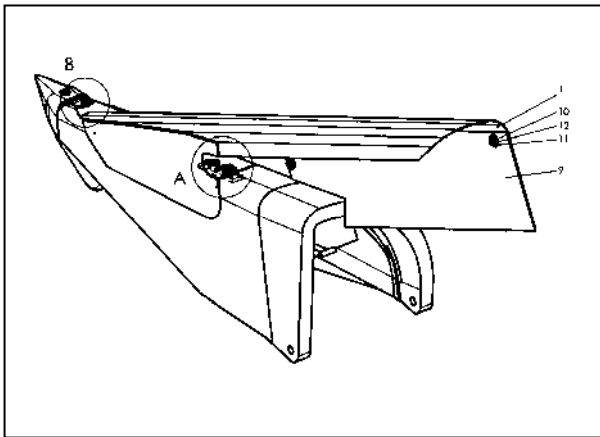


Bodywork extension right and left

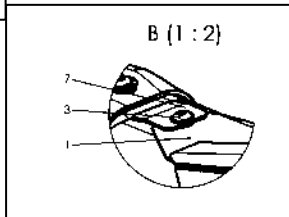
Used to avoid harvesting losses for sunflower and corn harvest

Mounting instructions:

1. Drill holes (in front: $\varnothing 9$; rear 2x11-2x $\varnothing 9$) with a template (504286 left; 504287 right).
2. In the area of the mounting holes, drill assembly hole from below and/or inside into the outer divider nose ($\varnothing 50-55$).
3. Fit the threaded bar (2) through the mounting hole) from inside with the screws (3) to the outer divider nose (3).
4. Screw down clamping plate (7) to the outer divider nose (3,12,13) with 3 spacers (8).
5. Push outer divider nose extension with the frontal nose below the clamping plate so that the welded screw in the rear area engages into the pocket of the threaded bar.
6. Assemble outer divider nose, extension and threaded bar with each other (4,5,6).
7. Fit covering rubber (9,10,11,12).



View A

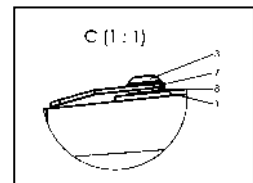
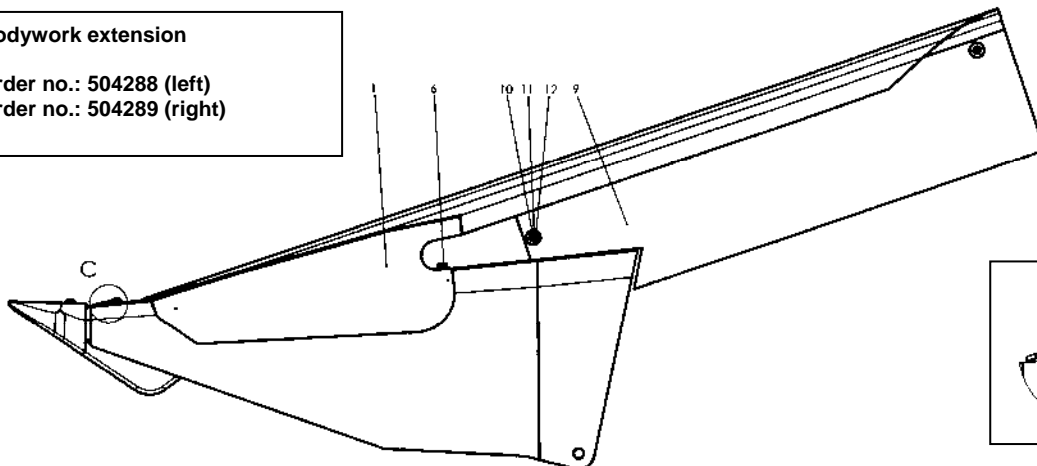


View B

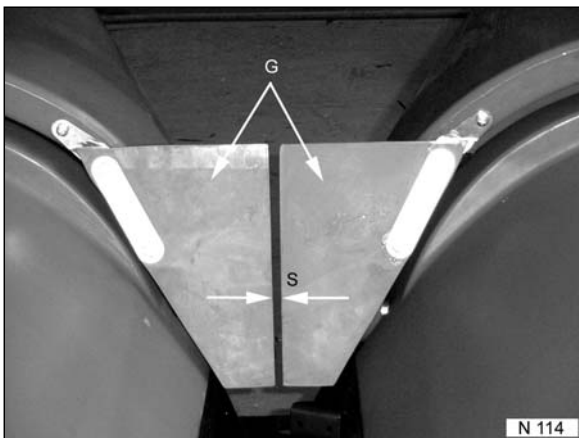
1	washer 8,4 DIN 9021	13	040216
5	hexagon nut M8-DIN 985	12	040008
4	washer V9-DIN 440	11	040300
4	saucer-head screw M8*16-DIN	10	040612
1	covering rubber	9	504297
3	washer A8-DIN 125	8	040201
1	clamping plate	7	504298
1	hexagon screw M10x30 DIN	6	040438
1	spring ring A10-DIN 9021	5	040109
1	washer 10,5-DIN 9021	4	040217
3	flat mushroom head screw 8x20	3	040917
1	threaded bar	2	504299
1	outer divider nose increase l+r	1	504290/291

Bodywork extension

Order no.: 504288 (left)
Order no.: 504289 (right)



Notes for special harvest conditions



Shield extension rubber

If the corn plants are thin or even crumbly, and dry, the shield extension rubbers (G) can be taken off.

There is also the chance of extending the gap (S) according to the conditions by removing a uniform piece from the right and left extension rubbers.

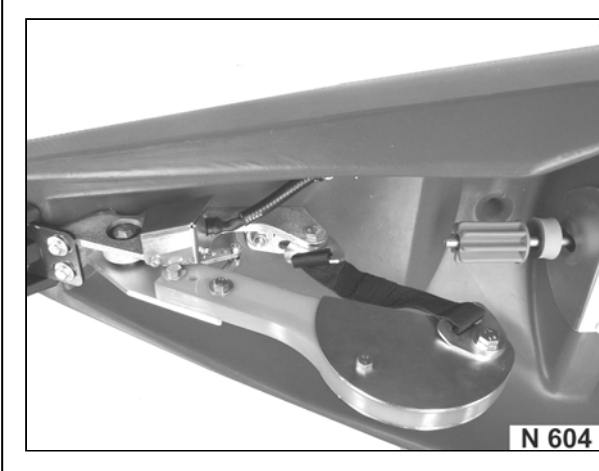


Additional cob saver (optional)

Additional cob savers are available to attach onto the center divider noses.

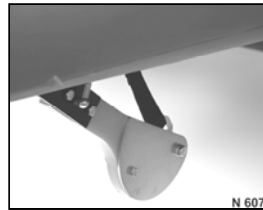
Certain corn varieties can produce cob losses, which require using this additional device.



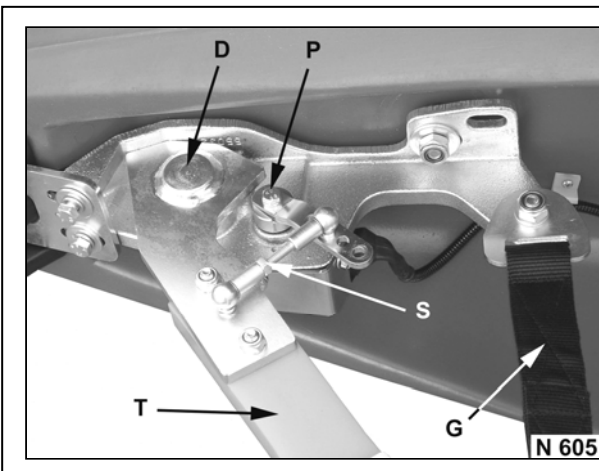


Ground levelling system

On option, an automatic bottom guide (keying device) can be supplied for getting a uniform lifting height and thus even a uniform stubble height.



The device allows to be fitted with ease. However, the used combine must be fitted with an adequate technique.



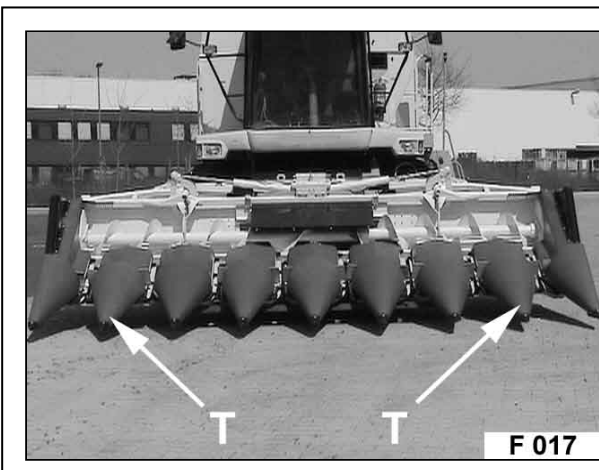
Adjustment of the automatic bottom adapter

The working height is fixed by the key (T) pivoted in position (D).

The spindle (S) allows adjusting the minimum and maximum value of the potentiometer position (volt) specified by the combine manufacturer.

All adjustments of the bottom guide device are described in the manual of the combine manufacturer and apply also to the corn header.

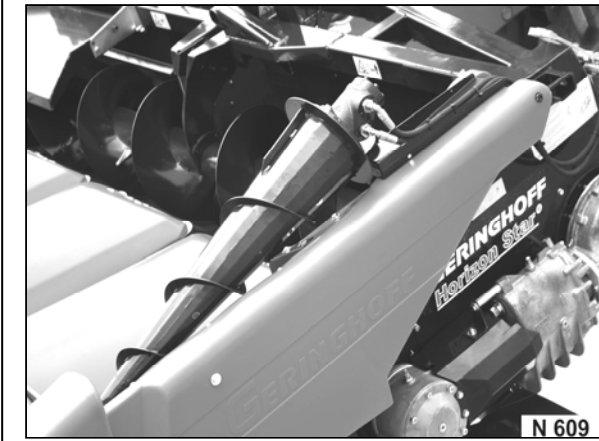
The belt (G) forms the downward limitation.



Arrangement of the keys

If an automatic ground adapter device has been supplied by the factory, the divider noses fitted with the keys are to be mounted at the points provided. They are to be identified via the connecting cables laid accordingly.

In case of a retrofitting, the keys are to be mounted at the outer centre noses.



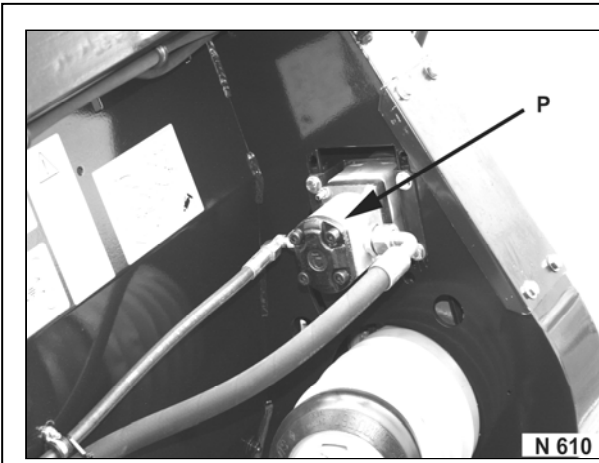
Lodged corn screw (optional)

Lateral conveyor screws for lodged corn can be mounted right and/or left. The unit is driven hydraulically.

If the combine itself is fitted with a special connection for a hydraulic reel drive, it is also used for driving the lodged corn screws. In such a case, the speed can be regulated via the combine controls:

“Reel faster or slower “

It can be switched off either by adjusting the reel speed to “zero” or disconnecting the hydraulic connection.

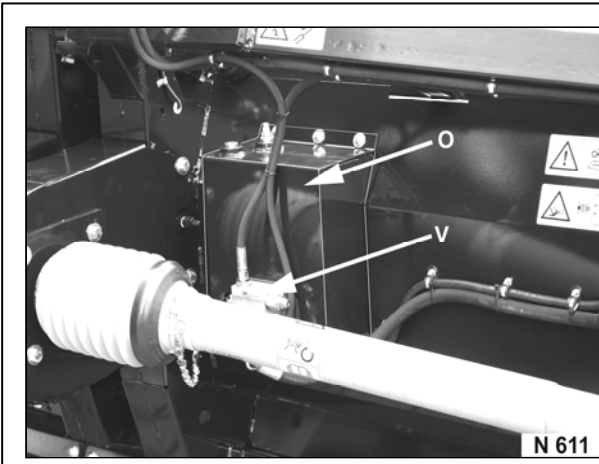


Lodged corn screws with on-board drive

If the combine is not fitted with a hydraulic reel drive, the lodged corn screws are driven by an on-board system.

The arrangement of the pump (P) may subject to a model and type different from the opposite illustration.

This additional device can be mounted to all headers with gear drive.



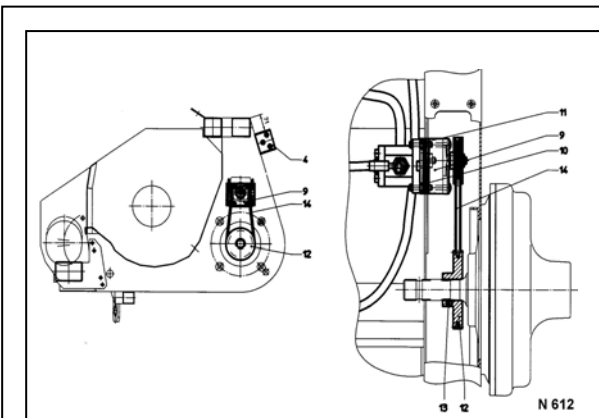
Hydraulic oil tank / control

The hydraulic oil tank (O) with the servo-valve (V) for the lodged corn screws is mounted on the rear panel of the header.

Filling capacity: 7 litres hydraulic oil (customary)

Oil change: Only if the system is damaged

Control: Cut in and off via valve (V).
Separate switching right / left is not provided.



Driving scheme of the hydraulic pump

Via a duplex chain the pump is driven from the crown gear shaft.

The driving chain is to be tensioned by displacing the hydraulic pump.

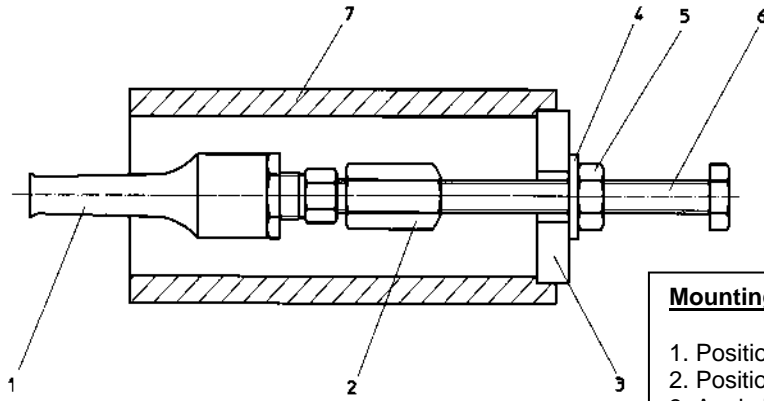
Oil the chain periodically.



Prior to performing maintenance works turn off engine.

Ensure that system does not run dry.

Special tool for the disassembly of front rotor-bearing



Dismounting tool
Order no. 501165

Mounting instructions:

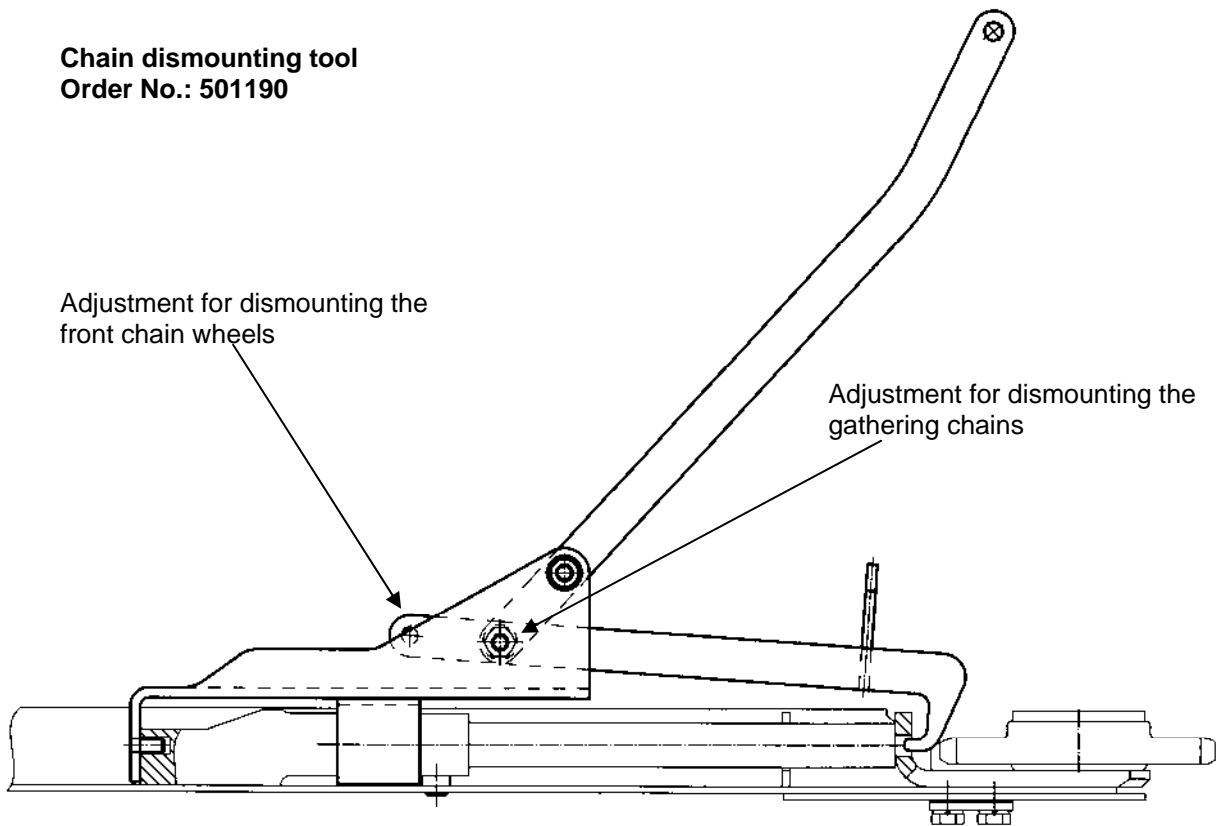
1. Position 5 to be screwed on pos. 6.
2. Position 4 to be slipped on pos. 6.
3. Apply Loctite medium-tight to thread of pos. 1 and 6.
4. Tighten pos.1 and 6 by turning pos. 2.

Bearing disassembly:

1. Tighten puller to bearing.
2. Slip puller-sleeve, pos. 7, on Rotor-head.
3. Fit washer with groove, pos. 3.
4. Secure Hexagon bolt, M 10, pos. 6.
5. Pull bearing by turning hexagon nut M10, pos. 5.

1	withdrawal sleeve	7	501166
1	hexagon screw M10xW0 DIN 933	6	040476
1	hexagon nut M10 DIN 934	5	040015
1	washer DIN 125 A 10.5	4	040202
1	washer with groove	3	501167
1	extension nut 3 D hoch	2	x
1	internal puller KUKKO U-19	1	501168
Pce	Designation	Pos	Drawing num
0			
0			
0			
0			
		Puller Front-Bearing on Rotor shaft	
<small> CARL SCHNEIDERWERK CARL SCHNEIDERWERK OPEN & CO KG D-39227 AMERIK </small>		Blatt 20	von 0
501165		Anzahl 11	Blatt
DIN 244-Beibl. 2 DIN 748-Beibl.		Entw.	Zeichn.
Schutzvermerk nach DIN 51 30		Name	Nachr.

Chain dismounting tool Order No.: 501190



N 058-1

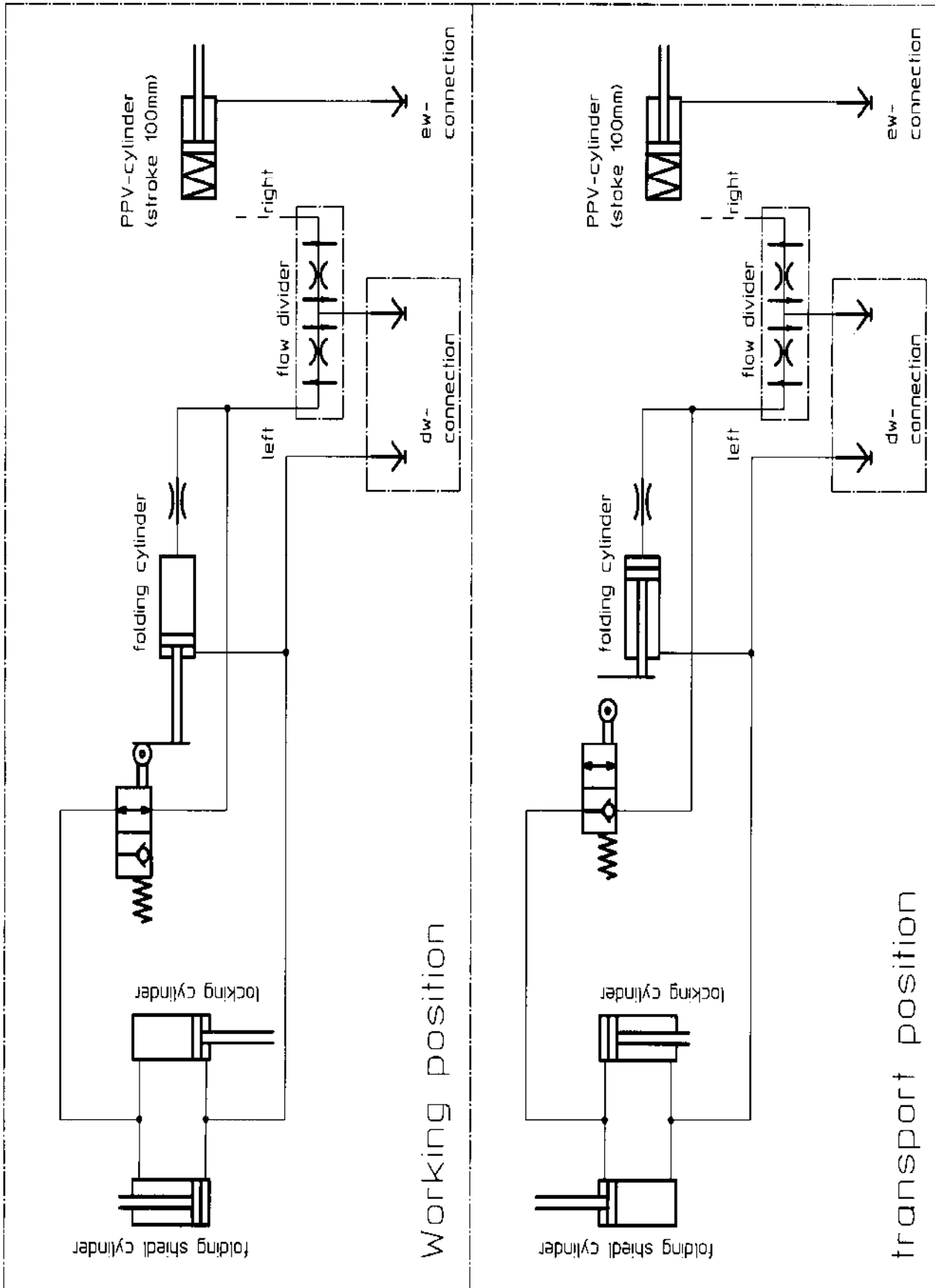
Minimum tightening torque for screws/bolts

Current for "full" bolts

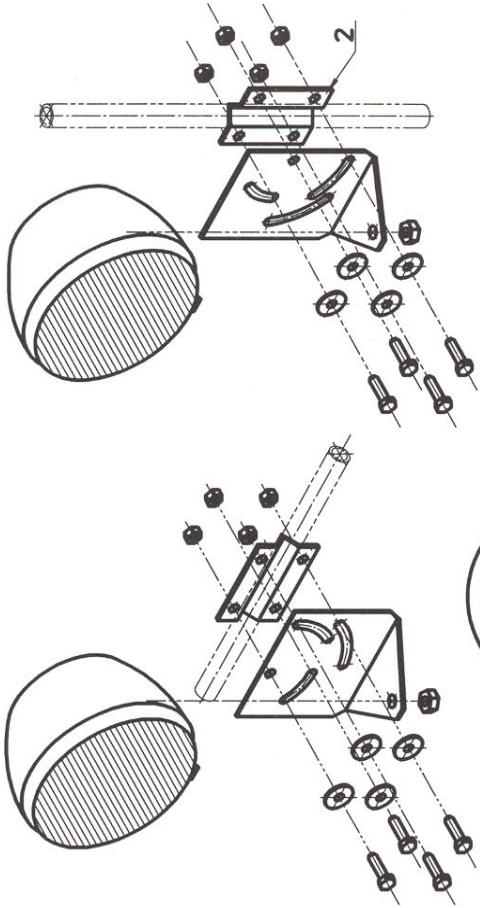
Dimension size	M rated in Nm		
	degree of firmness 8.8	degree of firmness 10.9	degree of firmness 12.9
M4	2,7	3,8	4,6
M5	5,4	7,6	9,1
M6	9,2	13,0	15,5
M8	22,0	31,0	37,5
M8 x 1	24,0	33,5	40,0
M10	43,5	61,0	73,5
M10 x 1,25	46,0	65,0	77,5
M10 x 1	50,0	70,0	84,0
M12	76,0	106,0	127,0
M12 x 1,5	79,0	111,0	133,0
M12 x 1,25	82,5	116,0	139,0
M14	120,0	168,5	202,0
M14 x 1,5	130,0	183,0	219,0
M16	187,0	262,0	314,0
M16 x 1,5	198,0	278,0	333,0
M18	257,5	362,0	433,0
M18 x 2	272,0	382,0	457,5
M18 x 1,5	287,0	403,0	483,0
M20	362,5	509,0	610,0
M20 x 2	381,0	535,0	641,0
M20 x 1,5	400,0	562,0	673,0

Hydraulic circuit diagram folding headers

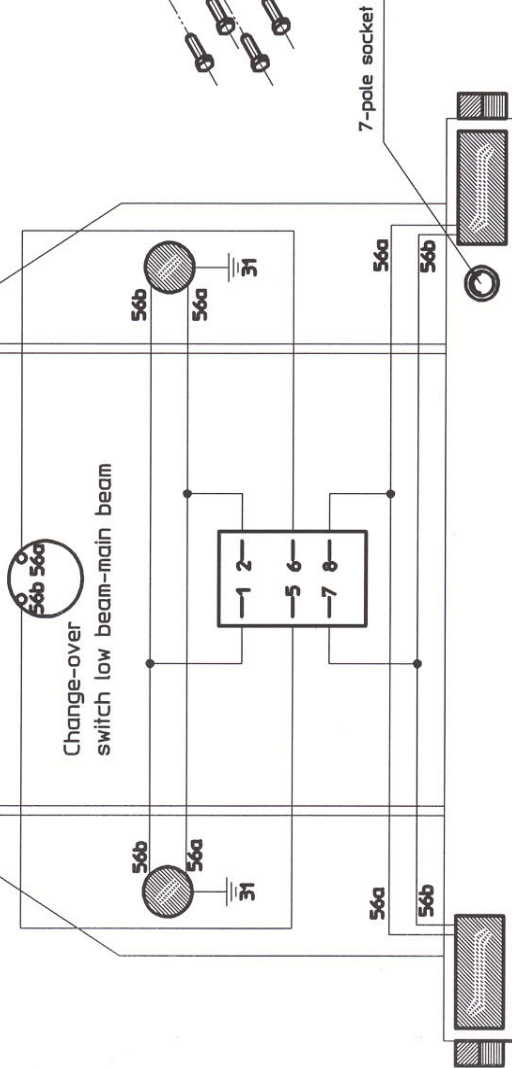
Hydraulic circuit diagram for foldable headers.



In case of questions or possible trouble with the hydraulic control of the corn header, please get in touch with our customer service at: 701-852-1876 or info@geringhoff.com



Attention: Prior to working on the mains battery to be disconnected



Direction indicators and side marker lamps of the combine and the front protection must light up in common!

2	2 cable 3x1.5mm ² 4.3m	026558
1	1 change-over switch	9 026528
1	1 socket 7-poles	8 026524
8	8 hexagon nut SM8	7 040008
8	8 hexagon screw M8x30	6 040528
8	8 washer A8.4 DIN 9021	5 040216
1	1 horizontal holder	4 026577
1	1 horizontal holder	4 026576
1	1 vertical holder	3 026575
1	1 vertical holder	3 026574
2	2 clamping plate	2 026573
2	2 auxiliary headlamp	1 026572
Pce.	Item	Pos.
		Drawing no.

Ind. Beschreibung der Änderung		Item	Material		Blatt	Index	Materiab. I/S	ersf.
		GERINGHOFF	mounted set for headlamps for all combine types					
		MASCHINENFABRIK CARL GERINGHOFF GMBH & CO KG D-59227 AHELEN	Z.-Nr.					
		Übersflächen nach Fremdatoleranzen nach DIN 314-Hreihe 2 DIN 786-mittel	Abmessung					
		Schutzvermerk nach DIN 34 beachten	Rohteil					
			Werkstoff					
			Gewicht					
			Höhe					
			Name					
			Datum					
			Spez.					
			Statue					