Technology you can count on

Operator's manual

Version B 0702

English

No. : 97441

ROTARY HARVESTING UNITS

330

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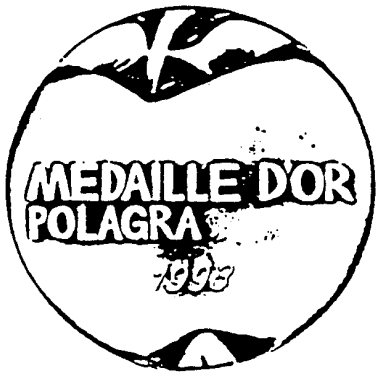

Design and model claims

The construction and function of our products are subject to technical continuous and further development, which means information and data pertaining to a delivery are not binding.

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Foreword

Carefully read this operating manual to familiarise yourself with the correct operation and maintenance of the machine and to prevent injury and damage to the equipment. This operating manual and the safety labels attached to the machine are available in various languages (contact your KEMPER dealer for details).

This operating manual is an integral part of the delivery. When the machine is sold, the manual must be handed over with the equipment to the new owner.

All dimensions in this operating manual are in metric units. Use only fitting parts and screws.

The directions of "RIGHT" and "LEFT" are indicated relative to the direction of forward travel of the machine.

Enter the product identification codes in the respective section. Please copy all digits and check them to be sure that they are correct. In the event of theft of the machine, these codes might assist the police in their enquiries.

These codes are also required by the KEMPER dealer for spare part orders. We recommend noting the codes also in another document.
The machine has been thoroughly tested and inspected by your dealer prior to delivery.

The attachment may only be used for its intended purpose and in line with standard agricultural work practices (see section "Proper use"). Any other use is deemed improper. The manufacturer shall not be liable for damage caused by improper use. Proper use includes compliance with the operating, maintenance and repair instructions and schedules laid down by the manufacturer.

The attachment may only be operated, serviced and repaired by persons who are fully familiar with the device and have been instructed regarding possible risks. Always adhere to all relevant accident prevention regulations and other safety practices. Also observe the relevant occupational health and road traffic regulations. Modifications to the attachment are forbidden. The manufacturer shall not be liable for any damage resulting directly or indirectly from modifications made to the equipment.

Inspection completed prior to delivery

The following tests, inspections, settings and maintenance tasks have been completed prior to the delivery of the machine:

1. ☐ Attachment properly mounted
2. ☐ Visual inspection for damage caused during transportation.
3. ☐ Lubricant applied to all lubrication points.
4. ☐ Friction clutches released.
5. ☐ Transmission checked for leakage.
6. ☐ All moving parts tested for smooth movement.
7. ☐ All hydraulic lines and connections tested for leakage - all lines and connections are tight.
8. ☐ All adhesive labels are OK.
9. ☐ Customer instructed in the operation of the device, with special reference to risks and safety measures.
10. ☐ Operating manual handed over to customer.

Date:

Signature of dealer/Kemper specialist:

1 Safety instructions

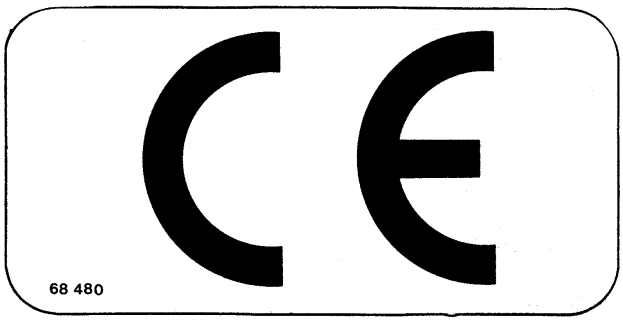
1.1 Working with the implement:

The Kemper harvesting implement with interface for self-propelled forage harvesters is suitable for row-independent harvesting of silage maize, whole crop silage, lucerne, oil seed rape, field beans, sorghum, sunflowers and other stalk-type crops.
This machine may only be used for the purpose for which it is intended, in keeping with equipment safety regulations. Failure to do so will nullify all liability in the event of any resulting injury or damage. Use for the purpose for which it is intended also includes the observation of our operating and maintenance instructions and sole use of genuine Kemper replacement parts.

The harvesting unit may only be used, serviced and repaired by persons who are familiar with the operation of this equipment or who have been instructed regarding the hazards involved. (see UVV 1.1 §1)

Important:
It is forbidden to work on the header (removal of blockages, service and repair work) while the harvester engine is still running.

The header has undergone CE testing and is marked accordingly.



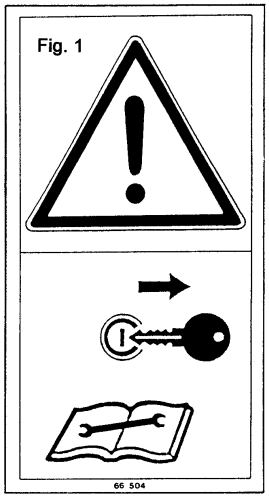
1.2 Recognising warnings

This sign draws your attention to the safety instructions mounted on the machine and contained in the safety instructions.
You must observe all safety and general accident prevention instructions.

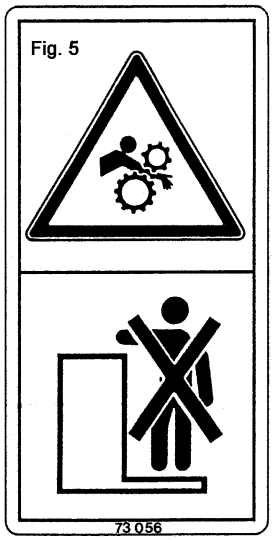
1.3 Safety instructions:

Read the safety instructions and warning signs mounted on the machine and contained in the operating instructions carefully.
Make sure that all signs can be easily read.
Replace any signs which cannot be clearly read.
Before you start working with the machine, make sure you are familiar with the overall machine operation.
Always ensure the machine is in good condition.
Unauthorised modifications will impair the proper functioning of the machine.

Switch off the engine and remove the ignition key before commencing all service and repair work.



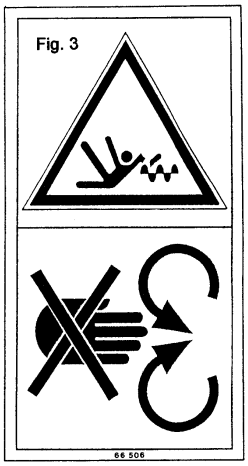
Do not climb on to the machine before the power system has cut out,
the engine has stopped and the ignition key has been removed.



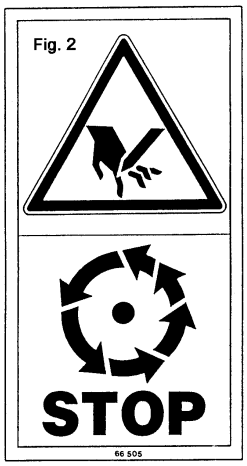
Do not enter the hazard area between the header and the machine.

Never put your hands in the auger while it is still turning.

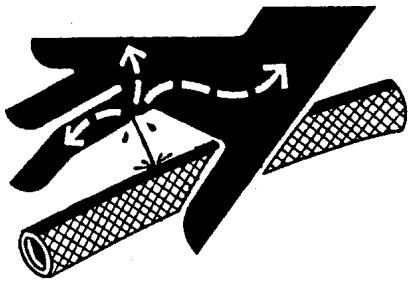
Do not access the intake parts of the implement before the power system has cut out, the engine has stopped and the ignition key has been removed.



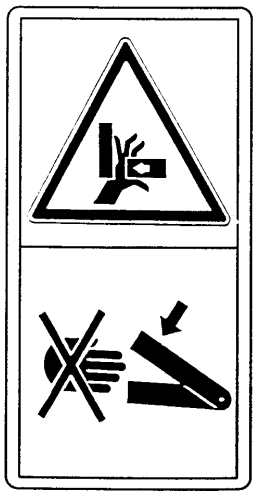
Do not touch any moving parts.



Beware of pressurised fluids emitted from the system!



Never place your hands in areas where there is a crush hazard while it is still possible for parts to move.



1.4 Accident prevention regulations

It is forbidden to stand or walk in the crop intake area.

Do not feed crop into the harvester using your hands. Do not push crop further into the machine using your foot.

Exercise great care when connecting the jointed shafts.

The jointed shaft guard must be kept in good condition at all times and the protecting tube must be secured against rotating.

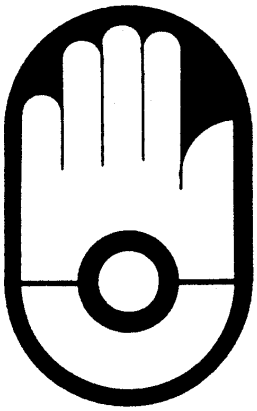
Do not alter the number of fins on the protection on the jointed shafts.

If necessary, attach counterweights in order to make the tractor easier to steer, but be sure to observe maximum permitted axle loads. Adhere to the stipulations made in the individual type-approval or in the government inspection survey regulations.

Headers should only be detached and removed when the equipment is standing on a level surface.

Whenever performing any work on the harvester the PTO lever must be switched to the "off" position; the tractor engine should be switched off and the ignition key removed.

Caution: The blade rotors are still rotating even after the intake drums have come to a standstill!



Before investigating the equipment for foreign bodies: Switch off all drive units; switch off the engine, and allow all moving parts to come to a complete standstill.

The equipment should be securely supported whenever any work is carried out underneath the machine.

Ensure that all blades are fixed securely.

Before carrying out any work on the header:
"Wait until the blade rotors have come to a complete standstill"

When travelling on the public highway:

Observe all stipulations made in the extended individual type-approval (document 'ABE') regarding statutory highway regulations.
Attach the folding accident protection guard with covers to the header.
Attach all additional side lamps and indicators.
The additional dipped headlamps should be switched on when travelling during hours of darkness.
The reflecting hazard warning plates on the accident protection guard must be in good condition.
The header must be raised so that the front accident protection guard is approx. 300 mm above the road surface.
Government inspection survey regulations regarding axle loads, permitted gross vehicle weights and rear-end weights must be observed.

Moreover, the general specifications contained in the accident protection regulations for machinery, equipment, tools, technical equipment and vehicles issued by the agricultural professional associations, UVV 3.1 to 3.11 must be observed.

A measurement of the noise level was carried out during the CE test: max. noise level reaching the driver's ears, in conformity with regulation 86/188/EWG; measured in accordance with ISO 5131 with the cab closed = 80.0 dB (A).

Only genuine Kemper replacement parts should be used.

1.5 Mechanical safety

Do not place your hands or any other objects inside the equipment while during operation or while the harvester engine is still running.
Before carrying out repair and maintenance work, the harvester engine must be switched off and the ignition key removed.
Safety devices may only be removed in order to perform repair and maintenance work.
The permitted gross loads, axle loads and tyre pressures must not be exceeded.
The statutory regulations of the highway code must be observed when travelling on public highways.

1.6 Safety instructions for attaching and removing the header

The header may only be removed on firm, level ground.
When removing the header, ensure it is standing securely.
You may only enter the space between the harvesting attachment and the machine when the engine is switched off and when you have ensured it is not possible for the machine to roll forwards or backwards.

1.9 Safety guidelines when welding and working with flame

Hazard from electrical current

- Use only welding equipment with electrics which are in perfect condition
- Do not carry out welding where there is an increased electrical hazard
  (welder standing on a surface which will conduct electricity, welding in a constrained position, welding in confined spaces...)

Hazard from optical and UV radiation

- Use a face screen with sight glasses appropriate to the welding procedure in question
  (welding goggles, hand or head guard with appropriate glasses).
- Protect your body by wearing clothing appropriate to the welding procedure.

Hazard from build-up of gases

- When components are subjected to heat, layers of paint and deposits of contamination contained on the components may combust. This will result in the formation of noxious vapours.
  It is therefore essential that layers of paint and contamination are removed before heat is applied to the components in the area to be welded.
  (Quite apart from the hazard involved, contamination will cause faults in the weld bead.)
  Weld bead faults will also occur when welding is carried out where a draft is present (stream of protective gas is blown away), or when moisture is present (hydrogen entering the weld bead).

Hazard from heat

- Remember that a large amount of heat is applied to the material when welding, making the parts extremely hot. Make sure no combustible material is located within your work area. Wait until all hot tools and equipment have cooled down before touching them.

2.0 Declaration of EC conformity

This product has been tested and marked in accordance with EU directive 98/37/EC (Communauté européenne / European Community). A 'Declaration of EC Conformity' is attached to the instruction and should be delivered to the end-customer together with the instruction.

2.1 Transfer of ownership of the equipment

Important! If the customer himself transfers ownership of the equipment to another party at a later date, the instruction must also be included in the transfer.

2.2 Obligation to provide information about product liability

Product liability obliges the manufacturer and dealer to deliver the instruction when equipment is sold and to instruct the customer in the use of the equipment, referring to relevant operating, safety and maintenance regulations.
A multi-copy form (A,B,C), as shown below, is attached to every copy of the instruction. Written confirmation is required as proof of the fact that the equipment and the instruction manual have been properly delivered.
To this end, Document A must be signed and returned to Kemper.
Document B is retained by the dealer supplying the equipment, and Document C is retained by the customer. This also ensure your warranty rights.

Kemper **Übergabeerklärung für Landmaschine** **A**

[1] Typ:

Maschinen-Nr:

[4] Tag der Übergabe

Kd-Nr. Händler

[2] Anschrift des Kunden:

[5] Anschrift des Händlers:

Firmenstempel / Unterschrift

[3] Die unter (1) angeführte Maschine wurde von mir erworben

Mit der Übergabe der Maschine wurde mir die Betriebsanleitung überreicht, außerdem wurde mir die Bedienung, die Sicherheits- und Wartungsvorschriften erläutert.

Unterschrift des Kunden

Datum

Kundenexemplar

Firmenstempel / Unterschrift, falls mit (5) nicht identisch

[6] Die Maschine wurde gemäß Herstellerrichtlinien dem Kunden übergeben.

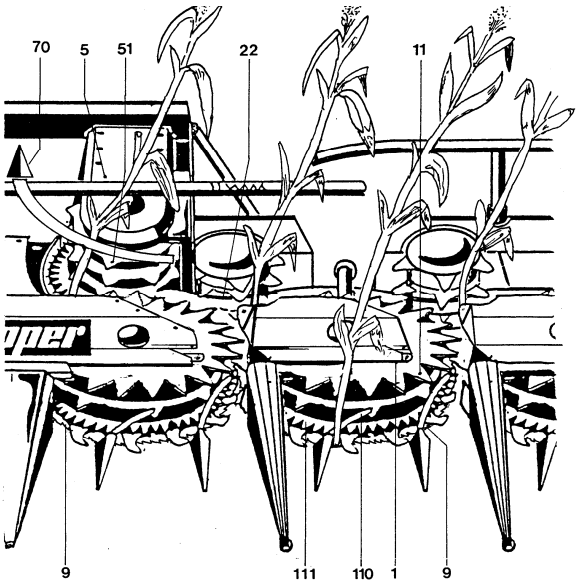
Unterschrift des KD-Fachmannes

Datum

Maschinenfabrik KEMPER GmbH - Postfach 1352 - 48694 Stadtlohn

4 General

Our patented cutting system enables you to approach the maize stems from any direction you choose: parallel to the rows, perpendicular to the rows, or at an angle.
Every single maize stem is fed automatically into a gap in the cutting head.
In open-cut mode, i.e. without return cut, the crop stem is cut along the entire working width by the fast-action blade 9. The slow-action intake drum 1 feeds the stem along the intake bars 110.
A row of teeth 111 grasp the stem securely.
The forward movement of the intake drum pushes the crop up against the carrier teeth 11, thus allowing the crop to be transported safely past the guides and scrapers 22 to the intake drum.
Here, the stem is placed against the carrier teeth 51 and is thus cleanly and evenly gathered lengthways. It is then fed pre-pressed to the header's pre-compression and intake rollers.



Closely spaced rows - High crop yields

Maize cultivation methods have formed the subject of intensive debate in recent times; there has also been a shift towards increasing crop yields by placing the individual plants closer together.
However, if this new cultivation method is to be adopted, it is essential that the existing seed drills be used, and harvest is only possible with a row-independent harvesting system.
The new cultivation method does not allow us to work with double rows; instead, the previous row distance of 75 cm must be reduced to 30 cm. Maintaining the same cultivation density of 10 plants/m^2 produces a greater distance between the plants in the individual rows.

The advantages of the new cultivation method:

- More space for each individual plant.
- Faster overgrowing between rows and hence earlier shading of soil.
- Less soil erosion.
- Improved utilisation of nitrogen in the soil.
- Increased yields by approx. 12 - 17 %.
- Improved quality.

4.1 Description of the header

Harvesting implement with integrated interface for self-propelled forage harvesters.
When fitted with the appropriate interface, the header is suitable for attachment to a variety of self-propelled forage harvesters.
Power transmission is delivered by the SPFH drive line via oil-immersed transmission and safety clutches.

Row-independent cutting system with fast-running rotors and freewheel mechanism.
Cutting across the entire working width by closed saw-type rotor blades with replaceable segments.
Even crop intake to the chopping unit via slow-running intake drums and clean gathering by two slanting intake drums. Two mechanically driven crop separators for heavily laid crops, height-adjustable crop lifters.

330

Working width = 3.0 m

4.2 Design of the harvesting attachments with the major sub-assemblies

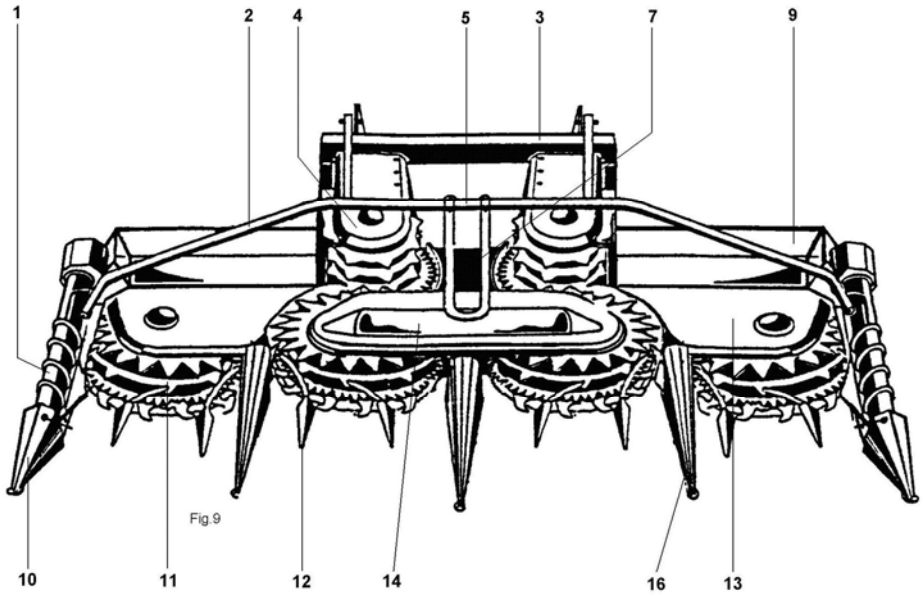


Fig.9

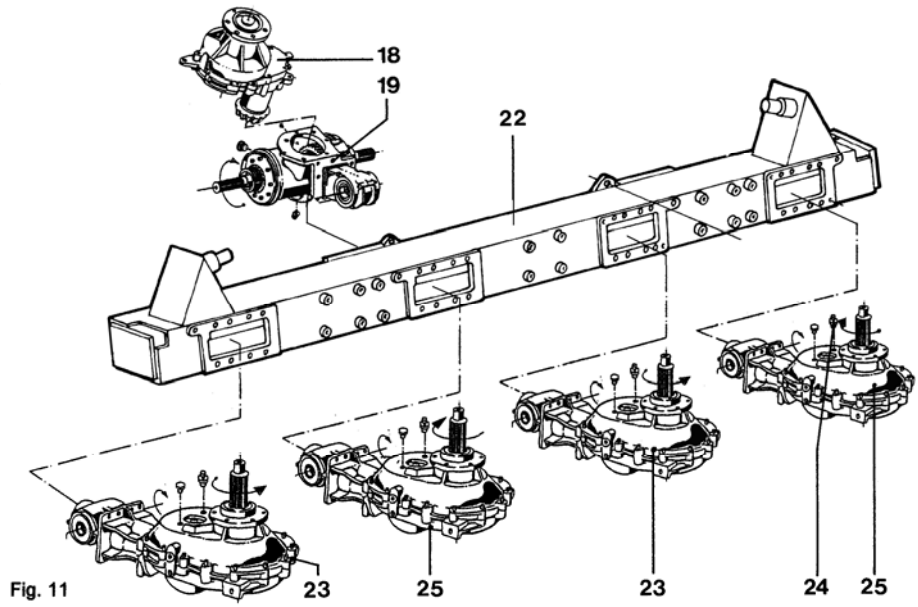


Fig. 11

Sub-assembly designations

1 Rotating lodged maize auger

2 Outer feed bar

3 Frame

4 Intake drum

5 Central feed bar

7 Centre guide

9 Rear guard

10 Outer crop separator

11 Intake drum, left or right-rotating

12 Small crop separators

13 Shield

14 Central covering plate

16 Large crop separators

18 Spur gear drives - Intake drum

19 Spur gear angle drive left and right

22 Basic frame

23 Spur gear angle drive - Intake drum, left-rotating.

24 Breather - always outside!

25 Spur gear angle drive - Intake drum, right-rotating.

4.3 Header dimensions and weights

		Harvester attachment type			
	Unit of dimension	**330**			
Length	m	**2.06**			
Overall width	m	**3.00**			
Height	m	**1.36**			
Working width	m	**3.00**			
Transport width	m	**3.00**			
Weight of basic version	Kg	**1500**			
Height folded in - lowered	m	**1.36**			

4.4 Maintenance and testing

Maintenance at start of new season

The most important job to be performed before operating the header is to inspect the two friction clutches in the main power unit: remove both clutches, dismantle, clean or replace.
(See appropriate instructions in the instruction manual)
Before commencing new operation, we recommend star ratchets K 43 in the intake drums be inspected. For lubrication of the star ratchet (1 x year) we recommend a lithium saponified grease, "**GLEITMO 805 and 810"** made by Gleitmolybdän. This is particularly suitable for combating frictional corrosion.
Run the machine and check all bearings for overheating or excess play.

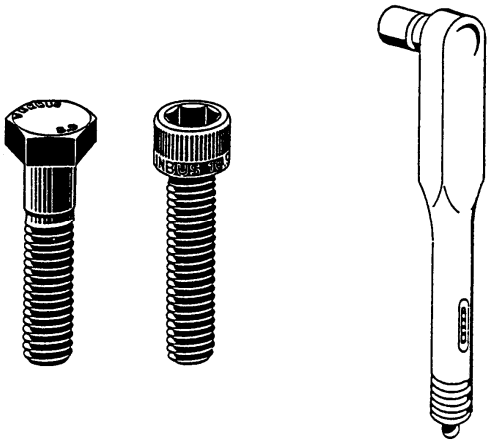
Daily maintenance

Make sure scrapers (2 per rotor) beneath the rotor blade are intact. This is important as blunt or deformed scrapers can cause blockages and place an unnecessary strain on the power unit and friction clutches.
Tighten the bolts after a few days' use when applying from new or when replacing the blades or scrapers. Check all rotor blades. Heavily worn blades should be replaced as they will create long stubble and place unnecessary strain on the power unit.
The entire area surrounding the intake drums, rotor blades and scraper must be cleaned of husks and stem remains every day.
Carry out a visual check of all transmissions every day to see if there are any oil leaks.
Carrying out lubrication daily in accordance with the lubrication schedule merely means greasing the two front bearings on the side lodged maize augers, or, on certain models, greasing the jointed shaft.

Weekly maintenance

All bolts and screws should be checked at regular intervals to ensure they are firmly secured.
Foreign bodies in the cutting area can cause damage to or deformation of the rotors, the carrier elements on the intake drums or the crop separators. You should therefore check the entire area.

4.5 Torques for metric bolts



TORQUES FOR METRIC BOLTS in NM

	Grade 4.8		Grade 8.8 or 9.8		Grade 10.9		Grade 12.9	
Size	Lubricated *	Dry*	Lubrica-ted*	Dry*	Lubricated*	Dry*	Lubricated *	Dry*
	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm
M6	4.8	6	9	11	13	17	15	19
M8	12	15	22	28	32	40	37	47
M10	23	29	43	55	63	80	75	95
M12	40	50	75	95	110	140	130	165
M14	63	80	120	150	175	225	205	60
M16	100	125	190	240	275	350	320	400
M18	135	175	260	330	375	475	440	560
M20	190	240	375	475	530	675	625	800
M22	260	330	510	650	725	925	850	1075
M24	330	425	650	825	925	1150	1075	1350
M27	490	625	950	1200	1350	1700	1600	2000
M30	675	850	1300	1650	1850	2300	2150	2700
M33	900	1150	1750	2200	2500	3150	2900	3700
M36	1150	1450	2250	2850	3200	4050	3750	4750

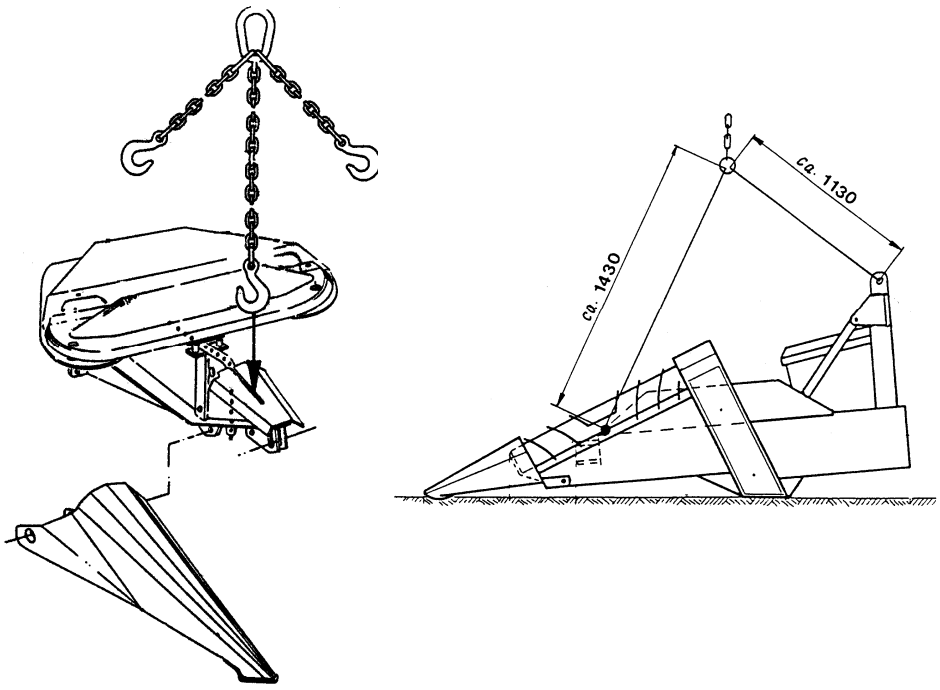
*“Lubricated“ means that the bolts are supplied with a lubricant such as engine oil, or that phosphated or oiled bolts are used. "Dry“ means that normal or galvanised bolts without any lubrication are used.

The torques specified in the table are guidelines only and do NOT apply where a different torque specification is given in this manual for certain bolts and nuts.
Check that bolts and nuts are securely tightened.
Shearing bolts are designed to shear off when a specific load is applied. Same grade bolts only should be used when replacing shearing bolts.
When replacing bolts and nuts, ensure that same grade parts or better are used. Bolts and nuts of a higher grade should be tightened to the same torque as the parts originally used.
Make sure that the threads engage properly and the bolts are correctly applied.
This will prevent damage occurring when tightening.
Tighten locknuts (not the bolts) with a plastic insert and flanged steel locknuts to approx. 50% of the 'dry' value given in the above table.
Tighten hinge / nuts to the full torque value.

4.6 Transporting the equipment

Fold in the outer cutting units for transport (transport width 3.00 m)
Attach the folding accident prevention guard.
(The transport guard is fitted with flashing lights and position lights.)
When folded, the cutting units may partially cover the headlamps on some self-propelled forage harvesters.
In this case, it may be necessary to re-position the headlamps to conform to the prevailing highway regulations, or to fit additional headlamps.
When loading the equipment with the outer units folded, chains (or rope) must be used as shown in Fig.7. This will prevent the machine from toppling over. When loading in this way, you must exercise great care and use additional securing chains if necessary.

Fig. 7



4.7 Travelling on the public highway

Steering

To ensure proper steering is maintained, the steering axle on the transport vehicle must be equipped with counterweights, paying due attention to the permitted axle loads.

Counterweight specifications are given in the appropriate government inspection survey regulations.

Accident prevention

When travelling on public highways the entire area around the crop separators must be covered with a folding guard.

Assembly sequence:

A After the rotors have come to a complete standstill, fold up the side cutting units.

B Place the folding guard in a central position and insert the rubber rings.

C Fold up the protective profiles on the side and insert rubber rings.

D The runners, blades and other edges are covered with protective cloths.

Ground clearance

When travelling on public highways the harvesting attachment must be raised so that the front accident prevention device is approx. 300 mm above the road surface.

Side lamps and indicators

As the side lamps and indicators on the transport vehicle are usually covered by the intake drums in raised position, we have mounted duplicates of these inside the accident protection device. For the 12 V power supply a 7-pole plug is located on the right side of the harvester.

Dipped headlamps Fig. 46 Fig. 48

The dipped headlamps (not to be confused with working headlamps) must be duplicated at another position on the harvester. This is because the road ahead is not adequately illuminated when the outside intake drums are in the raised position.

The TÜV, Germany's technical inspection authority, suggests the following:

"Additional dipped headlamps "A" of approved design fitted (e.g. Hella type 1 AB 004231-001, test mark HR HC/R E1 02 24461 R20) with two independent switches, for serial lighting when travelling without the header and with standard cutting unit and standard lighting plus additional headlamps when travelling with Kemper harvesting implement.

The headlamp mountings are attached to the cab posts on the left and right using appropriate drilled holes. The lower edge of the headlamp should be approx. 3000 mm above the road surface".

See instructions in the appropriate government inspection survey regulations.

Moreover, additional side indicators "B" should be mounted at the front of the harvester on the right and left, in accordance with statutory traffic regulations.

(e.g. Hella type 2 BM 006 692 - 011 or - 021)

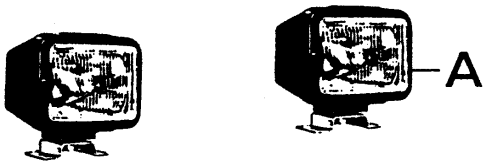


Fig. 46

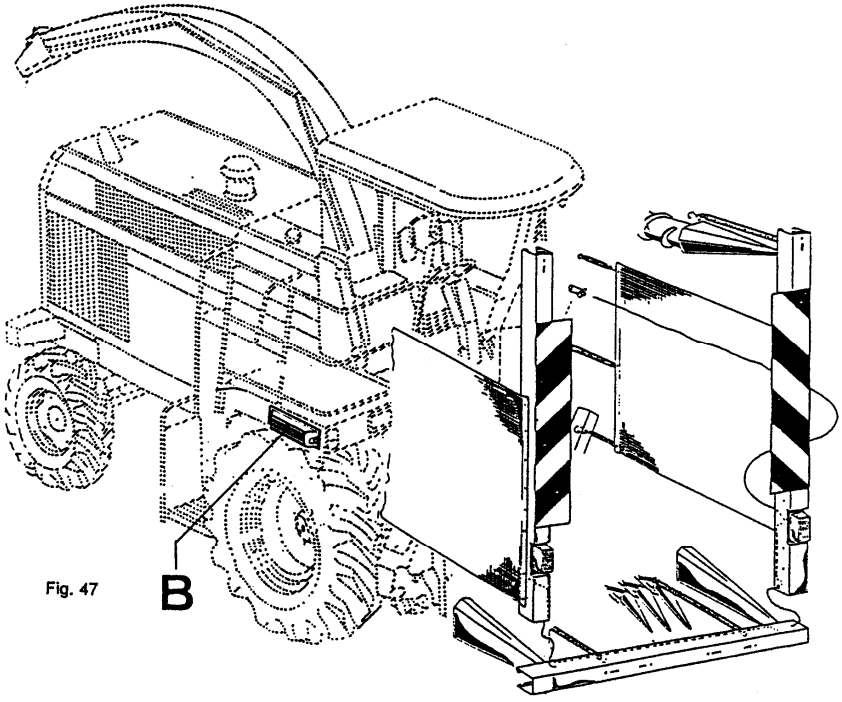


Fig. 47

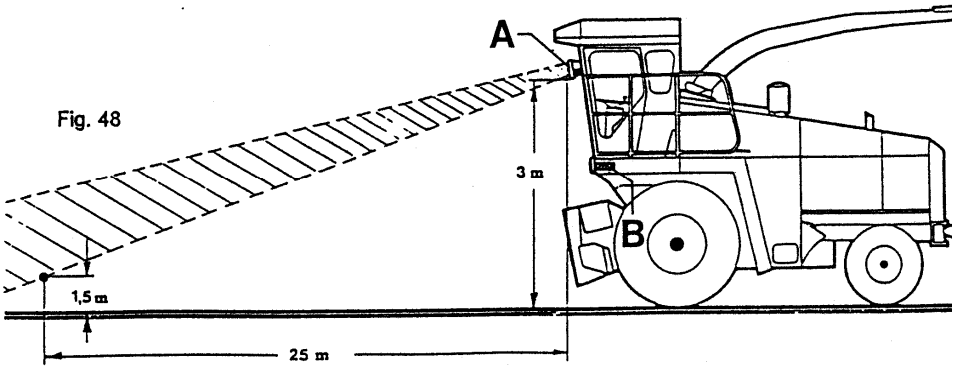


Fig. 48

4.10 Observe Public Road Legislation

CAUTION: Before transporting the machine on public roads, make sure that the machine conforms to the legislation governing the use of agricultural vehicles on the road.

9

Power transmission

Power is transmitted via jointed shafts, drive shafts and transmission units.

Initial start - up

The individual oil levels have to be checked before the initial startup of the device. The header also has to be subjected to a visual inspection.

9.1

How the drive elements interact

The harvesting implement is driven by jointed shafts from the main chopping unit to the main drives (21 / 22) on the implement.
The transmissions (20) for the transverse intake drums are flanged directly to these transmissions.

Arrangement of transmissions 330

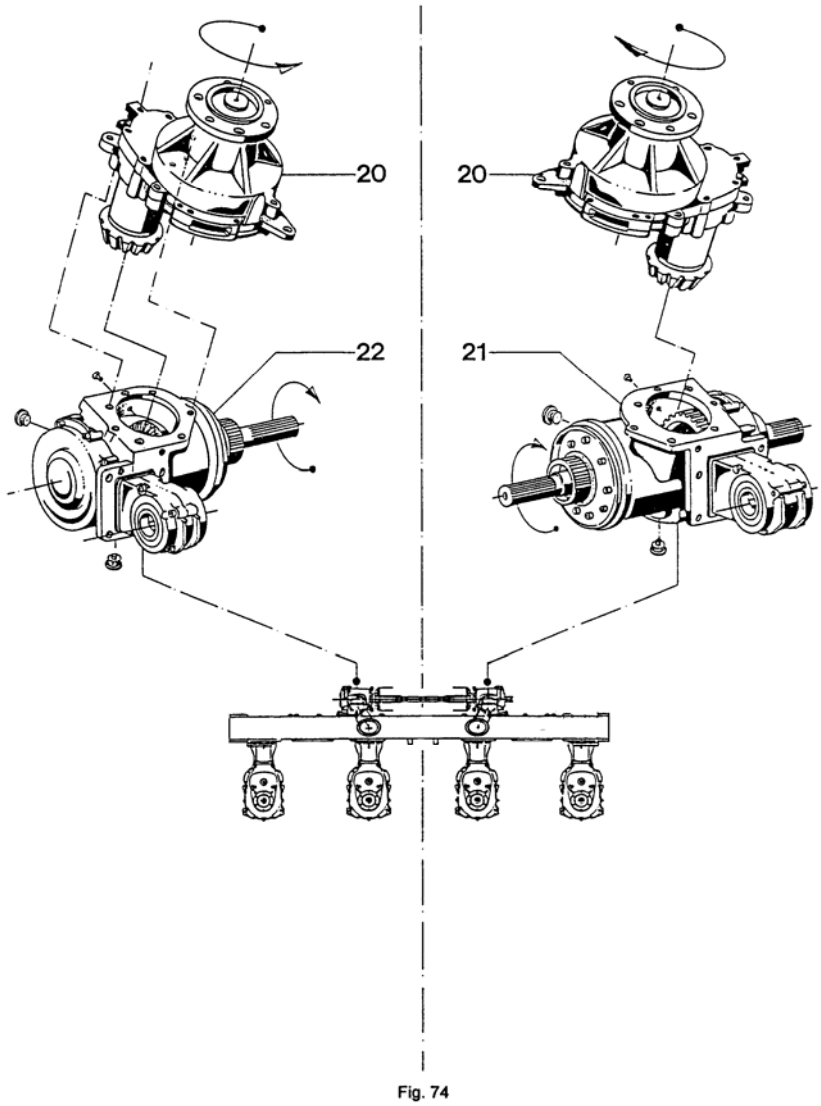


Fig. 74

Fig. no.	Description	Remarks
20	**Spur gear** **This gear is fitted with a ratchet clutch. It is filled with 0.5 l of AVIATICON XRF liquid grease.**	
21	**Spur gear angle drive left** **Transmission oil: 1.0 litres SAE 90**	
22	**Spur gear angle drive right** **Transmission oil: 1.0 litres SAE 90**	

Before installing, we recommend you check the direction of rotation. This is determined by the position of the rear bevel gear shaft 100. On left-handed transmissions the bevel gear is on the left. The bore in the bevel gear has one short and one long projection to the hex form. The bevel gear is situated on the short projection side.

Transmissions 1,5,6 and 7 = Freewheel for clockwise
Transmissions 2,3,4 and 8 = Freewheel for anticlockwise

Transmission 20 = Ratchet clutch 1150-1250 Nm

Arrangement of transmissions 330

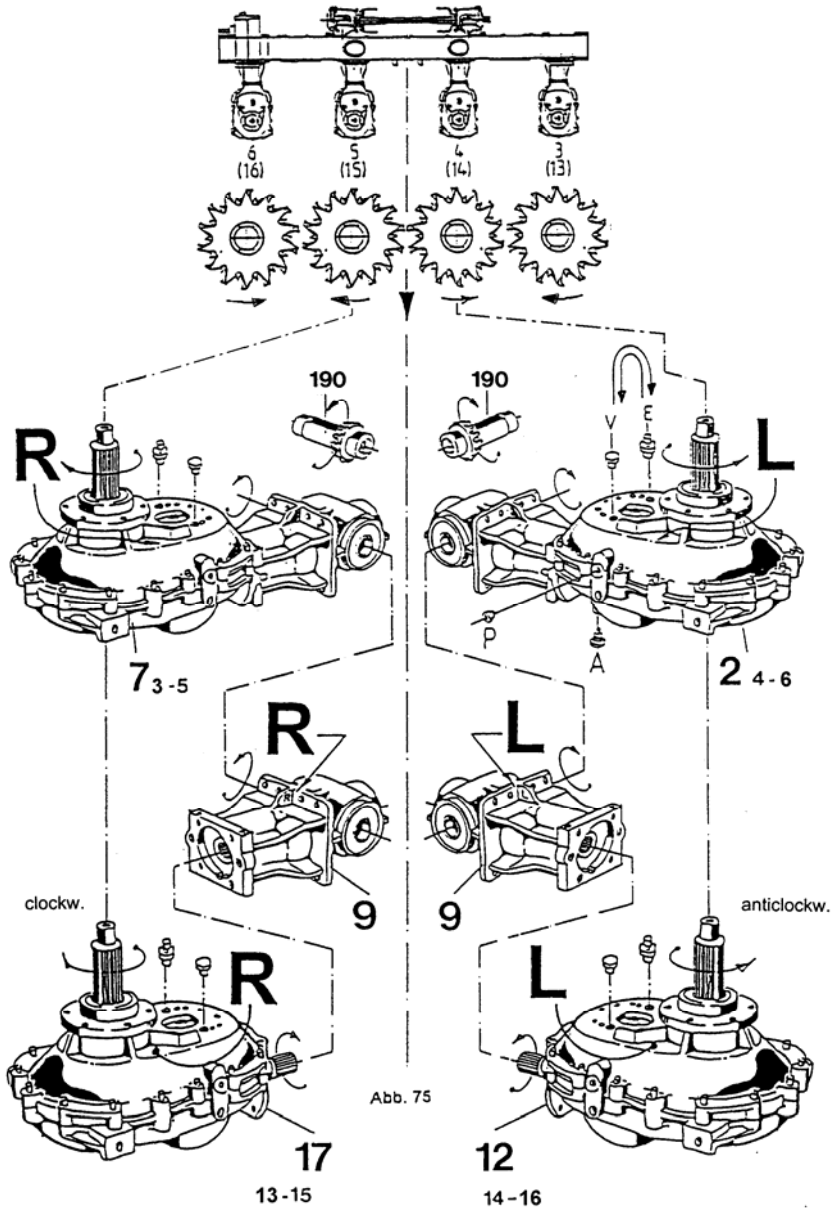


Fig. 2

Direction of rotation

When carrying out assembly and dismantling work on spur gear angle drives 3-6 it is particularly important that you observe the direction of rotation.

Freewheel

There are transmissions with anti-clockwise freewheel and clockwise freewheel. (The number depends on the type of harvesting implement.)

Basic principle: **All transmissions have a fixing bolt V M12x1.5 DIN 908 and a bleeding bolt E M12x1.5.**

"The bleeding bolt is always assembled in the direction of travel, facing outwards."

In the event of incorrect assembly, oil will escape from the breather in the raised position!

Clockwise and anticlockwise transmission versions

There are essentially just 2 transmission versions:
L = anti-clockwise freewheel, transmissions items 4 ,6
R = clockwise freewheel, transmission items 3, 5

Oil

The transmissions each have <u>one</u> oil supply system = 4.80 litres SAE 90.
An inspection screw P is located on the left and right M22x1.5 and a magnetic drain bolt A M18x1.5 is located at the bottom.
The threads are different to prevent confusion. Drain oil before dismantling the transmissions 12 - 18!

Direction of rotation

We recommend you check the direction of rotation before installing. This is determined by the position of the rear bevel gear 190. On left-handed transmissions the bevel gear is on the right. The bore in the bevel gear shaft has one short and one long projection to the hex form. This bevel gear is on the short projection side.
An additional mark is located on the raised casing area of transmission 9: L or R at the top.
When assembling from new:
L, top = anti-clockwise transmission.
R, top = clockwise transmission.

Split transmissions, rear

Transmissions 3-6 can be split to make for fast dismantling in the event of service being necessary. The rear bevel gear 9 remains in the basic frame.

Oil change intervals

First oil change after approx. 100 operating hours, then every 500 operating hours

Oil level check

Before checking the oil level, place the implement in a horizontal position and open the check bolt.
Oil should reach the lower edge of the inspection aperture.

Transmissions with grease lubrication

Item 20 = Spur gears. These two transmissions are each filled with 0.65 litre of Aviaticon XRF liquid grease and are lubricated for their entire service life.
Alternative grease options: Gresanat X00 made by Westfalen or to norm: sodium transmission grease of consistency grade NL GI 00, e.g. Shell special transmission grease "H".

Transmission grease - A comparison

Made by	Description	
Westfalen	Gresanat	X00
Aral	Aralub	FDP 00
Shell	Special transmission grease	H
Esso	Liquid transmission grease	
BP	Energrease	HT 00 EP
Texaco	Starfak	E 900
Antar	Liquid transmission grease	EPEXELF 00

Check interval

Daily visual check for oil leaks

9.2 Position of openings on the various transmissions

Filling, drainage bleeding bolts, grease nipples

A = Oil drainage bolt
E = Filler bolt
L = Bleed
N = Grease nipple
P = Oil level check bolt

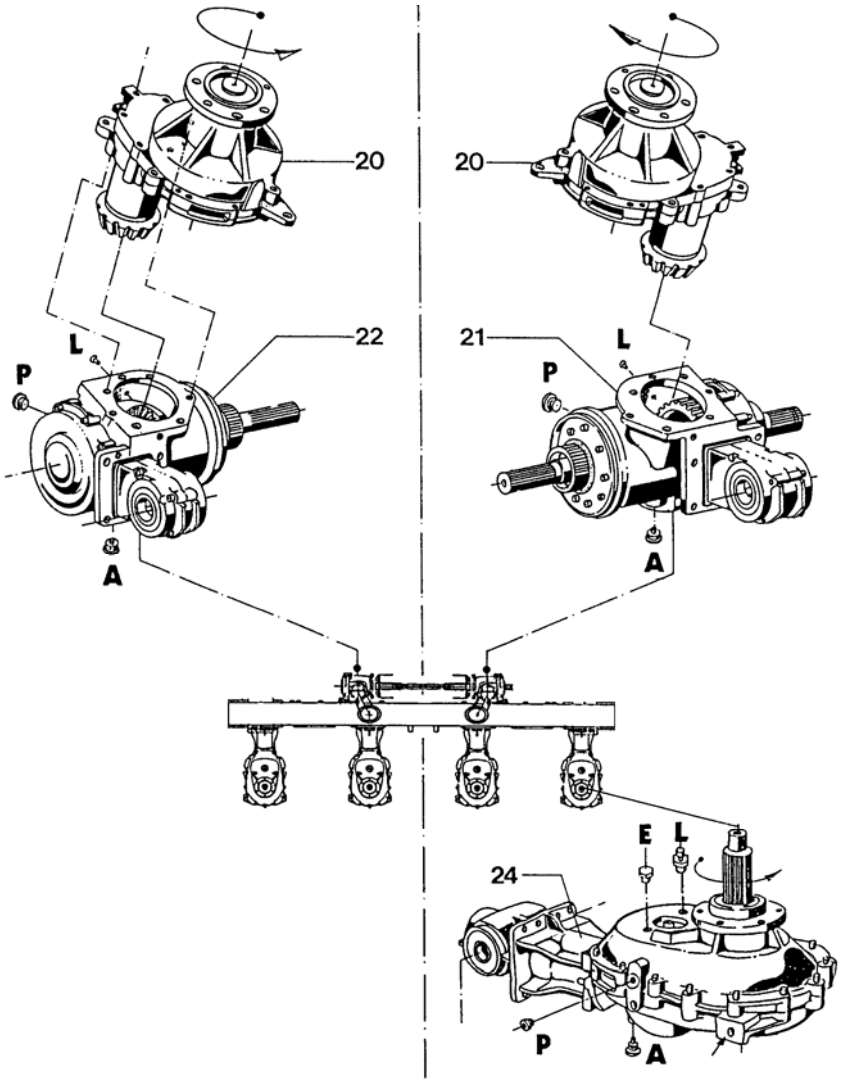


Fig. 4

9.3 Oil grades and capacities

Oil grade

SAE 90 transmission oil

Capacities, oil-filled transmissions

Item 21 = Spur gear angle drive	=	1.00 litre
Item 22 = Spur gear angle drive	=	1.00 litre
Item 24 = Spur gear angle drive	=	4.80 litres

9.3 Oil grades and capacities

Direction of rotation

When carrying out assembly and dismantling work on Spur gear angle drive 4 it is particularly important that you observe the direction of rotation.
We recommend you check the direction of rotation before installing. This is determined by the position of the rear bevel gear 100. On left-handed transmissions the bevel gear is on the right. The bore in the bevel gear shaft has one short and one long projection to the hex form. This bevel gear is on the short projection side.

Ratchet clutch

Transmission 20 = Ratchet clutch
1150-1250 Nm
Transmission 24 = Ratchet clutch
570- 630 Nm

Fig.4 no.		Description	Parts 330	Remarks
20		Spur gear drives **This gear is fitted with a ratchet clutch. It is filled with 0.5 l of AVIATICON XRF liquid grease**.	2	
21		Spur gear angle drives Left-handed Transmission oil: 1.0 L SAE 90	1	
22		Spur gear angle drives Right-handed Transmission oil: 1.0 L SAE 90	1	
23		Spur gear angle drives Right-handed Transmission for transverse intake drum - left-handed. This transmission is fitted with a ratchet clutch. Mark beneath transmission = 07 Transmission oil: 0.85 L SAE 90	2	
24		Spur gear angle drives Left-handed Transmission for transverse intake drum - right-handed. This transmission is fitted with a ratchet clutch. Mark beneath transmission = 08 Transmission oil: 0.85 L SAE 90	2	

9.4 Basic machine lubrication schedule

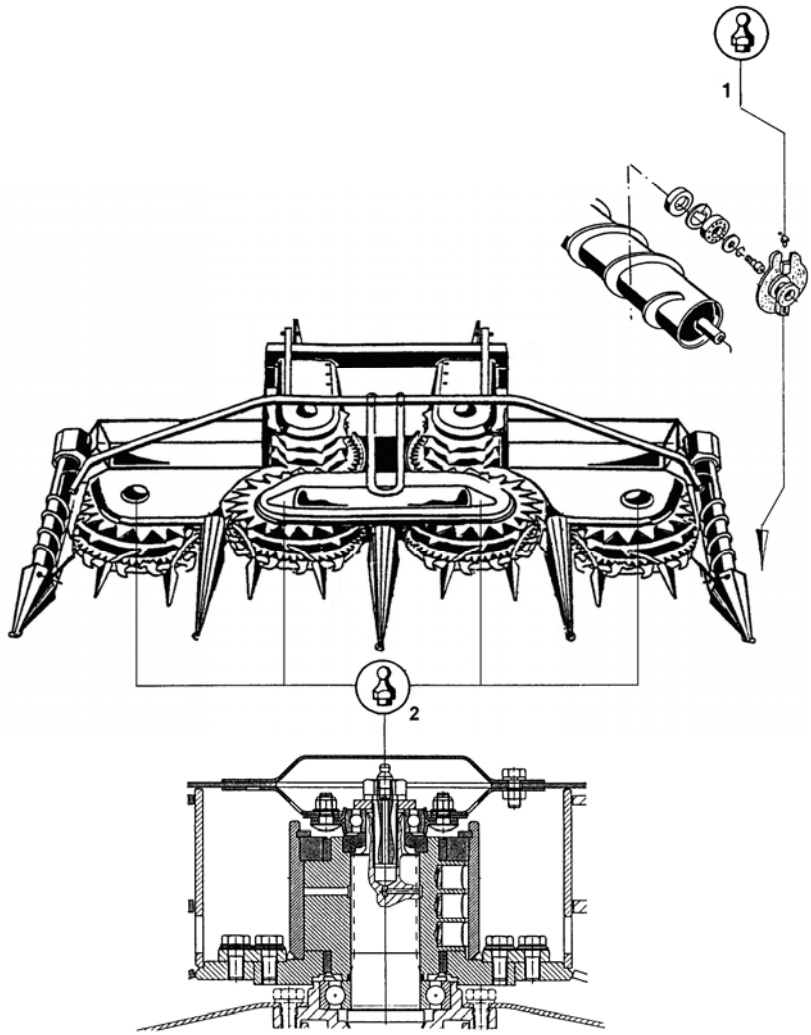


Fig. 80

Basic machine

Grease daily

1 = Grease nipple on lower bearing of lodged maize auger (left and right)

Grease annually

2 = Star ratchet in all eight intake drums.
We recommend lubrication using a lithium saponified grease lithium-saponified grease "GLEITMO 805 and 810" made by Gleitmolybdän. This is particularly good against friction corrosion.

10 Clutches

General inspection of friction clutches shortly before each new season begins

10.1 Starting clutch
800 Nm

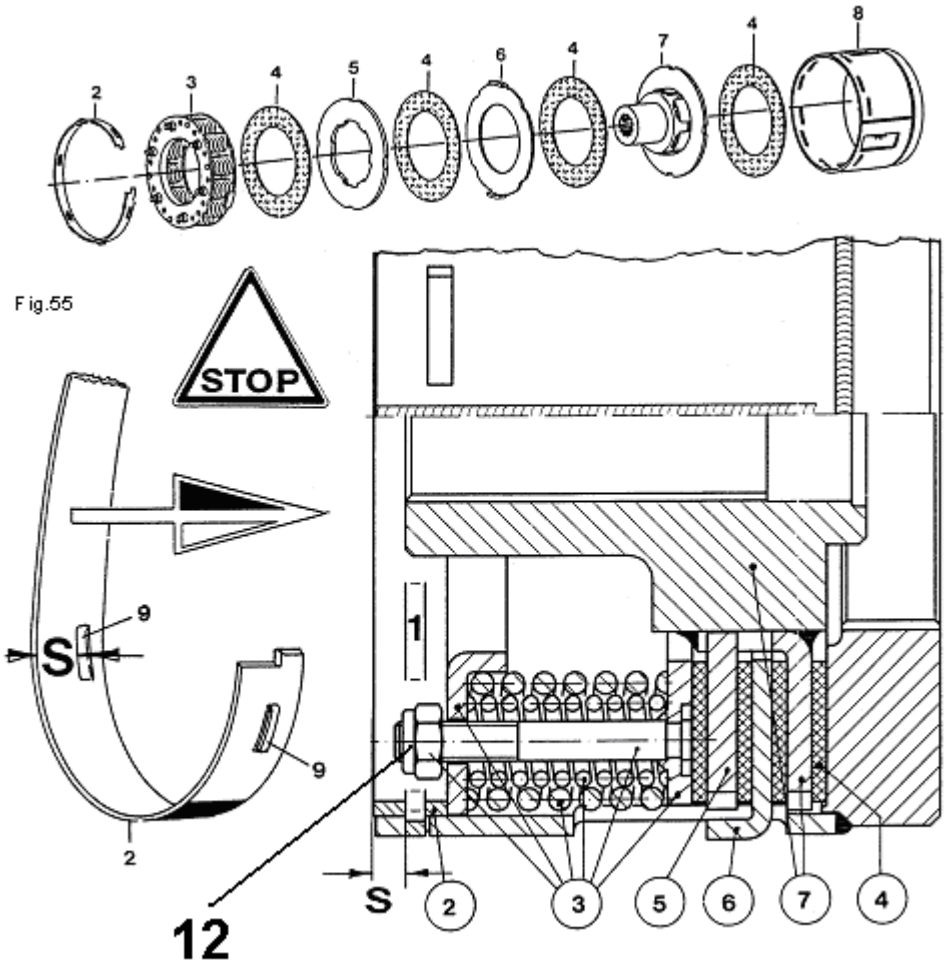


Fig.55

The 700 Nm friction clutch in main drive

Protective function
Fig. 55-58

The two friction clutches 50 in the main drive (beneath the attachment frame) protect the entire machine from unnecessary loads. Proper maintenance of both clutches and continuous inspection of proper functioning are

absolutely essential!

Torque

The torque setting is M = 800 Nm. The following two chapters describe the maintenance work necessary to ensure this torque value is retained. The friction clutch must be "bled" at regular intervals.
Failure to observe these instructions will render your warranty null and void!

Simple inspection

Simple inspection before first time of using and following a lengthy period out of service:

- Dismantle protective tube 54.
- Tighten nuts 12, thus relieving the friction disk, slip clutch.
- Loosen nuts 12 to end of thread.
- Assemble protective tube.

General Inspection "bleeding"

General inspection before start of new season:

- Dismantle protective tube 54 - Dismantle circlip 52 - Push aside bushing 51 - Remove clutch shaft 53 - Remove both friction clutches 50.
- Tighten nuts 12, thus relieving friction disks 4 and setting ring 2.
- Remove setting ring 2.
- Remove spring pack, friction disks, drive plates and hub, clean or replace if necessary.
- In order to maintain torque at M = 800 Nm, the correct installation of setting ring 2 is important, see Fig. 55 (cam 9 on setting ring 2 inside - cam 9 engages in depression 1 on housing 8).

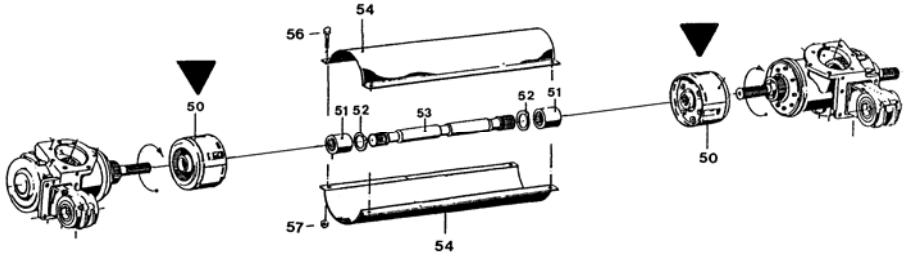
New linings

When new friction disks have been fitted, the clutch will require time to run-in before it achieves full torque.

- Exercise care when driving off. Do not place the clutch under unnecessary load.
- Allow a running-in period before driving at full power.

Note on assembly:

It is easier to assemble the friction clutch if all the nuts 12 are tightened. Meshing on the clutch housing and the flange hub can then be turned.

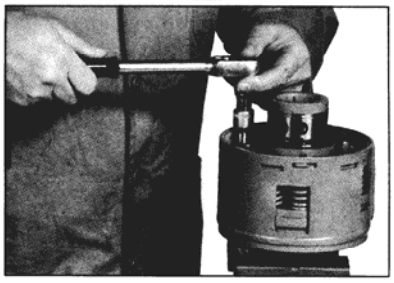


10.4 Dismantling

Demontage · Dismantling · Démontage

WALTERSCHEID

Fig. 59



5. Einstellring durch Anziehen der 6 Muttern am Federpaket entlasten
Tighten the 6 nuts at the spring pack to relieve setting screw
Serrer les 6 écrous du bloc-ressort pour détendre la bague de réglage

6. Einstellring entfernen
Remove setting ring
Enlever la bague de réglage

7. Federpaket aus Gehäuse herausnehmen
Take spring pack out of housing
Retirer le bloc-ressort du boîtier

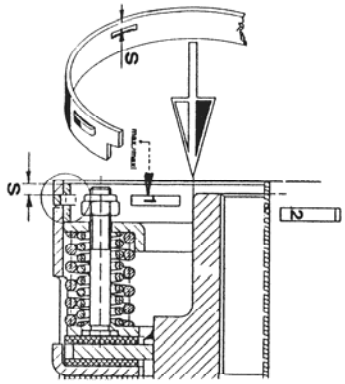
8. Flanschnabe einschl. Reib- und Mitnahmescheiben herausnehmen
Remove flange hub together with friction disks and drive plates
Enlever le moyeu à plateau avec les disques de friction et les disques d'entraînement

Montage · Assembly · Montage

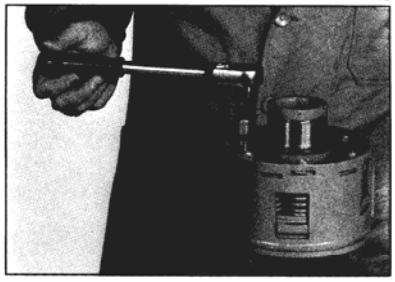
1. Reibscheiben und Mitnahmescheiben in richtiger Reihenfolge auf Flanschnabe montieren
Fit friction disks and drive plates to flange hub in correct sequence
Monter les disques de friction et les disques d'entraînement sur le moyeu à plateau dans l'ordre correct

2. Flanschnabe mit Reib- und Mitnahmescheiben in Kupplungsgehäuse einsetzen
Insert flange hub with friction disks and drive plates into clutch housing
Placer le moyeu à plateau avec les disques de friction et les disques d'entraînement dans le boîtier

3. Federpaket in Kupplungsgehäuse einsetzen
Insert spring pack into clutch housing
Placer le bloc-ressort dans le boîtier



4. Einstellring montieren (auf richtige Position achten)
Fit setting ring (make sure that it is in the correct position)
Monter la bague de réglage (faire attention à sa position correcte)



5. Die 6 Muttern am Federpaket bis Gewindeauslauf lösen. Die Kupplung ist dann funktionsbereit
Loosen the 6 nuts at the spring pack to end of thread. The clutch is now ready for use.
Dévisser les 6 écrous du bloc-ressort jusqu'à l'extrémité du filet. Le limiteur peut maintenant être utilisé

11 Maintenance and inspection

Pre-season maintenance

The 'general inspection' of the two friction clutches in the main drive is the most important task before commencing operation with the harvesting implement: remove the two clutches, dismantle them, clean and replace if necessary. Follow the instructions contained in the chapter "Friction clutch in the main drive".
Before commencing operation at the start of a new season, we also recommend the inspection of the star ratchets K 43 in the gathering drums. We recommend the use of a lithium-saponified grease "GLEITMO 805 and 810" made by Gleitmolybdän for lubrication of the star ratchet (1 x annually); this is particularly effective against friction corrosion.
With the machine running, check all bearings for overheating and for excess clearance.

Daily maintenance

Make sure the scrapers (2 per rotor) beneath the blades are intact, as blunt or bent scrapers will cause blockages and place unnecessary load on the drive system and the friction clutches.
After a few days' operation or when replacing the blades or scrapers, the bolts should be re-tightened. Check all the blades. Replace heavily worn blades, as these will cause long stubble and place the drive system under unnecessary load.
The entire area around the gathering drums, the blades and scrapers must be cleared of husks and stem remnants on a daily basis.
You should carry out a daily visual inspection of all transmissions and check for oil leakage.
'Grease daily in accordance with lubrication schedule' simply means you must grease the two front bearings on the side lodged maize auger, or the jointed shaft on certain models.
Loose bolts on the blades and scrapers will quickly result in major subsequent damage such as worn bores. A brief inspection with the side cutting units raised takes very little time.

Weekly maintenance

You should check regularly that all screws and bolts are properly tightened. Torques in Nm:

Foreign bodies in the cutting area can cause damage or deformations to the blades, the drives on the gathering drum or on the crop separators. It is therefore essential that you check the entire area.
Clean the clutches in the hinge.

Maintenance at the end of the season

Clean and conserve before a lengthy period out of service. Follow the instructions given on the equipment!

Using high-pressure cleaner : water pressure max. 80 bar, distance of nozzle from equipment min. 25 cm and water temperature max. 50° C.

Important : Do not use jets with circular section!
Touch-in minor damage to paintwork immediately.

Clean all spaces 21 above the drum star ratchet K43.

Carry out the first transmission oil change after 100 operating hours, and then every 500 operating hours. Grease in accordance with lubrication schedule.

Inspect all parts for general wear and tear and order replacement parts in good time.
The use of replacement parts, accessories and additional equipment which are not genuine KEMPER parts and have not been tested and approved by KEMPER can have negative effects on the design characteristics of the KEMPER machine or impair its proper functioning, thus impairing its active and/or passive safety when driving or when working (accident prevention).
For any damage caused through the use of parts, accessories and additional equipment which are not genuine KEMPER parts, KEMPER declines all liability.

11.1 Star ratchet

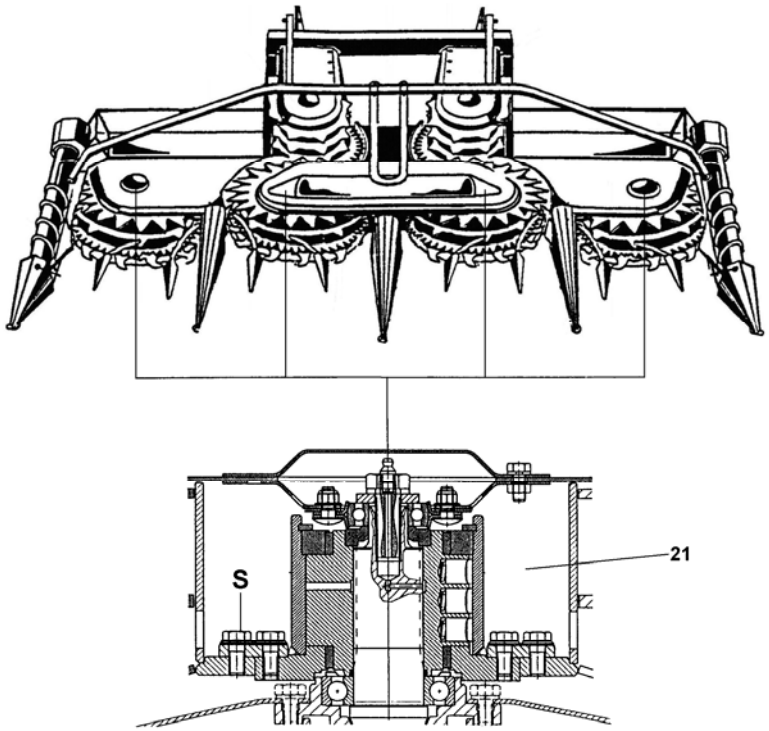


Fig. 85

Information regarding the star ratchet

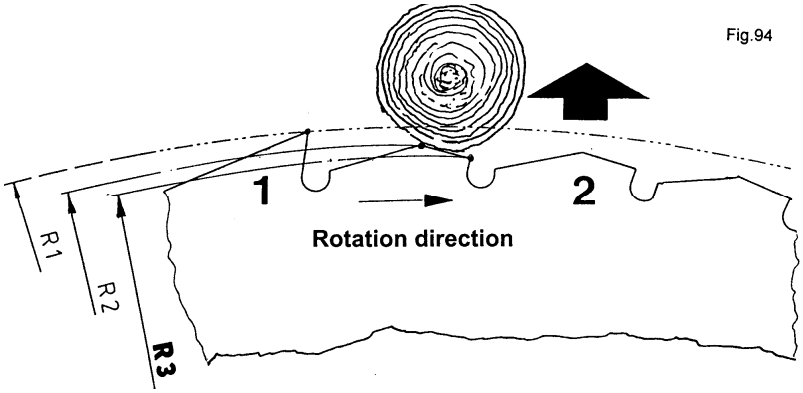
The star ratchet as shown in Fig.85 can be removed by removing the hex bolts S (8x) without the need to dismantle the gathering drum.

11.2

Blade wear

The blades have a limited service life. Fig. 94 shows:
Teeth 1 = New condition = 1:1
Teeth 2 = Condition after heavy duty
When the tips are fully worn, the crop may be pushed forward. Cutting will then require greater power, which will have a negative effect on the transmissions and clutches.

Blades



Replacing the blades

When assembling the coated blades, you should ensure that green and yellow blades are fitted alternately. Pay attention to left and right rotation. The coating should face upwards. The assembly sequence is a safety feature: when the rotor is turning, a visual effect is created which shows that the rotor is in operation.

11.3 Maintenance of the intake and cutting area

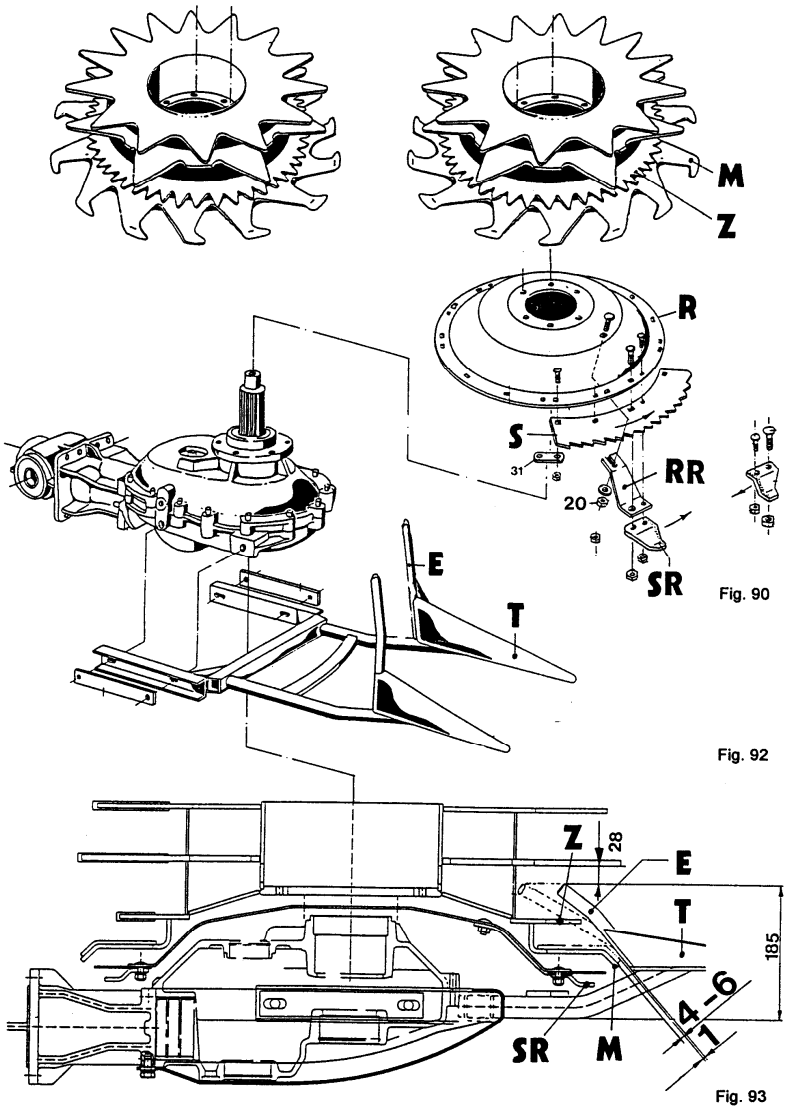


Fig. 90

Fig. 92

Fig. 93

Intake and cutting area

The following functional parts are included in the intake and cutting area:

Small crop separators	T	- Intake bars	E
Driver teeth	M	- Row of teeth	Z
Blades	S	- Blade scrapers	SR
Rotor	R	- Rotor scrapers	RR

The functional interaction of these parts is of major importance for crop intake, for the safe grasping and cutting of the crop, and for the further crop transport. Problems occurring in the cutting area are usually easy to resolve, providing the following instructions are observed.

Small crop separators Fig. 93

- The gap between the rear side of the small crop separators T and the drive teeth M should be as small as possible (4-6 mm). The smaller the gap, the better lodged crop will be picked up.

Drive teeth

- For the reason mentioned above, please ensure that any deformation of the drive teeth M, caused by the presence of foreign bodies in the system, is rectified immediately.

Intake rods

- The intake rods E perform the important task of pressing the crop into the narrowly spaced row of teeth Z.
- Wear to the intake rods E (18 ∅) can occur after a lengthy period of use. This wear can be compensated for by making re-adjustment; alternatively, the parts can be replaced.

Blades

- The blades must be assembled in the direction of cut.
- The blades will continue to run after the harvesting implement has been switched off. The different colour of the blades provides a visual warning, and the clicking sound made by the freewheels provides an audible indication that the blades are still running.

Caution! Do not touch any parts while they are moving! Wait until the rotors have first come to a complete standstill.

Blade scrapers SR

Intact blade scrapers SR keep the cutting area free of fowling by weeds and husks. They are secured on the rotor by a fixing screw M 10 x 25 and a shearing screw M 8 x 25. Both screws are special-type screws because of the degree to which they are tightened (8.8).

- Blunt or bent scrapers will cause blockages. We therefore recommend they are inspected on a daily basis.
- The tungsten carbide coating on the scrapers SR must face forwards in the direction of rotation.

Rotor scrapers RR

The two scrapers RR on each rotor keep the space between rotor R and the transmission clear of husks and contamination.

- Intact scrapers protect the drive system from overloading.
- The front edge in the direction of rotation should be as sharp as possible. We therefore recommend daily inspection. By loosening the special nut 20 and dismantling the blade scrapers SR, you can remove the scraper RR and hone its leading edge using a right-angle grinder.

11.4 Inspecting the crop guide track

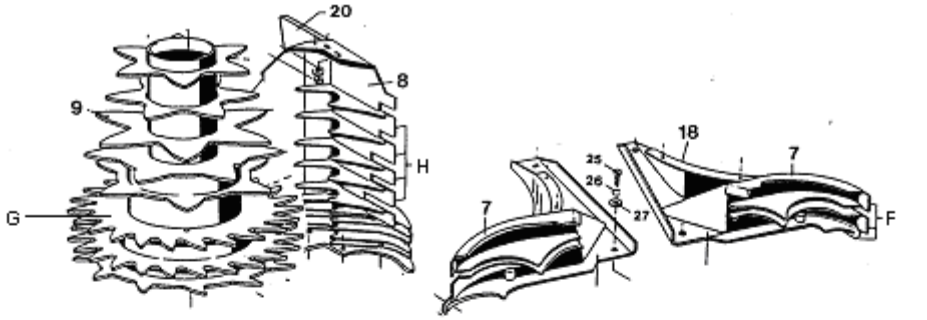


Fig. 95

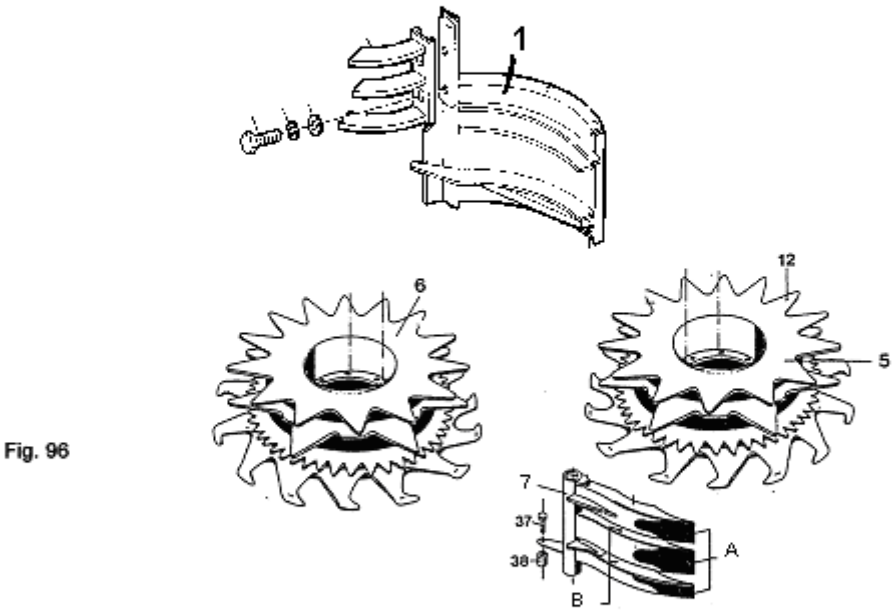


Fig. 96

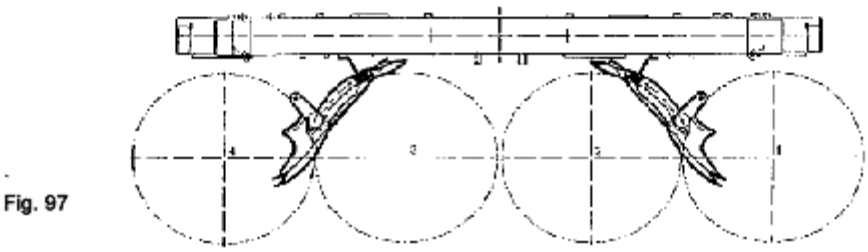


Fig. 97

Scrapers and guides

All the scrapers and guides inside the crop guide track require special attention and should be carefully examined in the event of a fault occurring. Faults can occur (e.g.) when foreign bodies enter this track.
Faults can also occur following assembly work in this area.
Should you notice any faults in the flow of the crop, you must examine the entire scraper and guide track.

Scrapers 7
Fig.96

The basic setting is correct if all the teeth in the gathering drum 5 run through the centre of the slot.
The scraper ends A should also be as close as possible against the wall of the gathering drum 5. The distance should not be greater than 5 mm. The teeth on the gathering drum 5 should all pass at the same height through the guide slot B.

Guide
Fig. 95

Here, too, two important points should be observed. The scraper ends F should be set as close as possible to the wall of gathering drum 6.
A maximum distance of 5 mm should not be exceeded.
The lower drive teeth G should not pass more than 4 mm away from the guide plate.

Scraper 8
Fig.95

In connection with the intake plate 20, the scraper 8 can be turned about the feed drum 9 depending on the channel width on the harvester. You should ensure that the H are also set as close as possible to the feed drum wall 9 (max. 5 mm distance).

11.5 Scrapers

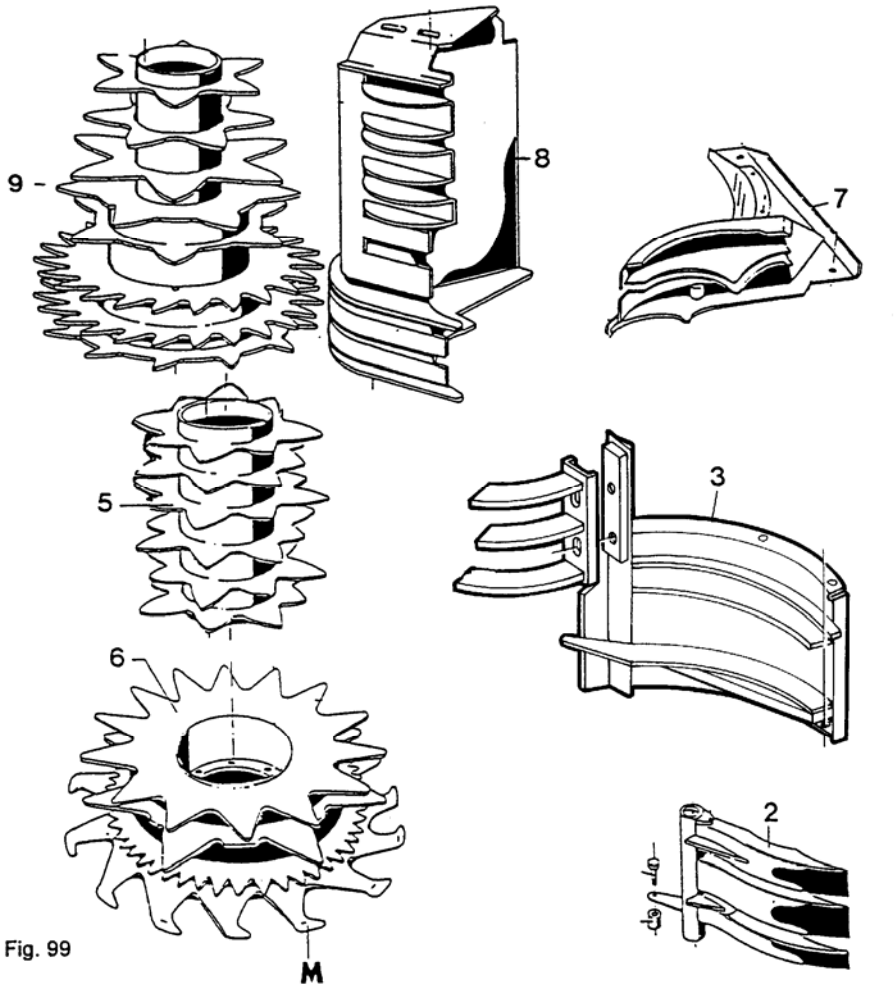


Fig. 99

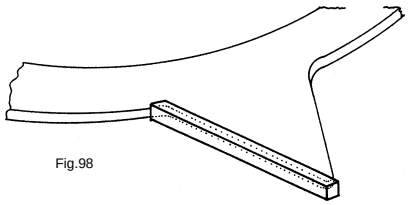


Fig.98

Scrapers
Fig. 98

The scrapers on the teeth of gathering drum 6 and feed drum 9 have the important task of keeping the scrapers 2,3,7 and 8 free of husk accumulations.

Intake drum
Feed drum 9

Feed drum 9 is fitted with 5 scrapers.

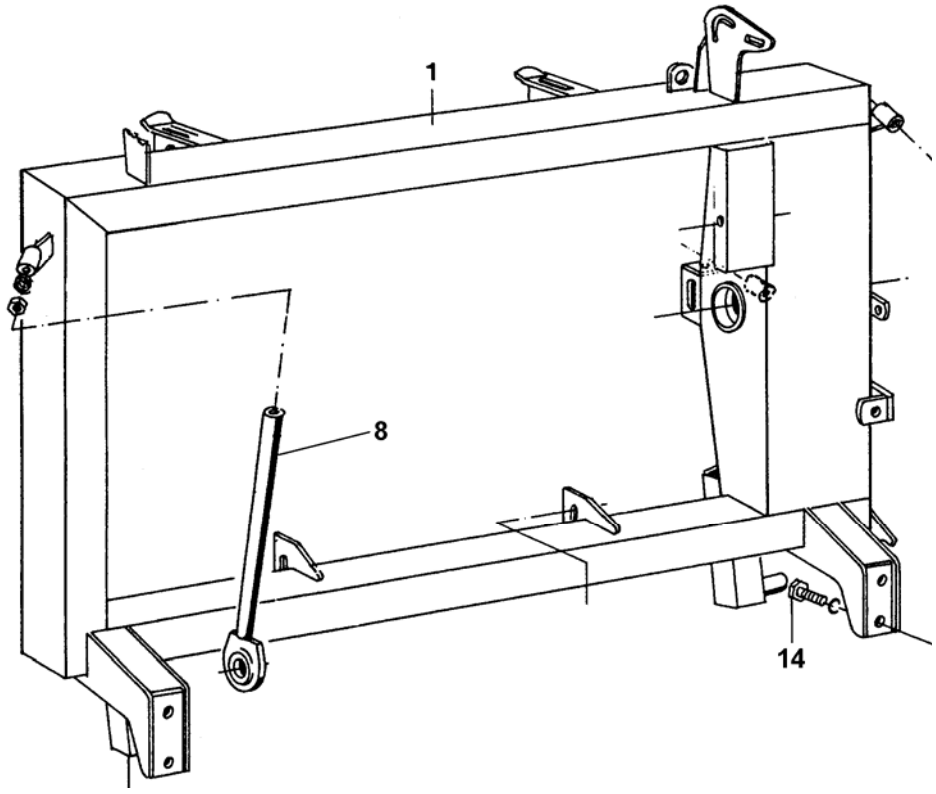
Intake drum
Gathering
drum 6

The three rows of teeth on all the gathering drums are each fitted with a scraper. One set of driver teeth M is also fitted with a special flat scraper.

Inspection

The scrapers are made of heavy-duty special steel. They are subject to continuous wear and tear and should therefore be inspected at regular intervals.
An accumulation of husks in the scrapers A is usually a sign of incorrect adjustment or faulty scrapers.
Any wear of the cleaner points can be compensated by build-up welding with steel electrodes.

11.6 Attachment frame



Attachment frame

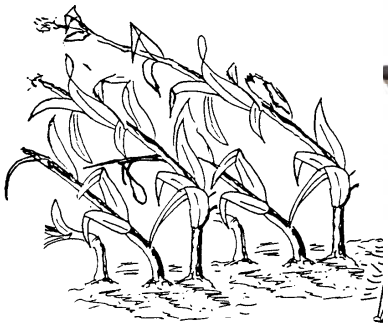
Check for proper tightening of all screws after the first 10 hours of service, and from then on at regular intervals.
When assembling the attachment frame 1, you should first tighten the screws 14. Then tighten the screws on the struts 8 at top and bottom.

11.7 Fault - Causes

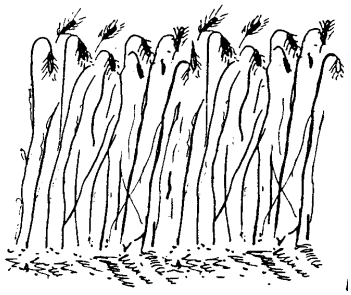
Fault	Possible cause	Remedy
Greater power required	Blunt blades	Replace blades
	Faulty scrapers	Replace scrapers
Heavy running cutting rotors	Blockage of leaves beneath rotors	Clean rotor area daily
	Contamination in rotor area	Clean rotor area
	Faulty scrapers	Replace scrapers
Vibration of implement	Imbalance caused by uneven blades	Replace blades in pairs
	Scrapers torn off	Replace scrapers
	Imbalance caused by contamination in rotor	Clean rotor
	Height at which blades pass too great	Adjust – replace if necessary
Husks accumulate on scrapers	Scrapers have moved	See chapter "maintenance and inspection of scrapers"
Stubble is bent forwards before it is cut - Long stubble	Small crop separators are full of leaves	Clean crop separators
	One scraper is torn off	Replace both scrapers
	Blunt blades	Replace blades
Drives heat up Intake drum or feed drum stops (Cutting rotor is running)	Too much oil in the drive	Check oil level
	Bunch or ball of crop lodged in intake channel	Reverse a short distance
	Clutch transmits speed	Repeat procedure if necessary
	Damage to drive	Replace parts
Intake drum and cutting rotor stop	Faulty claw clutch (selector sleeve)	Replace faulty parts
Entire right or left-hand side stops	Left and right friction clutch Faulty (starting-off clutch)	See "Friction clutch in main drive"
Backlog in hydraulic system in outer folding cutting unit	Foreign bodies, e.g. grain of sand in front of throttle.	Clean throttle: located in screwed joint at cylinder input
Faults upstream of pre-compression rollers	Incorrect gear combination	Select new gear combination in acc. with table of cutting lengths.
	Springs on pre-compression rollers incorrectly set	Adjust: Green maize = slacker Dry maize = tighter

Drum speed

40 – 44 min $^{-1}$



38 - 44 min $^{-1}$



48 - 52 min $^{-1}$

Working with the Harvesting Header
Starting – Turning – Changing Forage Wagon - Reversing

The header may only be used, serviced and repaired by personnel familiar with the operation of the machine or trained and instructed about the dangers and risks associated with the machine!
These instructions only serve to make some general recommendations. Your own experiences as well as compliance with the following instructions and notes are certain help avoiding major problems.

- You should be familiar with the machine before you start!

Starting

Start the forage harvester, engage the chopping unit and the header as well as reverse with the engine running at idling speed the engine running at idling speed. Reversing causes the gathering drums to rotate in the opposite direction. The cutting rotors stop. Switching the gathering drums to forward movement should also take place at idling speed to avoid unnecessary slipping of the friction clutches.

Driving into the crop fahren

- Always start and shift into first at idling speed to save the drive units!

When the chopping unit and the cutting blades have come up to speed, drive at a sufficient speed into the crops to obtain from the beginning a compact stream of fodder. This applies especially in case of difficult crop conditions or when handling short-stemmed maize.

- Always drive smoothly and steadily into the crops!

Direction of travel

The row-independent harvesting system allows selection of any direction of travel. In difficult conditions (e.g. down crops) there is always one direction which provides better results. This must be determined by trial and error.

- Use the free choice of the travel direction for your advantage!

Driving speed

The driving speed is determined by the type and density/volume/mass of the crops and the available engine power. The shorter the crop and the lower the crop density, the faster you should drive to ensure satisfactory operation of the gathering elements.

- The driving speed is based on the existing mass, the type of crops and the harvester capacity.

Turning

- To protect the header drive, maintain your speed when turning and steadily turn back into the crops when negotiating headlands.
- Maintain rpm when turning!

Due to the short conveyor distances of the header, it is not advantageous to actuate the instantaneous stop at the forage harvester when changing the crop wagon. Stopping and restarting the unit would only cause loss of time and expose the drive units to unnecessary stresses.

Changing the forage wagon

- When changing the forage wagon, allow all drive units to continue to run!

To clear blockages in the channel openings caused by weed-infested crops or long and sticky husks, stop and operate in reverse for a short period (idling speed, repeat if necessary).

Eliminating problem

- It is important that the quick reversal process does not allow the cutting blades to come to a stop!

Should you find it necessary to use your hands to remove any material, be sure to switch off the combine harvester motor and turn the PTO shaft shift lever to OFF.

Even though the gathering drum may have stopped rotating, the cutting blades may still be rotating! Wait for all moving parts to come to a complete stop!

Down maize

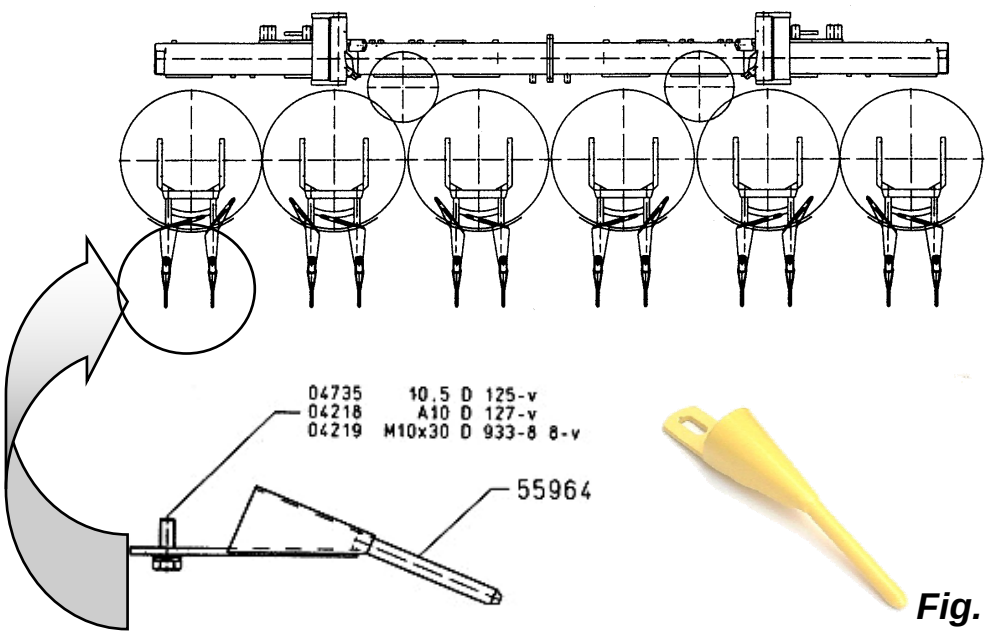


Fig. 1

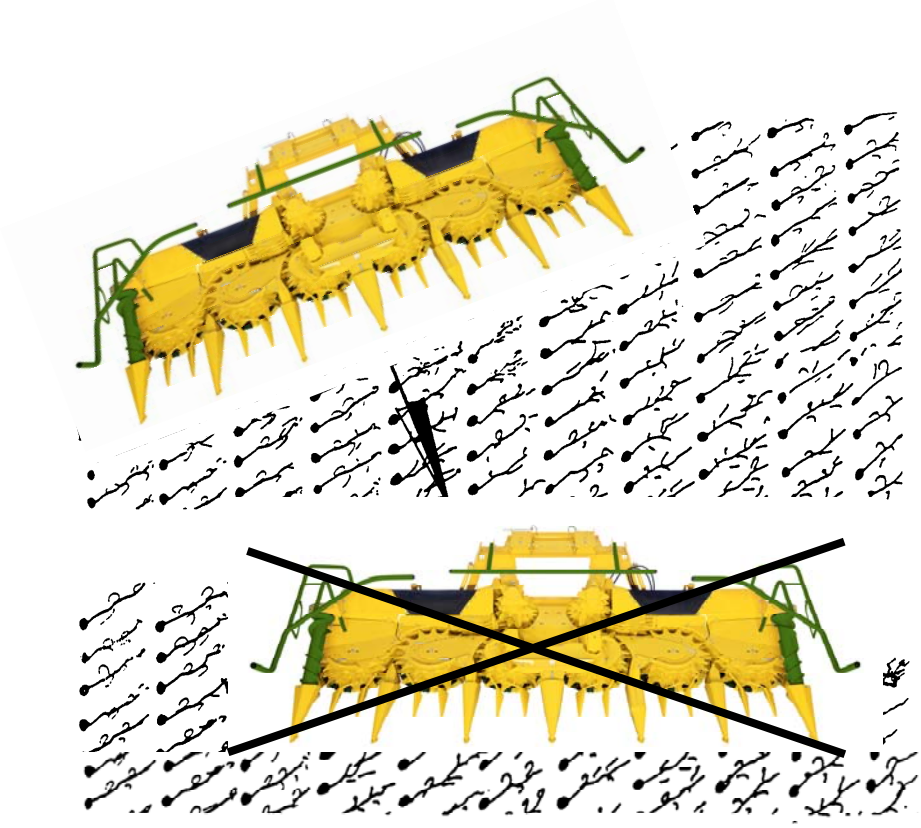


Fig. 2

Down maize

Down crops vary widely, because the effects of nature differ greatly.
Despite the successful cultivation of new varieties and the use of new growing methods, it will never be possible to overcome the problem of down crops. This is why we have equipped the header with standard design features and technical solutions, which allow contractors to offer a machine which can deal with any situation. The most important requirement is here the row-independent operation so that crops can be approached from the optimal side.
Standard equipment for the header consists of two driven maize augers for down crops as well as height adjustable crop separators. With the aggressive toothed element at the gathering drums, the stems frequently positioned crisscross on the ground are pulled apart, lifted by the traverse auger for down crops and height adjustable crop separators, and then safely rioted to the blades of the forage harvester.
Here are some things to consider in spite of the standard universal equipment:

- Walk around the field to determine the best possible driving direction.
- In most cases, it is best to approach crops at a crosswise angle to the direction in which the stalks are positioned. See Fig. 2
- When starting the harvest, observe exactly how well the machine is handling the crops.
- Quickly drive at a very low rpm of the gathering drums into the crops so that a material flow is created.
- In case of jams: stop, reverse briefly and repeat the process if necessary.
- Extensive reversing is usually always disadvantageous.
- Mount rigid stalk lifter (fig. 1, optional equipment); kit containing 4 lifters

330 = Sets of 2

Never use your hands or feet to "help"!

Always select a high forward speed to obtain an immediate flow of material when harvesting short-stemmed maize. The feed bars also have to be lower so that the maize stalks do not enter the compression rollers vertically.

- Drive quickly and apply more pre-pressure to the maize stalks.

Renewable resources Ornamental grasses (Maiden Gras, Zebra Gras, Elephant Grass)

The header is currently the only production machine which allows elephant grass to be harvested and chopped in a single operation. The chopped crop has to feature an even structure due to the subsequent further processing.
This is only possible with the unique lengthwise transport and bundling provided by the header.

15 Attachment to forage harvester

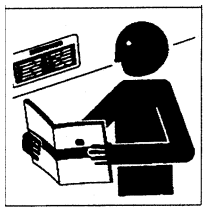
Interface

Rigid frame for firm attachment of header to harvester

Notes

When attaching a header, always adhere to the following instructions:

- **Slowly** drive the forage harvester to the header.
- Attach the header to the pre-compression roller housing.
- Lift the header.
- Lock the support feet at the highest position.
- Ensure that the header is fully engaged in the receptacle so that it cannot become dislodged.
- Close the locking mechanisms.
- Mount the safety devices.



For detailed mounting instructions, please refer to the respective chapter in the section covering your forage harvester model in this manual!

Removing header from forage harvester

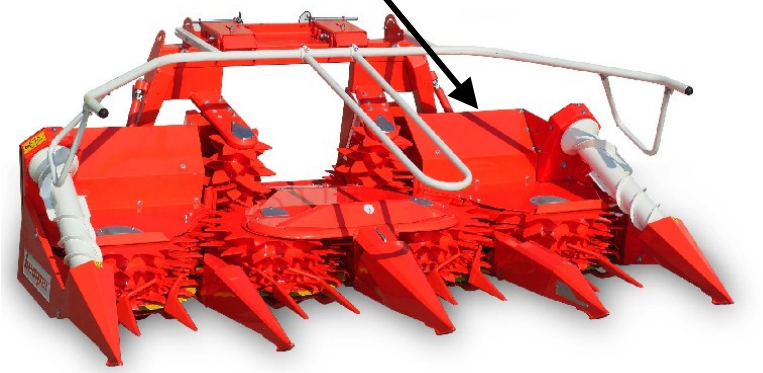
1. Lower the header onto the level ground.
2. Pull out the two support feet and engage them.
3. Remove the jointed shaft.
4. Open the locking mechanism.
5. Disconnect the hydraulic hoses.
6. Slowly lower the mounting device of the forage harvester until the frame is released and the harvester can be moved away from the header.
7. **Slowly** drive the harvester away from the header.

Some header models require a third support foot below the centre separator tip. For details, please refer to the section covering your harvester model in this manual.

Serial number

The serial number identifying the harvesting header is engraved into the type plate of the machine, which is attached at the position shown below.

stamped number



Type plate

Please enter here the serial number of your harvesting header.

Maschinenfabrik KEMPER

Type / Model

Identification

Product Identification Number

Weight KG

Max. axle load KG

Constr. year

Model year

LCA99500

CE

Maschinenfabrik Kemper GmbH&CoKG 48703 Stadtlohn