Technology - you can depend on

# Operator's manual

**Issue B 0712**
**English**

**No.: LCA94955**

# ROTARY HARVESTING UNIT

# 445

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DD: 28.1.08

**Disclaimer**

The design and functions of our products are continuously developed further and modified in line with the latest technological developments.
The specifications in this document might therefore not be accurate for all deliveries.

| | | |
|---|---|---|
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| | Machine sales | +49 (0) 25 63 - 88 34 |
| | Spare part sales | +49 (0) 25 63 - 88 35 |
| | Customer service | +49 (0) 25 63 - 88 36 / 88 37 |
| **Fax - Germany** | Sales office | +49 (0) 25 63 - 88 155 |
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| | Spare part sales | +49 (0) 25 63 - 88 95 |
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# Introduction

## Foreword

INTENDED USE: This rotary harvesting unit is designed solely for use in customary agriculture or similar operations. Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and the safety signs on your machine may also be available in other languages (see your KEMPER dealer to order).

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS IN THIS MANUAL are given in metric. The U.S. equivalents are still quoted, however. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification or Identification Numbers section. Please note all numbers exactly. In the event of theft, these numbers may prove vital in tracing your property. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

BEFORE DELIVERING THIS MACHINE, your dealer performed a predelivery inspection. After operating for the first 20 to 50 hours, schedule an after-sale inspection with your dealer to ensure best performance.

THIS ROTARY HARVESTING UNIT SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times. Any arbitrary modifications carried out on this combine will relieve the manufacturer of all liability for any resulting damage or injury.

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## Predelivery Checklist

After the 445 rotary harvesting unit has been completely assembled, inspect it to be sure it is in good running order before delivering it to the customer. Check off each item when found satisfactory or after making the necessary adjustments.

❒ All shields open and close freely.

❒ Rotary harvesting unit has been properly assembled.

❒ Parts delivered separately have been properly installed.

❒ Nuts on all bolts have been tightened.

❒ All grease fittings have been lubricated.

❒ Gear cases have been properly filled (see Lubrication and Maintenance).

❒ Knife attaching screws are tightened correctly.

❒ Shipping brackets removed.

❒ Rotary harvesting unit can be folded correctly.

❒ Rotary harvesting unit has been cleaned and touched up wherever paint is nicked or scratched.

❒ All moving parts are working freely.

❒ Check all slip clutches as shown in the Service section.

❒ All decals are in place and in good condition.

❒ Check that auxiliary lights are installed on basic harvester.

❒ This rotary harvesting unit has been tested and, to the best of my knowledge, is ready for delivery to the customer.

(Date Tested)

(Signature of Technician)



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## Delivery Checklist

The following checklist is a reminder of very important information which should be conveyed directly to the customer when delivering the machine.

❒ Advise the customer that the life expectancy of this or any other machine depends on regular lubrication as described in the operator's manual.

❒ Discuss proper harvesting management practices required for good silage.

❒ Give operator's manual to customer and fully explain all operating adjustments.

❒ Advise the customer of the proper weights and fluids that must be used in the tires, depending upon forage harvester.

❒ Advise the customer of safety precautions that must be observed while using the rotary harvesting unit.

❒ Invite the customer to come in and discuss any problems that may be encountered while operating the rotary harvester unit.

❒ Tell the customer to record the serial number of his rotary harvesting unit in the space provided at the end of this manual.

❒ Remove and file this page.

(Signature of Technician)

(Signature of Customer)

## After-Sale Checklist

The following items should be checked sometime during the first season of operation with the rotary harvesting unit.

❒ Go over the entire machine for loose or missing nuts and bolts.

❒ All safety shields are in place and fastened securely.

❒ Check for broken or damaged parts.

❒ If possible, run the rotary harvesting unit to see if it is functioning properly.

❒ Check for worn rotary knives.

❒ Check with the customer as to the performance of the rotary harvesting unit thus far. Make sure the customer understands the best methods of rotary harvesting unit operation.

❒ Review the entire operator's manual together with your customer and stress the importance of proper and regular lubrication, as well as safety precautions.

(Signature of Technician)

(Signature of Customer)

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## Identification View



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# Safety

## Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

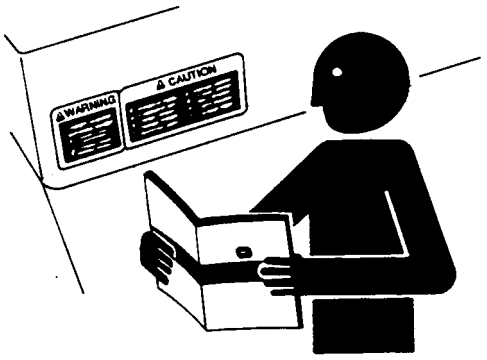
## Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your KEMPER dealer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your KEMPER dealer.




## Understand Signal Words

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

**⚠ DANGER**

**⚠ WARNING**

**⚠ CAUTION**

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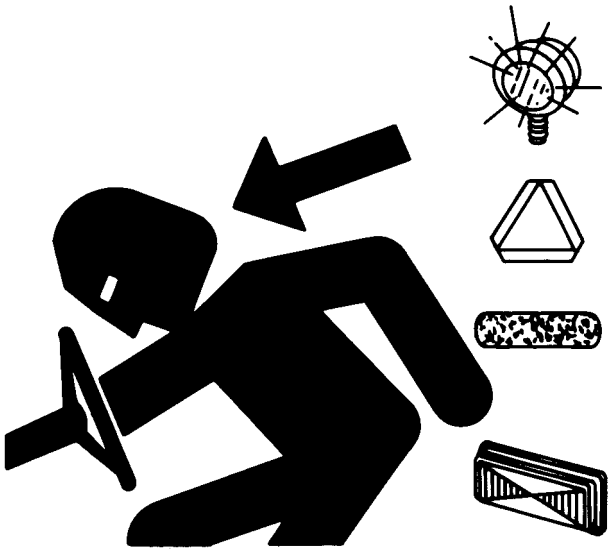
## Observe Road Traffic Regulations

Always observe local road traffic regulations when using public roads.

## Use Safety Lights and Devices

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your dealer.

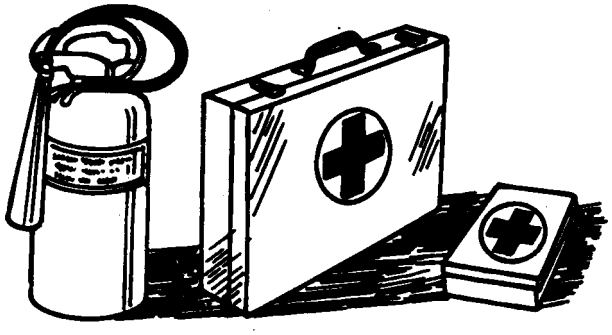


## Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.





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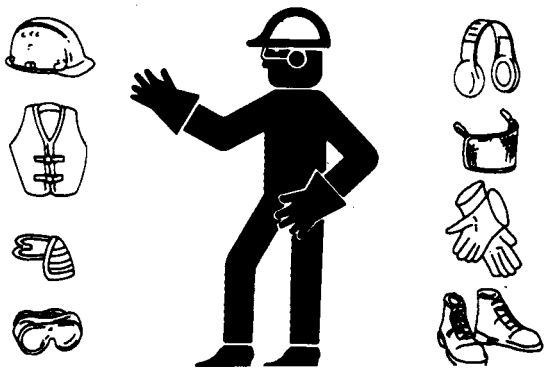
## Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



## Check Machine Safety

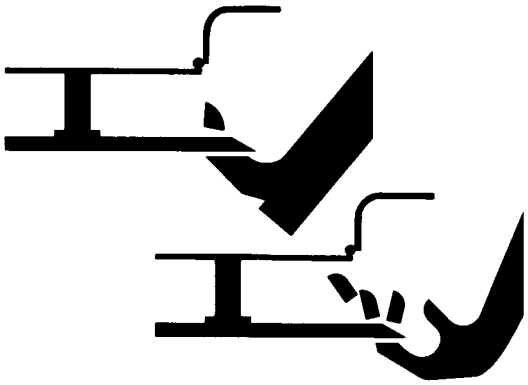
Always check the road and general operating safety of the machine before using.

## Guards and Shields

Keep guards and shields in place at all times. Ensure that they are serviceable and installed correctly.

Always disengage main clutch, shut off engine and remove key before removing any guards or shields.

Keep hands, feet and clothing away from moving parts.



## Stay Clear of Harvesting Units

Due to their function, the cutting, gatherer and feed drums cannot all be completely shielded. Stay clear of these moving elements during operation. Always disengage main clutch, shut off engine and remove key before servicing or unclogging machine.

## Keep Hands Away From Knives

Never attempt to clear obstructions in front of or on harvesting unit unless main clutch is disengaged, engine shut off and key removed.

Everyone must be clear of the forage harvester before starting the engine.

## Store Attachments Safely

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.



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## Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

## Stay Clear of Rotating Drivelines

Entanglement in rotating driveline can cause serious injury or death.

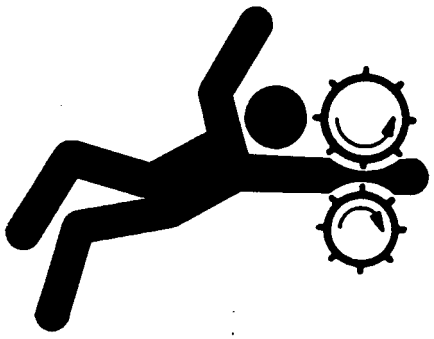
Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

## Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

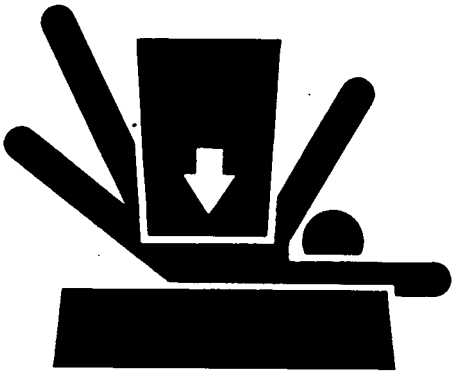


## Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.





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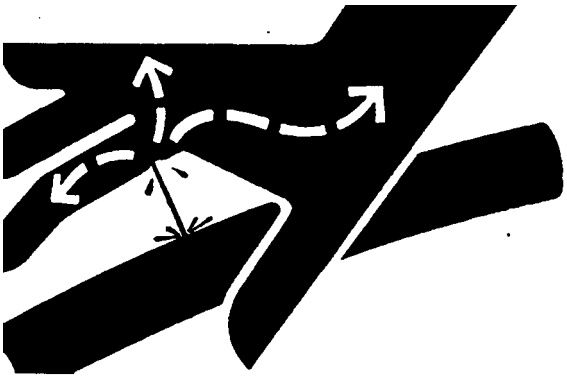
## Avoid High-Pressure Fluids



Escaping fluid under pressure can penetrate the skin causing serious injury.

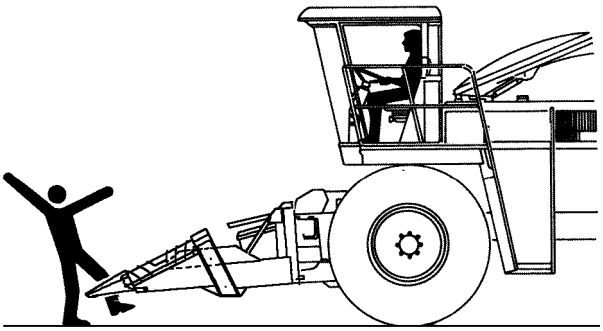
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

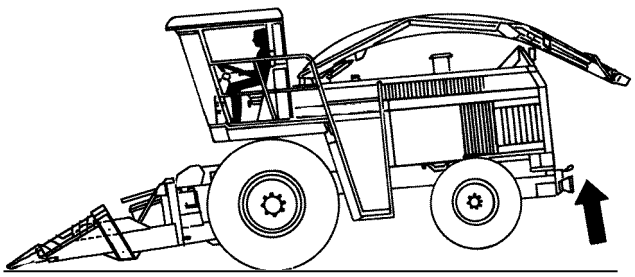
## Transport With Harvesting Unit Installed

Before driving forage harvester on public roads, harvesting unit must be raised and secured in the raised position. It must not, however, obstruct operator's view of the road.



## Ballasting for Safe Ground Contact

Operating, steering and braking performance of forage harvester can be considerably affected by attachments which alter the center of gravity of the machine. To maintain safe ground contact, ballast the harvester at the rear end as necessary. Observe the maximum permissible axle loads and total weights.



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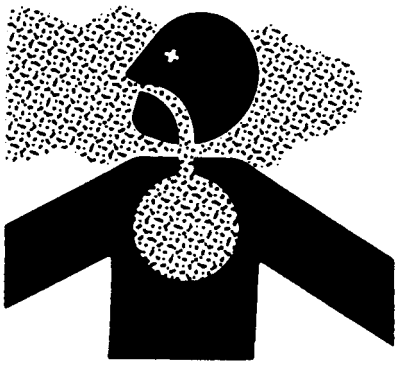
## Remove Paint Before Welding or Heating



Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

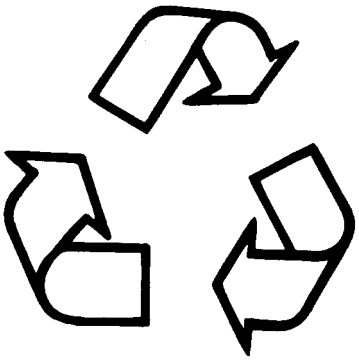
- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

## Dispose of Waste Properly



Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with KEMPER equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your KEMPER dealer.



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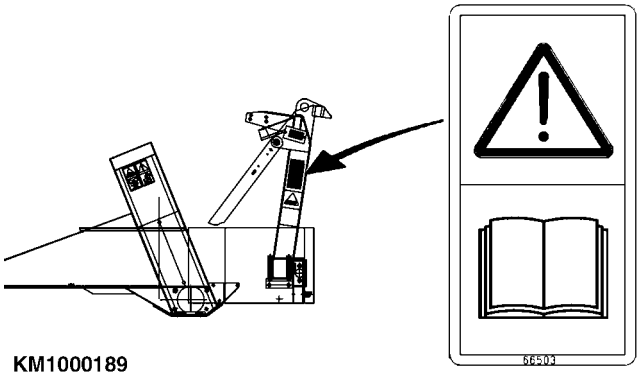
# Safety Decals

## Pictoral Safety Signs

At several important places of this machine safety signs are affixed intended to signify potential danger. The hazard is identified by a pictorial in a warning triangle. An adjacent pictorial provides information how to avoid personal injury. These safety signs, their placement on the machine and a brief explanatory text are shown below.


## Operator's Manual

This operator's manual contains all important information necessary for safe machine operation. Carefully observe all safety rules to avoid accidents.



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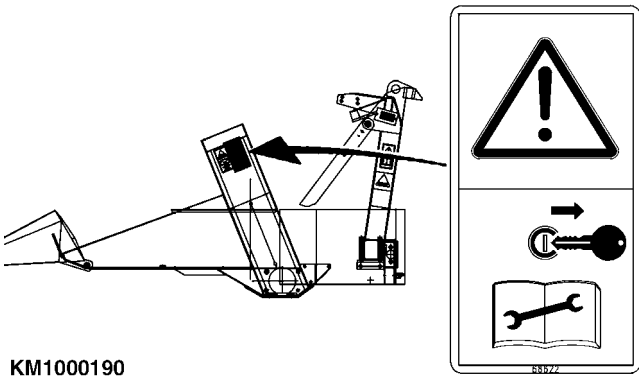
## Repair and Maintenance

Before carrying out repair and maintenance work, shut off engine and remove key.



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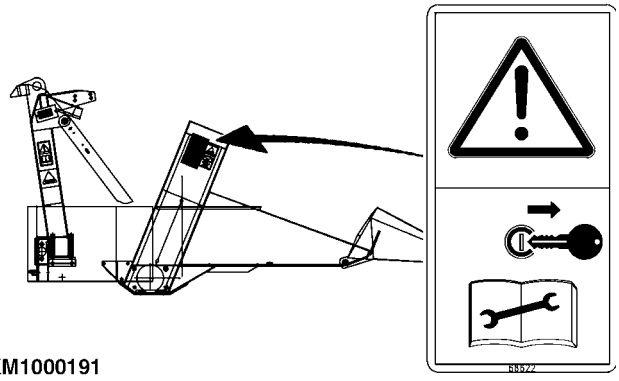

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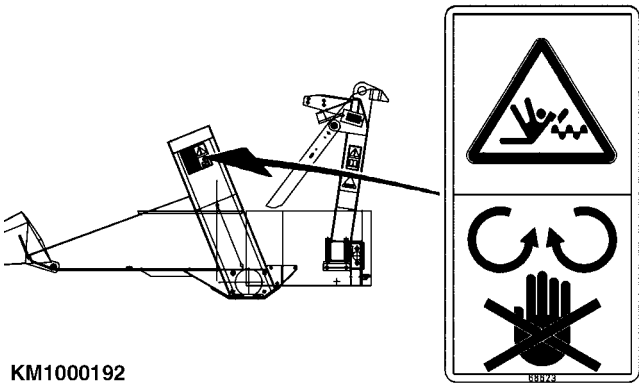
## Rotary Harvesting Unit

Stay clear of rotary harvesting unit to avoid personal injury.

Arms, legs or loose clothing might become caught in the rotary harvesting unit when in operation.

Always keep the required safety distance from the rotary harvesting unit.



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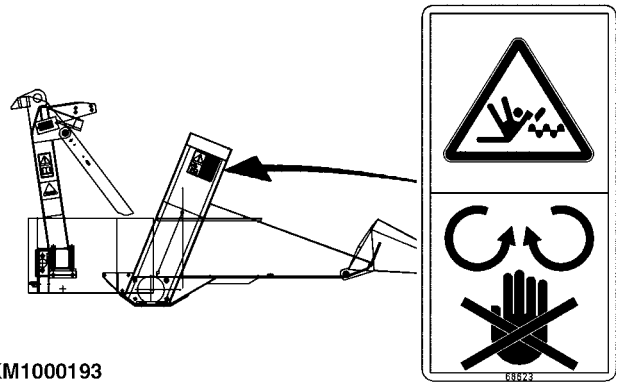

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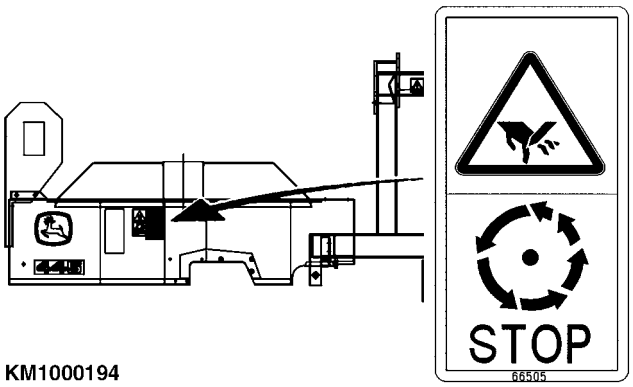
## Rotating Blade

Do not touch any moving machine parts. Wait until all moving parts have stopped.

The rotating blades are not immediately stopped when the machine is shut down.

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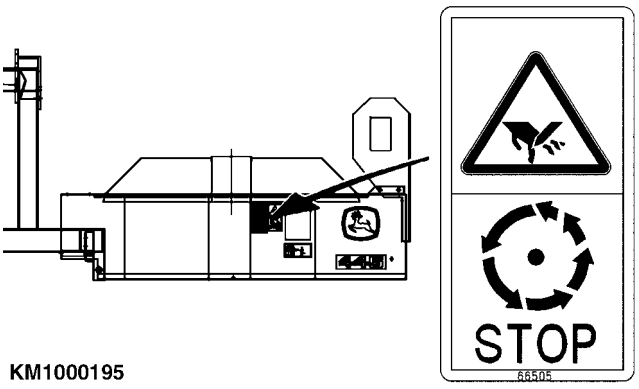


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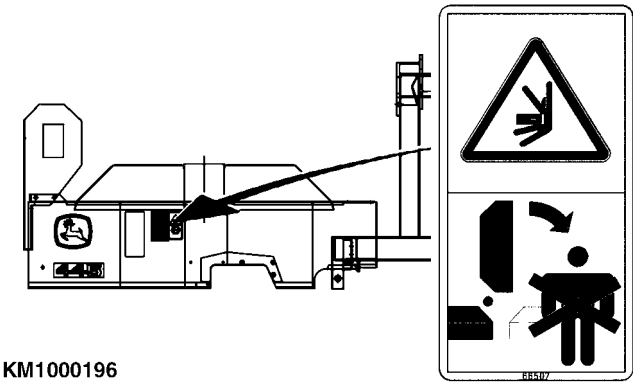
## Folding Area

Stay clear of the folding area of the rotary harvesting unit.

When folding or unfolding the rotary harvesting unit, ensure that no persons are standing within the folding area.

Before folding or unfolding, ensure that all persons keep the required safety distance from the rotary harvesting unit.



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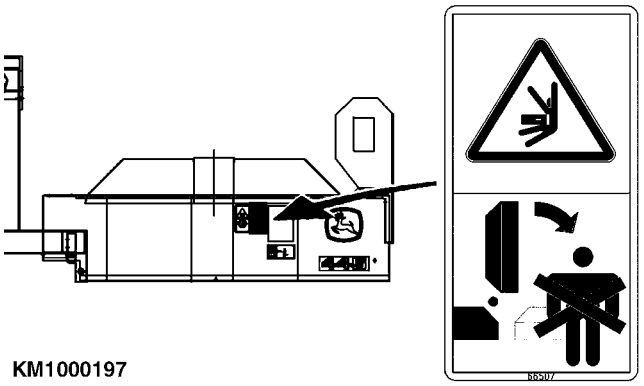

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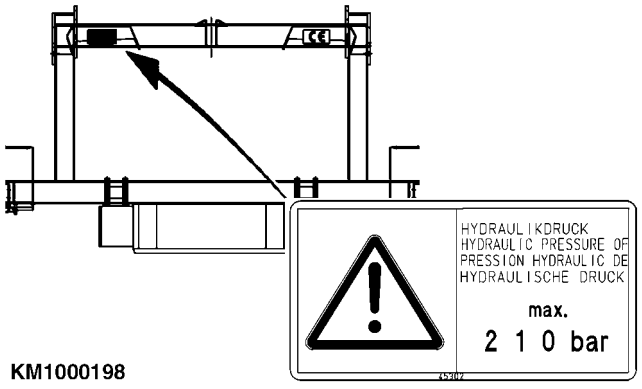
## Hydraulic System

The hydraulic pressure must not exceed 21000 kPa (210 bar; 3046 psi).

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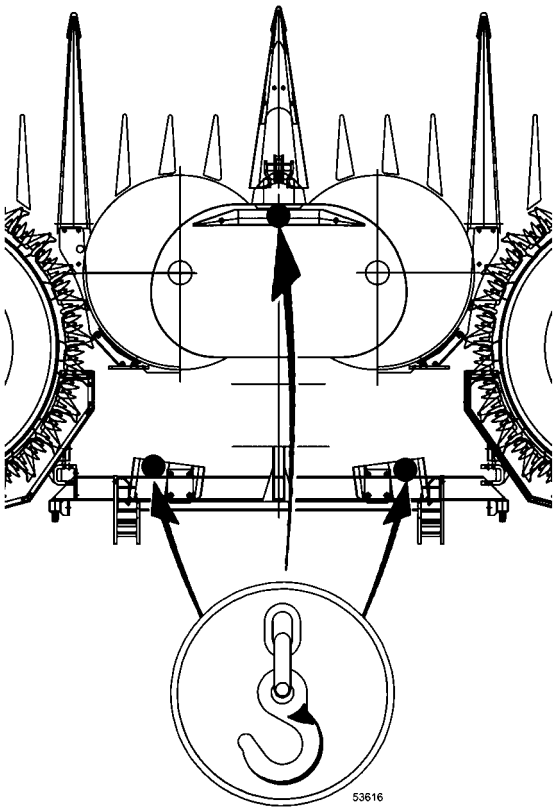
## Hanging Points

Should the rotary harvesting unit be moved without attaching to the forage harvester, always use the hanging points.

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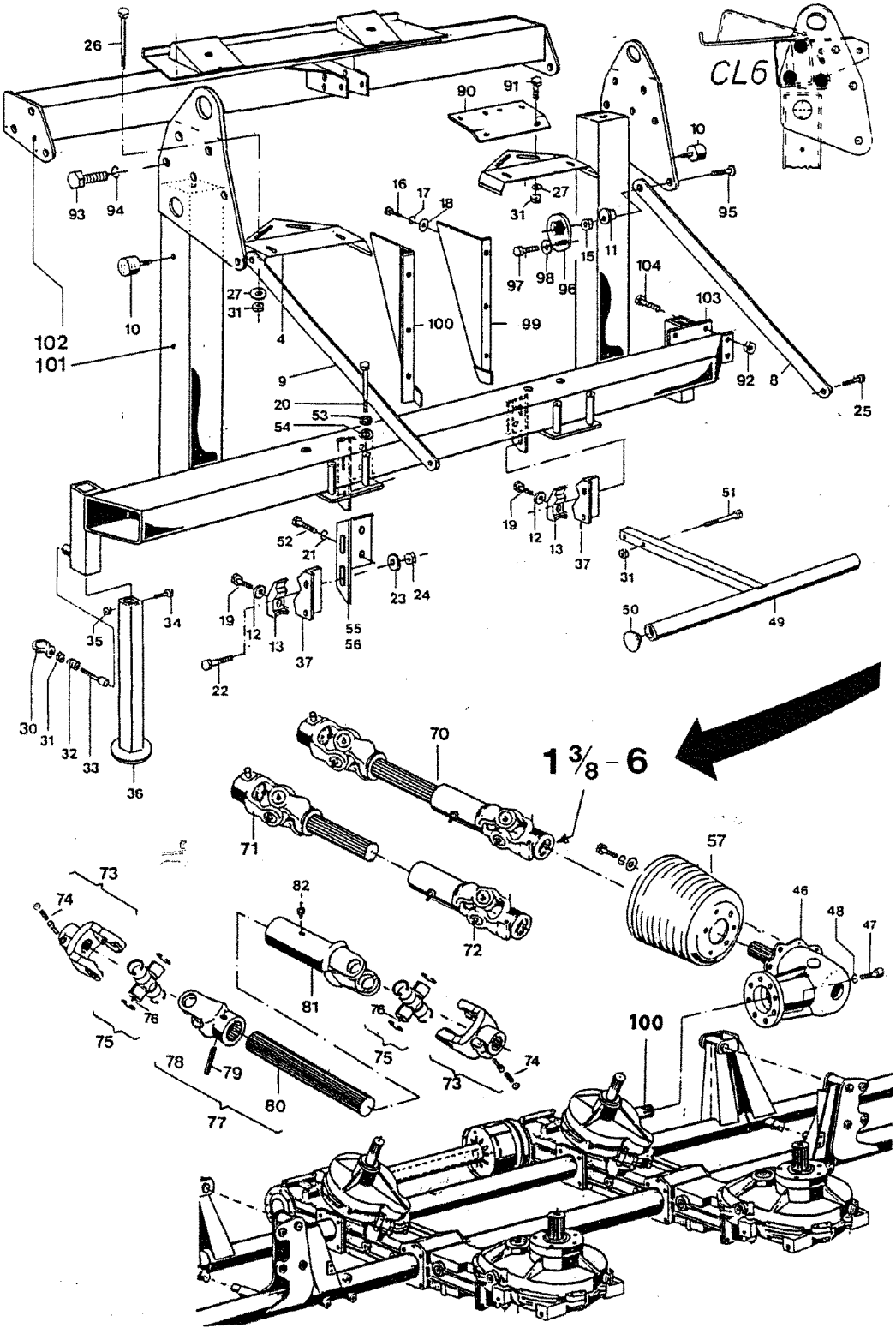
# Attachment to Claas forage harvester

## Attachment to CLAAS 6-series



### *445 CL 6*

The hitch points and the drive system of this header are designed to match the following CLAAS forage harvesters:

- 685 = 250 HP
- 685 SL = 250 HP
- 690 = 300 HP
- 690 SL = 316 HP
- 695 = 354 HP
- 695 SL = 354 HP
- 695 MEGA = 354 HP

### *Main Drive*

Power is transmitted by a PTO shaft from the reverse gear places on the left-hand side of the JAGUAR.

### *1. Speed*

The drive shaft of the CLAAS gearbox turns ~400 rpm under load. This speed should be used for standard conditions an thickstemmed crops, e.g. corn, sunflower, beans or elephant grass.

### *2. Speed*

The drive shaft of the CLAAS gearbox turns ~495 rpm under load. This speed is required for harvesting whole crop silage. An accurate cut of thin- stemmed crops requires a higher rotating speed of the cutting blades.

### *Speed Check*

Whatever the speed ratio of the drive system of the forage harvester: for the practical use it will only be of importance that the drive shaft (100) turns at ~380 to 400 rpm under load (idling speed should be approx. 8% higher). This corresponds to a rotational speed of the large outher gathering drums from 19 to 20 rpm.

### *Spring Tension of the Pre-Compression Rollers*

The performance of both the 445 and the JAGUAR can only be utilized to the full if the precompression system of the forage harvester is under sufficient tension.

**CAUTION: Due to its small diameter the knive drum 5 (fig. 23) has the tendency to push back the strem of forage (see the wedge-shaped area 3).**
**This problem can be eliminated by increasing as much as possible the spring pressure of the rear precom-pression roller 2. The forage caped will then be less thick and the wedge-shaped artea will be smaller.**

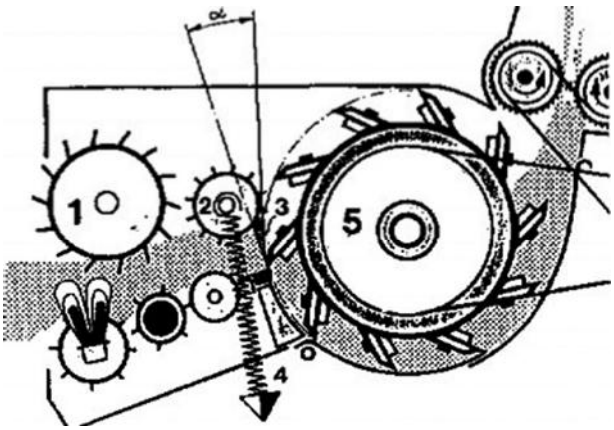
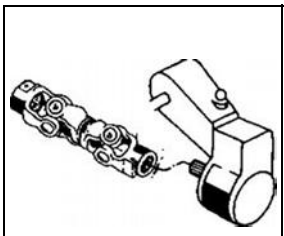
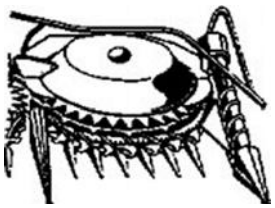



Fig. 23





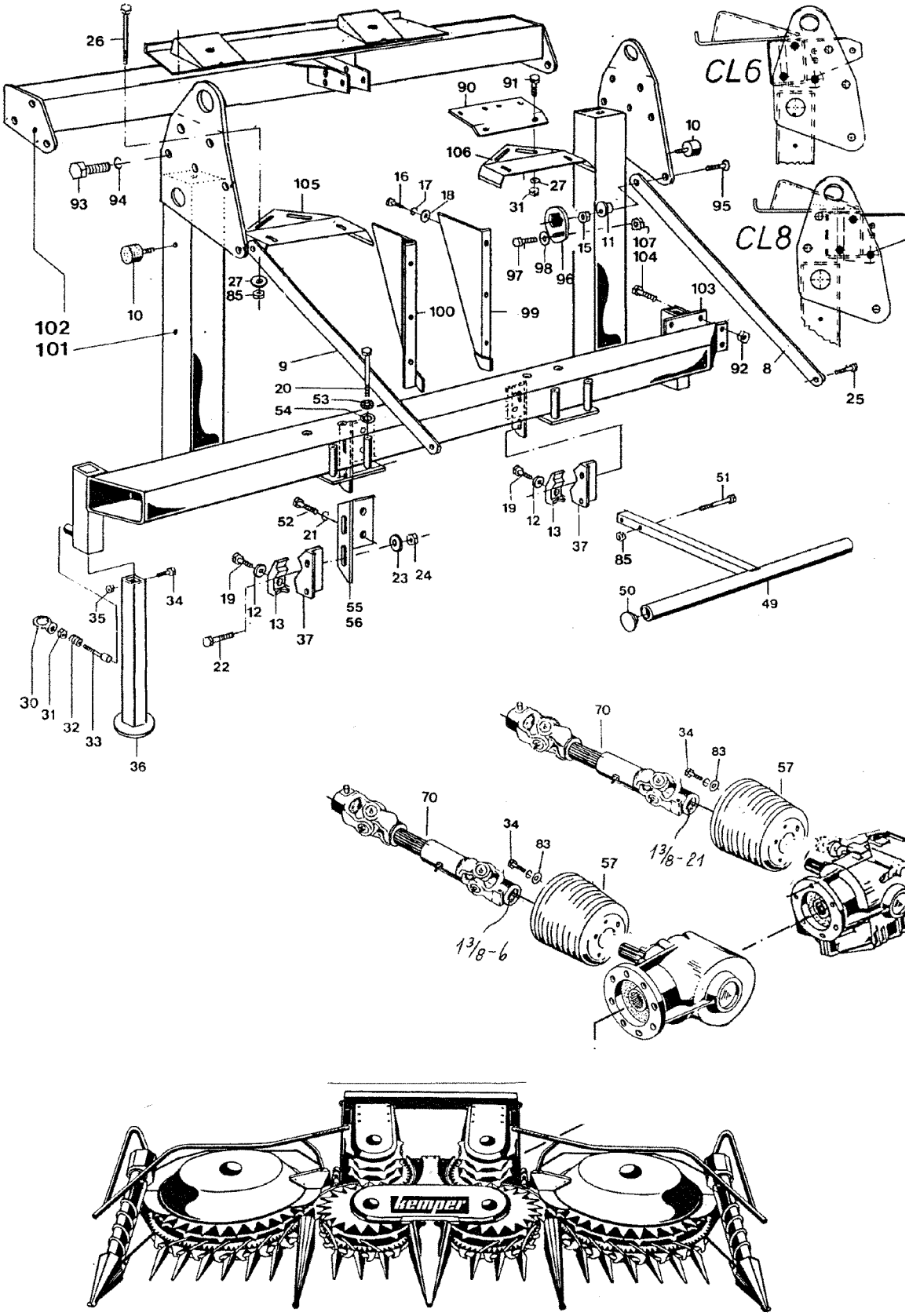
| Attachment Header Gear | Drum rpm | Rotor rpm |
|---|---|---|
| 1 | 20 | ▼ 633 |
| 2 | 20 | ▽ 783 |

▼ = Thick stemmed crops (corn etc.)
▽ = Whole Crop Silage
= Down Crops



DD: 28.1.08
AN: Th.G.

## Attachment to CLAAS 8-series



### *445 CL 8*

As far as linkage and drive are concerned, this header is designed for the following CLAAS forage harvesters::

- 820 = 310 HP
- 830 = 345 HP
- 840 = 360 HP
- 850 = 412 HP
- 860 = 410 HP
- 870 = 453 HP
- 880 = 481 HP
- 890 = 507 HP
- 900 = 623 HP

### *Main Drive*

The main drive is effected by a PTO shaft located on the left side of the Jaguar gearbox.

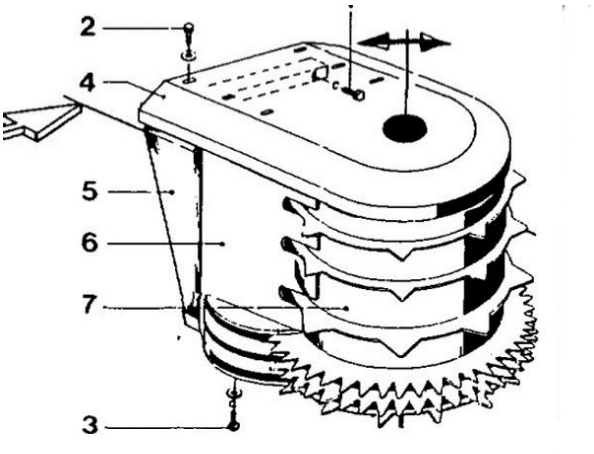
### *Checking rpm*

Regardless of the drive speed ratio, it is important when cutting rough-stem crops under normal conditions that the drive shaft (100) turns at approximately 380-400 rpm under load (idling speed approx. 8% higher). This correlates to 19-20 rpm on the large outer gathering drums.

### *Channel Width*

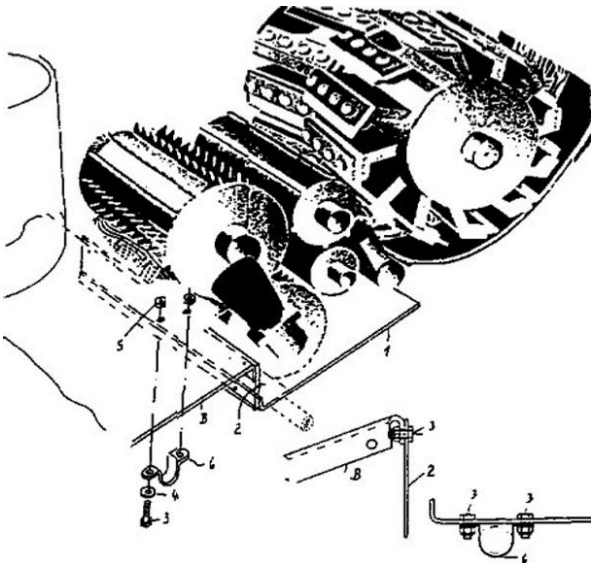
CLAAS CL 8 headers have an adjusted channel width of 735 mm.

The cover (4), the feed plate (5) and the scraper (6) may be rotated around the drum (7) to a channel width of 735 by unscrewing screws (2+3). When test-lifting, a check of the adjustment of the feed plates (5) must be made.




### *Trough*

The problem of winding the lower roller on a CLAAS forage harvester can be solved by installing a trough (see technical information 3198). We recommend installation, but cannot assume any responsibility for such since it involves parts from another manufacturer.



### *Cutting Lenghts*

The indicated values concerning the choice of gear and the feed rate are only suggestions. Depending on the power of the motor, crop density, and the driving speed, it may be sensible to adjust the feed rate.

### *Troubleshooting*

Trouble with the compression rollers is often the result of an improper choice of gear. Pay attention to the table on cutting lengths.

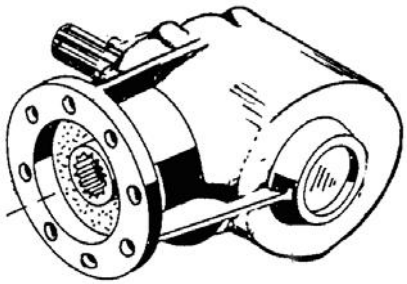
In many cases, it is necessary to regulate the tension of the springs on CLAAS compression roller housing.



DD: 28.1.08
AN: Th.G.

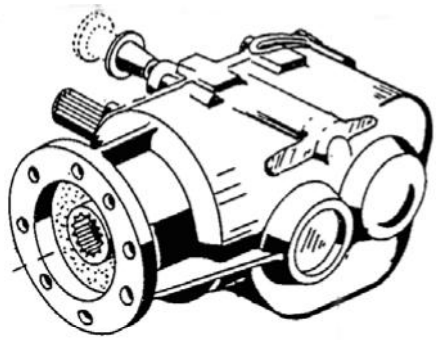
### *Angular Drive*

The standard header 445 CL 8 is equipped with an angular drive.



### *2-Speed Gear box*

The use of a 2-speed gearbox is recommended so that all cutting lengths can be used optimally. It is also possible to retrofit to older headers. During installation, be sure that the PTO shaft to gearbox is equipped on both sides with a profile of 1 3/8-2.



### *Whole Crop Silage (WPS)*

Generally, the faster gear 2 is used here. In order to optimise the cutting process, the speed of the cutting blades must be higher.

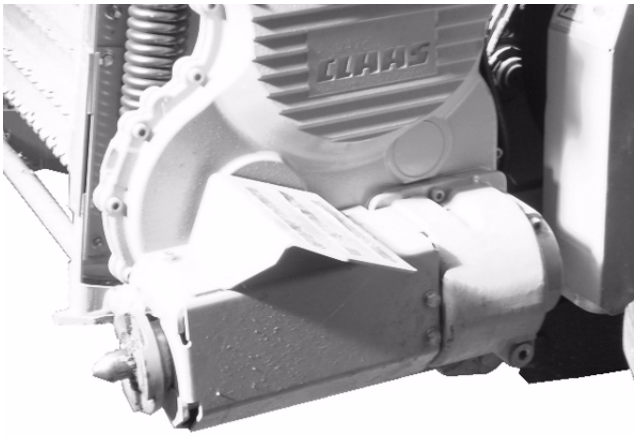
### *Checking drum rotation speed*

The most accurate method is to make a chalk mark on the large gathering drum and count the rotations per minute.

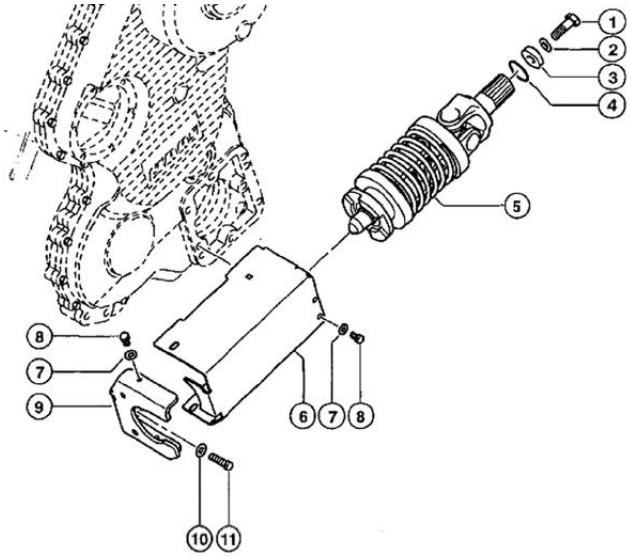
DD: 28.1.08
AN: Th.G.

## Attachment to the CLAAS forage harvester (series 493)

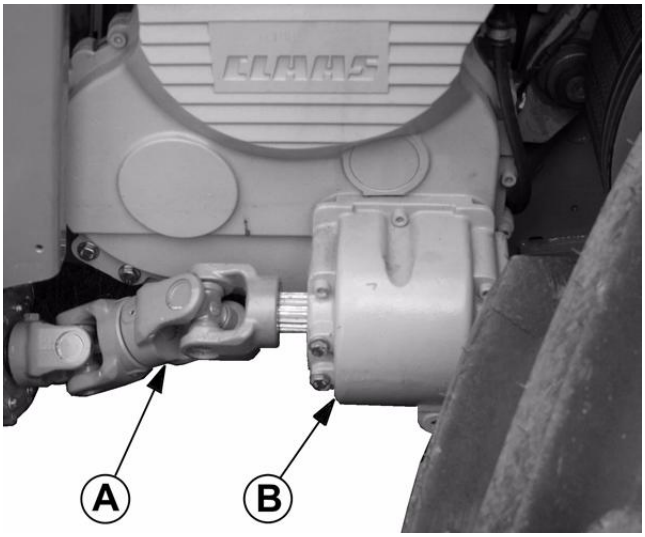
1. Completely remove the claw coupling at the attachment linkage.




2. For this all items from 1 to 11 must be removed.




3. First insert the propeller shaft (A) into the spline shaft bushing of the attachment linkage (B) at the forage harvester.
   Then push the other end onto the linkage at the rotary head until the locking pin engages.

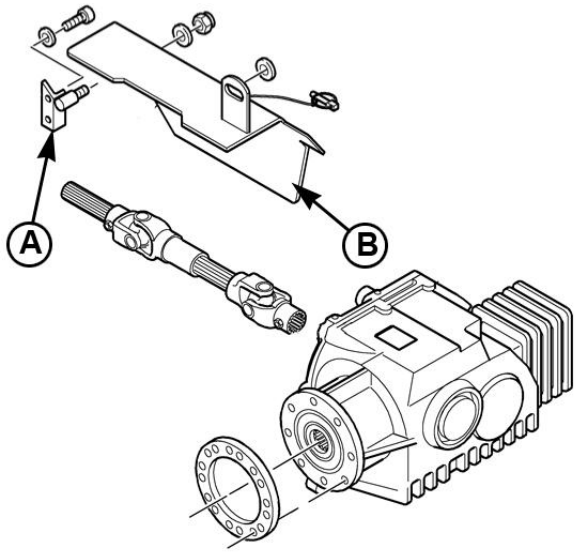



**Continued on next page**

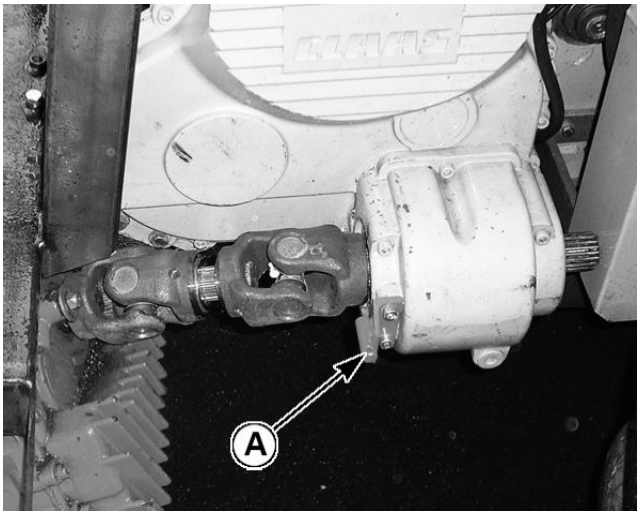


DD: 28.1.08
AN: Th.G.

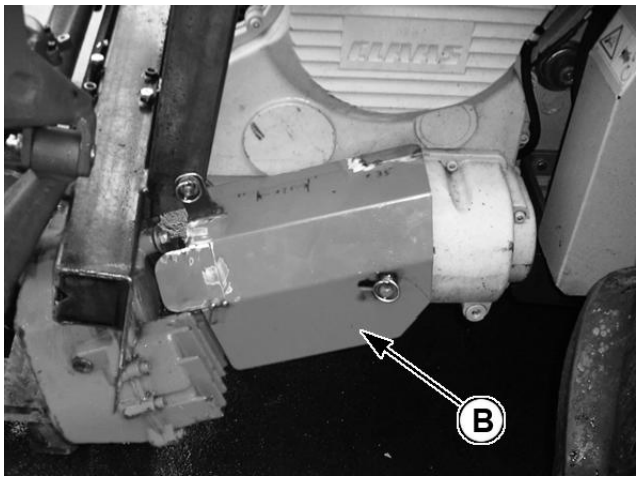
## Attachment to the CLAAS forage harvester (series 493, continuation)




4. Screw the holder (A) to the attachment linkage of the forage harvester.



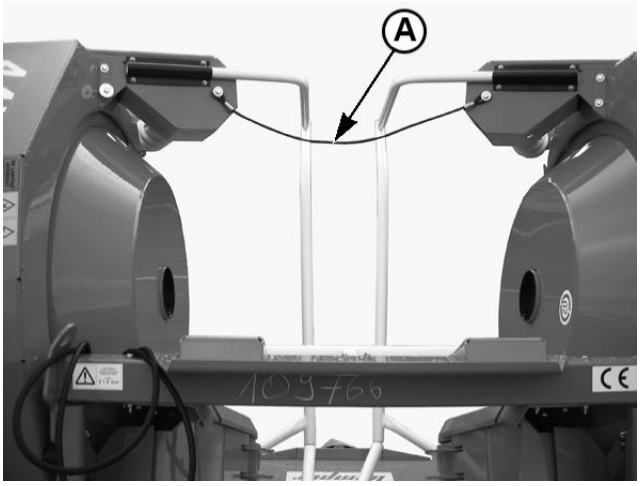

5. Install PTO shaft guard (B).



## Mechanical transport safety equipment

When driving on public roads, the raised gatherer drums must be secured by a rope (A) to prevent unintentional lowering.

**A - Rope**






DD: 28.1.08
AN: Th.G.

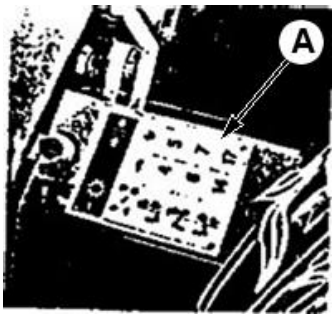
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 820-840 built 1995-1996

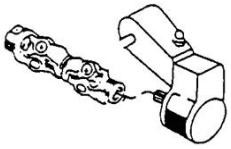
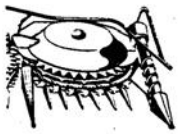
The forage harvester CLAAS 820-840 can, depending on the year of construction, be outfitted with various cutting length drives.

Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives

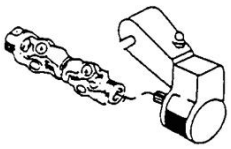
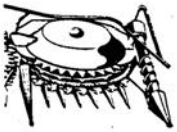



***Claas 820-840 MY 1995-1996 with KEMPER Standard Gear Box***

|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
|  | 327 | --- | 327 | 4 | | 17 |  |
|  | 400 | --- | 400 | 5 | 7 | 20 |  |

# Cutting lenghts with Claas forage harvesters

***Claas 820-840 MY 1995-1996 with KEMPER 2-Speed Gear Box Option***

|  **CLAAS** | |  **KEMPER 2-Speed Gear Box Option** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
|  | 327 | 1 | 327 | 4 | | 17 |  |
|  | 327 | 2 | 411 | 4 | 6 | 20 |  |
|  | 400 | 1 | 400 | 5 | | 20 |  |
|  | 400 | 2 | 503 | | 7 | 25 |  |

= Thick stemmed crops (corn etc.)

= Whole Crop Silage

= Down Crops



DD: 28.1.08
AN: Th.G.

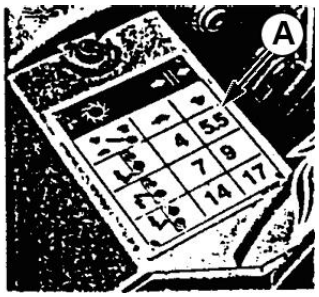
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 820-840 built 1997-1998

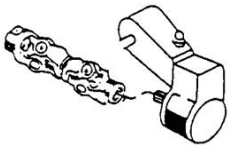
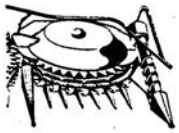
The forage harvester CLAAS 820-840 can, depending on the year of construction, be outfitted with various cutting length drives.

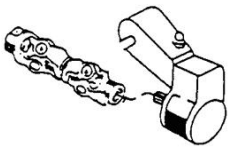
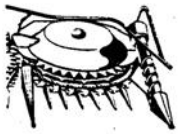
Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives



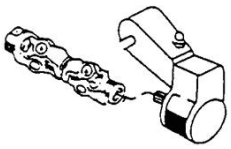
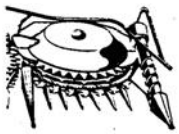

***Claas 820-840 MY 1997-1998 with KEMPER Standard Gear Box***

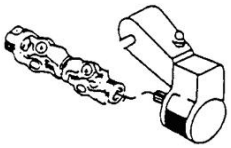
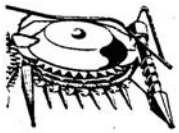
|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
|  | 327 | --- | 327 | 4 | | 17 |  |
|  | 400 | --- | 400 | 5,5 | 9 | 20 |  |

|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 368 | --- | 368 | 4 | | 18 |  |
|  | 455 | --- | 455 | 5,5 | 9 | 23 |  |

# Cutting lenghts with Claas forage harvesters

***Claas 820-840 MY 1997-1998 with KEMPER 2-Speed Gear Box Option***

|  **CLAAS** | |  **KEMPER 2-Speed Gear Box Option** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
|  | 327 | 1 | 327 | 4 | | 17 |  |
|  | 327 | 2 | 411 | 4 | 7 | 20 |  |
|  | 400 | 1 | 400 | 5,5 | | 20 |  |
|  | 400 | 2 | 503 | | 9 | 25 |  |

|  **CLAAS** | |  **KEMPER 2-Speed Gear Box Option** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 368 | 1 | 368 | 4 | | 18 |  |
|  | 368 | 2 | 463 | 4 | 7 | 23 |  |
|  | 455 | 1 | 455 | 5,5 | | 23 |  |
|  | 455 | 2 | 572 | | 9 | 28 |  |

 = Thick stemmed crops (corn etc.)

 = Whole Crop Silage

 = Down Crops



DD: 28.1.08
AN: Th.G.

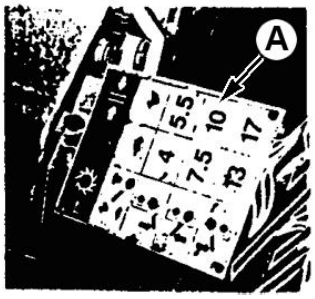
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 820-840 (Special edition cutting length drive 97/98)

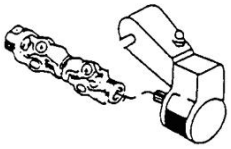
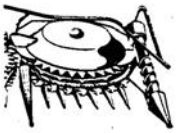
The forage harvester CLAAS 820-840 can, depending on the year of construction, be outfitted with various cutting length drives.

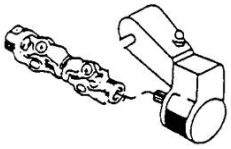
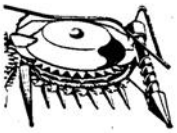
Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives



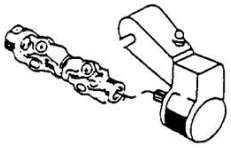
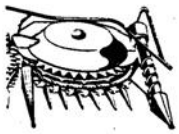

***Claas 820-840 (Special edition cutting length drive 97/98) with KEMPER Standard Gear Box***

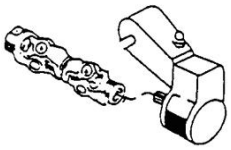
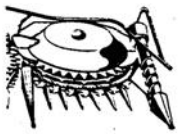
|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
|  | 327 | --- | 327 | 4 | | 17 |  |
|  | 400 | --- | 400 | 5,5 | 10 | 20 |  |

|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 368 | --- | 368 | 4 | | 18 |  |
|  | 455 | --- | 455 | 5,5 | 10 | 23 |  |

# Cutting lenghts with Claas forage harvesters

***Claas 820-840 (Special edition cutting length drive 97/98) with KEMPER 2-Speed Gear Box Option***

|  CLAAS | |  KEMPER 2-Speed Gear Box Option | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 20 knives cutting length | | Drum rpm | |
| | 327 | 1 | 327 | 4 | | 17 | |
| | 327 | 2 | 411 | 4 | 7,5 | 20 | ▼ |
| | 400 | 1 | 400 | 5,5 | | 20 | ▼ |
| | 400 | 2 | 503 | | 10 | 25 | ▼ ▽ |

|  CLAAS | |  KEMPER 2-Speed Gear Box Option | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
| | 368 | 1 | 368 | 4 | | 18 | |
| | 368 | 2 | 463 | 4 | 7,5 | 23 | ▼ |
| | 455 | 1 | 455 | 5,5 | | 23 | ▼ |
| | 455 | 2 | 572 | | 10 | 28 | ▼ ▽ |

▼ = Thick stemmed crops (corn etc.)

▽ = Whole Crop Silage

= Down Crops



DD: 28.1.08
AN: Th.G.

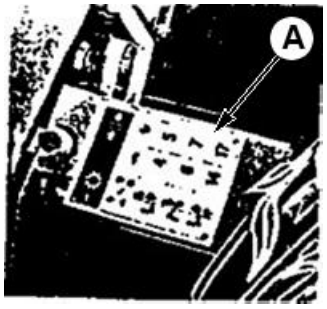
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 860-880 built 1995-1996

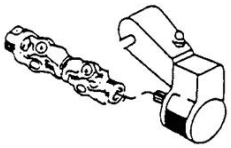
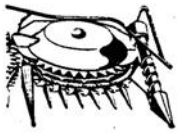
The forage harvester CLAAS 860-880 can, depending on the year of construction, be outfitted with various cutting length drives.

Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives

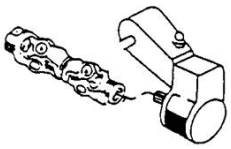
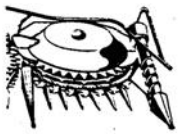



***Claas 860-880 MY 1995-1996 with KEMPER Standard Gear Box***

|  **CLAAS** | |  **KEMPER Standard Gear Box** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | --- | 400 | 4 | 6 | 20 | ▼ |
|  | 495 | --- | 495 | 5 | 7 | 25 | ▽ |

# Cutting lenghts with Claas forage harvesters

***Claas 860-880 MY 1995-1996 with KEMPER 2-Speed Gear Box Option***

|  **CLAAS** | |  **KEMPER 2-Speed Gear Box Option** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | 1 | 400 | 4 | 6 | 20 | ▼ |
|  | 400 | 2 | 317 | 4 | | 17 | |
|  | 495 | 1 | 495 | | 7 | 25 | ▼ ▽ |
|  | 495 | 2 | 393 | 5 | | 20 | ▼ |

▼ = Thick stemmed crops (corn etc.)

▽ = Whole Crop Silage

= Down Crops



DD: 28.1.08
AN: Th.G.

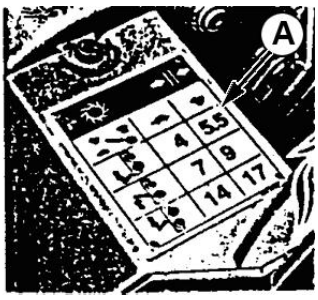
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 860-880 built 1997-1998

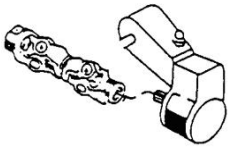
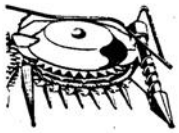
The forage harvester CLAAS 860-880 can, depending on the year of construction, be outfitted with various cutting length drives.

Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives

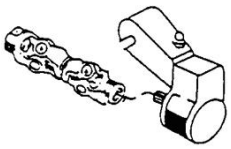
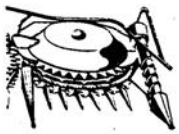



***Claas 860-880 MY 1997-1998 with KEMPER Standard Gear Box***

|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | --- | 400 | 4 | 7 | 20 |  |
|  | 495 | --- | 495 | 5,5 | 9 | 25 |  |

# Cutting lenghts with Claas forage harvesters

***Claas 860-880 MY 1997-1998 with KEMPER 2-Speed Gear Box Option***

|  **CLAAS** | |  **KEMPER 2-Speed Gear Box Option** | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | 1 | 400 | 4 | 7 | 20 | ▼  |
|  | 400 | 2 | 317 | 4 | | 17 | ▽ |
|  | 495 | 1 | 495 | | 9 | 25 | ▼ ▽ |
|  | 495 | 2 | 393 | 5,5 | | 20 | ▼  |

▼ = Thick stemmed crops (corn etc.)

▽ = Whole Crop Silage

 = Down Crops



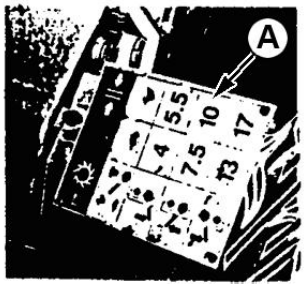
DD: 28.1.08
AN: Th.G.

## CLAAS forage harvester 860-880 (special edition cutting length drive 97/98)

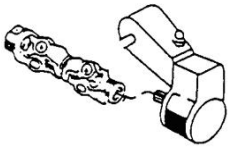
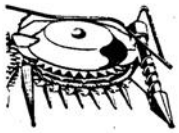
The forage harvester CLAAS 860-880 can, depending on the year of construction, be outfitted with various cutting length drives.

Choose the appropriate table:

- based on the construction year of the harvester
- based on the table (A) for CLAAS cutting length drives

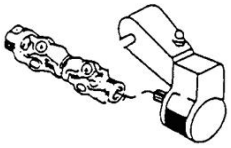
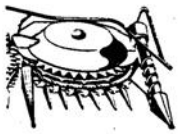



***Claas 860-880 (Special edition cutting length drive 97/98) with KEMPER Standard Gear Box***

|  CLAAS | |  KEMPER Standard Gear Box | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | --- | 400 | 4 | 7,5 | 20 |  |
|  | 495 | --- | 495 | 5,5 | 10 | 25 |  |

# Cutting lenghts with Claas forage harvesters

***Claas 860-880 (Special edition cutting length drive 97/98) with KEMPER 2-Speed Gear Box Option***

|  CLAAS | |   KEMPER 2-Speed Gear Box Option | |  | |  | |
|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | 24 knives cutting length | | Drum rpm | |
|  | 400 | 1 | 400 | 4 | 7,5 | 20 | ▼  |
|  | 400 | 2 | 317 | 4 | | 17 |  |
|  | 495 | 1 | 495 | | 10 | 25 | ▼ ▽ |
|  | 495 | 2 | 393 | 5,5 | | 20 | ▼  |

▼ = Thick stemmed crops (corn etc.)

▽ = Whole Crop Silage

 = Down Crops



DD: 28.1.08
AN: Th.G.

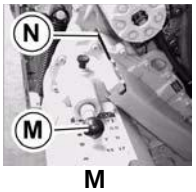
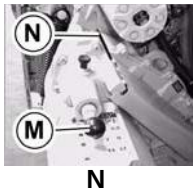
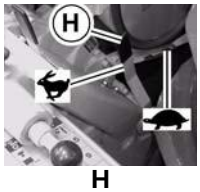
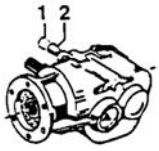
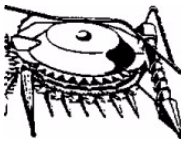
# Cutting lenghts with Claas forage harvesters

## CLAAS forage harvester 830-900 type 492

Speed of drive shaft:

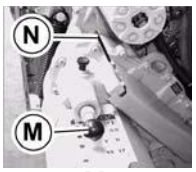
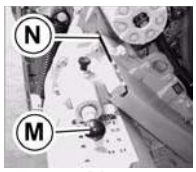
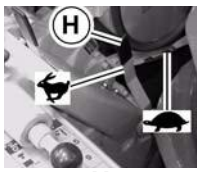
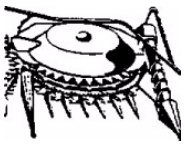
- 1st gear - CLAAS = 403 rpm
- 2nd gear - CLAAS = 488 rpm

***Claas 830-900 type 492 with 24-knife cutterhead***

|  **Cutting lengths 2x12-knife cutterhead** |   **M** |   **N** |   **H** |   **KEMPER Gear** |  **rpm** |
|---|---|---|---|---|---|
| 4 mm | 1 | | | 1 | 22 |
| 5,5 mm | 1 | | | 1 | 26 |
| 7 mm | 2 | | | 2 | 27 |
| 9 mm | 2 | | | 1 | 26 |
| 14 mm | 3 | | | 2 | 27 |
| 17 mm | 3 | | | 2 | 33 |

# Cutting lenghts with Claas forage harvesters

***Claas 830-900 type 492 with 20-knife cutterhead***

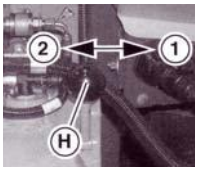
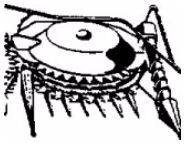
|  **Cutting lengths 2x10-knife cutterhead** |  **M** |  **N** |  **H** |  **KEMPER Gear** |  **rpm** |
|---|---|---|---|---|---|
| 5 mm | 1 | | | 1 | 22 |
| 6,5 mm | 1 | | | 1 | 26 |
| 8,5 mm | 2 | | | 2 | 27 |
| 11 mm | 2 | | | 1 | 26 |
| 17 mm | 3 | | | 2 | 27 |
| 21 mm | 3 | | | 2 | 33 |



DD: 28.1.08
AN: Th.G.

## CLAAS forage harvester 830-900 type 493

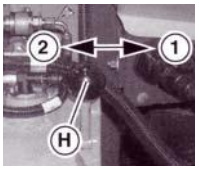
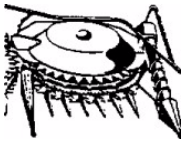
***Claas 830-900 type 493 with 24-knife cutterhead***

| Cutting lengths | | Forage harvester | KEMPER | Drum speed |
|---|---|---|---|---|
|  | |  |  |  |
| **2x12 knives** | **2x6 knives** | **Gear** | **Gear** | **rpm** |
| 6 mm | 12 mm | **1** | 1 | 26 |
| 7 mm | 14 mm | | 1 | 26 |
| 8 mm | 16 mm | | 1 | 26 |
| 9 mm | 18 mm | | 1 | 26 |
| 10 mm | 20 mm | | 2 | 33 |
| 8 mm | 16 mm | **2** | 1 | 26 |
| 9 mm | 18 mm | | 1 | 26 |
| 10 mm | 20 mm | | 2 | 33 |
| 11 mm | 22 mm | | 2 | 33 |
| 12 mm | 24 mm | | 2 | 33 |
| 13 mm | 26 mm | | 2 | 33 |
| 14 mm | 28 mm | | 2 | 33 |

DD: 28.1.08
AN: Th.G.

# Cutting lenghts with Claas forage harvesters

***Claas 830-900 type 493 with 20-knife cutterhead***

| Cutting lengths | | Forage harvester | KEMPER | Drum speed |
|---|---|---|---|---|
|  | |  |  |  |
| **2x10 knives** | **2x5 knives** | **Gear** | **Gear** | **rpm** |
| 7,3 mm | 14,7 mm | **1** | 1 | 26 |
| 8,5 mm | 17,0 mm | | 1 | 26 |
| 9,7 mm | 19,3 mm | | 1 | 26 |
| 10,8 mm | 21,7 mm | | 1 | 26 |
| 12,0 mm | 24,0 mm | | 2 | 33 |
| 10,0 mm | 20,0 mm | **2** | 1 | 26 |
| 11,2 mm | 22,4 mm | | 1 | 26 |
| 12,4 mm | 24,8 mm | | 2 | 33 |
| 13,6 mm | 27,2 mm | | 2 | 33 |
| 14,8 mm | 29,6 mm | | 2 | 33 |
| 16 mm | 32,0 mm | | 2 | 33 |
| 17,2 mm | 34,4 mm | | 2 | 33 |

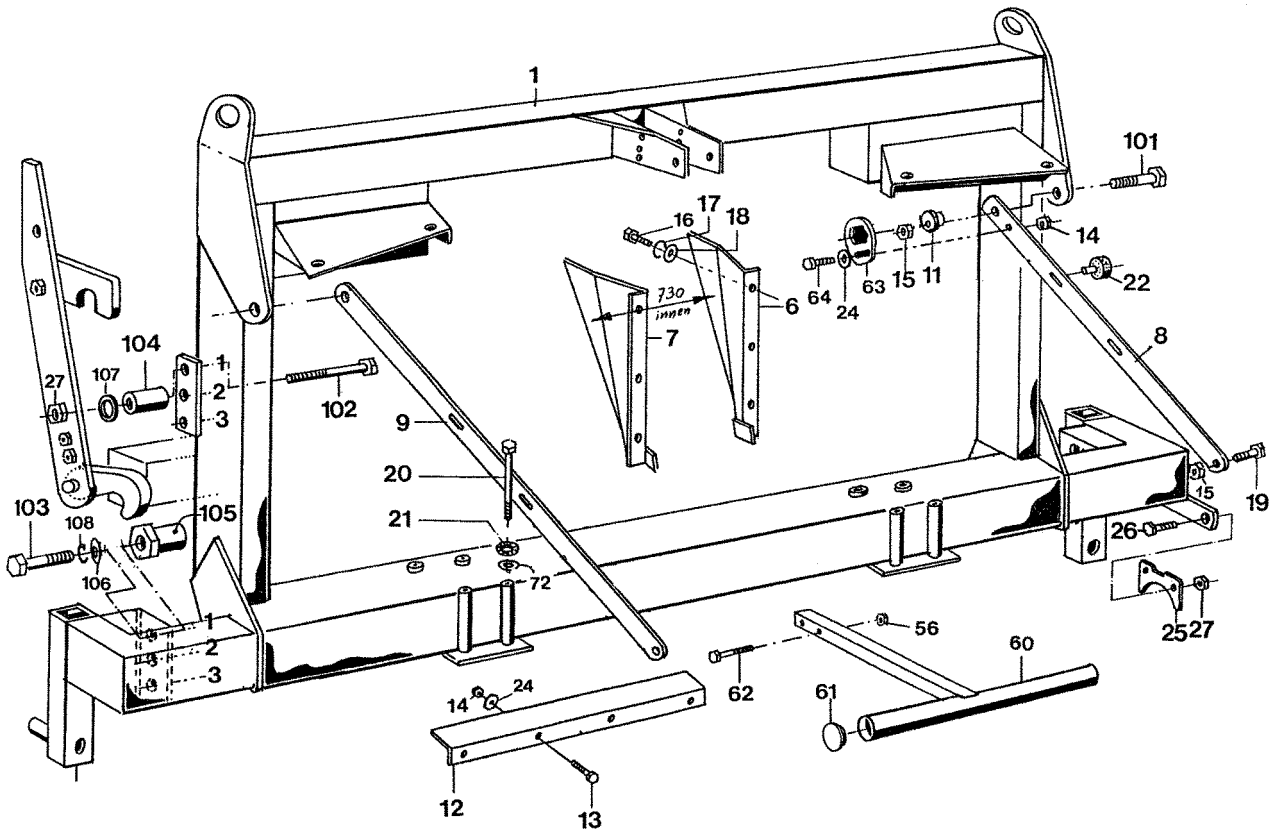
*NOTE: The cutting process can be optimised by adjusting the drum speed. It is however not possible to give detailed instructions here, as the optimum drum speed is influenced by too many different factors.*



DD: 28.1.08
AN: Th.G.

# Attachment to New Holland and Case forage harvester

## Attachment to FX Series




## 445 FX

In respect of the hitch points as well as the drive, this mowing attachment is designed for the following field choppers:

- FX 300 = 300 HP
- FX 375 = 375 HP
- FX 450 = 450 HP
- FX 28 = 345 HP
- FX 38 = 414 HP
- FX 48 = 459 HP
- FX 58 = 526 HP

DD: 28.1.08
AN: Th.G.

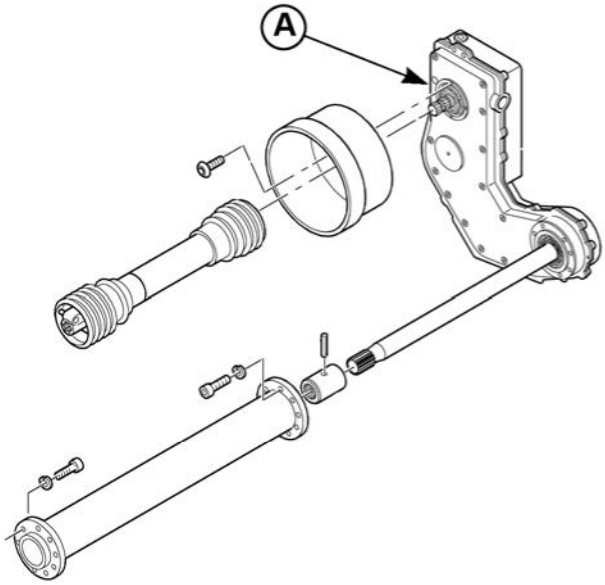
### *Drive speed (corn)*

The main drive is effected by a PTO shaft located on the left side of the FX gearbox.

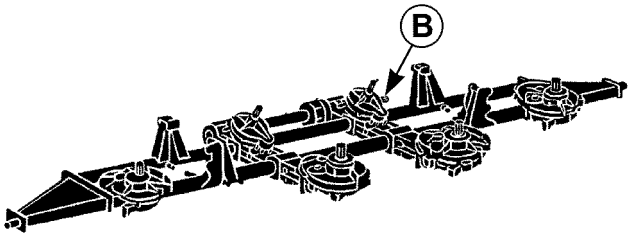
Under normal operating conditions, the gearbox (A) on the header should be in first gear (1:1). Regardless of the drive speed ratio, it is important when cutting rough-stem crops under normal conditions that the bottom PTO stub shaft (B) turns at approximately 400 rpm. This correlates to 20 rpm on the large gathering drums.

To check the rotation speed of the large gathering drum, make a chalk mark on the drum and count the rotations per minute.

Should extreme harvest conditions make it necessary to reduce the intake speed but this does not seem to be possible with the available harvester, contact your dealer and request technical information no. 3201-122.



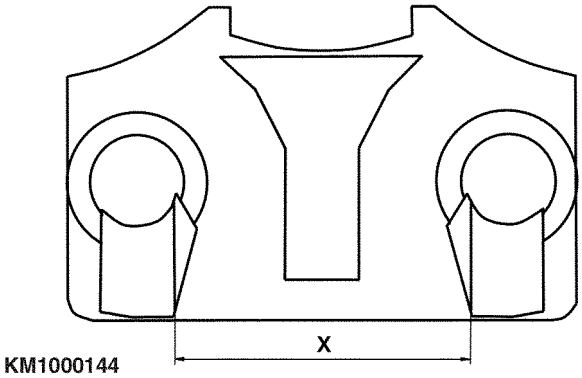

**A - Gearbox**
**B - PTO stub shaft**




**CAUTION: To avoid damage, never shift the gearbox under load.**

### *Channel width*

FX headers have an adjusted channel width (X) of 730 mm. When test-lifting, a check of the adjustment of the channel width must be made.

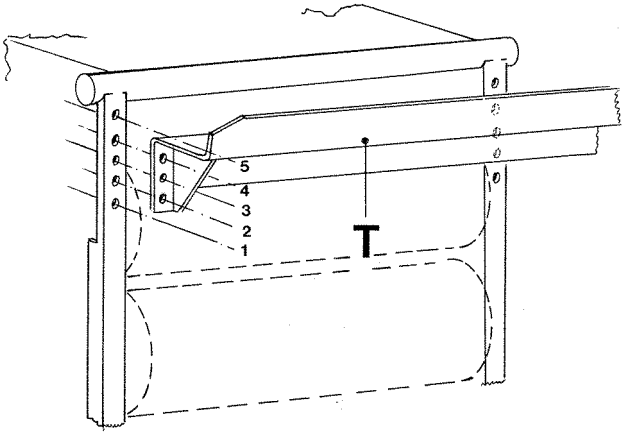




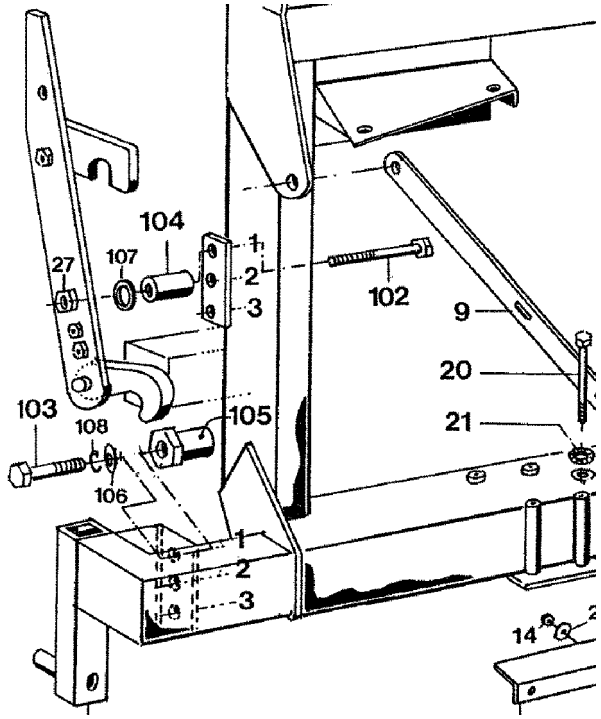

DD: 28.1.08
AN: Th.G.

***Attachment***

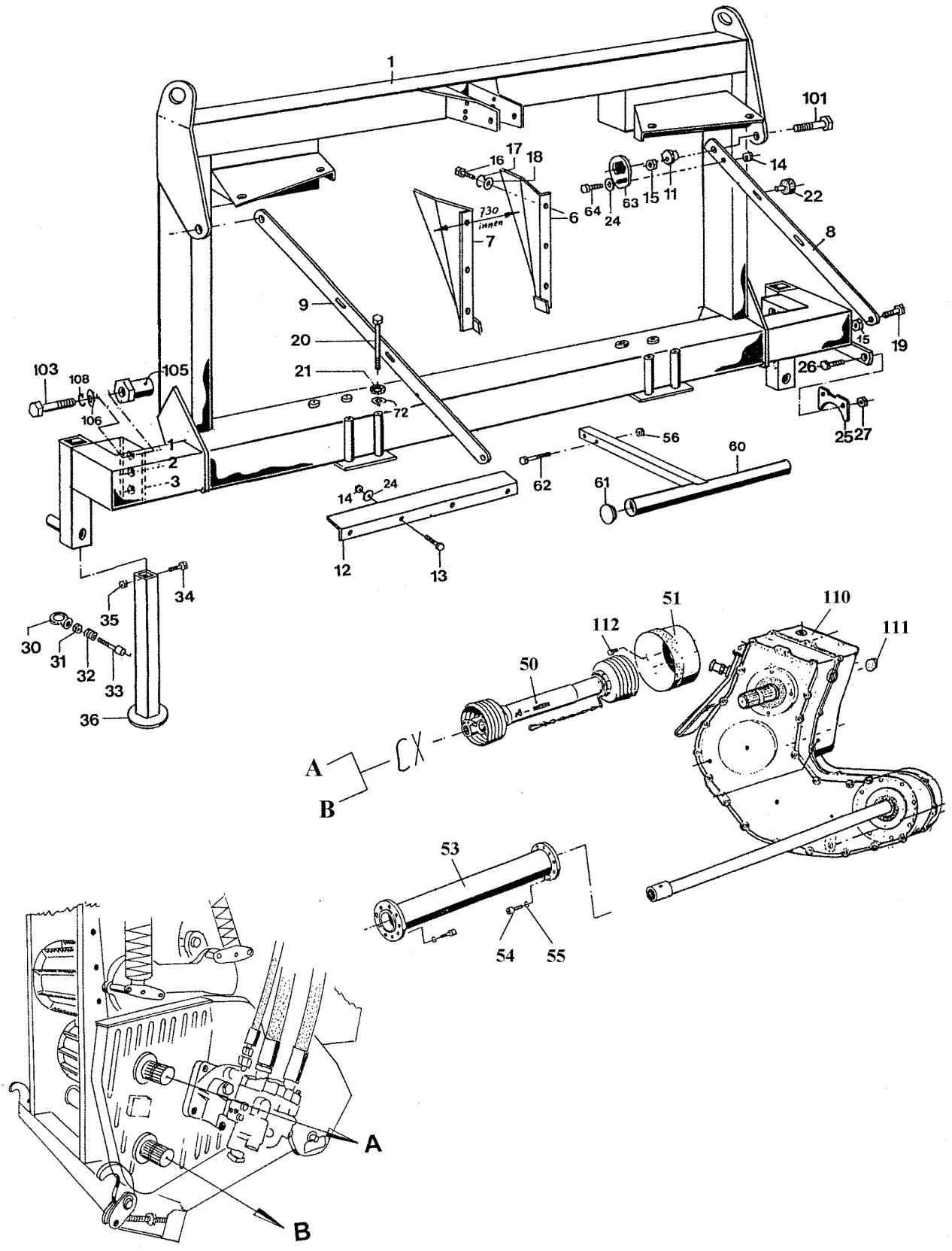
The header is attached to the housing of the compression rollers. The compression roller housing is fitted with a mounting rail T.




Practical use has shown that the middle hitch (i.e. mounting in the attachment holes 2, 3 and 4) provides the proper hitch point. For this height, two pins (104+105) will need to be set for mounting.



## Attachment to New Holland "FX" and Case IH "CHX"






DD: 28.1.08
AN: Th.G.

### *445 CX*

In respect of the hitch points as well as the drive, this mowing attachment is designed for the following field choppers:

**New Holland**

- FX 30 = 386 HP
- FX 40 = 460 HP
- FX 50 = 515 HP
- FX 60 = 571 HP

**Case IH**

- CHX 320 = 386 HP
- CHX 420 = 460 HP
- CHX 520 = 515 HP
- CHX 620 = 571 HP

### *Field choppers FX/CHX*

The description in these instructions is based on the premise that the field chopper is equipped with the technology “infinite cutting length and hydrostatic drive”.

### *Mowing attachment with manual transmission*

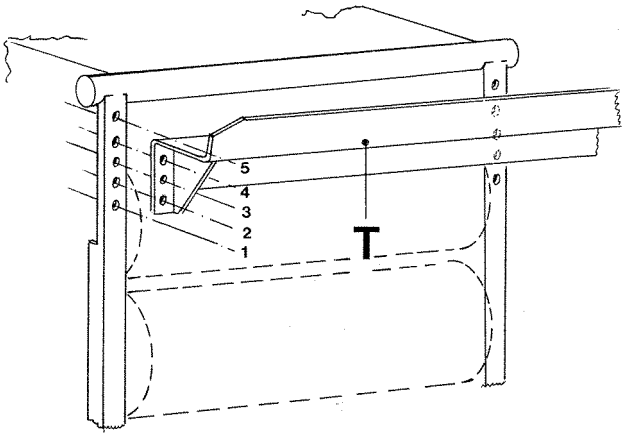
This mowing attachment is equipped with a 2 gear manual transmission M2. The connection is via the cardan shaft 50 either on the shaft drive A or B.

**CAUTION: To avoid damage to the transmission "do not switch when the machine is under load".**

DD: 28.1.08
AN: Th.G.

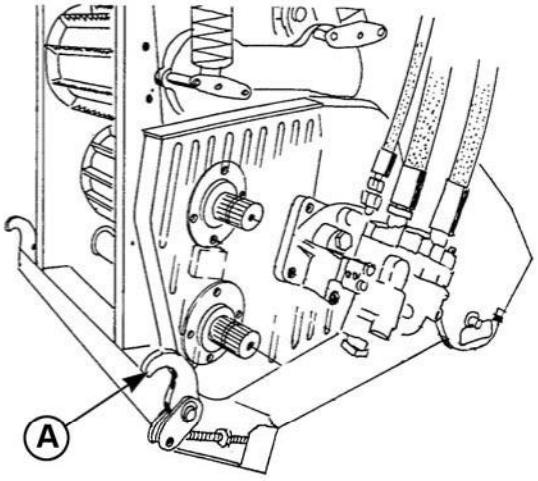
### *Attaching the device*

1. The mowing attachment is attached to the pre-press roller housing. The mounting rail T must be fixed in the middle hole pattern 2,3,4.




2. The lower fastening is effected via the clamp (A).

3. The mount is aligned to the tire size 30.5 - 32. Depending on the type, smaller tires may not meet the allowed limit loads required in the TÜV expert's reports.




4. When the mowing attachment is assembled or disassembled, the 445 stands on three supports. Two supports (36) are located in the lower area of the mount frame. The third front support is fixed on the upper crosstie of the mount frame to the left upon delivery of the device.
   Before being first mounted, the mowing attachment is tipped on a level fixed surface. The mowing attachment must be raised and securely supported by means of a crane or another suitable aid.

**CAUTION: Observe the weight, work using three chains if necessary because of the overturning hazard.**

5. After this, the front support can be mounted underneath the middle crop separator.
6. The mowing attachment is set on the supports 36 in the upper position before the field chopper. In this position, the channel width and the setting of the insertion plates 6+7 should be checked.
7. Slowly lift the mowing attachment, observe the insertion plates 6+7, support the mowing attachment, hoist and lock the rear supports and exchange the front support against the filler plug.

**CAUTION: The machine must be securely supported whenever work is performed to its underside.**



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AN: Th.G.

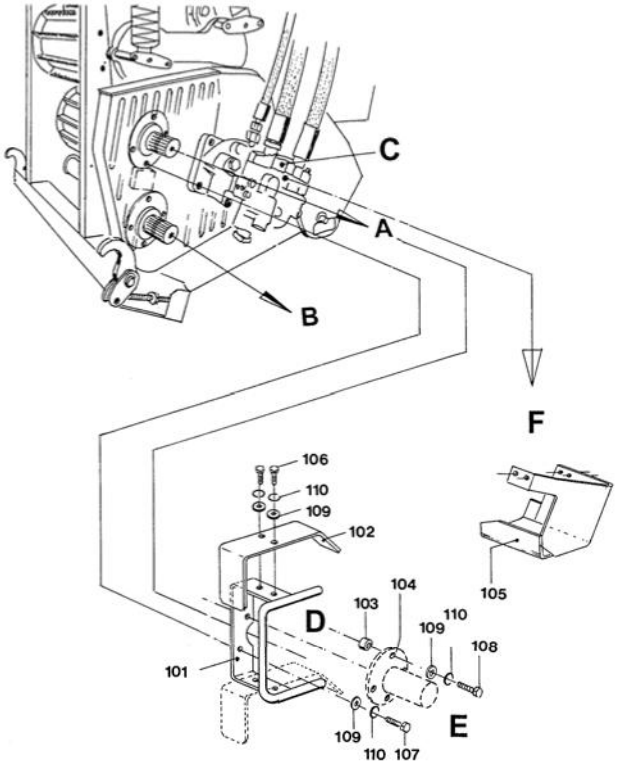
### *Fitting the propeller shaft cover plates*

In accordance with the CE conformity declaration the two drive ends (A) and (B) for the propeller shaft attachment must be covered with a protective cover (D).

Dependent on the use of the shaft (A) or (B) the cover plate (102) must be fitted to the top or bottom of the bracket (101).

Dependent on the use of the shaft (A) or (B) the shaft cover (104) must be fitted at the top or bottom.

The hydraulic motor (C) must be covered by a protective hood (105). The existing bracket must be removed.



DD: 28.1.08
AN: Th.G.

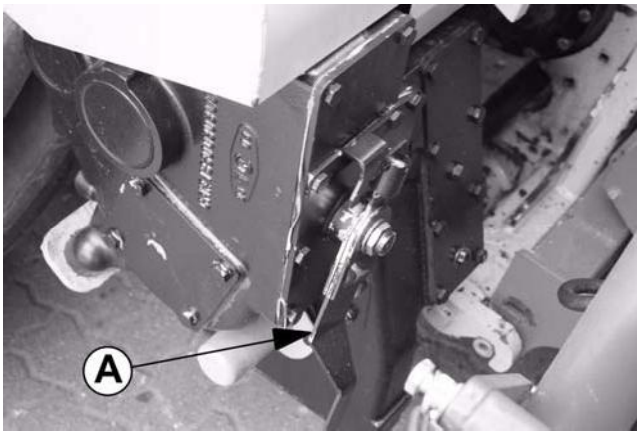
# Cutting lenghts with New Holland and Case forage harvesters

## Adjustable drum speeds

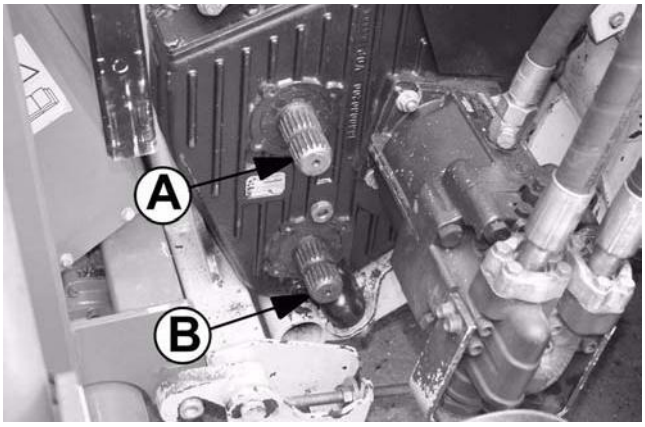
**For forage harvesters fitted with the continuously variable cutting length adjustment "HydroLoc" it must always be ensured that the drum speed of the KEMPER attachment does not exceed a value of 33 rpm. This corresponds to a intake speed at the drive linkage of the rotary head of max. 620 rpm.**

The change lever (A) for the cutting length is to the right of the first press roller housing in the direction of travel.

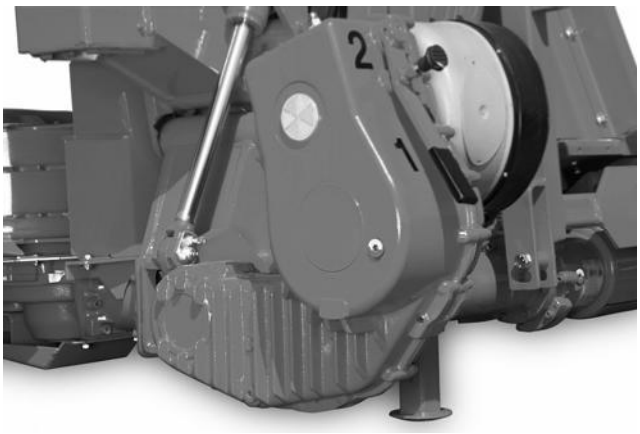
If it is switched to High (H) or Low (L) the attachment speed changes (see table).




The outgoing power for the attachment is to the left of the drive shafts (A) and (B) in the direction of travel.




For the KEMPER rotary head the 1st gear or 2nd gear is selected directly at the gearbox.




**IMPORTANT: The drum speed must not exceed a value of 33 rpm!**

# Cutting lenghts with New Holland and Case forage harvesters

## Cutting lenghts and drum speeds

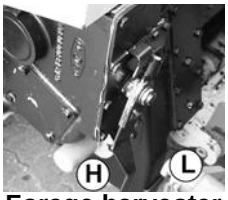
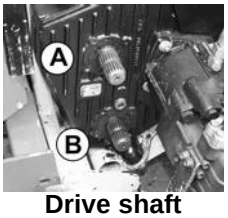
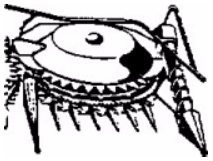
**New Holland**

- FX30, FX40, FX50, FX60

**Case**

- CHX320, CHX420, CHX520, CHX620)

***12-knife cutterhead***

|  **Forage harvester Gear** |  **Cutting lengths 12-knife-cutterhead** |  **Drive shaft A / B** |  **KEMPER Gear** |  **rpm** |
|---|---|---|---|---|
| **L** | 4 mm | A | 1 | 12 |
| | 5 mm | A | 1 | 15 |
| | 6 mm | A | 1 | 18 |
| | 7 mm | A | 1 | 21 |
| | 8 mm | A | 1 | 24 |
| | 9 mm | A | 1 | 27 |
| | 10 mm | A | 1 | 30 |
| **H** | 8 mm | B | 2 | 23 |
| | 9 mm | B | 2 | 26 |
| | 10 mm | B | 2 | 28 |
| | 11 mm | B | 2 | 31 |
| | 12 mm | B | 1 | 26 |
| | 13 mm | B | 1 | 28 |
| | 14 mm | B | 1 | 30 |
| | 15 mm | B | 1 | 32 |
| | 16 mm | A | 2 | 28 |
| | 17 mm | A | 2 | 30 |
| | 18 mm | A | 2 | 31 |
| | 19 mm | A | 2 | 33 |
| | 20 mm | A | 1 | 26 |



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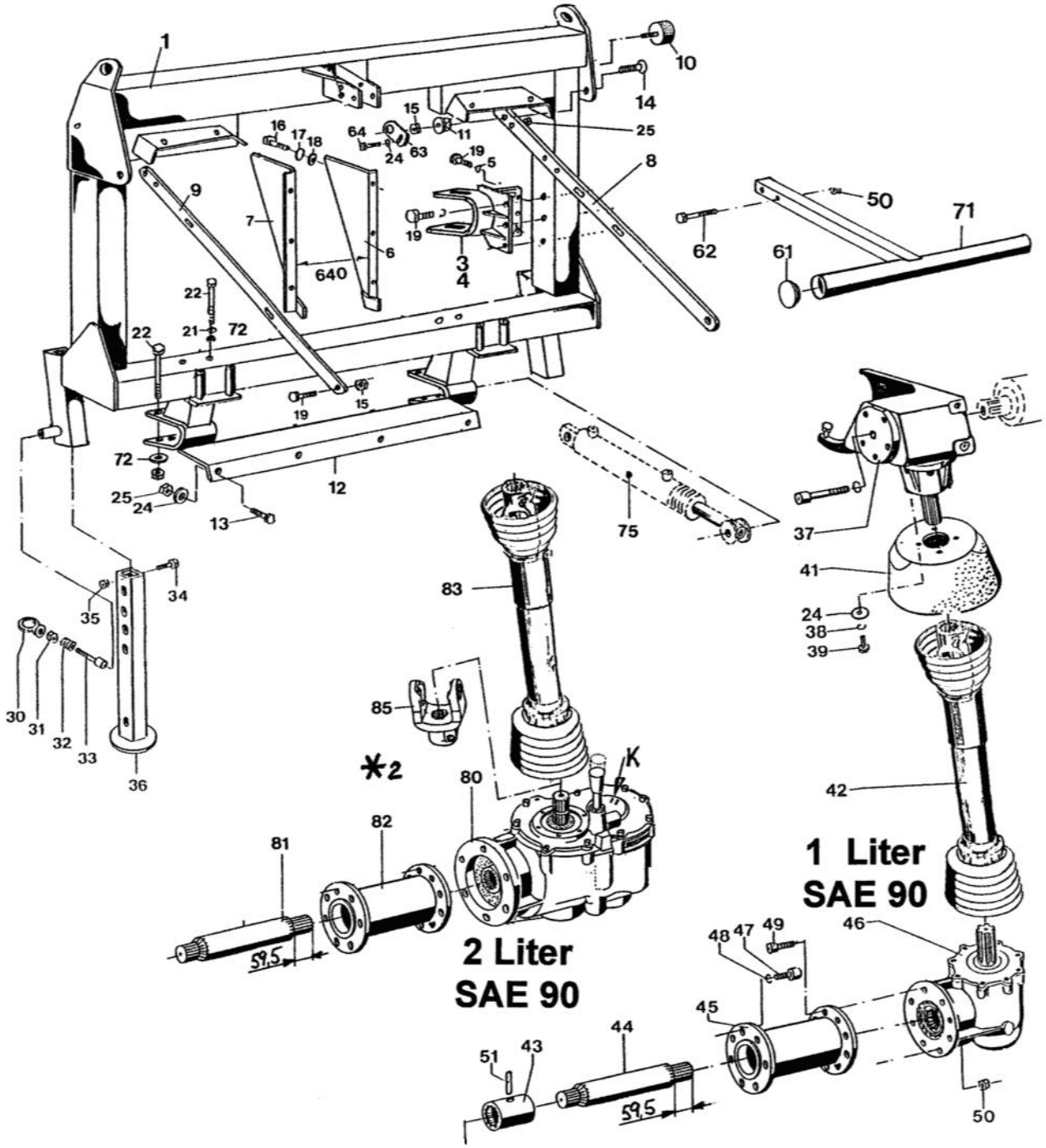
# Attachment to Mengele, Ferguson and Case forage harvesters



## 445 ME

The header is designed for the following harvesters:

**Mengele**

- SF 5200 = 255 HP
- SF 5500 = 280 HP
- SF 5600 = 250 HP
- SF 6000 = 330 HP
- SF 6500 = 360 HP
- SF 6600 = 354 HP
- SF 7000 = 435 HP
- Mammut 5800 = 250 HP
- Mammut 6300 = 320 HP
- Mammut 6800 = 354 HP
- Mammut 7300 = 410 HP
- Mammut 7800 = 480 HP

**Ferguson**

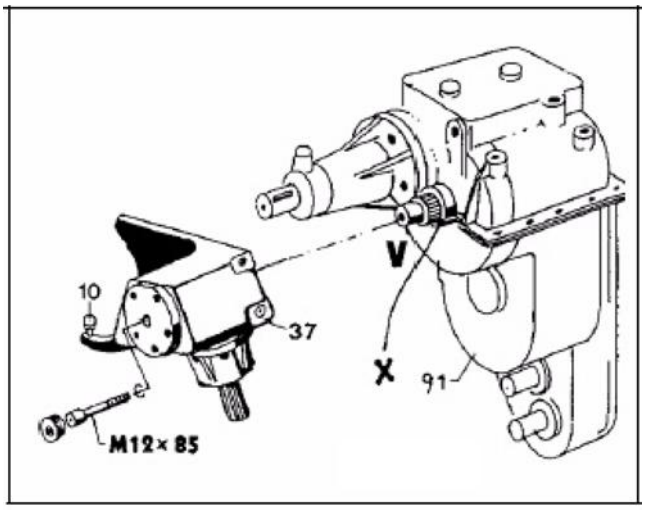
- MF 5130 = 320 HP
- MF 5150 = 410 HP
- MF 5170 = 480 HP

**Case**

- 6900 = 374 HP
- 7400 = 422 HP
- 7800 = 480 HP

### *Necessary equipment MENGELE*

The gearbox (91) must be fitted with an extended control shaft V. The shaft is necessary for the attachment of the angular drive (37). A conversion kit can be ordered from MENGELE which includes a longer shaft, a few spur wheels, a cluster gear, compression springs, as well as a replacement drive. Starting with 1995 models, the equipment is standard.



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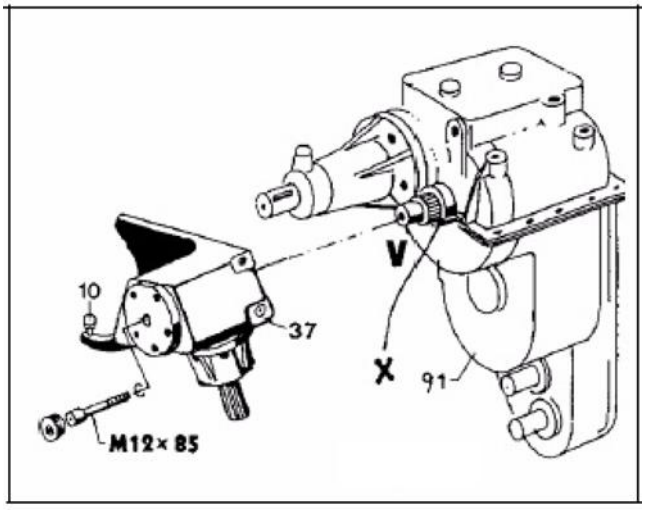
### *Installing drive*

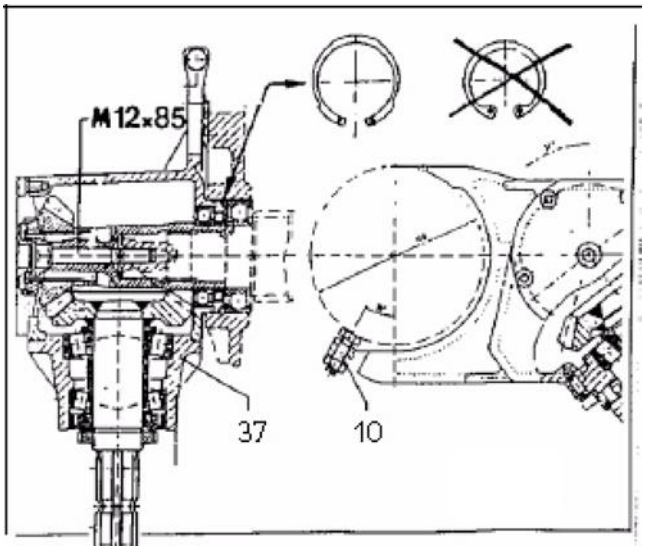
The angular drive (37) can be mounted only after the screws on gearbox (91) have been unscrewed and the drive has been lowered. Use a cheese head screw M12x85 to fasten the drive (37) to the junction shaft. Apply Locite to the screw. Secure drive (37) against rotation using bolt and locknut.

**CAUTION: Drive (37) must be filled with 0.8 litre SAE 90 oil!**




### *Note on drive (37)*

Before installing drive (37), insure that a special circlip JV90x3 (inner diameter = 80.3mm) is fitted in front of bearing X on gearbox (91). If a circlip JV90x3 (with noses) is installed, the connection area of the drive (37) would foul the noses of the circlip. The drive would then be distorted due to the M12x85 screw.




### *Recommendations*

Implementing the following changes on the harvester will improve performance:

- Starting with 1997 models of the above listed Mammuts, MENGELE standard equipment includes a reinforced platform. For older machines, MENGELE will deliver a replacement platform. (Conversion kit 09-130276).
- Since 1997, MENGELE has added extension springs to improve compression on compression roller housing. (Conversion kit 09-133120).
- Since 1997, MENGELE also includes a pre-compression roller to increase safety in material handling. (Conversion kit 02-130680).

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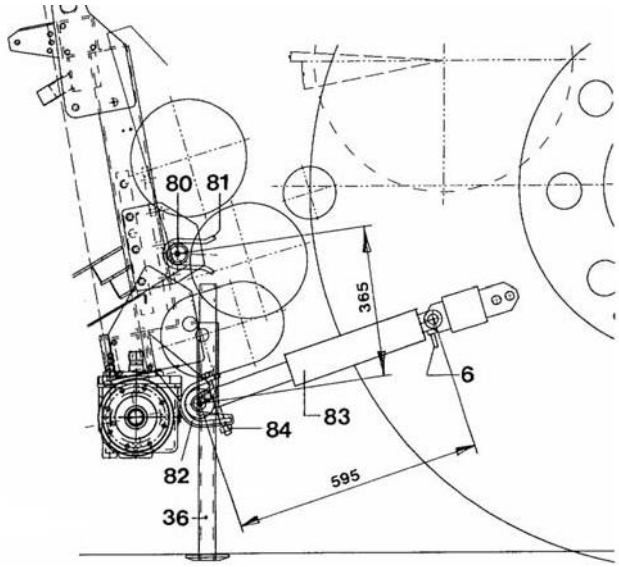
### *Prerequisites for lifting cylinder*

For the lower hitch, no longer are two support rods used. Instead, both lifting cylinders (83) are used. This is advantageous when switching between corn and grass.

*NOTE: The lifting cylinder must be shortened and then fitted with an extension adapter for use with grass. (MENGELE conversion kit 09-133116 or 09-133513)*
*The rear lifting cylinder (21) for adjusting the height of the compression roller housing must be hung in the rear holes of the lifting bracket.*




### *Attachment*

MENGELE Mammut harvesters are equipped with tyres in the following sizes:

- 30.5 - 32 + 24.5 - 32
- 28 - 26 + 23.5 - 26

1. The header is set on supports (36) in the upper position of the forage harvester. In this position, the channel width and adjustment of the feed plates need to be checked.
2. Both lifting cylinders (83) are extended to 595. Using support screws (6) they are set to 365 and locked with a shut-off tap. Hereafter, both lifting cylinders (83) should again be run in hydraulically.
3. The pin (80) on the compression roller housing is set to the height of the catch bracket (81) on the header, run in and secured with a key.
4. The header is lightly lifted until the supports are free of load. Supports are taken up for transport and secured.
5. Hereafter both lifting cylinders (83) can again be extended or, using a shut-off tap, locked.

Each catch bracket (81) is fastened with 6 bolts M 16x40, washers and spring lock washers. These bolts have to be pulled up to 210 Nm torque. Insert bolts with Locite 243 and regularly check them for proper fit, especially at the start of each field use.





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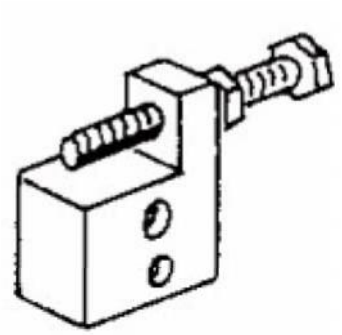
### *Ground contact*

Depending on the tyres of the forage harvester, it may happen that the header cannot be lowered sufficiently over the compression roller housing. The tilting angle is limited by pins located behind the housing. Remove these pins to obtain a better ground contact.



### *Drive*

MENGELE, CASE or FERGUSON forage harvesters have different drives (434-571 rpm, 472-620 rpm). Header speed is dependent on the chosen gear on the harvester.

### *Gear K, L, R*

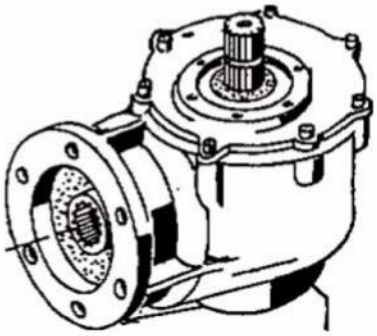
**K = short (slow)**

**L = long (fast)**

**R = reverse**

### *Angular drive*

The standard header 445 ME is equipped with an angular drive. The main drive speed of the header is consequently reduced by approximately 10%. Using gear K, the optimal rotation speed for the gathering drum can be achieved (20-21 rpm) for forage lengths of 5, 8 and 12.5.



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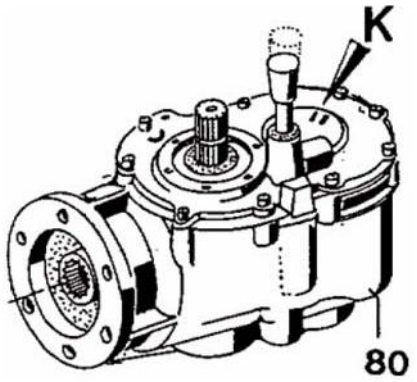
### *2-speed gearbox*

So that all cutting lengths can be used optimally, it is recommended to use a 2-speed gearbox (80). It is also possible to retrofit older header models (see technical information 3003).

1. Both standard cutting lengths 5-8-12.5 and 6.5-10-16 can be used in corn with an optimal gathering drum turning range of 20-22 rpm. Use gear combination K-1 or L-2.
2. Using with WPS and with low corn, we recommend an increased gathering drum speed of approx. 25-28 rpm. Use the gear combination L-1.
3. With lodged maize, all gear combinations may be used with a gathering drum rotation speed of 17-22 rpm.

For all cutting lengths, operations are optimised with the gearbox. This applies to short or long corn, light crops, lodged maize, as well as WPS.




### *WPS*

Generally, the faster gear 2 is used here. In order to optimise the cutting process, the speed of the cutting blades must be higher.

### *Checking gathering drum rotation speed*

The most accurate method is to make a chalk mark on the large gathering drum and count the rotations per minute.



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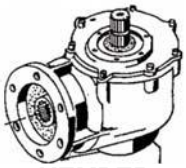
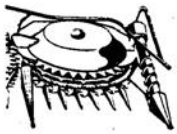
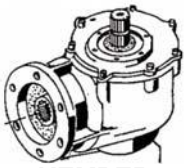
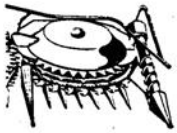
# Cutting lenghts with Mengele forage harvesters

*NOTE: The indicated values concerning the choice of gear and the feed rate are only suggestions. Depending on the power of the motor, crop density, and the driving speed, it may be sensible to adjust the feed rate.*

***Mengele SF, Mammut 6300-7800 with KEMPER Standard Gear Box (Cutterhead = 900 rpm)***

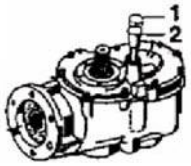
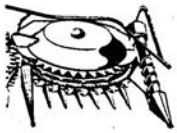
|  MENGELE | |  KEMPER | |  | | |  | |
|---|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | Cutting lengths | | | Drum rpm | |
| K | 434 | --- | 395 | 5 | 8 | 12,5 | 20 | ▼▽ |
| L | 571 | --- | 519 | 6,5 | 10 | 16 | 26 | ▽ |

***Mengele SF, Mammut 6300-7800 with KEMPER Standard Gear Box (Cutterhead = 1000 rpm)***

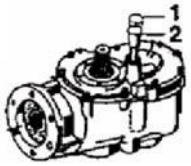
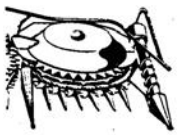
|  MENGELE | |  KEMPER | |  | | |  | |
|---|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | Cutting lengths | | | Drum rpm | |
| K | 472 | --- | 429 | 5 | 8 | 12,5 | 21 | ▼▽ |
| L | 620 | --- | 563 | 6,5 | 10 | 16 | 28 | ▽ |

# Cutting lenghts with Mengele forage harvesters

***Mengele SF, Mammut 6300-7800 with KEMPER 2-Speed Gear Box (Cutterhead = 900 rpm)***

|  MENGELE | |  KEMPER | |  | | |  | |
|---|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | Cutting lengths | | | Drum rpm | |
| K | 434 | 1 | 395 | 5 | 8 | 12,5 | 20 | ▼ ⛆ |
| K | 434 | 2 | 313 | 5 | 8 | 12,5 | 16 | ⛆ |
| L | 571 | 1 | 519 | 6,5 | 10 | 16 | 26 | ▽ |
| L | 571 | 2 | 412 | 6,5 | 10 | 16 | 20 | ▼ ⛆ |

***Mengele SF, Mammut 6300-7800 with KEMPER 2-Speed Gear Box (Cutterhead = 1000 rpm)***

|  MENGELE | |  KEMPER | |  | | |  | |
|---|---|---|---|---|---|---|---|---|
| Gear | rpm | Gear | rpm | Cutting lengths | | | Drum rpm | |
| K | 472 | 1 | 429 | 5 | 8 | 12,5 | 21 | ▼ ⛆ |
| K | 472 | 2 | 340 | 5 | 8 | 12,5 | 17 | ⛆ |
| L | 620 | 1 | 563 | 6,5 | 10 | 16 | 28 | ▽ |
| L | 620 | 2 | 448 | 6,5 | 10 | 16 | 22 | ▼ |

▼ = Thick stemmed crops (corn etc.)

▽ = Whole Crop Silage

⛆ = Down Crops



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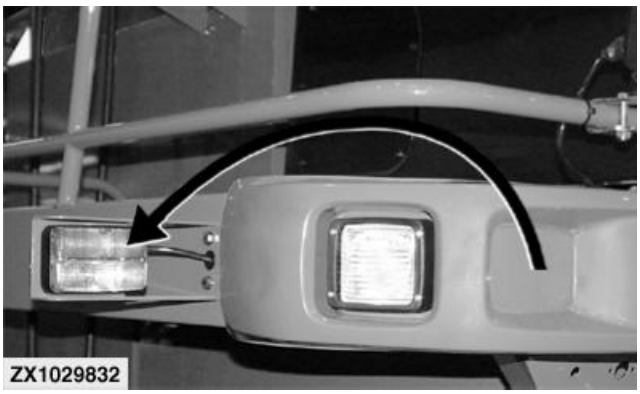
# Transport

## Special Road Regulations

**IMPORTANT: Observe local government regulations when driving harvester on public roads.**

Special dipped headlight and warning light equipment (both sides) for rotary harvesting unit can be installed for driving on public roads. Contact your dealer.

**IMPORTANT: Dipped headlights must be installed so that the lower edge of the headlight is approx. 3000 mm (9 ft 10 in.) above the ground surface.**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## Accident Prevention

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

**Folding Guard (A) Assembly sequence:**

1. After the rotors have come to a complete standstill, fold up the side cutting units.
2. Place the folding guard in a central position and hook in the springs.
3. Fold up the protective profiles on the side and secure using the springs.
4. The runners, blades and other edges are covered with protective cloths (A).

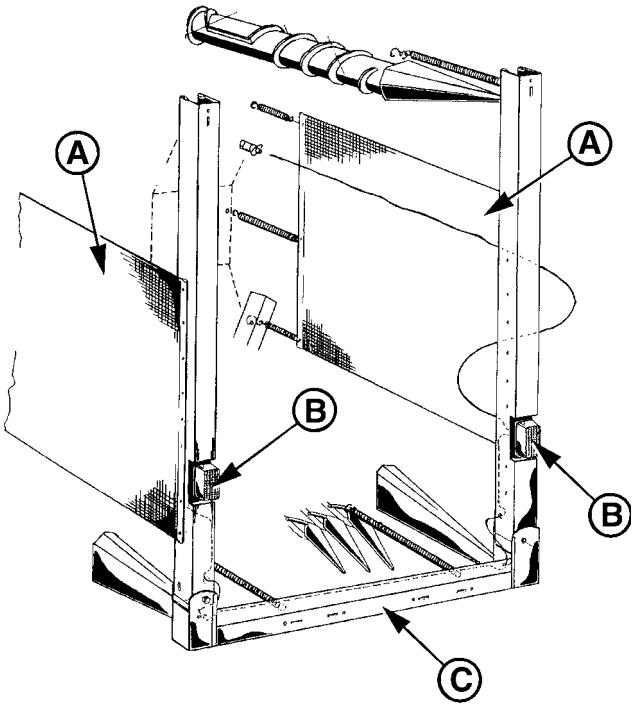
**Side Lamps and Indicators:**

As the side lamps and indicators on the forage harvester are usually covered by the intake drums in raised position, the accident protection device features two duplicated position lamps/indicators (B). For the 12 V power supply use the 7-pole plug located on the right-hand side of the harvester.

**Ground Clearance:**

When driving on public roads the rotary harvesting unit must be raised so that the front accident prevention device (C) is approx. 300 mm (1 ft) above the ground surface.

**A - Protective cloths**
**B - Position lamps/indicators**
**C - Protection device**

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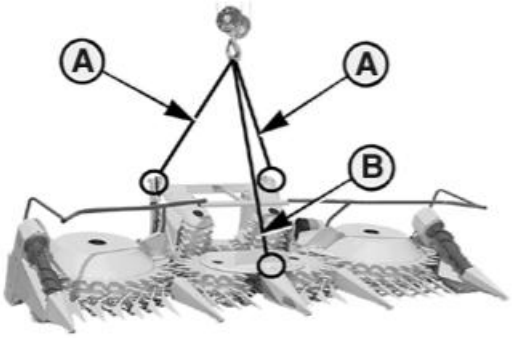
## Hanging Points

**CAUTION: Always use the hanging points (see arrows). This will prevent the machine from toppling over.**

**Make sure to use chains or slings that meet the weight of the harvesting unit (see "Specifications" Section).**

**When loading in this way, you must pay extreme attention and use additional securing chains if necessary.**

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When loading the harvesting unit with a crane, chains or slings with the relevant length must be used as shown on illustration.

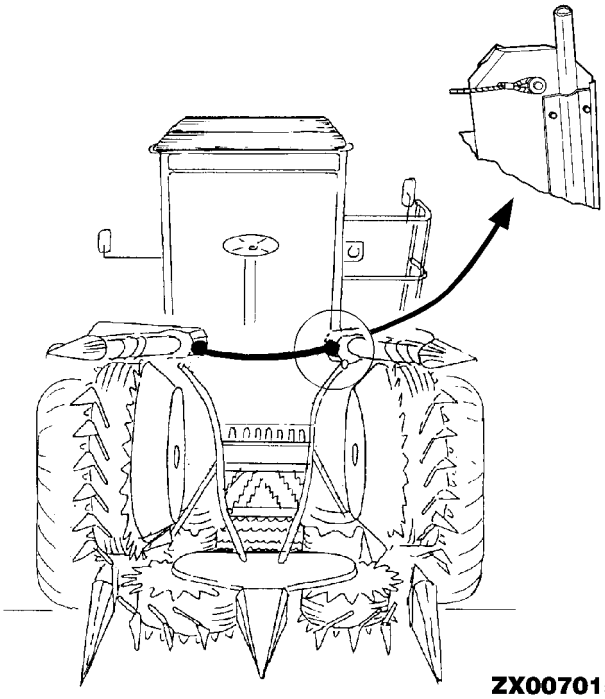
**A - 1400 mm (4 ft 7.08 in.)**
**B - 1600 mm (5 ft 2.88 in.)**

## Folding the Harvesting Unit

**CAUTION: When driving on public roads, either at night or during the day, always comply with the relevant traffic regulations concerning hazard warning equipment, lighting and safety. See the "Safety" section.**

If required by local regulations, fold up the harvesting unit end sections for transport.

When driving on public roads, the raised gatherer drums must be secured by a rope to prevent unintentional lowering.



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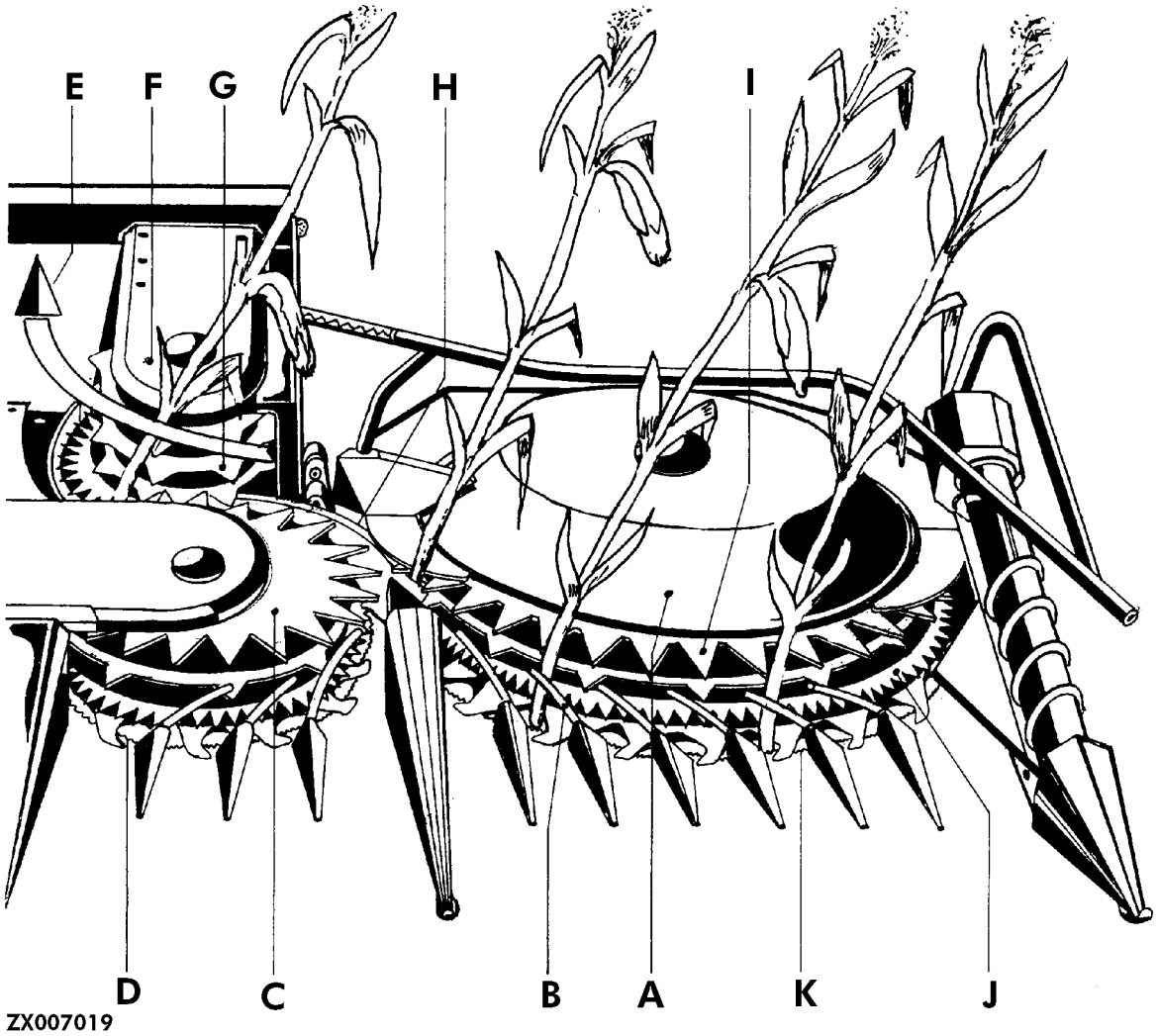
AN: Th.G.

# Operating the Rotary Harvesting Unit

## Method of Operation, 445 Rotary Harvesting Unit




**A - Gatherer drum**
**B - Intake bars**
**C - Gatherer drum**
**D - Rotating blade**
**E - Lengthwise direction of crop**
**F - Feed drums**
**G - Feed teeth**
**H - Guides / scrapers**
**I - Feed teeth**
**J - Row of teeth**
**K - Rotating blade**

The cutting system allows the crop to be harvested from any direction. It does not matter how the row is approached — it can be approached end-on, at right angles or at an oblique angle if so desired. The cutting system can cut 6 narrow rows or 4 wide rows. The cutting system cannot cut 5 wide rows. None of the stalks can escape the area covered by the rotary cutter. Although no counterknife is used, the fast rotating blades (D) cut all the stalks within the unit's operating width. The slowly rotating feed drum (A) passes the stalks along the intake bars (B). The stalk is seized by the row of teeth (J) as if by a gripper. The forward motion of the gatherer drums (A) forces the crop against the feed teeth (I) and so the stalks are conveyed along the guides and scrapers (H) to the feed drum (F). Here the stalks come into contact with the feed teeth (G). From there, they are transported in a constant and compacted stream in direction (E) to the forage harvester's feed roll.

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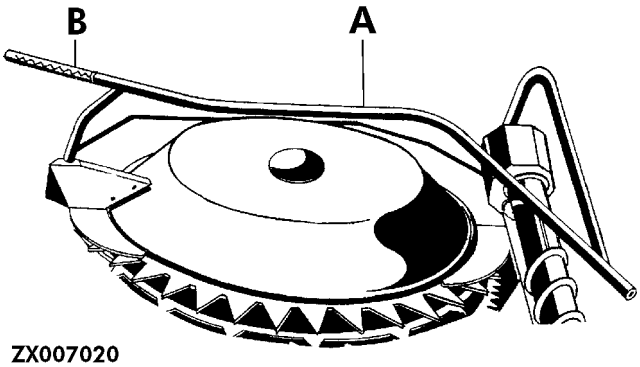
## Adjusting the Feed Bar

**CAUTION: The tube ends (B) of the feed bar are spring-loaded to allow for the transport position. Never use the tube ends as handles!**

Feed bar (A) pushes the stalks forwards to improve crop intake. Its height can be altered to suit crop conditions.

*NOTE: Do not raise the feed bars so high that they collide with each other in the transport position.*



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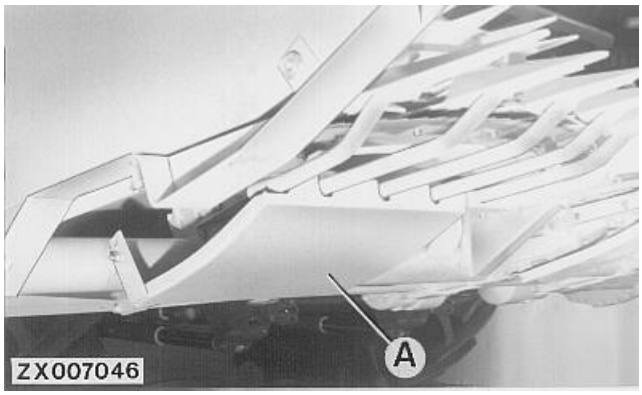
## Skid Plates

To allow the crop to be cut as close to the ground as possible without clogging the harvesting unit with soil, the underside of the harvesting unit is equipped with four skid plates (A). The two outer plates, which are on the folding sections, are wider than the center plates and can be adjusted for height.



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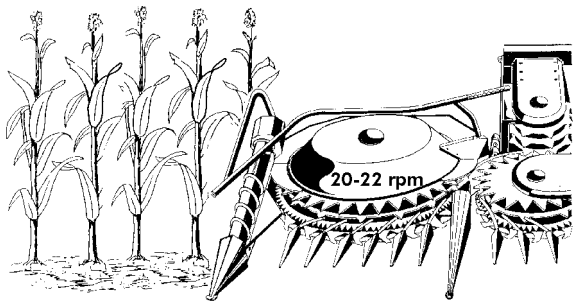
## Operating the Rotary Harvesting Unit

### Starting the Forage Harvester

Starting up the forage harvester, switching on the cutterhead and harvesting unit, and reversing the feed rolls should always take place with the engine running at idling speed (see forage harvester Operator's Manual for details). The cutting blade rotors do not move (due to overrun devices).

Engage forward gear at idling speed only. This avoids unnecessary wear on the slip clutches.



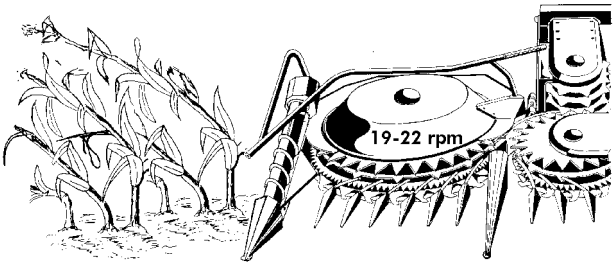

ZX007021

### Normal Conditions

Once the cutterhead is turning at the correct speed, and the cutting blade rotors are at the appropriate speed, drive into the standing crop.

Ground speed varies depending on the density of the crop, crop type and the performance of the forage harvester.

For headland turns, maintain the rate of rotation. This avoids unnecessary wear on the harvesting unit drive.

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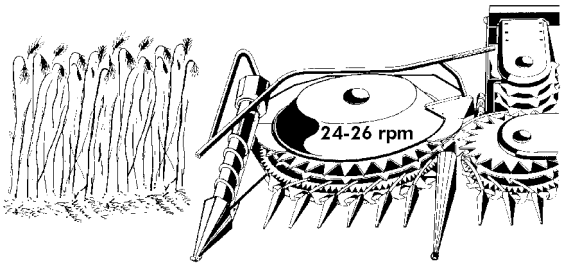
### Reversing the Harvesting Unit

If a blockage occurs, stop the harvester and reverse briefly without bringing the cutting blade rotors to a standstill. Cutting blade rotors cannot turn in reverse (due to the overrun devices).

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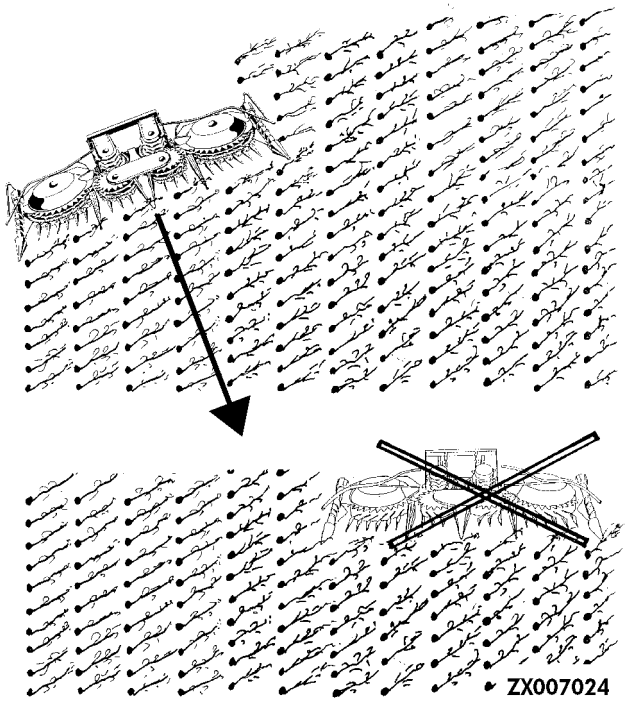
**CAUTION: When clearing a blockage by hand, first switch off the engine, remove the ignition key from the key switch and wait until all rotating components have come to a complete standstill.**

## Harvesting Down-Crop

By driving round the field once, the operator will get an idea of which direction works best. Watch how the harvesting unit gathers in the crop.

In most cases, it is best to approach the crop at right angles to the direction it is lying in.

Drive into the crop fast with the gatherer drum at as low a speed as possible. This results in the most even flow of crop.

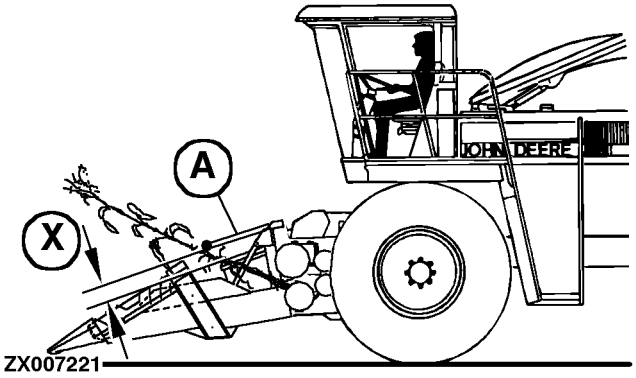



## Harvesting Short-Stemmed Corn

When harvesting short-stemmed corn, approach the crop at full field speed.

Set the feed bars (A) lower so that the stalks do not approach the feed rolls vertically.

Adjust feed bars (A) to dimension (X = 70 mm; 2.75 in).



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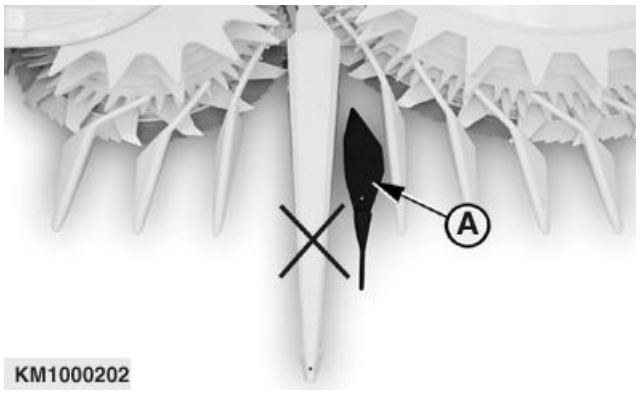
## Harvesting Whole-Crop Silage (WCS)

In case of harvesting whole-crop silage, install this special kit which is available through spare parts channel as follows:

1. Remove the two crop separators between the two gathering drums (left and right-hand sides) together with the pillow block and replace them with short WCS tips (A).
2. Align the two outer separator tips in their upper position and screw them to the smaller angle piece (B).

**A - WCS-Tips**
**B - Angle**



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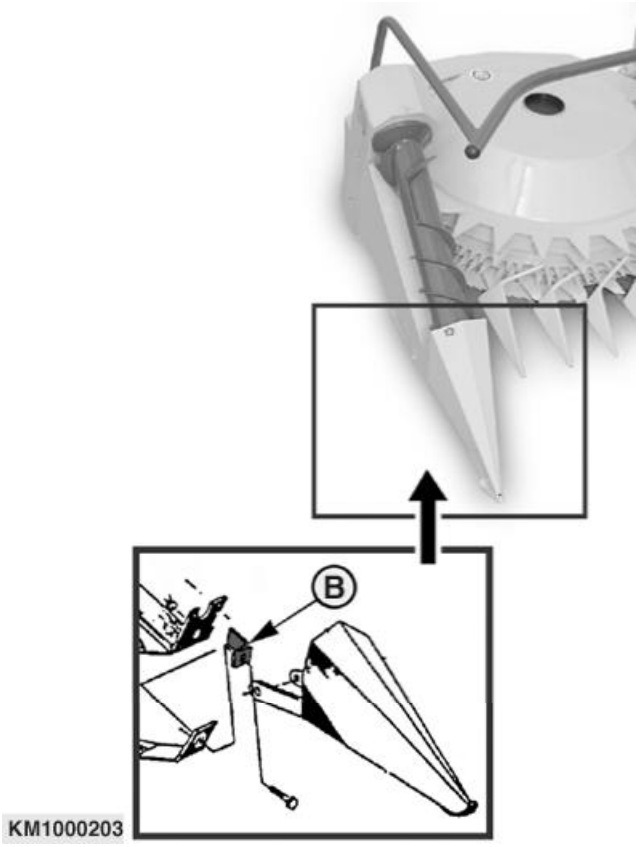

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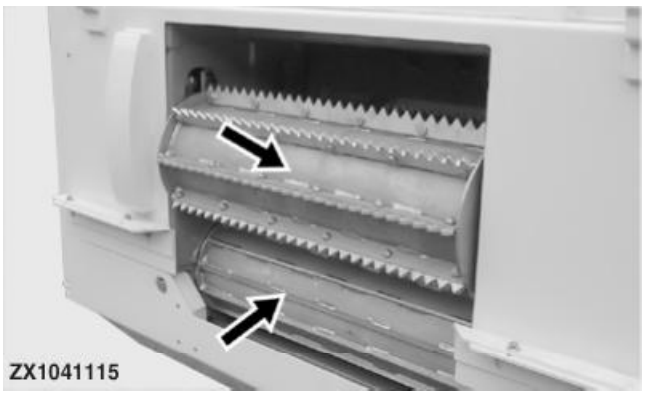
3. For the harvesting of crops with thin stalks, the spring tension of the front feedrolls must be reduced (see Forage Harvester Operator's Manual).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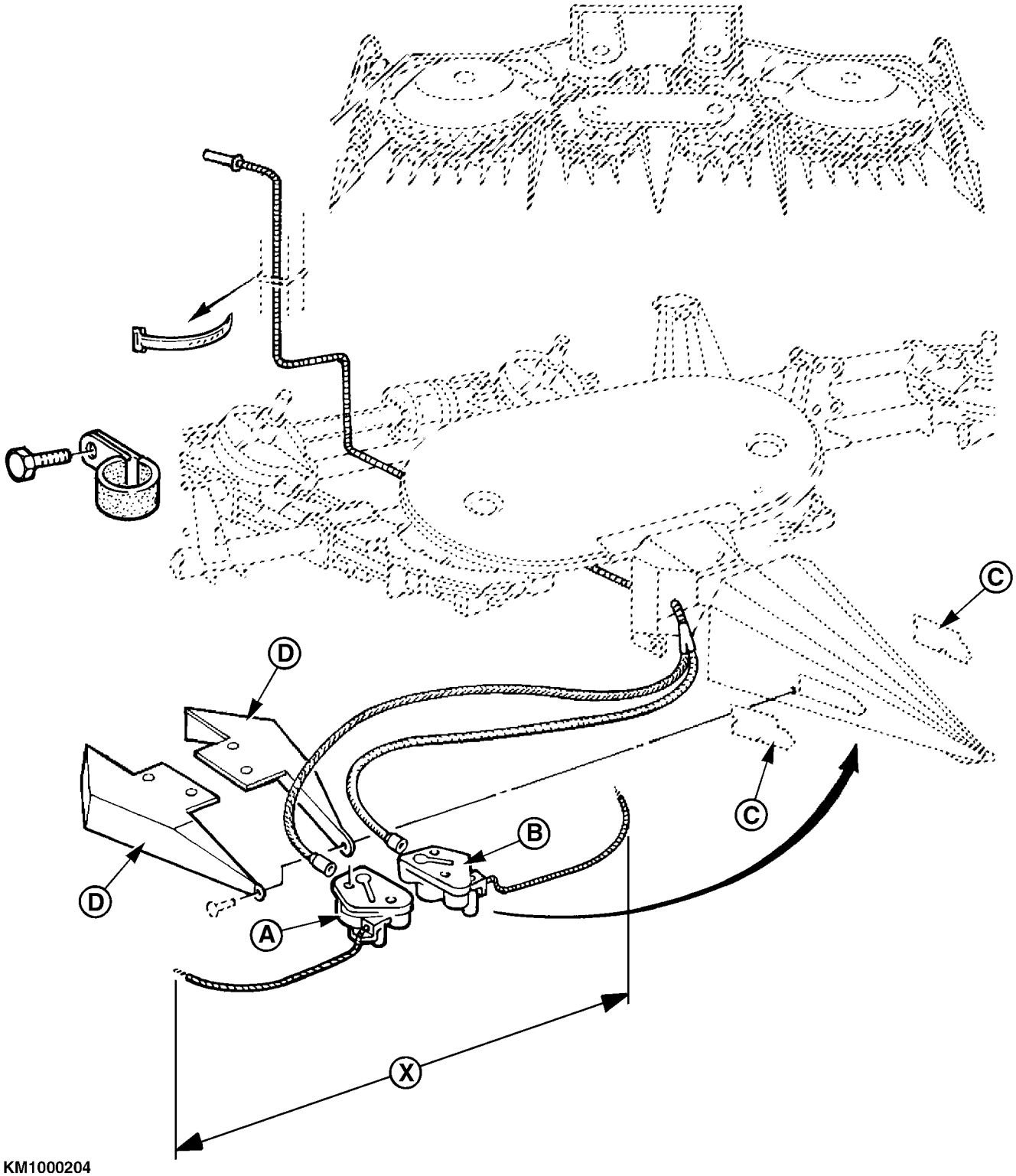
## Steering Assistance (Optional Equipment)

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A - Right-hand sensor
B - Left-hand sensor
C - Cover
D - Guide
X - 730 mm (2 ft 4.74 in.)

Continued on next page



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The rotary harvesting unit features standard equipment for mounting the row guidance (steering assistance) sensor system, i.e.: the central crop separator is fitted with a cross member to which the sensors (A) and (B) are mounted.

- Without steering assistance, the central crop separator has attached covers (C).

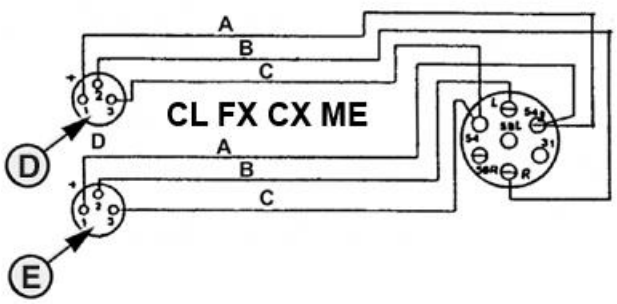
- With steering assistance (ex-factory or field installed) the two sensors (A) and (B) are integrated to the central crop separator.

**IMPORTANT: When operating steering assistance device, make sure that distance (X) between tip of sensor feelers is 730 mm (2 ft 4.74 in.) and that feelers are free from movement.**

## Harness Connection

Refer to the illustration opposite to check for proper wiring harness connection.

**A - Blue**
**B - Green-yellow**
**C - Brown**
**D - Right-hand side sensor**
**E - Left-hand side sensor**



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# Attachments

## Special Kit for Row Guidance (Steering Assistance)

When driving forage harvester 90 % of the driver attention is given over the steering. Use of the entire machine capacities is thus only possible with assisted steering.

A special kit is available as an attachment and is composed of:

- (2) sensor systems with connecting cables
- (1) set of hardware for installation on harvesting unit
- (1) assembly instructions

## Special Kit for Whole-Crop Silage

To significantly improve capabilities of the harvesting unit to harvest whole-crop silage, a special kit is available as an attachment.

The kit is composed of:

- (2) corner plates for the outer stalk lifters
- (2) spikes which play the role of dividers
- (1) assembly instructions.

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# Attachments



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# Troubleshooting

## 445 Rotary Harvesting Unit

**CAUTION: Before making adjustments or carrying out service work, always switch off the engine, remove the ignition key and wait until all the rotating components have come to a standstill.**

| Symptom | Problem | Solution |
|---|---|---|
| **Power requirement becomes excessive** | Rotating blades are dull<br>Defective cleaners | Replace the blades.<br>Install new cleaners. |
| **Cutting blade rotors not rotating smoothly** | Accumulation of leaves under the rotors, dirt in the area of the rotors | Clean the area of the cutting blade rotors daily or as often as required when in continuous operation. |
| | Defective cleaners | Install new cleaners. |
| **Harvesting unit vibrates** | Imbalance caused by unequal blades | Replace blades by pairs (two at a time, as they are mounted directly opposite each other). |
| | One of the cleaners has broken | Replace both cleaners. |
| | Imbalance caused by dirt on cutting blade rotor | Clean the rotor. |
| | Excessive vertical play of cutting blade rotor | Straighten the blades or install new blades. |
| **Accumulation of husks at the scrapers** | Scrapers not correctly positioned | See “Service” section. |
| **Stalks are pushed to the front before they are cut (long, uneven stubble)** | Leaves accumulated at the small dividers | Clean the dividers. |
| | One of the cleaners has broken | Replace both cleaners. |
| | Rotating blades are dull | Replace the blades. |
| **Transmissions overheating** | Too much oil in the transmission | Check oil level in transmission. |
| | Incorrect oil level in transmission | Check oil level in transmission. |

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| Symptom | Problem | Solution |
|---|---|---|
| **Gatherer or feed drums stop rotating (cutting blade rotors still rotating)** | Accumulation of crop on the feed area | Reverse the feed briefly. Repeat if necessary. |
| | Loose bolt on the friction clutch | Tighten the bolt. |
| | Dirty or worn slip pads | Clean or replace the slip pads. |
| | Defective transmission | See your KEMPER dealer. |
| **Large gatherer drums and cutting blade rotors stop rotating** | Defective jaw clutch (shift collar) | See your KEMPER dealer. |
| **The entire l.h. or r.h. side of the unit stops rotating** | L.h. or r.h. friction clutch defective | See your KEMPER dealer. |
| **Obstruction in hydraulic system of outer folding section** | A foreign body (e.g. grain of sand) is obstructing the restrictor | See your KEMPER dealer. |
| **Poor cutting in wide rows** | Center row is in the middle of the harvesting unit with 5 row operation | Cut only 4 rows at a time if the rows are wide. See your KEMPER dealer. |



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# Lubrication and Periodic Service

## Service Intervals

**IMPORTANT: The intervals quoted here are for average conditions. Adverse operating conditions may make it necessary to apply lubrication or carry out an oil change more often.**

Clean grease fittings before lubrication. Replace lost or damaged grease fittings immediately. If a new grease fitting does not accept any grease, take it off and check for an obstruction.

**CAUTION: Never clean, lubricate or adjust the harvesting unit while the harvesting unit is in operation.**

Carry out the lubrication and maintenance work described in this section at the beginning and end of each harvesting season.

## Grease

We recommend the use of sodium soap gear grease of grade NLGI 100. The following products meet this recommendation:

| Manufacturer | Product name | |
|---|---|---|
| Antar | Gear grease | EPEXELF 00 |
| ARAL | Aralub | FDP 00 |
| BP | Energrease | HT 00 EP |
| Esso | Gear grease | - |
| Shell | Special gear grease | H |
| Texaco | Starfak | E 900 |
| Westfalen | Gresanat | X00 |

**IMPORTANT: Some bodying agents in gear grease are not compatible with other grades. Before mixing different products, consult your lubricant supplier.**

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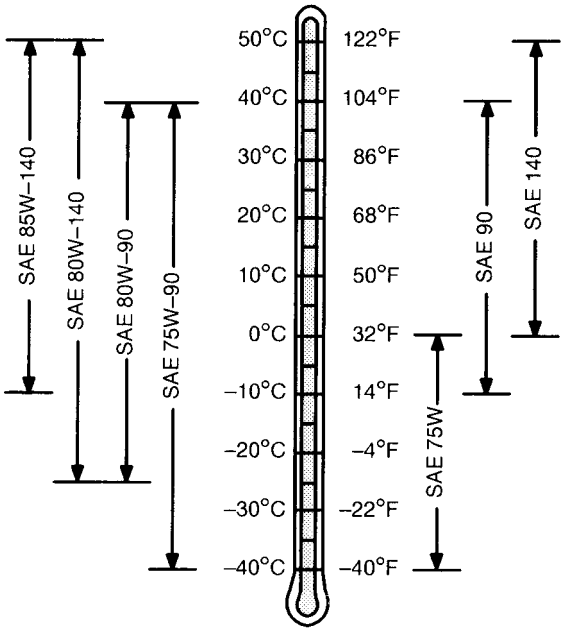
## Gear Oil

Choose the oil viscosity based on the expected outside temperature until the next oil change (see diagram).

The gear oil must meet the API specifications GL-5.



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## Main Drive Friction Clutch Coolant (Optional)

The main drive friction clutch cooling system is filled to provide year-round protection against corrosion and winter freeze protection to -37°C (-34°F).

Use a low silicate ethylene glycol base coolant concentrate in a 50% mixture of concentrate with quality water.

The coolant concentrate shall be of a quality that provides cavitation protection to cast iron in the cooling system.

A 50% mixture of ethylene glycol engine coolant in water provides freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your KEMPER dealer for recommendations.

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol base engine coolant concentrate.

**Coolant Drain Intervals**

Drain the factory fill main drive friction clutch coolant, flush the cooling system, and refill with new coolant after the first 3 years or 3000 hours of operation. Subsequent drain intervals are determined by the coolant used for service. At each interval, drain the coolant, flush the cooling system, and refill with new coolant.

## Alternative and Synthetic Lubricants

The operating conditions in certain regions of the world might require the use of oils or lubricants other than those recommended here.

Synthetic lubricants may be used, provided that they meet the specifications laid down in this manual.

The temperature ranges and maintenance intervals apply to both conventional and synthetic lubricants.

Recycled lubricants may also be used, provided that they meet the specifications.

## Mixing of Lubricants

Different oil grades and products should not be mixed. Oil producers add additives to their products in order for the oils to meet certain specifications and requirements.

When different oils are mixed, additives might loose their specific properties, so that the lubricating effect is impaired.

## Storage of Lubricants

Your machine can only work properly with clean lubricants.

Store lubricants only in clean containers.

Keep lubricants and containers in a place where they are protected against dust and humidity.

Store containers on their side to prevent water and dirt from collecting.

Label the containers properly so that their contents cannot be confused.

Dispose of empty containers and residual lubricants according to the statutory regulations.

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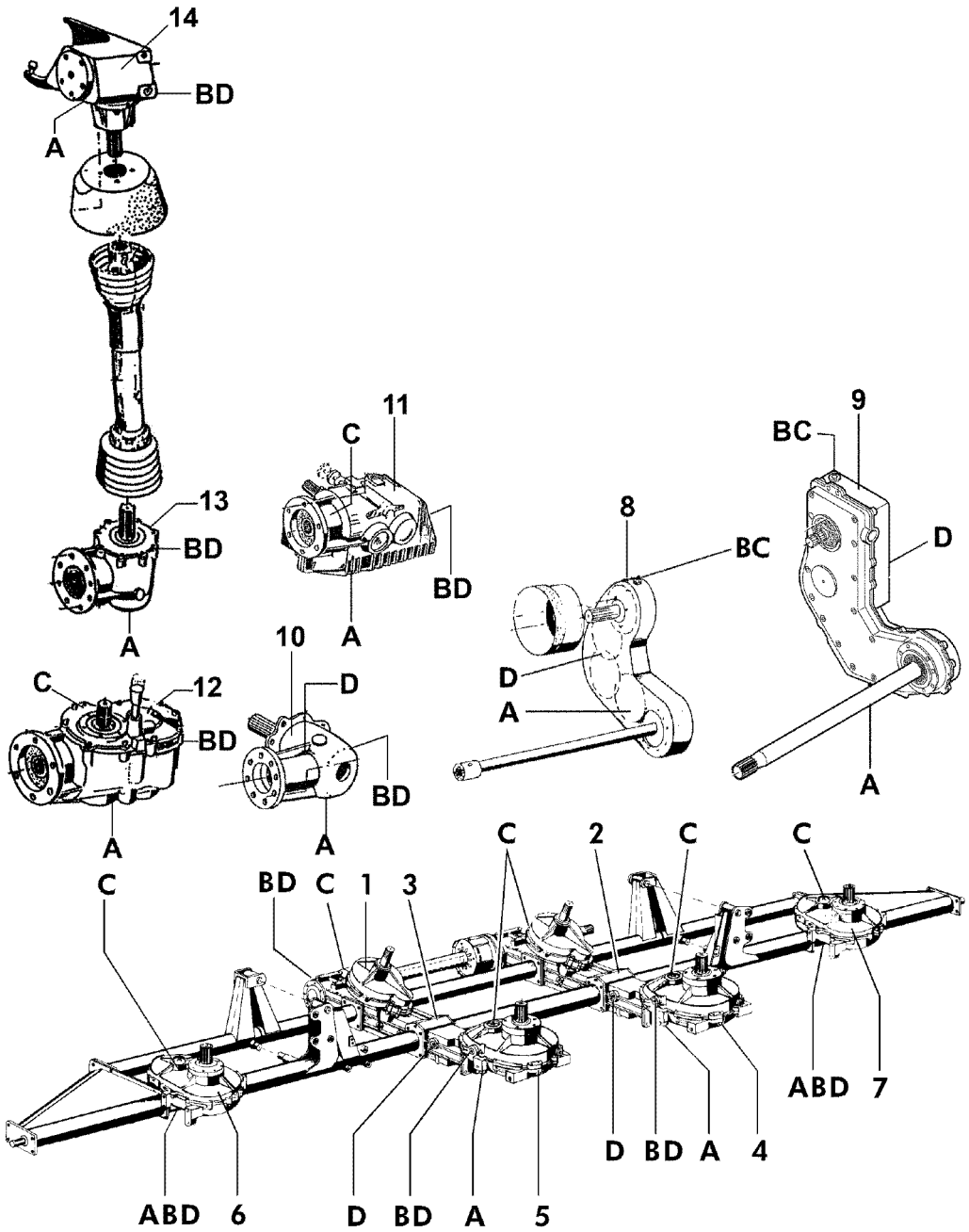
## Transmissions of 445 Rotary Harvesting Unit




**A - Oil drain plug**
**B - Oil filler plug**
**C - Breather**
**D - Oil level plug**
**1 -Spur-gear transmission (permanently lubricated)**
**2 -Angle drive - 3.5 L**
**3 -Angle drive - 3.5 L**
**4 -Spur-gear angle drive - 3.0 L**
**5 -Spur-gear angle drive - 3.0 L**
**6 -Spur-gear angle drive - 3.5 L**
**7 -Spur-gear angle drive - 3.5 L**
**8 -Spur-gear angle drive (CX) - 4 L**
**9 -Spur-gear angle drive (FX) - 4 L**
**10 -Angle Drive Claas - 0.9 L**
**11 -Gearbox Claas - 4.5 L**
**12 -Gearbox Mengele ME - 2 L**
**13 -Anlge Drive Mengele ME - 1 L**
**14 -Angle drive Mengele ME - 0.8 L**

Raise harvesting unit slightly so that it is horizontal, and check oil level in transmissions and angle drives. Oil level is correct when it reaches the bottom edge of oil level plug (D). Check oil level in angle drives (6) and (7) with the folding sections folded up.

Change the oil after every 500 hours of operation or at the end of each harvesting season.



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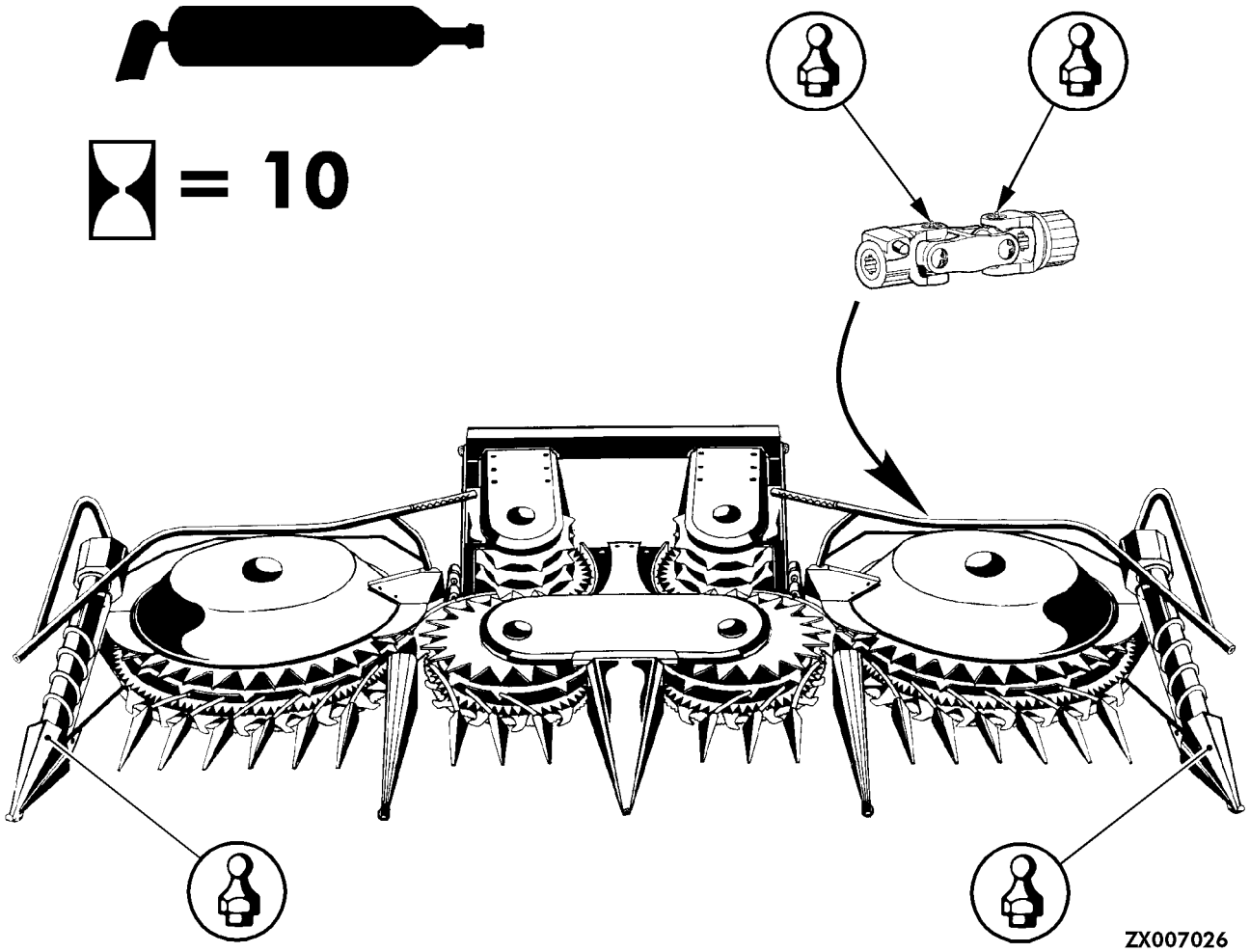
## Lubrication

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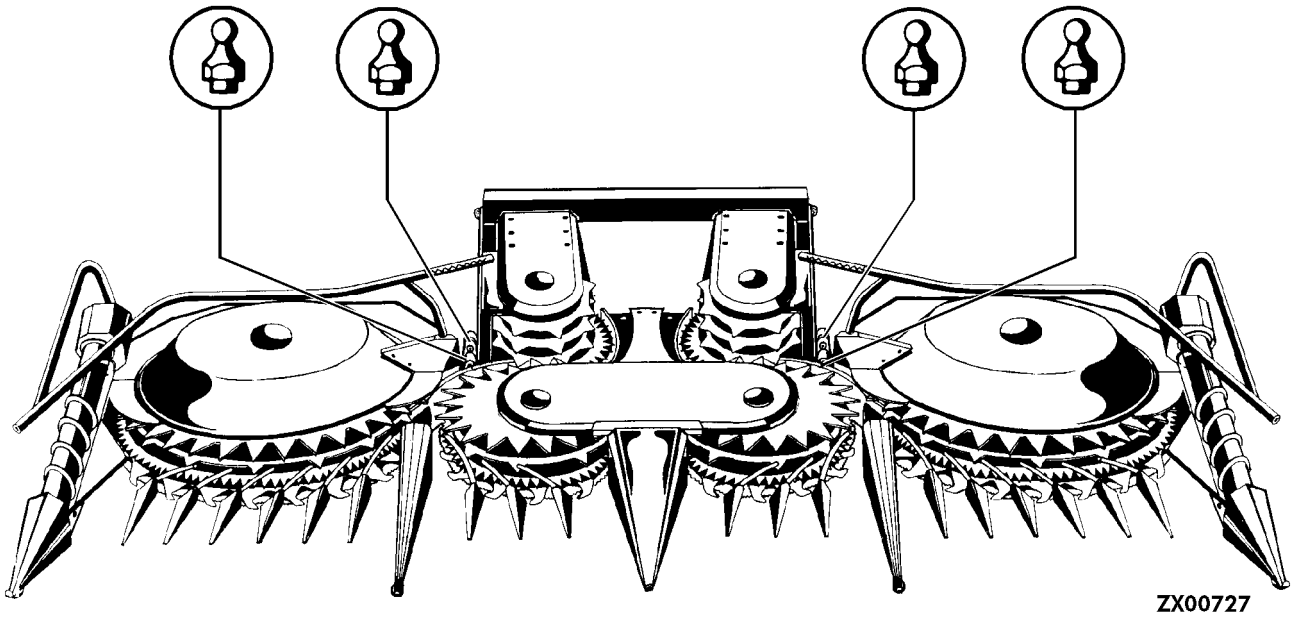




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## At the Start of the Harvesting Season

Before putting the harvesting unit into operation, carry out a general check of the friction clutches in the main drive and the gatherer and feed drum drives.

For details see “Friction Clutches in Main Drive” and “Friction Clutches in the Gatherer and Feed Drums” in the “Service” section.

Run the machine and check all the bearings for overheating and excessive play.

## Every 10 Hours (Daily, or More Often if Necessary)

Check the two cleaners underneath the rotors.

After operating for a few hours check that all bolts are firmly seated; this also applies after changing blades or cleaners.

Clear the area around the gatherer drums, rotating blades and scrapers of husks and bits of stalk.

Check all transmissions for signs of oil leaks.

## Every 50 Hours (Once a Week)

Perform all the operations listed under “Every 10 Hours”.

Check that all the bolts are firmly seated and tightened to the torques stated in the torque table.

Remove foriegn bodies from the intake and cutting area.

Clean the couplings in the universally jointed shafts of the foldable end sections.

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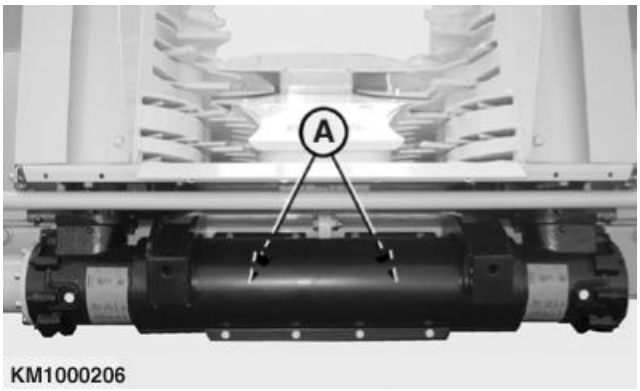
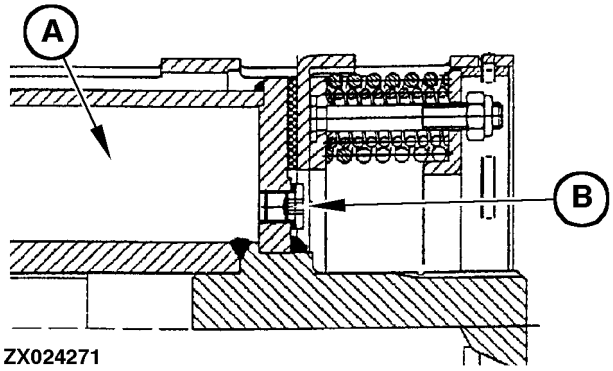
## Every 2 or 3 Years—Main Drive Friction Clutch Coolant (Optional)




**CAUTION: Never attempt to open drain/refill plug (B) when the friction clutch is hot! Wait until friction clutch has cooled down. First unscrew plug (B) by one turn to release overpressure.**

Friction clutch (A) cavity can be drained and refilled. This maintenance operation requires the friction clutch to be dismounted from the machine. Therefore, it is recommended to contact your KEMPER dealer to carry out draining/refilling of friction clutch.

**Main Drive Friction Clutch Cavity—Capacity = 1.3 L**



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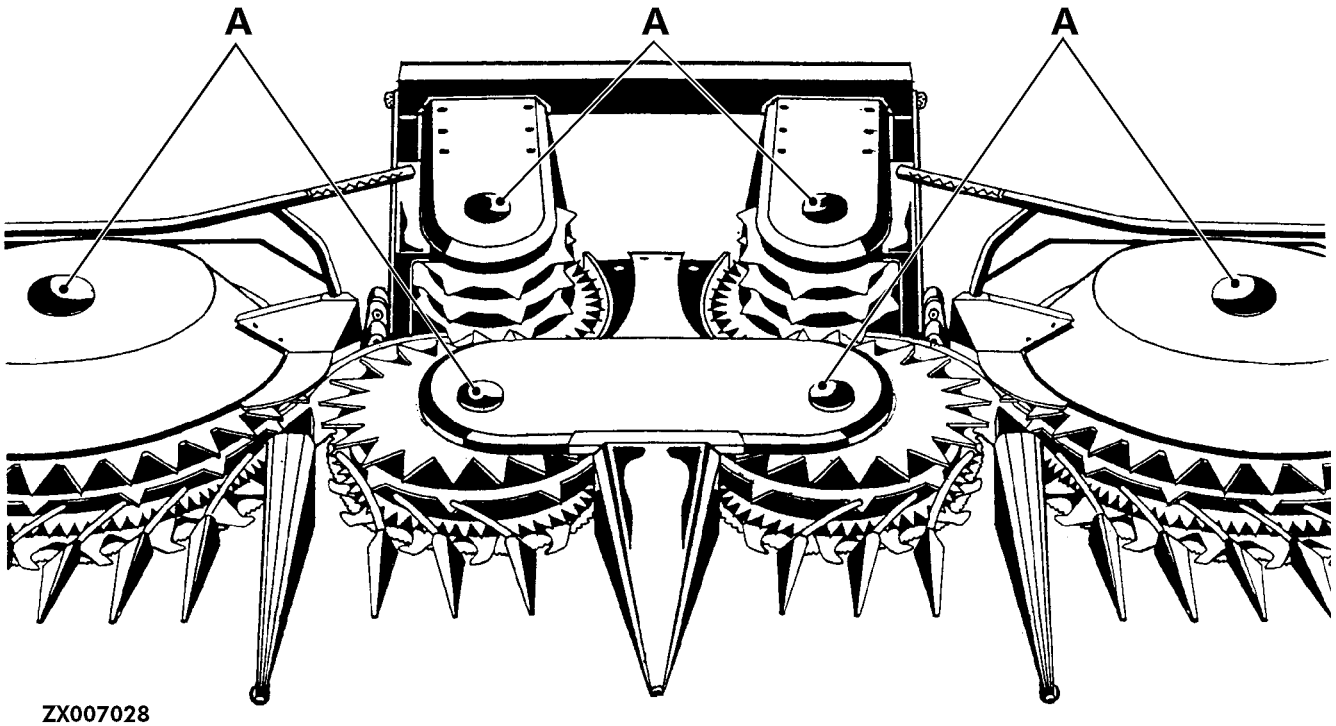
## End-of-Season Service

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Clean and preserve the harvesting unit. Clean cavities (A) below the drum friction clutches.

Change the oil and lubricate the harvesting unit.

Check all components for wear and order any spare parts that may be required in good time for the coming season.

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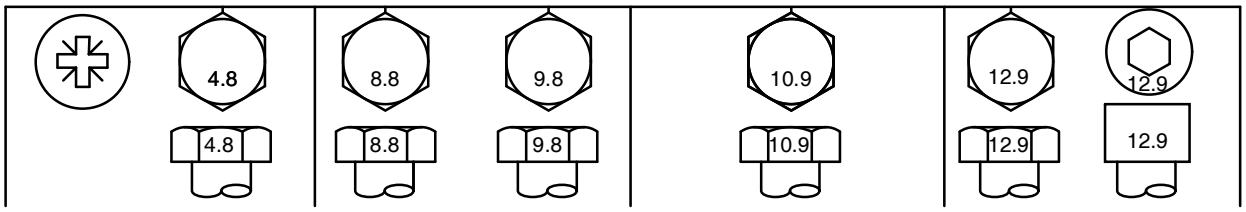
# Service

## Metric Bolt and Screw Torque Values




Top: class and head marking, bottom: class and nut marking

| - | Class 4.8 | | Class 8.8 or 8.9 | | Class 10.9 | | Class 12.9 | |
|---|---|---|---|---|---|---|---|---|
| Size | Oiled [a] N*m (lb*ft) | Dry [b] N*m (lb*ft) | Oiled [a] N*m (lb*ft) | Dry [b] N*m (lb*ft) | Oiled [a] N*m (lb*ft) | Dry [b] N*m (lb*ft) | Oiled [a] N*m (lb*ft) | Dry [b] N*m (lb*ft) |
| M 6 | 4.7 (3.5) | 6 (4.4) | 9 (6.6) | 11.5 (8.5) | 13 (9.5) | 16.5 (12.2) | 15.5 (11.5) | 19.5 (14.5) |
| M 8 | 11.5 (8.5) | 14.5 (10.7) | 22 (16) | 28 (20.5) | 32 (23.5) | 40 (29.5) | 37 (27.5) | 47 (35) |
| M 10 | 23 (17) | 29 (21) | 43 (32) | 55 (40) | 63 (46) | 80 (59) | 75 (55) | 95 (70) |
| M 12 | 40 (29.5) | 50 (37) | 75 (55) | 95 (70) | 110 (80) | 140 (105) | 130 (95) | 165 (120) |
| M 14 | 63 (46) | 80 (59) | 120 (88) | 150 (110) | 175 (130) | 220 (165) | 205 (150) | 260 (190) |
| M 16 | 100 (74) | 125 (92) | 190 (140) | 240 (175) | 275 (200) | 350 (255) | 320 (235) | 400 (300) |
| M 18 | 135 (100) | 170 (125) | 265 (195) | 330 (245) | 375 (275) | 475 (350) | 440 (325) | 560 (410) |
| M 20 | 190 (140) | 245 (180) | 375 (275) | 475 (350) | 530 (390) | 675 (500) | 625 (460) | 790 (580) |
| M 22 | 265 (195) | 330 (245) | 510 (375) | 650 (480) | 725 (535) | 920 (680) | 850 (625) | 1080 (800) |
| M 24 | 330 (245) | 425 (315) | 650 (480) | 820 (600) | 920 (680) | 1150 (850) | 1080 (800) | 1350 (1000) |
| M 27 | 490 (360) | 625 (460) | 950 (700) | 1200 (885) | 1350 (1000) | 1700 (1250) | 1580 (1160) | 2000 (1475) |
| M 30 | 660 (490) | 850 (625) | 1290 (950) | 1630 (1200) | 1850 (1350) | 2300 (1700) | 2140 (1580) | 2700 (2000) |
| M 33 | 900 (665) | 1150 (850) | 1750 (1300) | 2200 (1625) | 2500 (1850) | 3150 (2325) | 2900 (2150) | 3700 (2730) |
| M 36 | 1150 (850) | 1450 (1075) | 2250 (1650) | 2850 (2100) | 3200 (2350) | 4050 (3000) | 3750 (2770) | 4750 (3500) |
| [a] "oiled" means that the screws have been treated with a lubricant, e.g. engine oil, or that phosphate-coated or pre-oiled screws are used. | | | | | | | | |
| [b] "Dry" means that standard or galvanised screws without lubrication are used. | | | | | | | | |

The torques in the table are recommended values and are NOT applicable to screws and nuts for which different torques are indicated in this manual. Regularly check screws and nuts for tightness.

Ensure that the threads are clean and that the screws are inserted properly into the boreholes. This prevents damage to the screw upon tightening.

Shear pins are dimensioned in such a way that they are sheared off when a defined load is reached. When replacing shear bolts, use only bolts of the same class.

Tighten lock nuts (not screws) with plastic washers and beaded steel lock nuts with approx. 50% of the "dry" torque indicated in the table. Tighten serrated nuts and castle nuts with the full tightening torque.

Replace screws and nuts with parts of at least the same quality. Tighten screws and nuts of higher quality classes with the same torque as the replaced parts.

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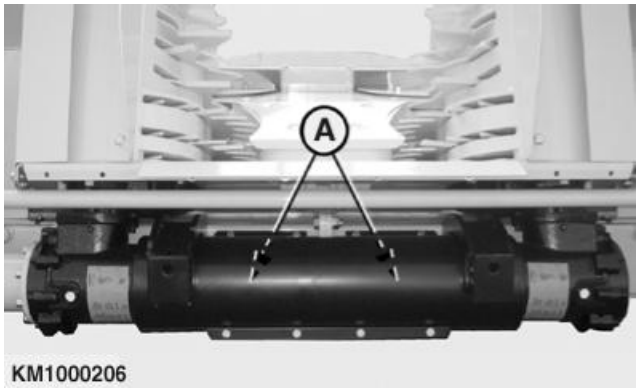
## Main Drive Friction Clutches

### General Information

The two friction clutches (A) in the main drive protect the entire harvesting unit from unnecessary loads. It is therefore essential to service these clutches properly. The torque setting is 700 N•m (511 lb-ft).

**A - Friction clutch**



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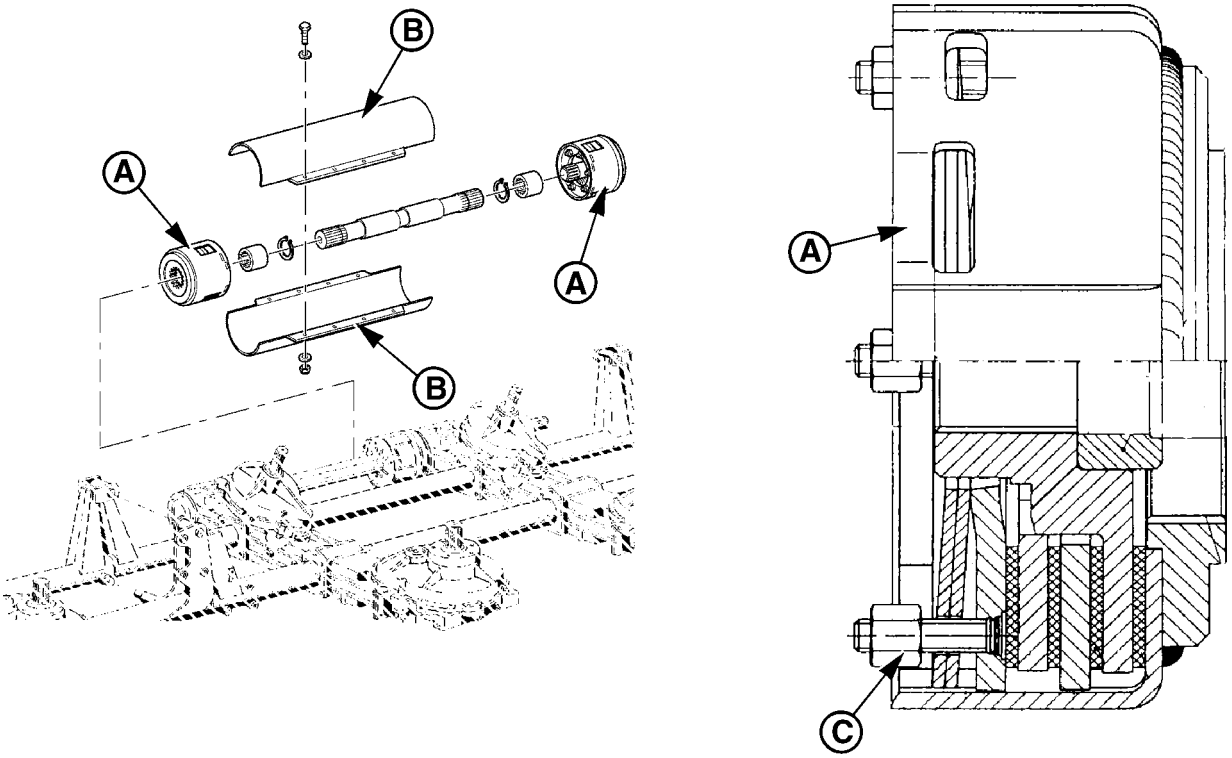

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**A - Friction clutch** **B - Protective pipe** **C - Nut**

### Checking the Friction Clutches

**IMPORTANT: The following operations must be performed before using the harvesting unit for the first time and after any lengthy period during which the harvesting unit was not used.**

Unbolt protective pipes (B).

Tighten nut (C). This relieves the pressure on the friction plates. Turn the clutch (A).

Slacken off nut (C) to the end of its thread.

Install protective pipes (B).

*NOTE: Have your KEMPER dealer perform a general service of the friction clutches once a year.*



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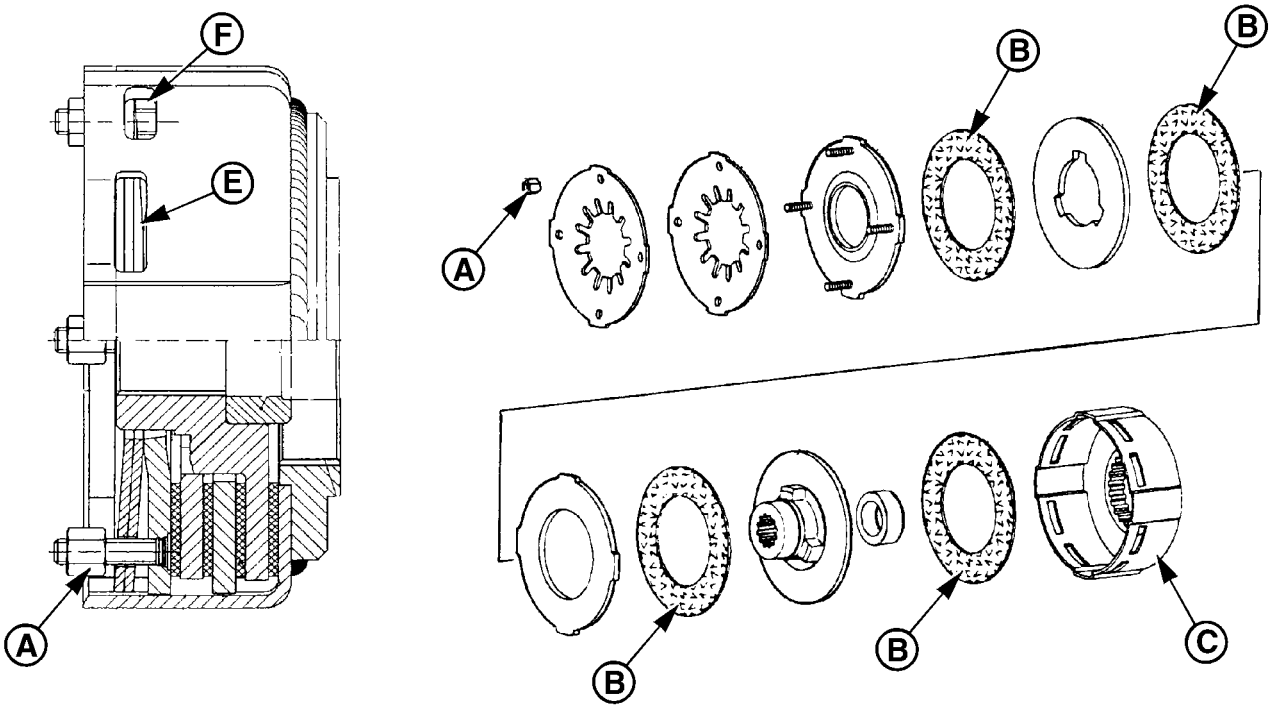


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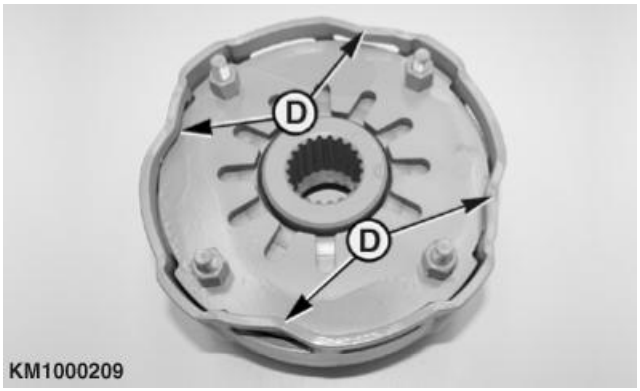
**Yearly Maintenance Friction Clutches**

Prior to each harvesting season, friction clutches should be cleaned.

Proceed as follows:

1. Disassemble clutches from harvesting unit.
2. Tighten the nuts (A). This relieves pressure on the friction plates.
3. Bend up relieved lugs (D) with an adequate tool.
4. Remove all parts of friction clutch from housing (C).
5. Clean all parts, especially the friction disks (B). Replace worn parts.
6. Reassemble all parts.
7. Bend lugs (D) of outer recess (E) back to the inside with an adequate tool.
8. Slacken off nuts (A) to the end of its thread.
9. Reinstall clutches to harvesting unit.

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**A - Nuts**
**B - Friction disk**
**C - Housing**
**D - Lug**
**E - Outer recess**
**F - Inner recess**

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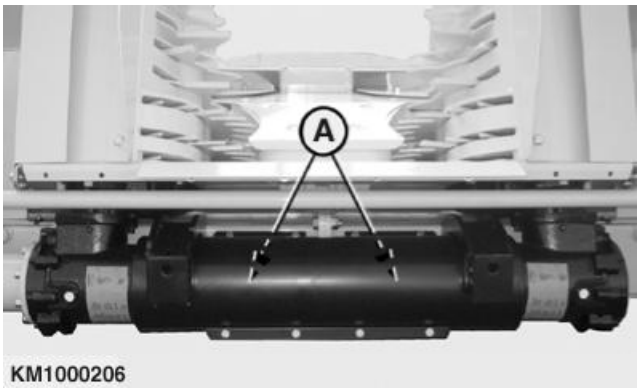
## Main Drive Friction Clutches—Water Cooled (Optional)

### General Information

The two friction clutches (A) in the main drive protect the entire harvesting unit from unnecessary loads. It is therefore essential to service these clutches properly. The torque setting is 680 N•m (501 lb-ft).

**A - Friction clutch**

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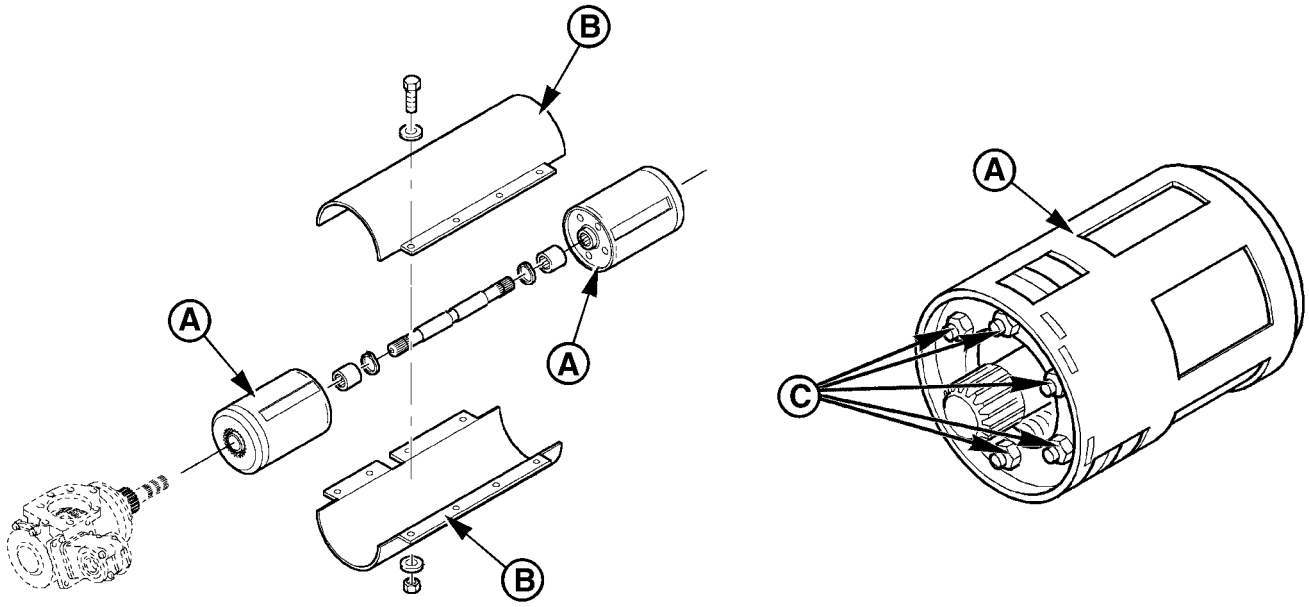


KM1000210

**A - Water cooled friction clutch** **B - Protective pipe** **C - Nut**

**Checking the Friction Clutches**

**IMPORTANT: The following operations must be performed before using the harvesting unit for the first time and after any lengthy period during which the harvesting unit was not used.**

Unbolt protective pipes (B).

**Continued on next page**

Tighten nut (C). This relieves the pressure on the friction plates. Turn the clutch (A).

Slacken off nut (C) to the end of its thread.

Install protective pipes (B).

*NOTE: Have your KEMPER dealer perform a general service of the friction clutches once a year.*

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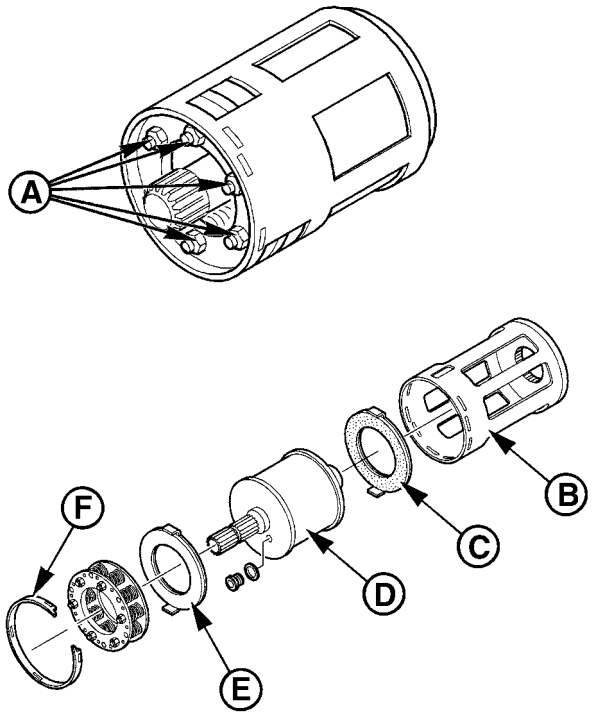
**Yearly Maintenance Friction Clutches**

Prior to each harvesting season, friction clutches should be cleaned.

Proceed as follows:

1. Disassemble clutches from harvesting unit.
2. Tighten the nuts (A). This relieves pressure on the friction plates.
3. First remove bushing (F) from housing (B).
4. Then remove all parts of friction clutch from housing (B).
5. Clean all parts, especially the friction disks (C) and (E). Replace worn parts.
6. Reassemble all parts.
7. Install bushing (F) as shown in "Torque Settings" hereafter.
8. Slacken off nuts (A) to the end of its thread.
9. Reinstall clutches to harvesting unit.




KM1000211

**A - Nut**
**B - Housing**
**C - Friction disk**
**D - Coolant fluid reservoir - 1.3 L (0.34 US. gal)**
**-0.65 L (0.17 US gal.) Water**
**-0.65 L (0.17 US gal.) Anti-freezing compound**
**E - Friction disk**
**F - Bushing**

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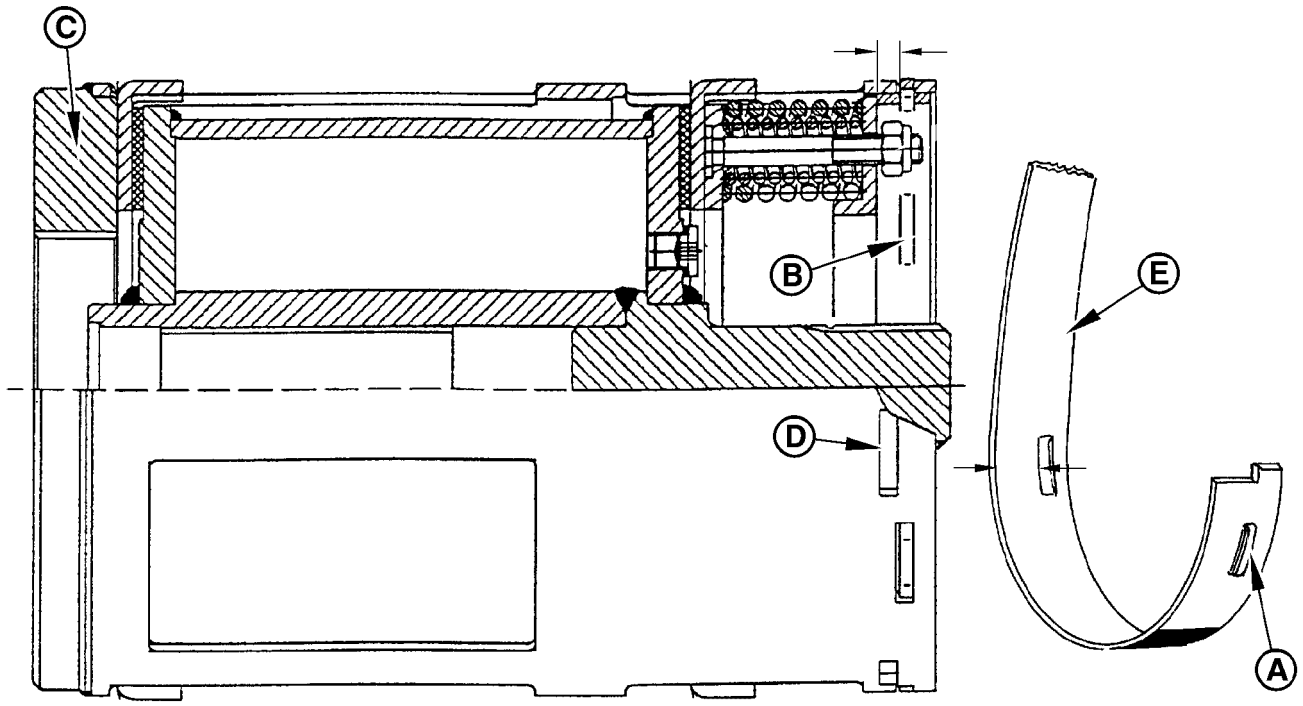


KM1000212

**A - Profile**
**B - Outer recess**
**C - Housing**
**D - Inner recess**
**E - Bushing**

**Torque Settings**

**IMPORTANT: The specified torque of 680 N•m (501 lb-ft) should not be exceeded.**

This torque is set by positioning the profile (A) towards the outside and engaged with outer recess (B) of housing (C).

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## Friction Clutches in the Gatherer and Feed Drums

### General Information

The gatherer and feed drums are equipped with friction clutches to protect the drive elements against overloading.

### Checking the Friction Clutches

**IMPORTANT: The following operations must be performed before using the harvesting unit for the first time and after any lengthy period during which the harvesting unit was not used.**

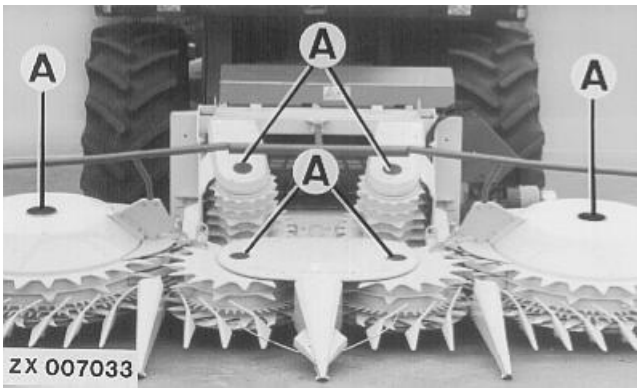
Remove plastic covers (A).

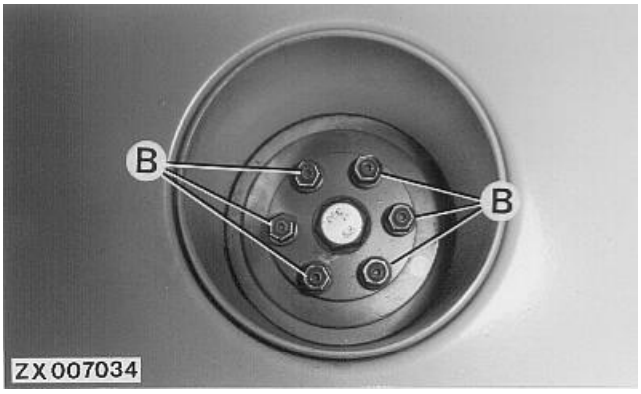
Tighten all nuts (B). This relieves the pressure on the friction plates.

Turn the relevant drum so that the friction plates become loose.

Slacken off all nuts (B) again until they reach the detent at the end of their threads.

*NOTE: Have your KEMPER dealer perform a general service of the friction clutches once a year.*

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## Intake and Cutting Area

**Small Dividers**

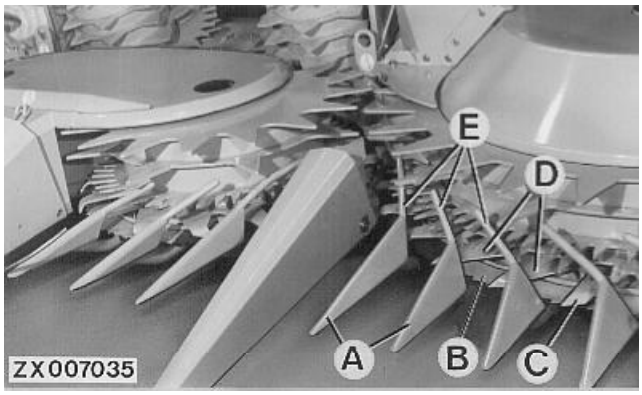
**CAUTION: Before carrying out servicing work or making adjustments, switch off the engine and wait until all the moving parts have come to a complete standstill.**

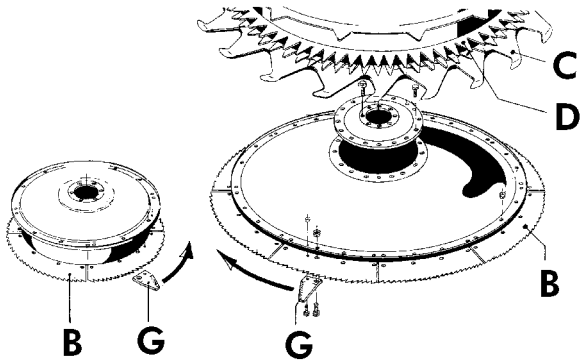
For the crop to be taken in, securely gripped and cut and then to be conveyed further, it is essential that the parts listed here operate together.

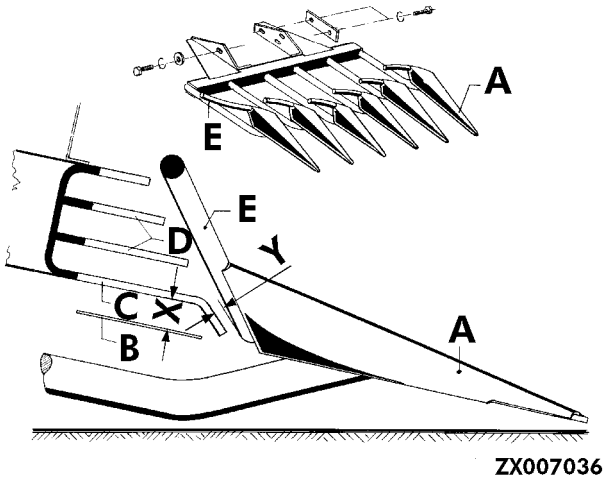
Feed teeth (C) move at a distance (X = 25 mm; 0.98 in) above the rotating blade (B). Gap (Y) between the rear end of the small divider (A) and feed tooth (C) must be between 4 and 6 mm (0.16 and 0.24 in). The narrower this gap, the easier it is to pick up down-crop.

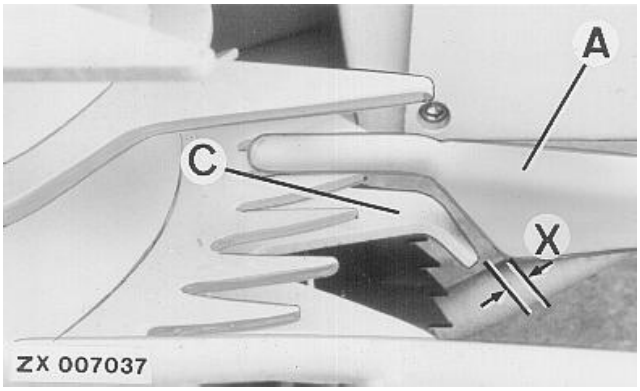
Intake bars (E) must force the crop into the row of closely-spaced teeth (D). Have your KEMPER dealer replace any worn parts.

**A - Small dividers**
**B - Rotating blade**
**C - Feed teeth**
**D - Row of teeth**
**E - Intake bars**
**G - Cleaner**
**X - 25 mm (0.98 in)**
**Y - 4-6 mm (0.16-0.24 in)**

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**Rotating Blades**

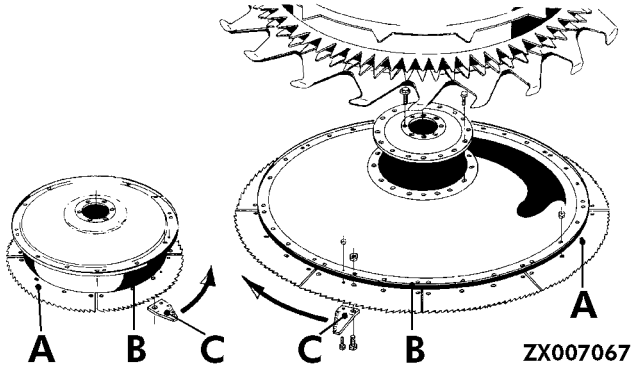
**CAUTION: The rotating blades normally continue to turn even after the harvesting unit has been switched off. You can see this by the color of the blade segments, and hear the clicking noise made by the overrunning devices.**

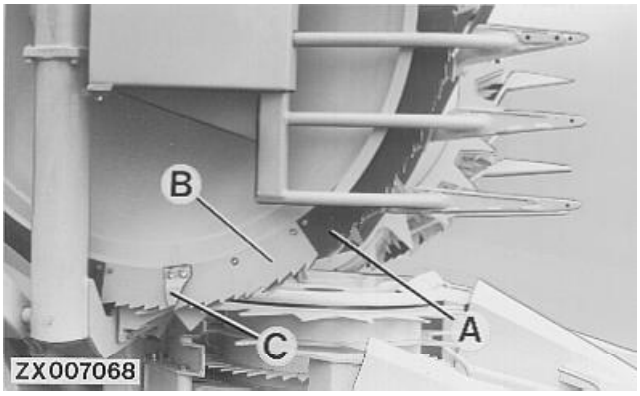
Blade tips and blade segments are attached in the direction of cutting. The normal blade segments (A) are 2.5 mm (0.1 in) thick and are secured with 4 bolts.

Blade segments (B) are used near the cleaners and are 3.5 mm (0.14 in) thick. They are secured with 5 bolts.

Cleaners (C) are attached to the rotor with one M10x25 bolt and one M8x25 shear bolt. Both these bolts are special bolts.

Check cleaners (C) every day for signs of wear or damage.

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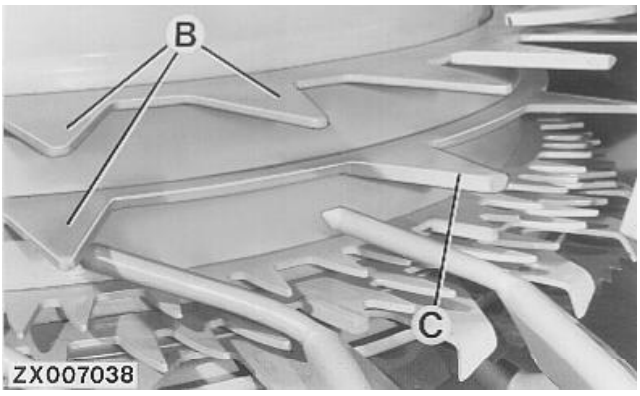
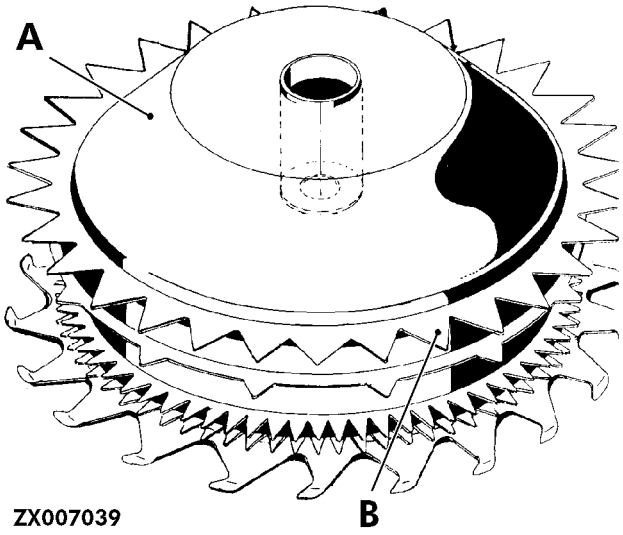
**Teeth on Gatherer Drum**

Teeth (B) on gatherer drum (A) should run at a constant height through the guide slit in the scraper.

Every row of teeth has a welded cleaner (C). This cleans the feed area of the scraper. The gap between the tip of cleaner (C) and the edge of the scraper slit should not exceed 2 mm (0.08 in).

Accumulations of husks in the scrapers indicate poor adjustment or wear at the cleaner tips. The cleaners are made of special high-strength steel and can be returned to their original condition by means of steel electrodes (build-up welding).

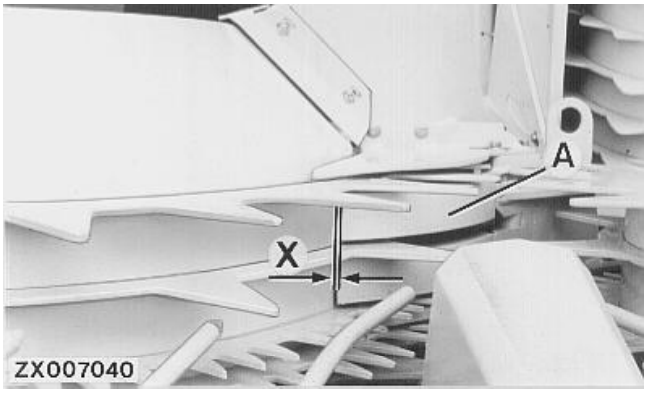



**Scrapers on Gatherer Drums**

To prevent blockages in the crop feed, the crop feed area must be kept clean.

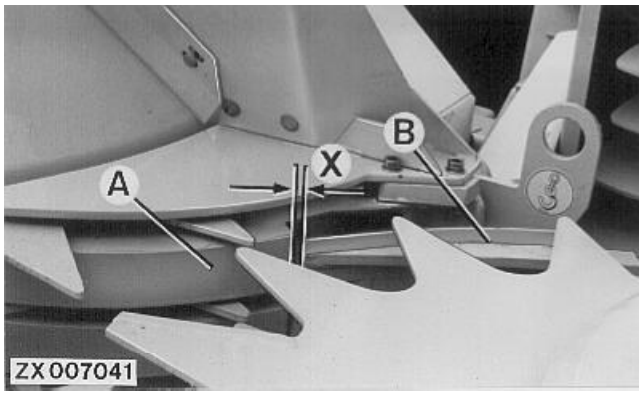
The scraper ends (A) must be as close as possible to the drum wall. The maximum gap (X = 5 mm; 0.2 in) must not be exceeded.



## Crop Feed Area

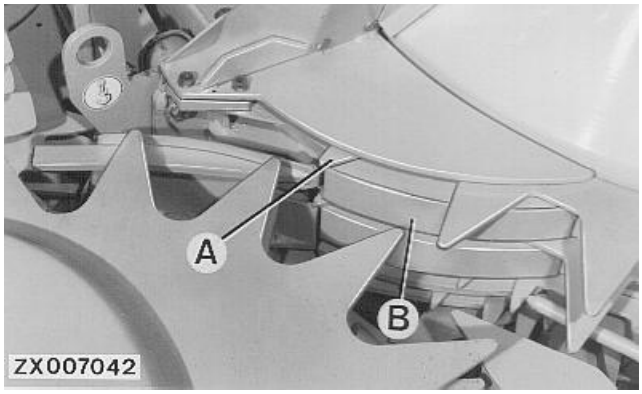
### Junction Between Scraper and Guide

Scraper (A) and guide (B) must be adjusted so that the gap (X) between them does not exceed 3 mm (0.12 in). To ensure a constant flow of crop, guide (B) must remain about 2 mm (0.08 in) behind scraper (A). The teeth must run through the area between the scraper and guide at a constant distance from the edges.



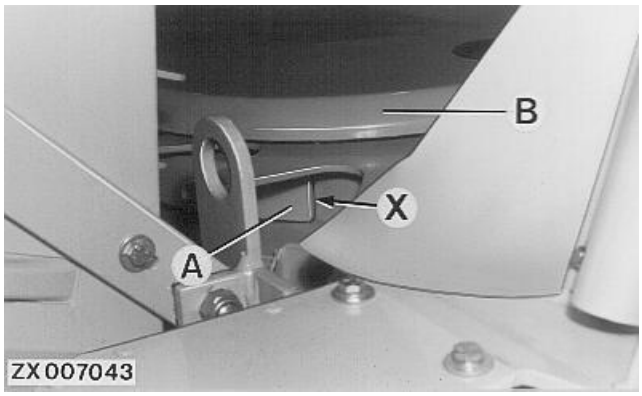

### Scraper on Large Gatherer Drum

The basic setting is only correct when the tips of teeth (A) on the gatherer drum are aligned exactly with the corner of scraper (B). This ensures that all the material is pressed out of the row of teeth before teeth (A) pass behind scraper (B).




### Scraper on Small Gatherer Drum

Adjust scraper (A) as close as possible to the wall of gatherer drum (B). Gap (X) must not exceed 5 mm (0.2 in).

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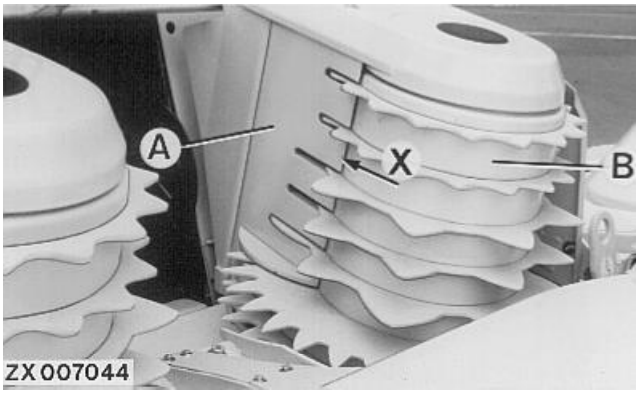
**Scraper on Feed Drums**

The scraper with guide plate (A) can be turned so that it matches the width of the forage harvester's feed roll. The rows of teeth on the drum should run in the center of the slit in the scraper.

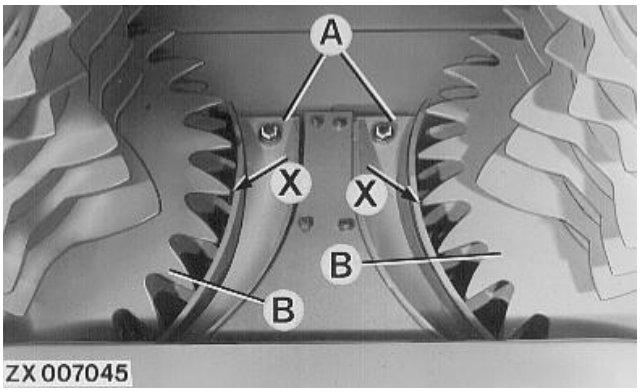
Gap (X) between the scraper and the wall of the drum must not exceed 5 mm (0.2 in).

*NOTE: Have your KEMPER dealer perform these operations for you.*



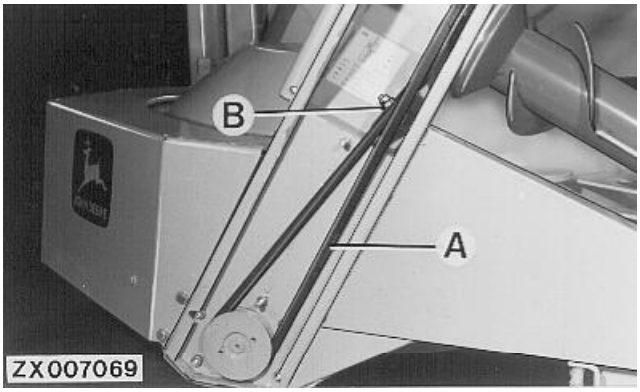

**Lower Feed Teeth on Feed Drums**

Deflectors (A) are set at a maximum distance (X) of 4 mm (0.16 in) to the tips of feed teeth (B).




## Drive for Down-Crop Auger

The belt drive for the down-crop auger is located at the outer end of the folding sections. The crossed-over V-belt (A) is guided by an adjustable guide roll (B). Tension on the belt is adjusted by pulling the rear upper auger bearing upwards. Adjusting procedure is explained on the decal located near the drive belt.



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# Storage

## Storage at the End of the Harvesting Season

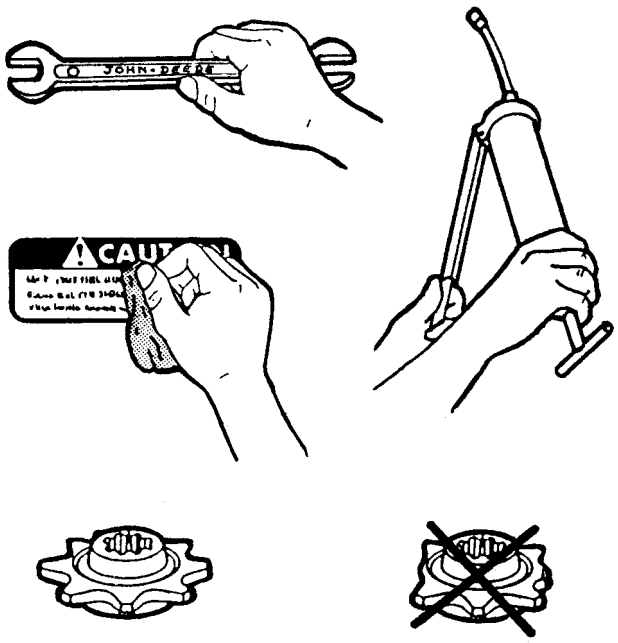
Store the rotary harvesting unit in a dry room and on a level floor if possible.

Carefully clean the cavities over all six of the drum friction clutches. Preserve as necessary.

Lubricate the harvesting unit or change oil as instructed.

Check the harvesting unit for damaged or missing parts, and replace parts as necessary. See your KEMPER dealer for advice on further checks.

Touch up the paintwork if required, and clean the decals.



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## Removing from Storage at Start of Season

If necessary, give the harvesting unit a thorough clean.

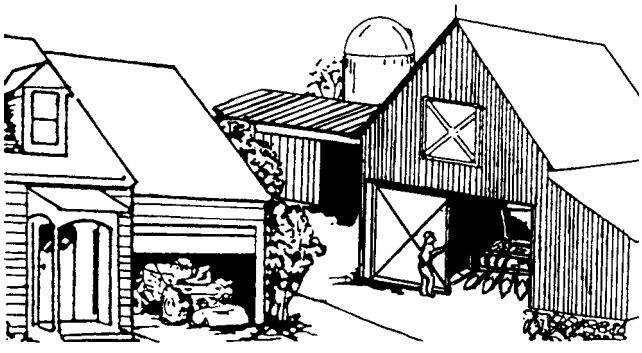
Lubricate the harvester unit. See “Lubrication and Periodic Service” section.

Tighten all bolts and make sure they are seated firmly.

Check slip clutches as shown in “Service” section.

Carry out all the operations described under “Lubrication and Periodic Service”.

Read the Operator’s Manual once again.



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# Specifications

## 445 Rotary Harvesting Unit

Drive system ..... oil-bath transmission with safety clutch

Harvesting system ..... cutting system with high-speed rotors for 4 wide rows or 6 narrow rows

Crop conveyor..... four slowly rotating gatherer drums and two oblique feed drums

Weight..... approx. 1795 kg (4068 lb)

Width
Transport width ..... 2.47 m ( 8 ft 1.2 in.)
Operating width..... 4.55 m (14 ft 11.12 in.)
Overall width ..... 4.60 m (15 ft 1.09 in.)

Height..... 1.15 m (3 ft 9.24 in.)

Length ..... 2.20 m (7 ft 2.60 in.)

Max. operating speed ..... 20 km/h (12.43 mph)

Speeds (with 2330 rpm at the SPFH's engine, the SPFH stationary and no crop):
Harvesting unit drive shaft (with shift rod pulled out for slow speed) ..... 405 rpm
Large outer gatherer drums ..... 20.6 rpm
Knives on large outer gatherer drums..... 637 rpm
Small inner gatherer drums..... 36 rpm
Knives on small inner gatherer drums ..... 1148 rpm
Feed drums..... 54 rpm

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AN: Th.G.

## Declaration of Conformity

Kemper GmbH & Co.KG
Am Breul
D-48703 Stadtlohn

CE

The Rotary Harvesting Units

Model:

445

comply with the EU provisions:

98/37/EEC.....Machinery Directive

EN292 .....Machinery - Safety

and EN632 .....Forage Harvesters - Safety

Stadtlohn, 26 February 2007

**Norbert Weiand**

*General Manager*

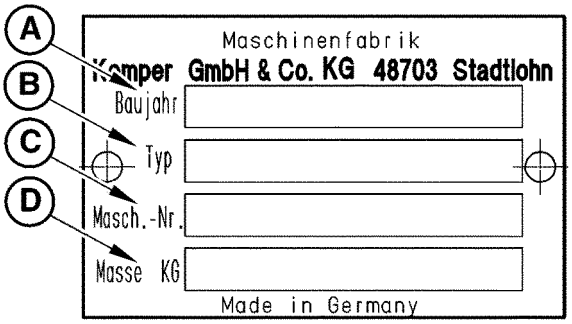


DD: 28.1.08
AN: Th.G.

# Serial Number

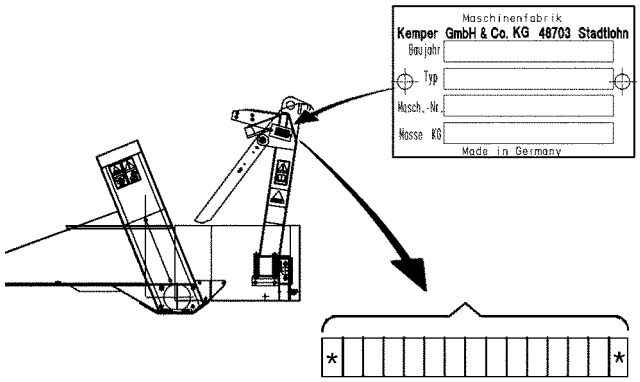
## Harvesting Unit Type Plate

**A - Year of production**
**B - Model**
**C - Product identification number**
**D - Weight**




## Serial Number

When ordering parts, always quote the rotary harvesting unit serial number. The serial number is on a plate at front left-hand side of the frame. Record serial number in the space provided opposite.



## Serial Number



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