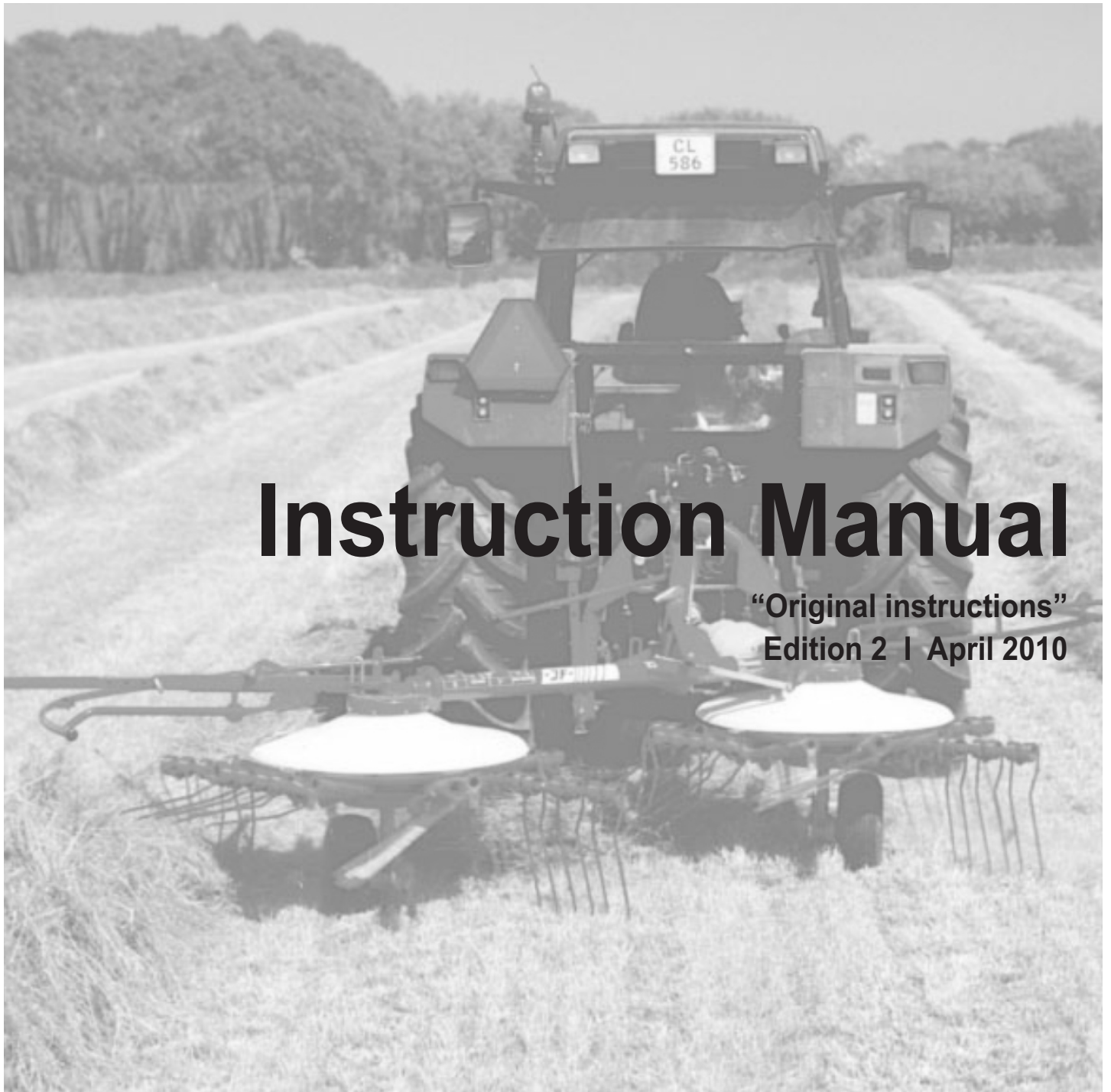


# Tedder Rake

CRS 400



## Instruction Manual

"Original instructions"  
Edition 2 | April 2010

**EN EC-Declaration of Conformity**  
according to Directive 2006/42/EC

**DE EG-Konformitätserklärung**  
entsprechend der EG-Richtlinie 2006/42/EC

**IT Dichiarazione CE di Conformità**  
ai sensi della direttiva 2006/42/EC

**NL EG-Verklaring van conformiteit**  
overeenstemming met Machinerichtlijn 2006/42/EC

**FR Déclaration de conformité pour la CEE**  
conforme à la directive de la 2006/42/EC

**ES CEE Declaración de Conformidad**  
según la normativa de la 2006/42/EC

**PT Declaração de conformidade**  
conforme a norma da C.E.E. 2006/42/EC

**DA EF-overensstemmelseserklæring**  
i henhold til EF-direktiv 2006/42/EC

**PL Deklaracja Zgodności CE**  
według Dyrektywy Maszynowej 2006/42/EC

**FI EY : N Vaatimustenmukaisuusilmoitus**  
täyttää EY direktiivin 2006/42/EC

EN We,  
DE Wir,  
IT Noi,  
NL Wij,  
FR Nous,  
ES Vi,  
PT Me,  
DA Vi,  
PL Nosotros,  
FI Nós,

**JF-Fabriken - J. Freudendahl A/S**  
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**Dänemark / Denmark**  
**Tel. +45-74125252**

EN **declare under our sole responsibility, that the product:**  
DE erklären in alleiniger Verantwortung, dass das Produkt:  
IT Dichiaro sotto la propria responsabilità che il prodotto:  
NL verklaren als enig verantwoordelijken, dat het product:  
FR déclarons sous notre seule responsabilité que le produit:

ES declaramos bajo responsabilidad propia que el producto:  
PT declaramos com responsabilidade própria que o produto:  
DA erklærer på eget ansvar, at produktet:  
PL deklarujemy z pełną odpowiedzialnością, iż produkt:  
FI ilmoitamme yksin vastaavamme, että tuote:

EN **Model:**  
DE Typ :  
IT Tipo :  
NL Type :  
FR Modèle :  
ES modelo :  
PT Marca :  
DA Typ :  
PL Model :  
FI Merkki :

**CRS 400**

EN **to which this declaration relates corresponds to the relevant basic safety and health requirements of the Directive:**

**2006/42/EC**

DE auf das sich diese Erklärung bezieht, den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG 2006/42/EC

IT E' Conforme ai Requisiti Essenziali di Sicurezza a di tutela della Salute di cui alla Direttiva e sue successive modificazioni: 2006/42/EC

NL waarop deze verklaring betrekking heeft voldoet aan de van toepassing zijnde fundamentele eisen inzake veiligheid en gezondheid van de EG-machinerichtlijn no: 2006/42/EC

FR faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la Directive de la: 2006/42/EC

ES al cual se refiere la presente declaración corresponde a las exigencias básicas de la normativa de la y referentes a la seguridad y a la sanidad: 2006/42/EC

PT a que se refere esta declaração corresponde às exigências fundamentais respectivas à segurança e à saúde de norma da 2006/42/EC

DA som er omfattet af denne erklæring, overholder de relevante grundlæggende sikkerheds- og sundhedskrav i EF-direktiv sam: 2006/42/EC

PL dla którego się ta deklaracja odnosi, odpowiada właściwym podstawowym wymogom bezpieczeństwa i ochrony zdrowia Dyrektywy Maszynowej: 2006/42/EC

FI johon tämä ilmoitus liittyy, vastaa EY direktiivissä mainitua perusturvallisuus- ja terveysvaatimuksia (soveltuvin osin) sekä muita siihen kuuluvia EY direktiivejä: 2006/42/EC



Konstruktion (Design) + Produktion (Production)  
Sønderborg, 15.12.2009 Jørn Freudendahl

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# FOREWORD

## DEAR CUSTOMER!

We appreciate the confidence you have shown our company by investing in a JF-machine. Of course, it is our wish that you will experience a complete satisfaction with the investment.

This instruction manual contains information about correct and safe use of the machine.

When buying the machine you will receive information about use, adjustment and maintenance.

**However, this first introduction** cannot replace a more thorough knowledge of the different tasks, functions and the technically correct use of the machine.

**Therefore you should read this instruction manual very carefully** before using the machine. Pay special attention to the safety instructions.

This instruction manual is made so that the information is mentioned in the order you will need it i.e. from the necessary operation conditions to use and maintenance. Besides this there are illustrations with text.

"Right" and "Left" is defined from a position behind the machine facing the direction of travel.

All the information, illustrations and technical specifications in this instruction manual describe the latest version on the time of publication.

JF-Fabriken reserves the right to make changes or improvements in the design or construction of any part without incurring the obligations to install such changes on any unit previously delivered.

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# 1. INTRODUCTION

## INTENDED USE

The tedder rake **CRS 400** is only intended for one certain purpose, namely: Spreading, turning and raking of grass and similar straw crops for feeding purposes etc.

**Of course, the machine should only be connected to a tractor which corresponds with the specifications of the product and is legal to use.**

**Any use beyond this is outside the intended use. JF-Fabriken A/S is not responsible for any damage resulting from such use, the user bears that risk.**

The performance of the machine will depend on the material, i.e. the crop, the condition of the field, the ground, and finally the weather.

It is assumed that the work is performed under reasonable conditions, i.e. thorough agricultural knowledge and authorised operation.

Intended use, of course, implies that the prescriptions concerning adjustment, operation and maintenance in the instruction manual are observed.

**The tedder rake CRS 400 should only be operated, maintained or repaired by persons who are confident with the use of the product and are aware of the risks.**

In the following there is a number of general safety instructions which **must** be observed altogether.

If changes are made on the machine and its construction without permission from JF-Fabriken A/S, JF-Fabriken A/S cannot be held responsible for any damage resulting from this.

### SAFETY

Generally much damage occurs in consequence of misuse and insufficient instruction. The safety of persons and machines is therefore an integrated part of JF-Fabriken's development work. **We wish to secure you and your family in the best possible way**, but this also demands an effort from your side.

A tedder rake cannot be constructed in such a way that it guarantees the full safety of persons and at the same time performs an efficient piece of work. This means that it is very important that you as user of the machine pay attention and use the machine correctly and thereby avoid exposing yourself and others to unnecessary danger.

The machine demands skilled operation which means that **you should read the instruction manual before you connect the machine to the tractor**. Even if you have had a similar machine before, you should read the manual - this is a matter of your own safety!

You should **never** leave the machine to others before you have made sure that they have the necessary knowledge to operate the machine safely.

### DEFINITIONS

The safety decals and the instruction manual contain a number of safety notes. The safety notes mention certain measures which we recommend you and your colleagues to follow to increase the personal safety as much as possible.

We recommend that you take the necessary time to read the safety instructions and inform your staff to do the same.



**In the instruction manual this symbol is used with reference to personal safety directly or indirectly through maintenance of the machine.**

- CAUTION:** The word CAUTION is used to secure that the operator follows the general safety instructions or the measures mentioned in the instruction manual of how to protect himself or others against injuries.
- WARNING:** The word WARNING is used to warn against visible or hidden risks which might lead to serious personal injuries.
- DANGER:** The word DANGER is used to indicate measures which according to legislation must be followed to protect oneself and others against serious injuries.

# 1. INTRODUCTION

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## **GENERAL SAFETY INSTRUCTIONS**

Before use, the operator should make sure that the tractor and the machine observe the general work-related legislation and can comply with the Road Traffic Act.

The following is a short mentioning of the measures which should be a matter of common knowledge to the operator.

1. Always disengage the PTO, activate the parking brake and stop the tractor engine before you:
  - lubricate the machine,
  - clean the machine,
  - disassemble any part of the machine,
  - adjust the machine.
2. Always lower the machine to the ground and use correct support when the machine is parked.
3. Never work under a raised machine unless the lift suspension of the machine is secured by means of a support chain or other mechanical securing.
4. Do not start the tractor before all persons are in safe distance from the tractor and the rake devices (20-30 m to the side and to the rear).
5. Before starting the tractor, check that all tools have been removed from the machine.
6. Make sure that all guards have been mounted correctly.
7. During work never wear loose clothes which can be pulled in by moveable parts in the machine.
8. Do not change a guard or work with the machine if a guard is missing.
9. Always drive with light on and the traffic marking during transport on public road and at night.
10. Limit the transport speed to max 30 km/h if the machine has not been marked with another max. speed limit.
11. Never stay near the machine while it is working.
12. When mounting the PTO-shaft check that the RPM of the tractor fits the machine.



## 1. INTRODUCTION

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13. Always use hearing protectors if the noise from the machine is trying or if you are working with the machine for a considerable period in a cabin which has not been silenced sufficiently.
14. Before raising or lowering the machine in the lift suspension check that nobody is near the machine - or touching it.
15. Do not stay near the guard of the rake or raise the guard until all revolving parts have stopped.
16. Never use the machine for other purposes than what it has been constructed for.
17. Do not allow any children to be near when you are working with the machine.
18. Never stay between the tractor and the machine during engagement and disengagement.
19. Check the revolving parts before use. If parts are damaged (bent or cracked), worn or missing, they should be replaced immediately.
20. Check the guards regularly.
21. The field should be kept clear of stones and foreign bodies, if possible.
22. If you are in doubt, contact the nearest dealer.

### **CHOICE OF TRACTOR**

Always follow the recommendations specified in the instruction manual of the tractor. If this is not possible, technical assistance must be sought.

Choose a tractor with a suitable power on the PTO.

If the power of the tractor is considerably larger than the prescribed power, long-term overload should be avoided.

Choose a tractor with a suitable own weight and track width so that it can drive steadily on the ground. Also make sure that the lift suspension of the tractor is intended to carry machines with the own weight in question.

However, the tractor specifications are different within the individual tractor brands. Therefore, at worst, it can be necessary to adjust the weight distribution with a couple of weights in front of the tractor.

## 1. INTRODUCTION

The machine is intended for 540 RPM. Therefore you should make sure not to use a wrong number of rotations on the PTO.

### CONNECTION AND DISCONNECTION

Always make sure that nobody is standing between the tractor and the machine during connection and disconnection. An unintentional manoeuvre can cause persons to be jammed (See fig. 1-1)



Fig. 1-1

Check that the machine is intended for the number and the direction of rotations of the tractor PTO. (See fig. 1-2). In the long run, a wrong number of rotations can damage the machine and at worst lead to parts being thrown out.

Make sure that the PTO shaft is mounted correctly, i.e. the lock pin is in mesh and the support chains have been fastened at both ends.

The PTO shaft must be correctly protected. If the guard is defect it must be replaced immediately.

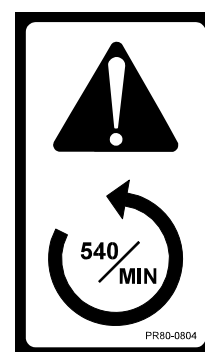


Fig. 1-2

### ADJUSTMENT

Never adjust the machine while the PTO is engaged. Disengage the PTO and stop the tractor engine before changing the adjustment of the machine.

### WORKING

During the daily work it should be considered that loose stones and foreign bodies on the ground might get in contact with the revolving parts and get thrown out again at very high speed.

Therefore all guards must be correctly mounted and intact when the machine is working.

**Never** allow anybody to stay near the rake during work, especially not children.

Change into a lower tractor gear if working on hilly ground. When working with lift suspended machines keep a safety distance from steep slopes and similar condition of the ground, as the ground may slide down. Also adjust the speed of the tractor to sharp turns when driving on uplands.

# 1. INTRODUCTION

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## **PARKING**

Never leave the tractor before the machine has been lowered to the ground, the tractor engine has stopped and the parking brake has been activated. This is the only way to perform a stable parking.

Make sure that the jack is placed correctly, and that the machine is resting on it when the machine is parked and disconnected from the tractor.

## **LUBRICATION**

When lubricating or maintaining the machine, make sure that the machine is resting on the ground or that the lift arms of the tractor are secured by means of a support chain.

Also make sure that the PTO has been disengaged, the tractor engine has been stopped and the parking brake has been activated.

## **MAINTENANCE**

Always drive with the rake tines in a suitable distance from the ground to reduce the risk of the machine getting damaged.

Always make sure that the used spare parts are tightened with the correct torque and that parts on the machines are tightened up regularly. (See section 5: Maintenance)

Never use other spare parts than those prescribed by the company.

## **MACHINE SAFETY**

If the vibrations or the noise of the machine increase gradually, stop working and check if the rotating parts are damaged. Do not continue the work until the fault has been corrected.

During the season check daily that no springs or bolts are missing. If any of these are missing, mount the parts immediately.

Clean the machine of earth and grass regularly and check that all parts are intact.

Check regularly that all parts at the mortise joints (various pins) are intact and sufficiently lubricated.


## 1. INTRODUCTION

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# 1. INTRODUCTION

①

PRB0-0801



**FORSIGTIG**  
Læs brugsanvisningen og sikkerhedsforskrifterne før maskinen tages i brug. Er brugsanvisning ikke medleveret, skal du bede om efterlevering.

**CAUTION**  
Before starting the machine read operators manual and safety instructions. Request copy if not supplied.

**VORSICHT**  
Vor inbetriebnahme Betriebsanleitung und Sicherheits-hinweise lesen und beachten. Wenn nicht mitgeliefert bitte anfordern.

**ATTENTION**  
Avant la mise en route de la machine lire le manuel d'utilisation et les prescriptions de sécurité. Réclamer le manuel s'il manque.

②

PRB0-0803




**FORSIGTIG**  
Stop altid traktormotoren og fjern tændingsnøglen før De smører, indstiller eller reparerer maskinen.

**ATTENTION**  
Always stop engine and remove ignition key before lubricating, maintaining or repairing the machine.

**VORSICHT**  
Schleppermotor immer abschalten und Zündschlüssel abziehen bevor Sie die Maschine schmieren, einstellen oder reparieren.

**ATTENTION**  
Toujours arrêter le moteur de tracteur et enlever la clef de contact avant de lubrifier, régler ou réparer la machine.




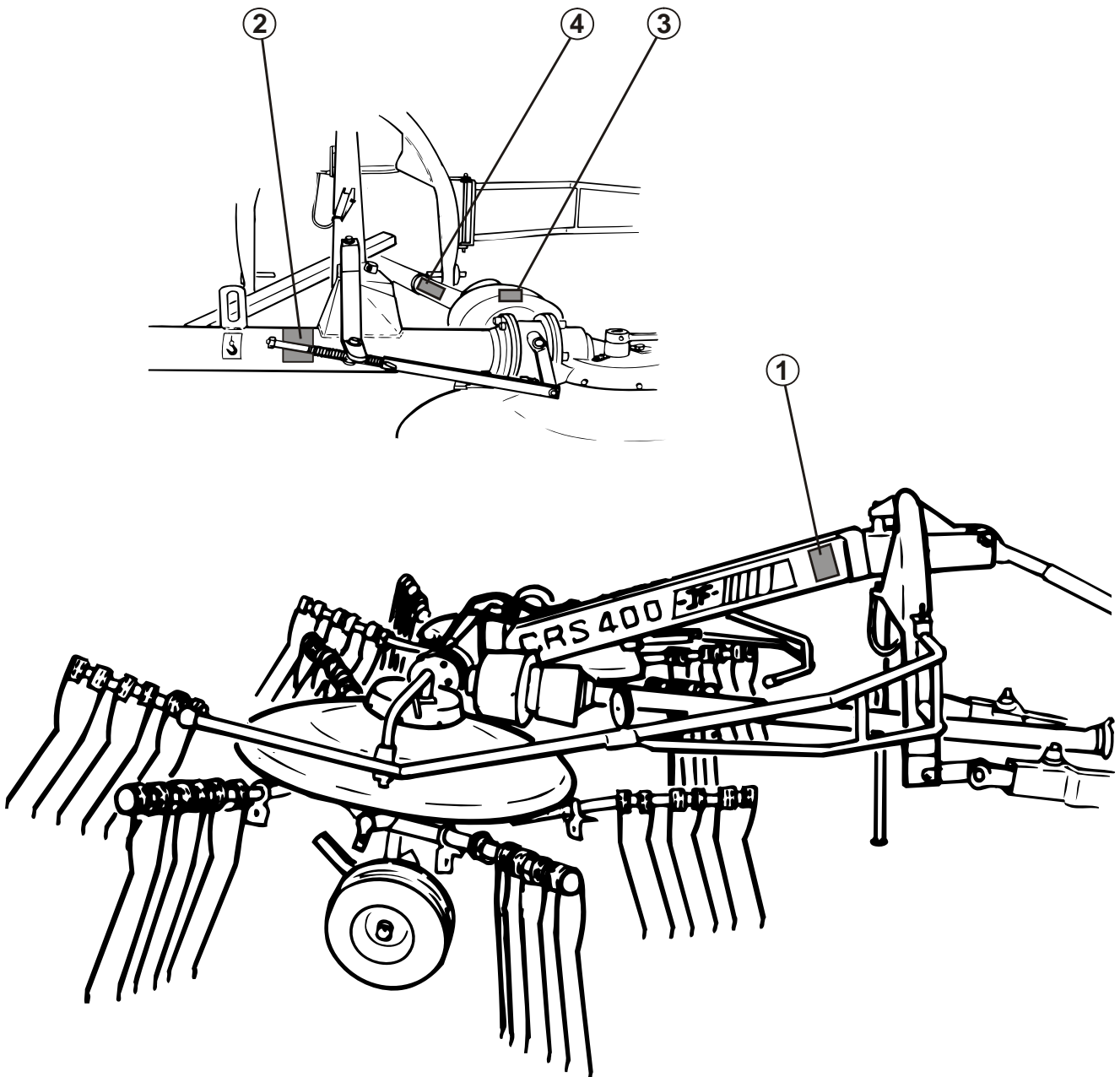
③




PRB0-0804

④

16.61.175

### SAFETY DECALS

The warning decals shown on the previous page are positioned as shown on the drawing at the bottom of the page. Before using the machine check that all decals are present, if not, require those missing. The decals have the following meaning:

**1 Read the instruction manual and the safety instructions.**

This is to remind you to read the delivered documents to ensure that the machine is operated correctly and to avoid unnecessary accidents and machine damage.

**2 Stop the tractor engine and remove the ignition key before touching the machine.**

Always remember to stop the tractor engine before lubricating, adjusting, maintaining or repairing. Also remove the ignition key to ensure that nobody starts the engine before the work is completed.

**3 The number and the direction of rotations.**

Check that the PTO drive shaft runs at the right RPM and in the right direction. A wrong number of rotations and/or direction can damage the machine with the risk of personal injury as a result.

**4 The PTO.**

This decal has the purpose to remind you of how dangerous the PTO shaft can be if it is not correctly mounted or protected.

## 1. INTRODUCTION

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### TECHNICAL DATA

Type	CRS 400
Working width, raking	4,0 m
Tractor requirements, max.	25 kW / 34 HP
Number of rotations PTO, max.	600 rpm.
Weight	450 kg
Working speed, max.	15 km/h
Transport width	3,0 m
Tyres	15,00-6.00x6
Tyre pressure	2,1 bar / 29 lbs.
Number of rake tines	36 pcs.
Number of rake arms	12 pcs.

We reserve the right to change the construction and specifications.



## 2. CONNECTION AND TEST DRIVING

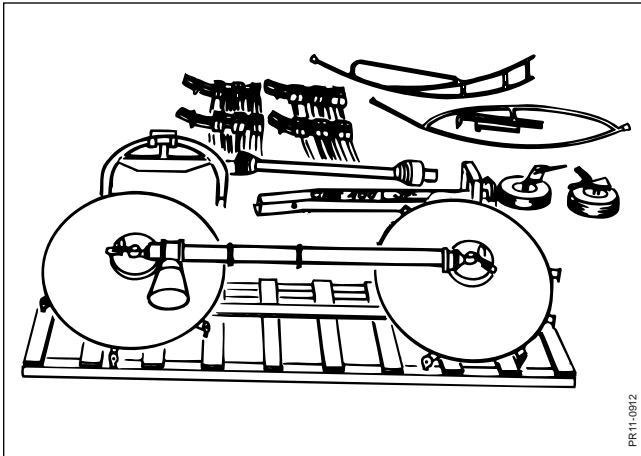


Fig. 2-1

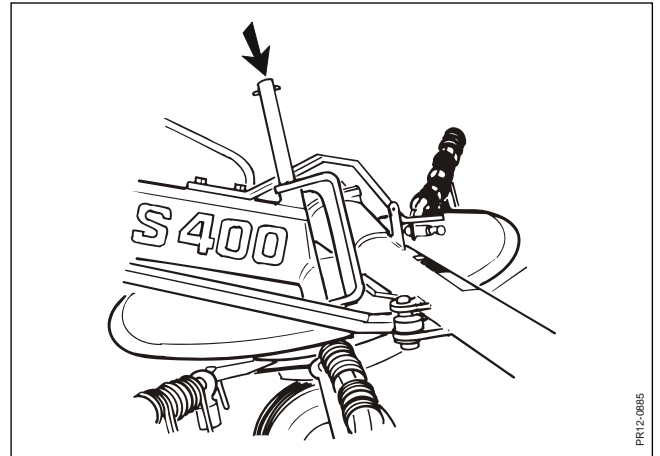


Fig. 2-2

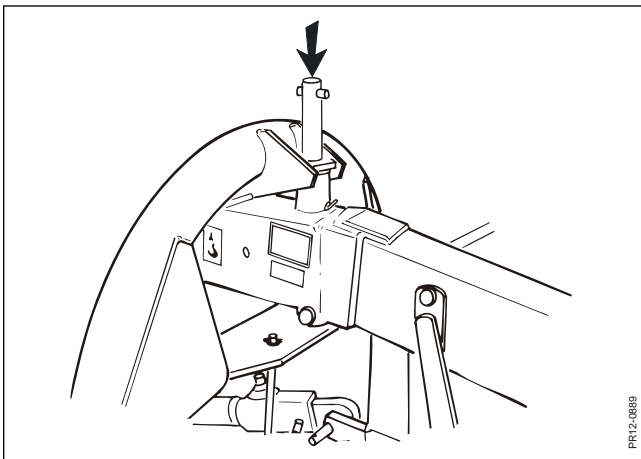


Fig. 2-3

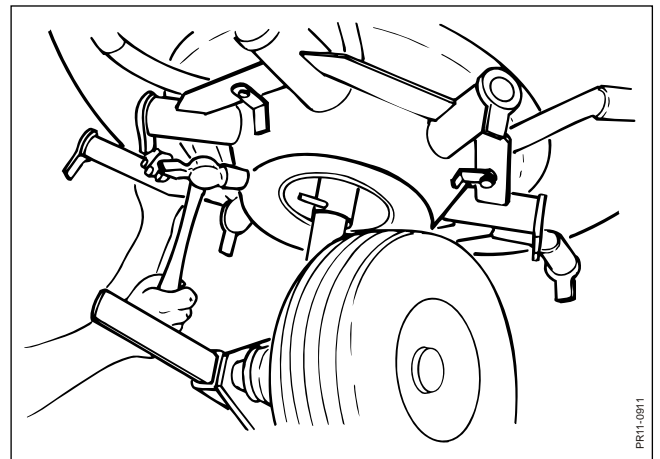


Fig. 2-4

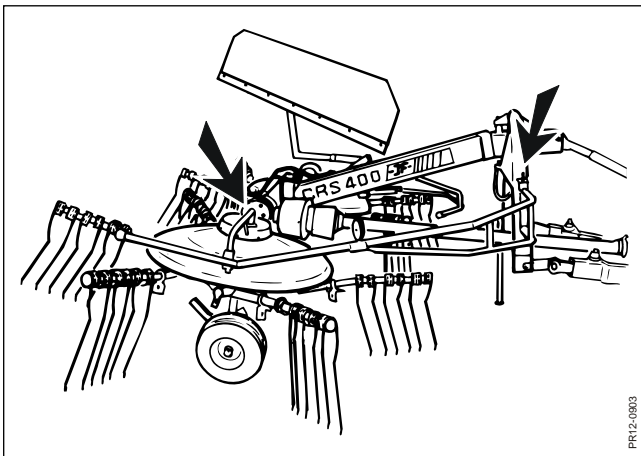


Fig. 2-5

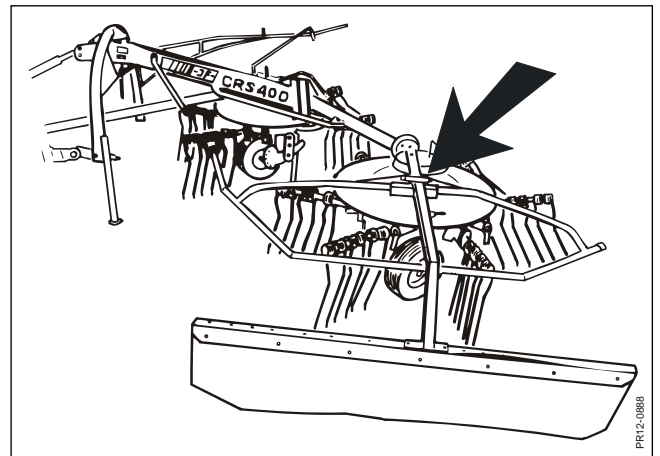


Fig. 2-6

## 2. CONNECTION AND TEST DRIVING

### PREPARATION / MOUNTING

**Fig. 2-1** To keep the transport charges at a reasonable level, the machine can be delivered separated in modules and packed in a crate.  
Open the crate and take out all parts except the transverse bar (the rotor module) with the two rotors.

Mount the rake as follows:

**Fig. 2-2** Mount the drawbar as shown using the pin and tube pins on the rotor module.

**Fig. 2-3** Support the drawbar with a board from the crate. Mount the headstock on the drawbar with the cotter bolt.  
Mount the guard above the articulated headstock.

**Fig. 2-4** When mounting the wheels the machine is connected in the 3-point linkage of the tractor and the machine is lifted by the hydraulics.  
Fasten the wheels with special pins and the adjustment handle of the wheels to the rear.

**Fig. 2-5** Mount the right protective hoop at the front of the headstock and at the rear the support is hooked in the holder on the right cover.  
**Tighten the bolts 4,5 Nm.**

**Fig. 2-6** Mount the support for swath guard - with holder for hoop - on the top cover for left rotor. Mount the left protective hoop in the holder with bolts and 2 spacers. Fasten the swath guard in the square tube by means of the catch.  
**Tighten the bolts 4,5 Nm.**

## 2. CONNECTION AND TEST DRIVING

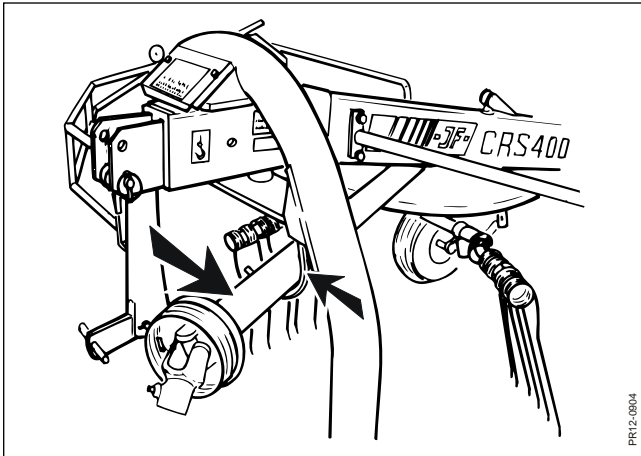


Fig. 2-7

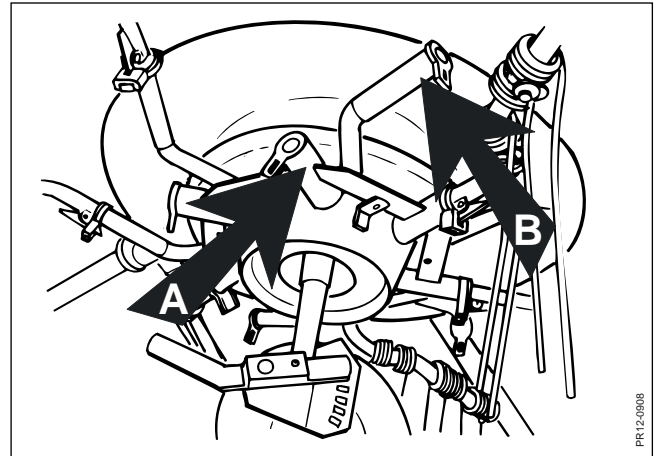


Fig. 2-8

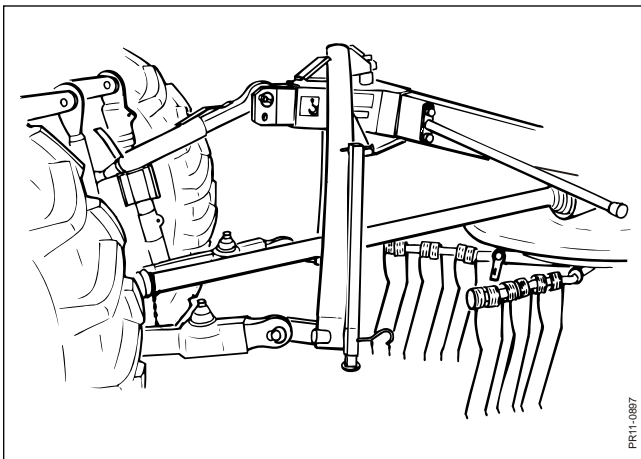


Fig. 2-9

**Fig. 2-7** Mount the PTO shaft on the gear box shaft with the safety clutch towards the machine. Mount hook for the PTO shaft in the headstock.

**Fig. 2-8** Mount the rake arms:  
**A. Short shaft for raking.**  
**B. Long shaft for spreading.**

## CONNECTION TO TRACTOR

**Fig. 2-9** Connect the machine in the 3-point linkage of the tractor. Try to connect the machine so that the drawbars and the top link are as parallel as possible. Mount the lift arms with the pins of the rake and secure with cotter ring. At the same time limit the ability of the lift arms to move sideways.

Fasten the top link in the top link fix point of the rake by means of the top link bolt which is also secured with a cotter ring.

**Raise the jack.**

## ADJUSTMENT OF THE PTO SHAFT

The PTO shaft between the tractor and the machine must now be mounted to complete the transmission line.

Dimensions and movements of the 3-point linkage of the individual tractor brands are not standardised. Therefore, the distance from the power take-off (PTO) of the tractor to the input shaft (PIC) of the machine will vary according to the tractor.

It may therefore be necessary to shorten the PTO shaft before using it on the machine to ensure correct operating ability.



**IMPORTANT:** Do not shorten your new PTO shaft until you are sure that it is necessary. From the factory the shaft is adjusted to the distance from the PTO to the PIC which can be used with most tractor brands.

## 2. CONNECTION AND TEST DRIVING

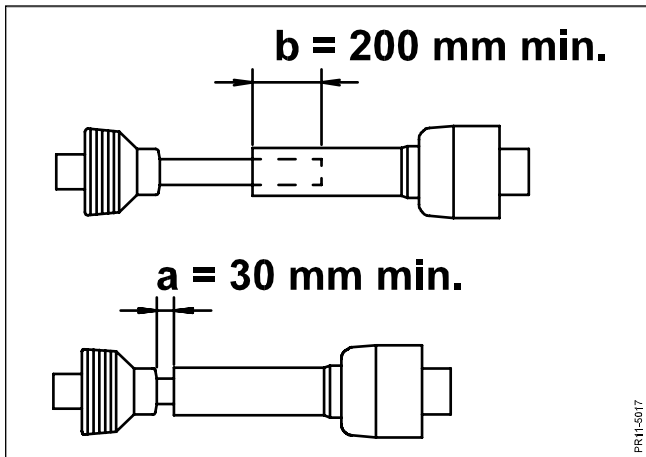


Fig. 2-10

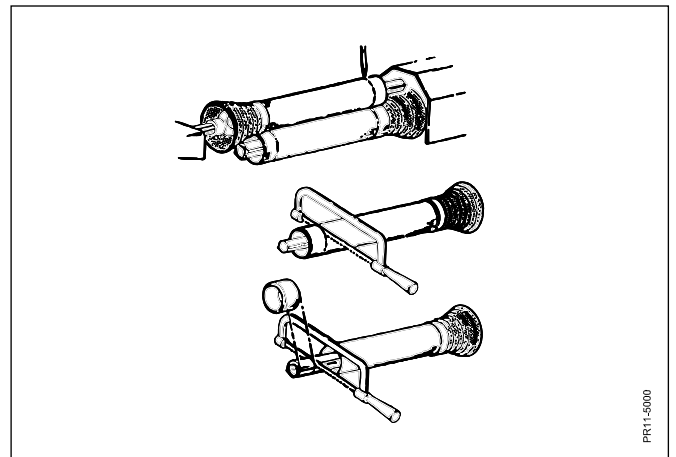


Fig. 2-11

## 2. CONNECTION AND TEST DRIVING

### SHORTENING

If it is necessary to shorten the shaft on your machine, the following applies:

**Fig. 2-10** Adjust the length of the PTO shaft so that it:

- has as much overlapping as possible
- in no position has less overlapping than 200 mm. (As the distance from the PTO to the PIC varies when the machine moves up and down within the normal working area, make sure that the overlapping is sufficient in both extreme positions.
- is not compressed more than the prescribed 30 mm in order not to bottom the shaft.



**IMPORTANT:** The specified values for overlapping on the tubes of the PTO shaft must be observed as shown on fig. 2-10.

**Fig. 2-11** Shortening procedure:

1. Separate the PTO shaft in two halves and mount these on the PTO and the PIC, respectively, when these are at the same horizontal level. This corresponds with the shortest possible length of the shaft on this machine.
2. Hold the ends of the shafts parallel side by side and mark the 30 mm (minimum) on the tubes. See also fig. 2-11.
3. Shorten all 4 tubes equally. The profile tubes as well as protective tubes.
4. Round off the ends of the profile tubes and remove burrs carefully with a file until the tubes are smooth. It is important to deburr the inside of the outer tube and the outside of the inner tube. Thereby the surface of the profile tubes is secured against damage of sharp edges and impurities.
5. Clean the ends of the profile tubes of dirt and loose burrs.



**WARNING:** Lubricate the profile tubes carefully before reassembling the shaft as insufficient lubrication may lead to high frictional forces during work which can cause the transmission to be overloaded.

When the PTO shaft has been mounted check that the PTO has sufficient overlapping in all position by raising and lowering the machine with the lift of the tractor.

Finally, check that the number of rotations of the PTO of the tractor is 540 RPM as the machine is intended for, and that the direction of rotation is correct.



**WARNING:** A too high number of rotations of the PTO can be highly dangerous. A too low number of rotations, however, can cause insufficient spreading and unnecessary high torque loads on the transmission.

## 2. CONNECTION AND TEST DRIVING

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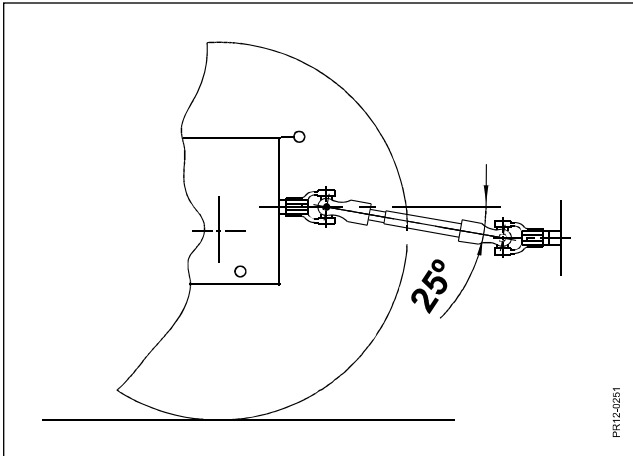


Fig. 2-11

### MAXIMUM ANGLES

**Fig. 2-11** For a standard PTO shaft we recommend the following maximum angles for the individual universal joint.

Constant operation	25°
Short operation	45°
Standstill	90°

The angles at each universal joint should be approximately equal, i.e. the deviation should be max 5°. If greater differences are found when raising the machine, try to change the position of the top link at the tractor side and make sure that the top link and the lift arms become more parallel.

### PREPARATION

It is important to grease the universal joint of the PTO and especially its profile tube at least after every 8 working hours, as recommended by the factory.

It is a good idea to grease the PTO shaft every day the machine is in operation.

### ROTOR SPEED

The number of rotations of the rotor is adjusted with the number of rotations of the tractor engine, i.e. by **speeding up or down**.

When spreading, the PTO of the tractor should run at approx. 540 RPM. When raking and turning it is advisable that the PTO runs at approx. 330 RPM.



### 3. ADJUSTMENTS AND DRIVING

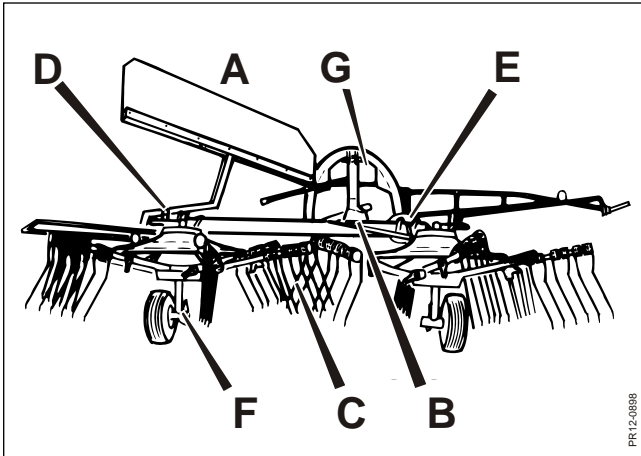


Fig. 3-1

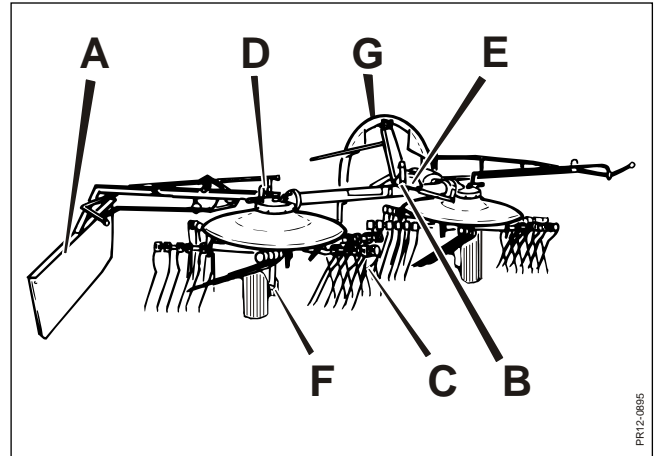


Fig. 3-2

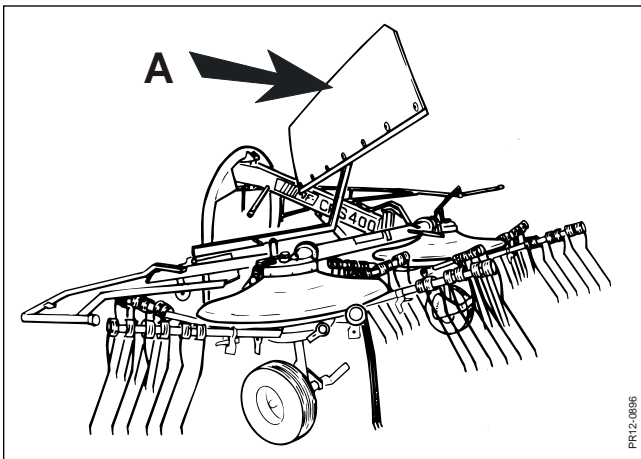


Fig. 3-3

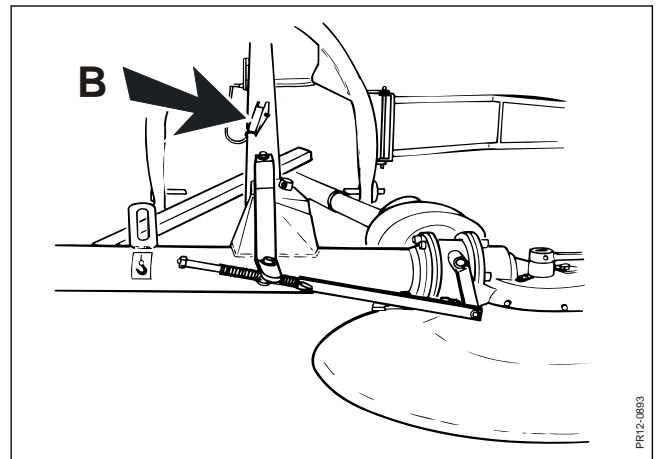


Fig. 3-4

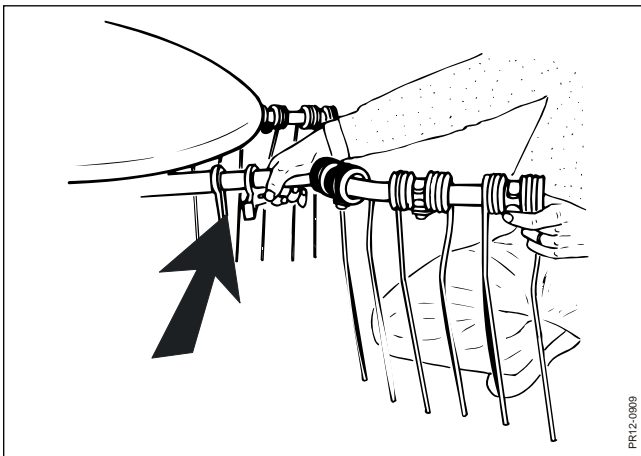


Fig. 3-5

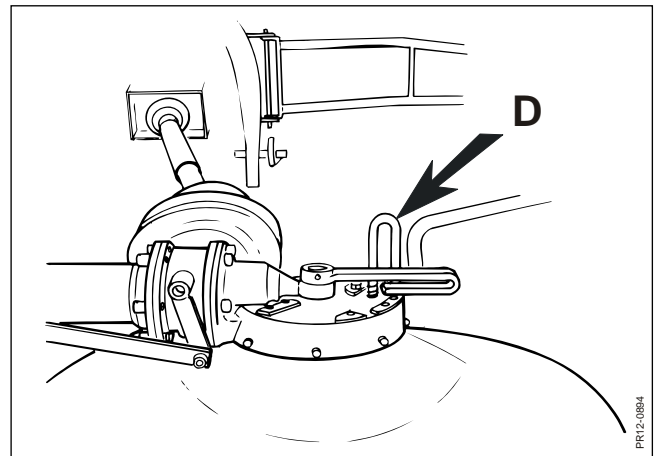


Fig. 3-6

## 3. ADJUSTMENTS AND DRIVING

### GENERAL ADJUSTMENTS

#### SPREADING

**Fig. 3-1**

- A. Swath collector
- B. Position in direction of travel
- C. Rake arms
- D. Position of the wheels
- E. Direction of rotation of the rotors (automatic)
- F. Height adjustment (possible)
- G. Top link

#### RAKING

**Fig. 3-2**

- A. Swath collector
- B. Position in direction of travel
- C. Rake arms
- D. Position of the wheels
- E. Direction of rotation of the rotors (automatic)
- F. Height adjustment (possible)
- G. Top link

### ADJUSTMENT SPREADING

For adjustment raise the machine from the ground with the hydraulic lift of the tractor.

**Fig. 3-3 Swath collector**

The swath guard A is placed above the left rotor.

**Fig. 3-4 Position in direction of travel**

Release the locking pin at the handle B  
Move the left side a bit forward  
Disengage the locking pin so that it can lock automatically  
Move the rake forward until the locking pin is in place in the connecting rod.

**Fig. 3-5 Rake arms**

Move the rake arms to long firm shaft. The arms are equipped with a lock.  
**Make sure that the arms are engaged correctly.**

**Fig. 3-6 Wheel adjustment**

Adjust the direction of travel of the wheels above the rotors. Pull the locking hoops D upwards and the wheels are disengaged and turned in the right direction.

### 3. ADJUSTMENTS AND DRIVING

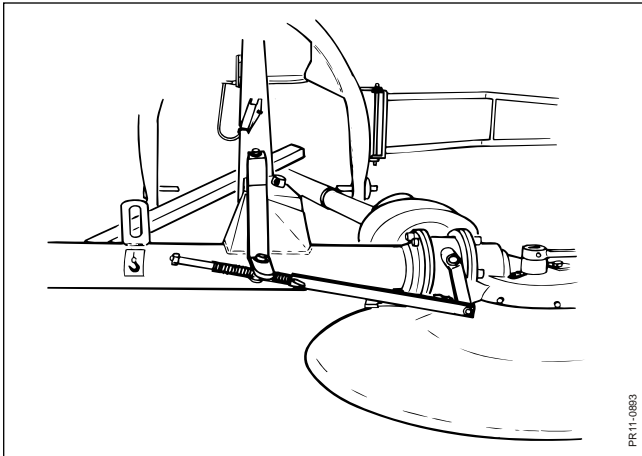


Fig. 3-7

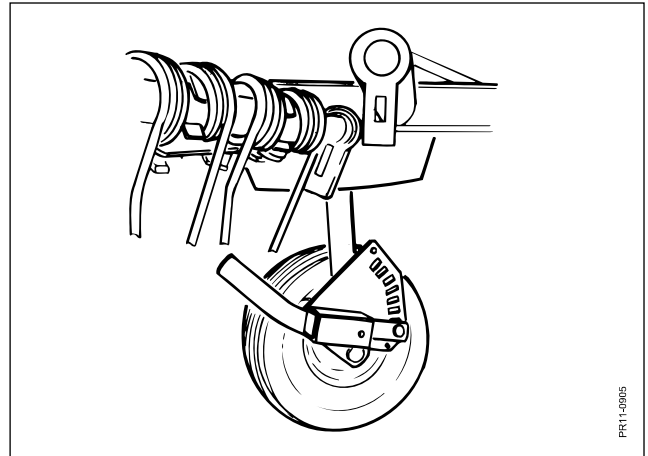


Fig. 3-8

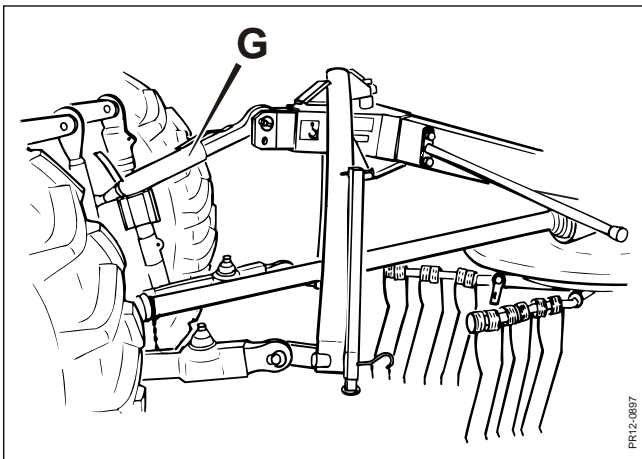


Fig. 3-9

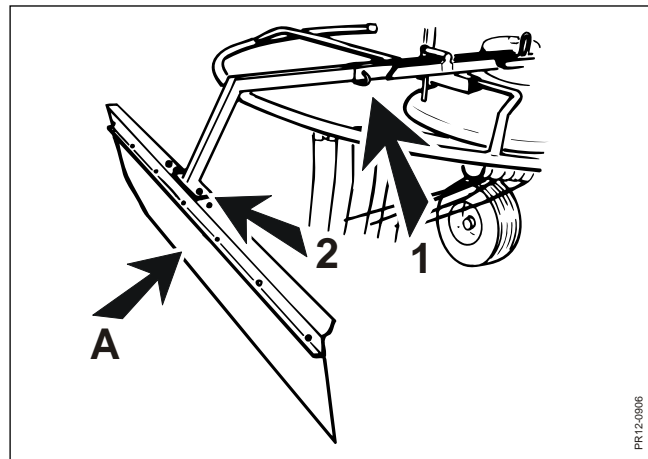


Fig. 3-10

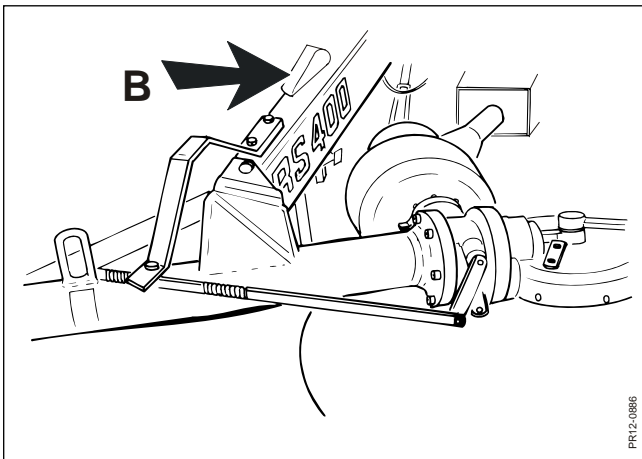


Fig. 3-11

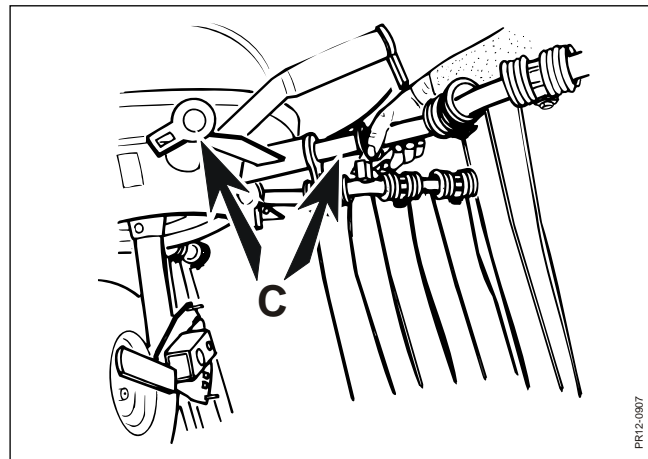


Fig. 3-12

### 3. ADJUSTMENTS AND DRIVING

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**Fig. 3-7** Direction of rotation of the rotors

Turn the left rotor manually until the coupling is engaged.

**When spreading the rotors must turn against each other.**

**Fig. 3-8** Height adjustment

Adjust the height of the rake by means of the wheels (and top link) so that the rake tines just touch the ground. When spreading swaths use the lowest holes in the adjustment plate.

**Fig. 3-9** Top link

Adjust the length of the top link G so that the rake tines just touch the ground.

#### **DRIVING TIPS**

**Check the direction of rotation of the rotors by turning them manually before engaging the PTO of the tractor.**

The driving speed 4-15 km/h must be adjusted according to the nature and character of the crop.

The number of rotations of the PTO approx. 500-600 RPM.

Adjust the rake so that the rake tines just touch the ground. A lower adjustment will damage the grassland and lead to unnecessary wear of the machine.

### **ADJUSTMENT RAKING**

**Fig. 3-10** Swath collector

Move the swath collector down to the left and place it as close to the rake as the swath size allows. The plate A can be moved back and forward at the boom arm 2.

**Fig. 3-11** Position in direction of travel

Release the locking pin at handle B

Move the left side of the rake a bit backwards

Disengage the locking pin so that it can lock automatically

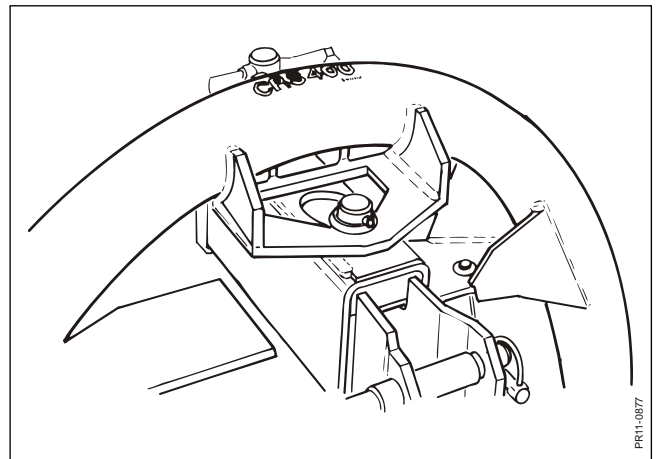
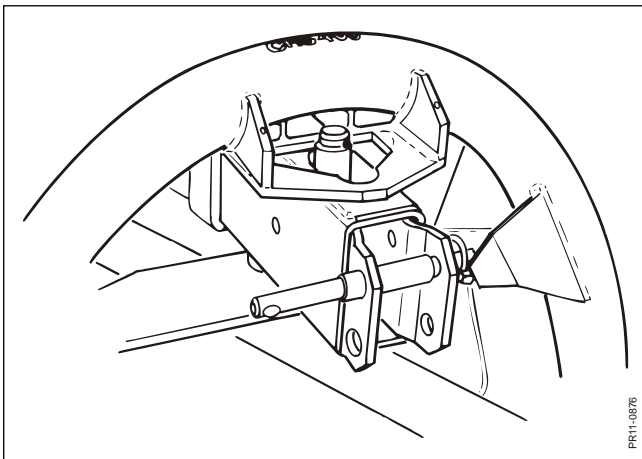
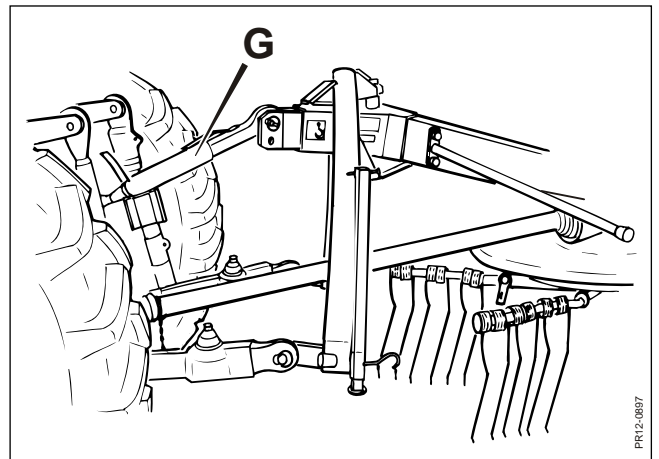
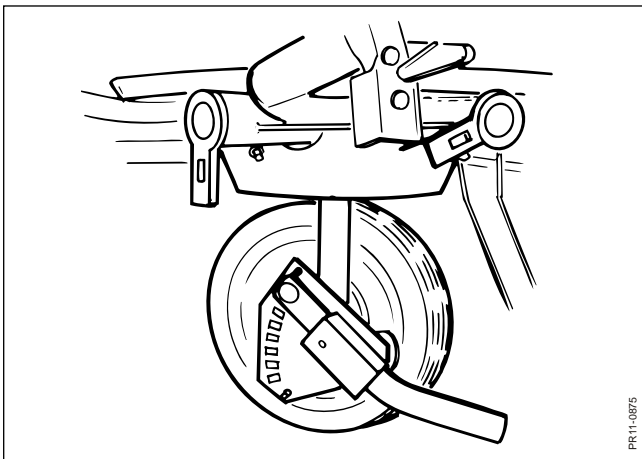
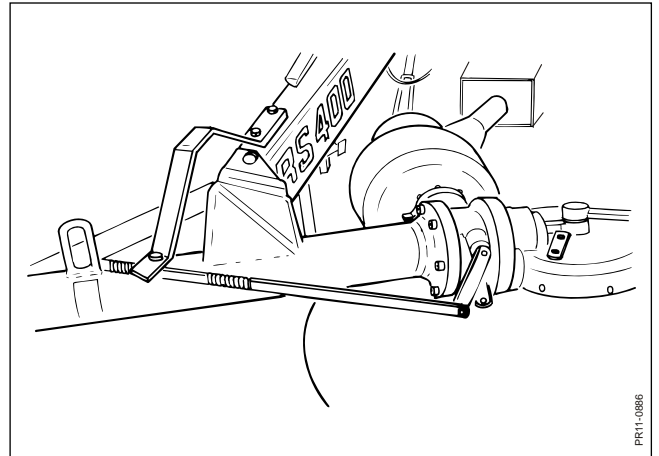
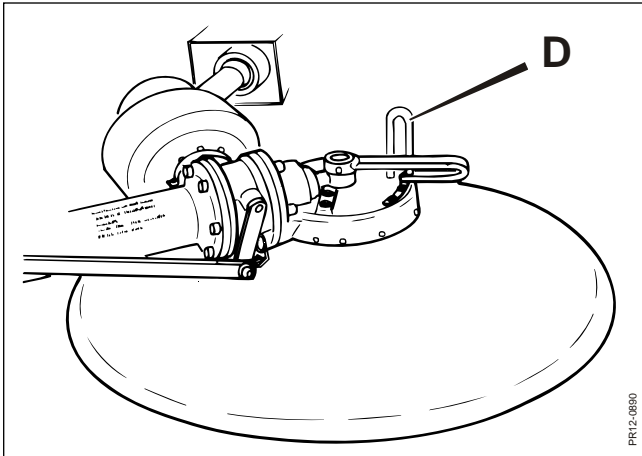
The rake is turned in position so that the locking pin is in place in the connecting rod

**Fig. 3-12** Rake arms

Move the rake arms C into short tubes, turnable shaft.

Check that the couplings are engaged correctly (the arms must be moved before placing the rake in raking position).

### 3. ADJUSTMENTS AND DRIVING



### 3. ADJUSTMENTS AND DRIVING

---

**Fig. 3-13 Wheel adjustment**

The direction of travel of the wheels is adjusted above the rotors. Pull the locking hoops D upwards and the wheels are disengaged and turned in the right direction.

**Fig. 3-14 Direction of rotation of the rotors**

Turn the left rotor manually until the coupling is engaged.

**When raking the rotors must turn in the same direction.**

(In some countries automatic readjustment is delivered.)

**Fig. 3-15 Height adjustment**

Adjust the height of the rake by means of the wheels (and top link) so that the rake tines just touch the ground. When raking use the upper holes in the adjustment plate.  
**The rake must be in horizontal position - or have a slight inclination forward.**

**Fig. 3-16 Top link**

Adjust the length of the top link G so that the rake is horizontal and the rake tines just touch the ground.

**DRIVING TIPS**

**Check the direction of rotation of the rotors by turning them manually before engaging the PTO of the tractor.**

The driving speed 5-10 km/h must be adjusted according to the nature and character of the crop.

RPM on the PTO approx. 300-350.

Adjust the rake so that the rake tines just touch the ground. A lower adjustment will damage the grassland and lead to unnecessary wear of the machine.

## DRIVING IN THE FIELD

**Fig. 3-17 In connection with working position it is important to lower the lift arms of the tractor completely and perhaps place the lift in "floating position", so that it is not limited in downward direction.**

The distance from the rake tines to the ground is solely adjusted by means of the length of the top link.

**Fig. 3-18** Thereby you ensure that the locking device of the articulated headstock is pushed fully to the rear and is fully released so that the machine can turn freely in relation to the tractor, contrary to transport position.



**WARNING:**

If you drive with the machine partly lifted so that the locking device cannot be fully released and the machine is turned anyway, wheel supports, wheel arms and headstock etc. can be damaged (due to high transverse forces).

### 3. ADJUSTMENTS AND DRIVING

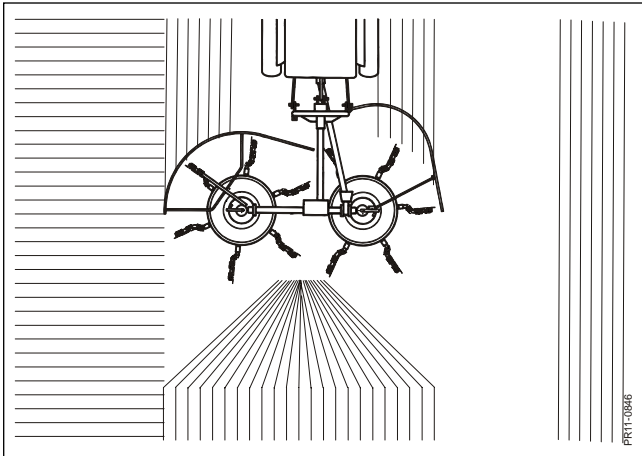


Fig. 3-19

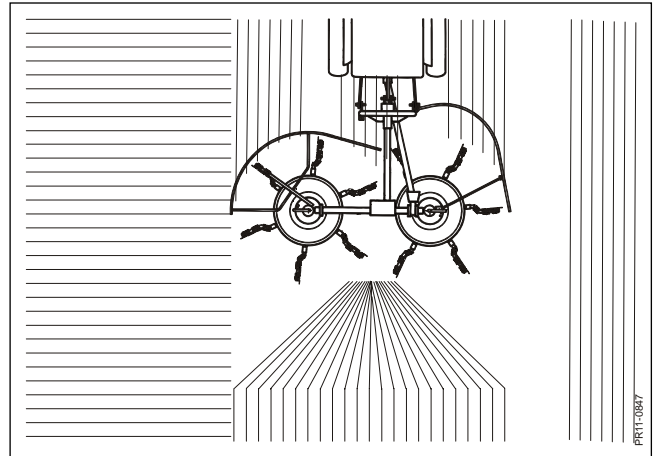


Fig. 3-20

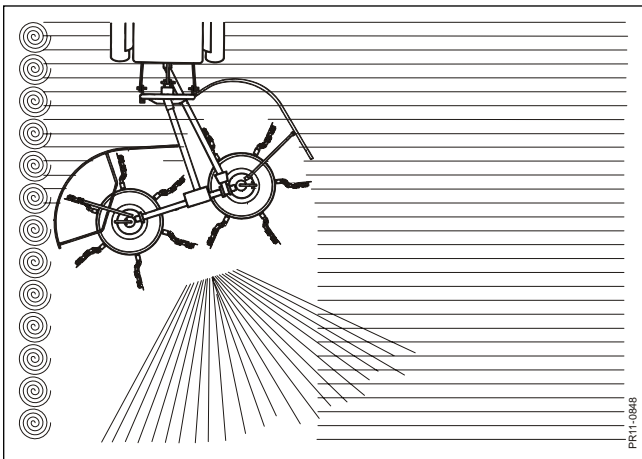


Fig. 3-21

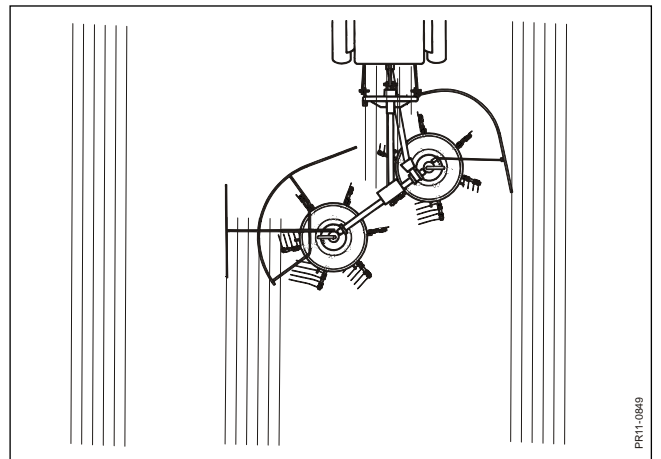


Fig. 3-22

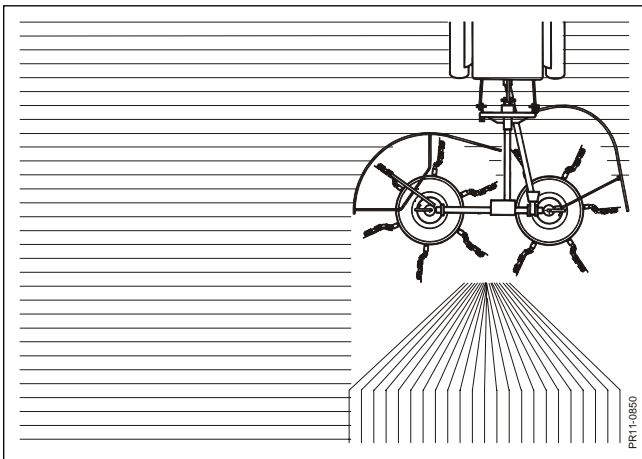


Fig. 3-23

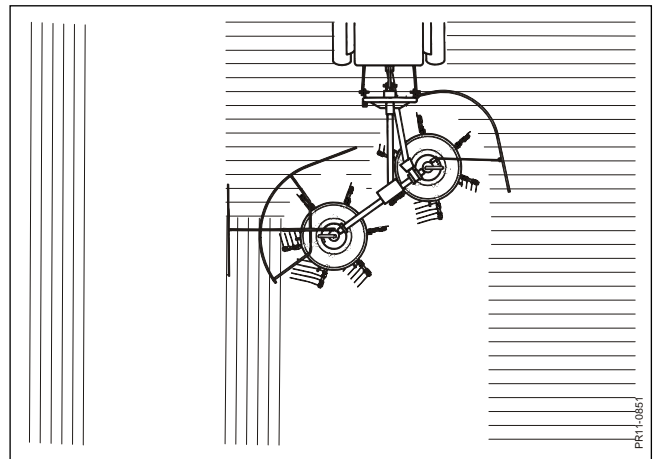


Fig. 3-24

### 3. ADJUSTMENTS AND DRIVING

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#### **SPREADING OF 2 SWATHS**

**Fig. 3-19** Max. 9' mower. The spreading quality may depend on how you drive in relation to the swaths.

#### **SPREADING OF 3 SWATHS**

**Fig. 3-20** Max. 5½' mower.

#### **SPREADING FROM FENCE**

**Fig. 3-21** Use spreading position, wheels at an oblique angle.

#### **SWATH TURNING**

**Fig. 3-22**

#### **TEDDING OF WIDESPREAD MATERIAL**

**Fig. 3-23**

#### **SINGLE SWATH**

**Fig. 3-24**



### 3. ADJUSTMENTS AND DRIVING

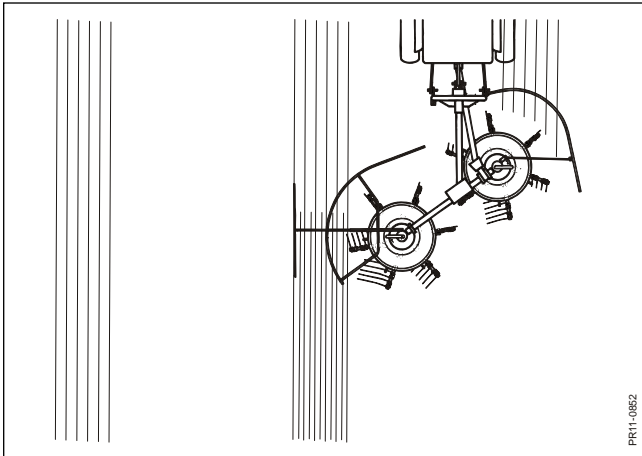


Fig. 3-25

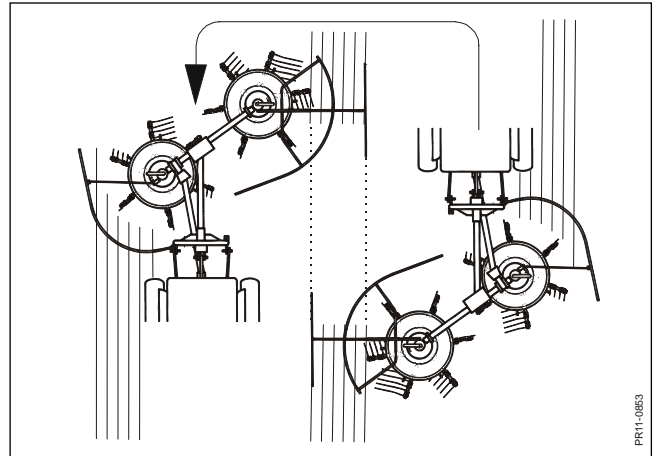


Fig. 3-26

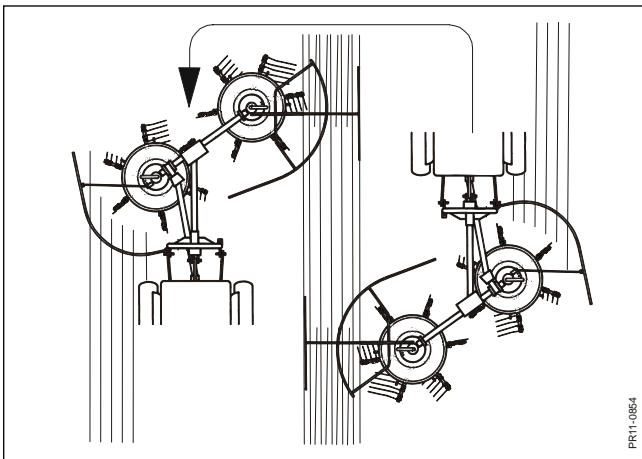


Fig. 3-27

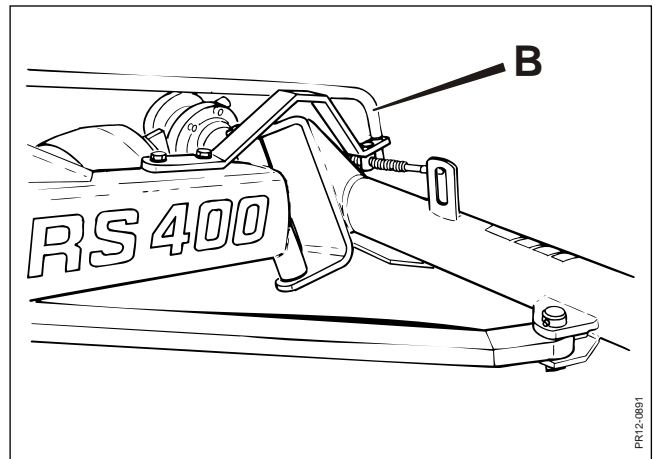


Fig. 3-28

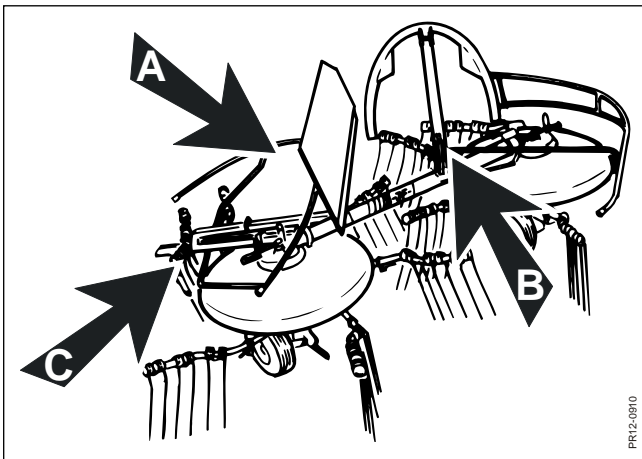


Fig. 3-29

### 3. ADJUSTMENTS AND DRIVING

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#### **DOUBLE SWATH**

**Fig. 3-25** after max. 11' mower or combined harvester.

**Fig. 3-26** over 11' mower or combined harvester.

#### **3-DOUBLE SWATH**

**Fig. 3-27** max. 11' mower or combined harvester.

#### **TRANSPORT**

**Fig. 3-28** Fold in the right hoop holder B and fasten it to the rod above the pivot point.

**Fig. 3-29** Tip up the swath collector and the left hoop A.

Move the 2 outer rake arms backward to free shafts. Place 2 rake arms as C to prevent the rotors from turning during transport.

**Place the rake in rear inclined position.**

### 3. ADJUSTMENTS AND DRIVING

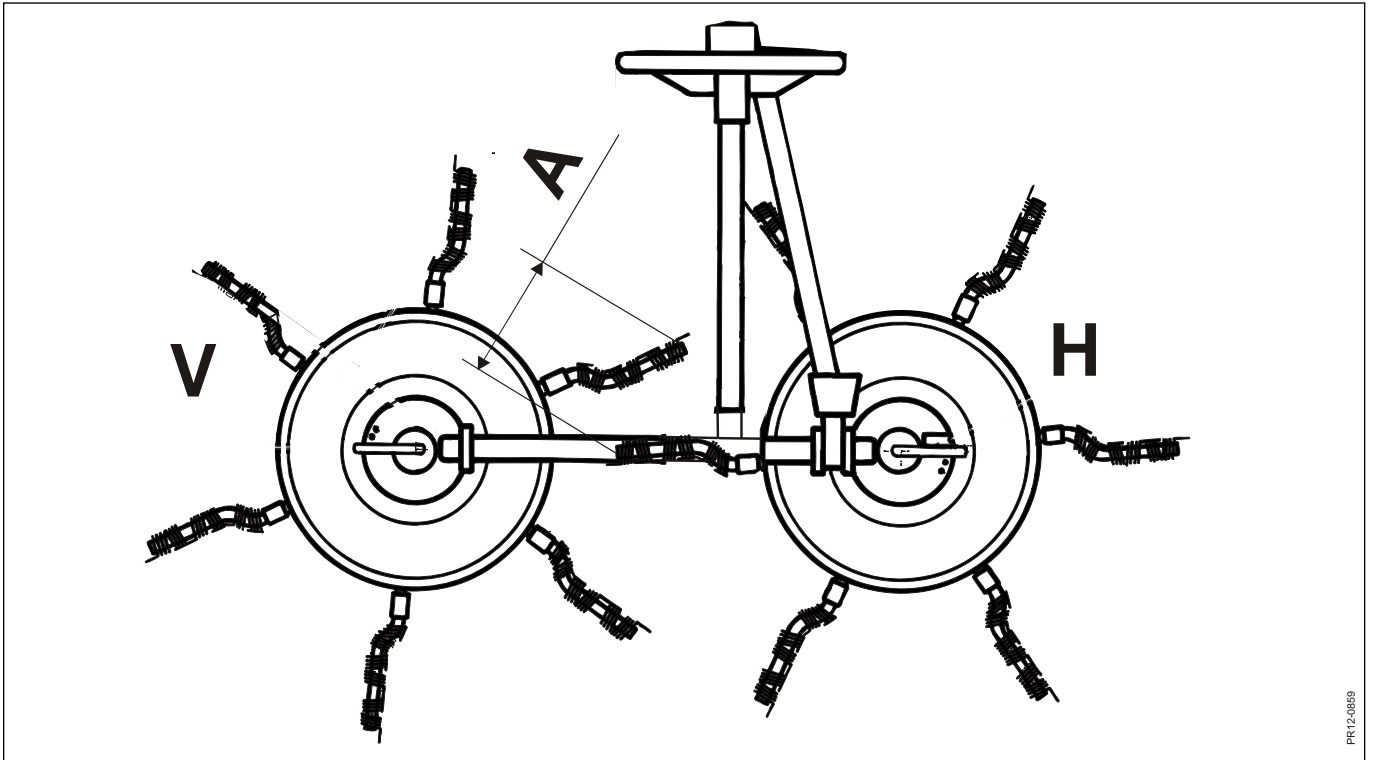


Fig. 3-30

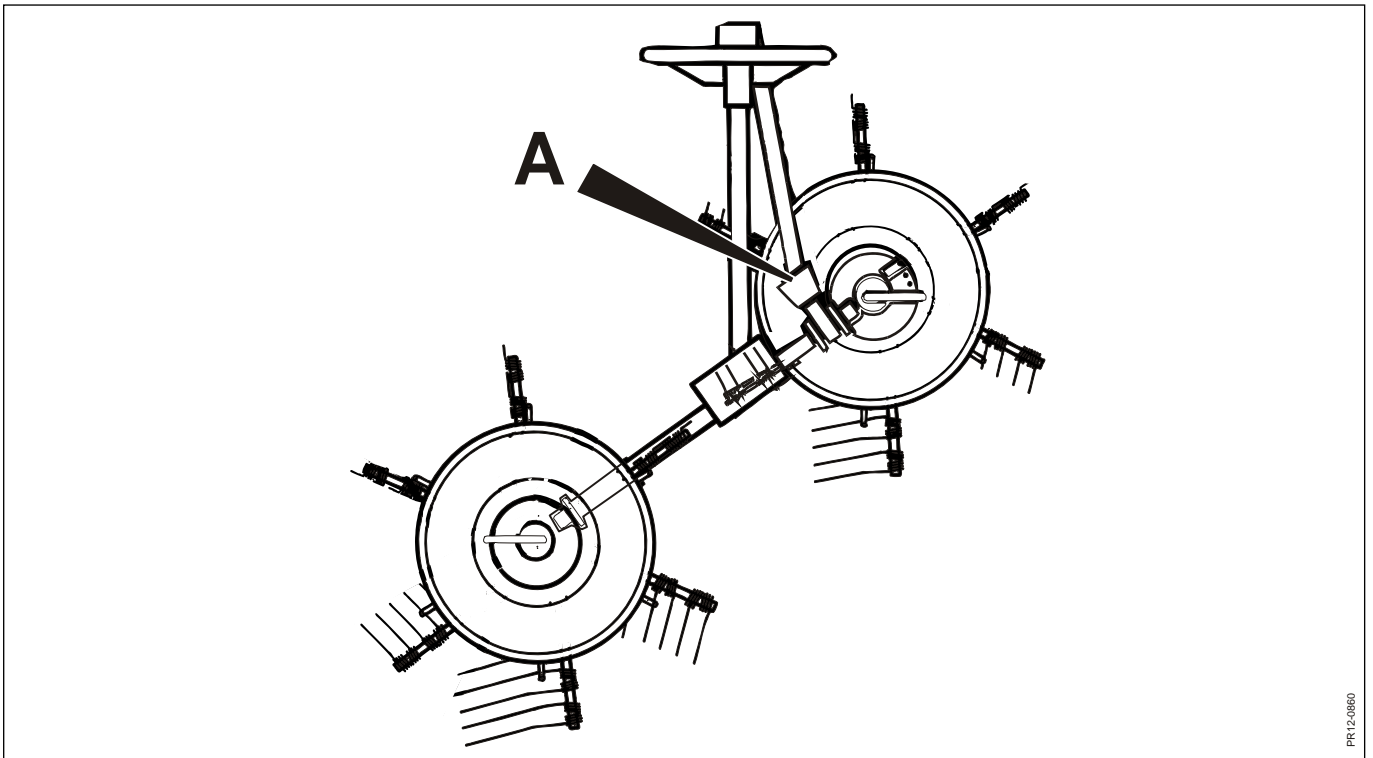


Fig. 3-31

## SYNCHRONISATION OF THE RAKE

### SYNCHRONISATION IN SPREADING POSITION

**Fig. 3-30** The distance A must always be 400-500 mm when the rake arm on the right rotor H is situated just below the cross tube. The distance A is measured from the middle of the tube to the middle of the tube.

The synchronisation must take place when the machine is in spreading position. (Selector and rake arms in spreading position.)

The engagement between the sprocket wheels on the left rotor is released by removing the special pin in the adjustment handle above the top cover and replacing it with a thin punch. The machine is raised and the rotors can be turned freely in relation to each other until distance A is obtained. The machine is lowered and the engagement is re-established with the rotors in the wanted distance. The special pin in the adjustment handle is mounted again.

**Bad synchronisation** may cause the machine to spread more to the left or to the right.

### SYNCHRONISATION IN RAKING POSITION

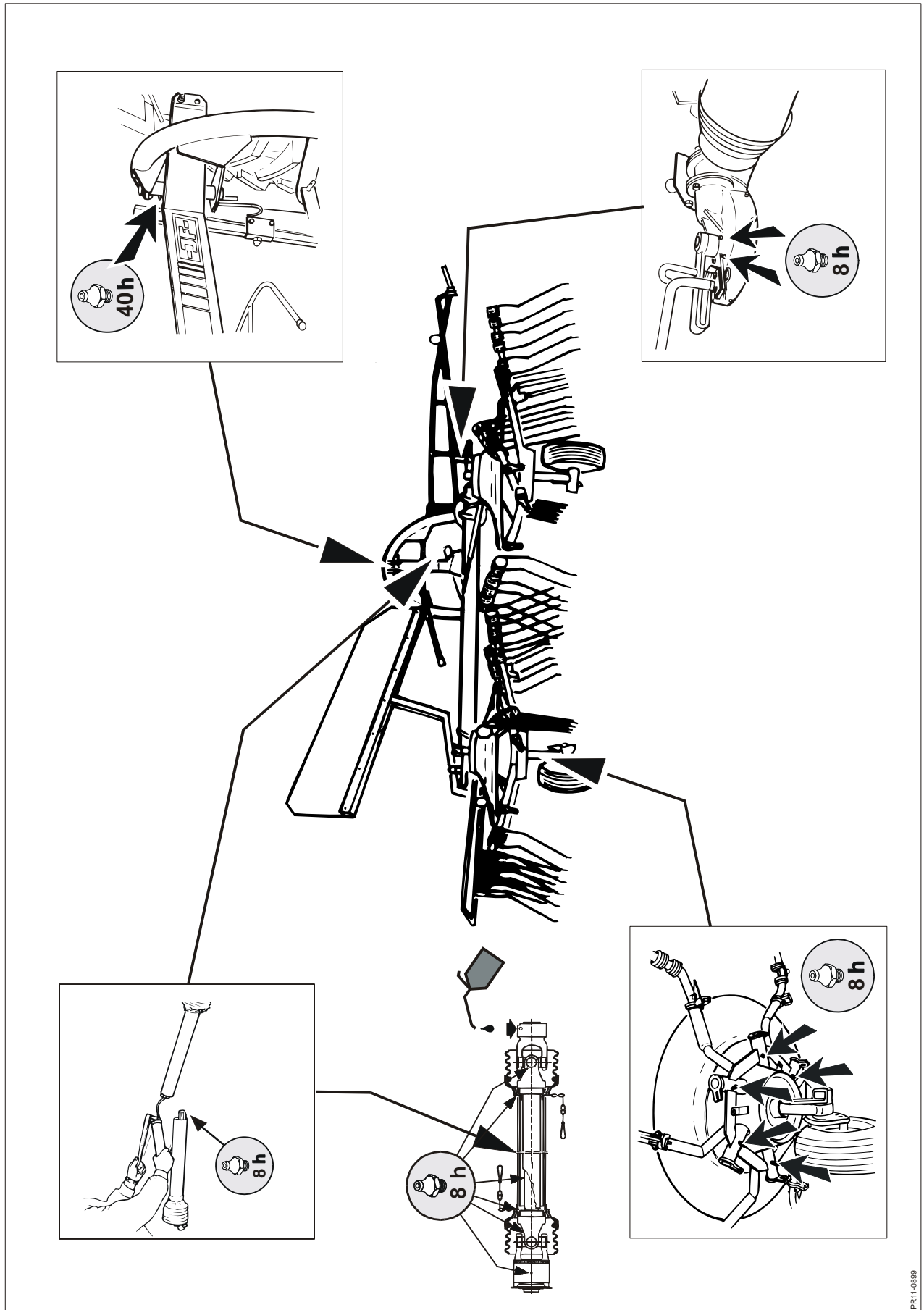
**Fig. 3-31** Synchronise the rake so that the two rotors pass each other below the middle of the cross tube.

The synchronisation must take place when the machine is in raking position. (Selector and rake arms in raking position.)

Synchronisation procedure: Remove the circlip and pull the input shaft A forward out of the engagement. The rotors can now turn freely in relation to each other until the wanted position on the rotors is obtained. The shaft is mounted again.

**Bad synchronisation** can cause a strip between the rotors.

## 4. LUBRICATION



PR11-0099

# 4. LUBRICATION

Always ensure that the machine has been properly greased before working.

## LUBRICATION WITH GREASE

### LUBRICATING POINTS

Use the lubricating chart on the opposite page.

**TYPE OF GREASE:** Universal grease of good quality.

The gear box is pre-lubricated with special grease type:

### SHELL CALITHIA EPT 2

Check and refill is unnecessary. When repairing **only** use this type of grease.

Lubricate movable mechanical connections with grease or oil when necessary.

**If you fail to lubricate regularly, high friction will soon appear which will lead to wear and damage.**



**IMPORTANT - REMEMBER:** Lubricate the PTO shaft after every 8 working hours. Pay special attention to the **sliding profile tubes** of the PTO shaft.

They must be able to slide back and forth when the torque is heavy during working.

**If you neglect to lubricate the profile tubes sufficiently, it will result in high frictional forces (raking) which will damage the profile tubes and in time also connecting shafts and gearboxes.**

## 5. MAINTENANCE

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## 5. MAINTENANCE

### IN GENERAL



**WARNING:** When repairing or maintaining it is especially important to ensure correct personal safety. Therefore, always park the tractor (if mounted) and the machine according to the GENERAL SAFETY RULES point 1 – 22 in the beginning of this instruction manual.

### TIGHTENING OF BOLTS



**IMPORTANT:** Screws and bolts on your new machine must be retightened after some hours of operation and after repairing.

Correct torque moment MA (if nothing else specified) for bolts on the machine.

Ma Ø	Class: 8.8 MA[Nm]	Class: 10.9 MA[Nm]	Class: 12.9 MA[Nm]
M 8	25	33	40
M 10	48	65	80
M 12	80	120	135
M 12x1,25	90	125	146
M 14	135	180	215
M 14x1,5	145	190	230
M 16	200	280	325
M 16x1,5	215	295	350
M 18	270	380	440
M 20	400	550	650
M 20x1,5	430	615	720
M 24	640	900	1100
M 24x1,5	690	960	1175
M 30	1300	1800	2300

### REPAIR

When mounting the rotor after repair the machine must be assembled so that the cam disc is placed with the highest part of the cam turning backwards.



### CONTROL OF UNBALANCE



**WARNING:** When driving in the field always be aware of unnatural vibrations or dissonance.  
When driving with a closed cabin the symptoms can be difficult to discover. Therefore check regularly if all springs are intact.  
**In the long term unbalance may lead to fatigue fractures and damage.**

The first time you start the machine pay attention to vibrations and noise to have a standard of comparison later.

## 6. MISCELLANEOUS

### STORAGE

When the season is over, the preparation for winter storage should be made immediately after. First, clean the machine thoroughly. Dust and dirt absorb moisture and moisture increases the formation of rust.



**CAREFUL:**

Be careful when cleaning with high pressure cleaner. Never use a high pressure cleaner to clean rotating parts and never spray directly on the bearings.



**IMPORTANT:**

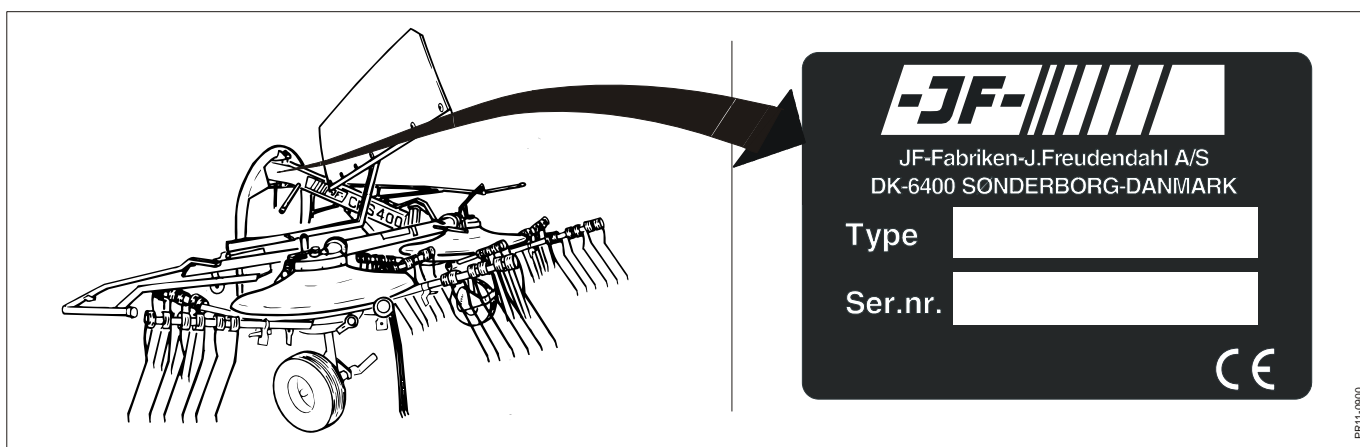
Grease all lubricating points after cleaning the machine.

**The following points are instructions how to prepare for winter storage.**

- Check the machine for wear and other defects.
- Note down the wearing parts required before the next season and order the spare parts.
- Disengage, clean and lubricate the PTO shaft. Remember to grease the profile tubes. The PTO shaft must be kept in a dry place.
- Disconnect the rake arms. Connecting shafts and couplings are protected against rust with oil or grease (which should be removed before working with the rake again).
- Spray the machine with a thin coat of rust-preventing oil. This is especially important on all parts polished with use.
- Place the machine in a ventilated engine house.

### SPARE PARTS ORDER

When ordering spare parts please state machine type and serial number. This information is printed on the machine plate which is placed as shown on the figure below. We request you to write this information on the first page in the spare parts catalogue supplied with the machine as soon as possible so that you have the information at hand when ordering spare parts.



## 6. MISCELLANEOUS

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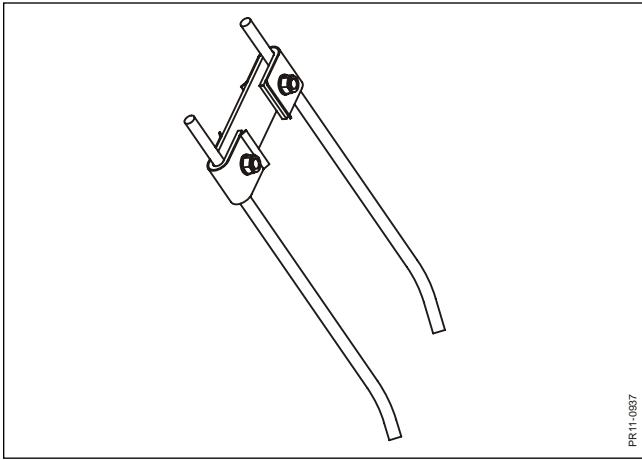


Fig. 6-1

### AUXILLIARY EQUIPMENT

Conc. order number: See spare parts list

#### SECURING OF TINES

**Fig. 6-1** To secure against broken rake tines in the field, holders can be mounted on the rake tines.

### MACHINE DISPOSAL

When the machine has been worn down it must be disposed of in a proper way.

Observe the following:

- The machine may not be placed somewhere outside, the gear box must be emptied of oil. The drained oil must be handed over to a destruction company.
- Disassemble the machine and separate the individual recycling parts, e.g. PTO shaft, tyres and components.
- Hand over the usable parts to an authorised recycling centre. The large scrapping parts must be handed over to an authorised breaker's yard.





# WARRANTY

**JF-Fabriken - J. Freudendahl A/S**, 6400 Sønderborg, Denmark, hereafter called "**JF**", grants warranty to any buyer of new JF-STOLL machines from authorized JF-STOLL dealers.

**The warranty covers remedy of material and production faults.  
This warranty is valid within a year after date of sale to end-user.**

The warranty is invalidated in the following cases:

1.     **The machine has been used for other purposes than those described in the instruction manual.**
2.     **Improper use.**
3.     **Damage caused by external sources, e.g. lightning or falling objects.**
4.     **Insufficient maintenance.**
5.     **Transport damage.**
6.     **The construction of the machine has been modified without JF's written permission.**
7.     **Unskilled repair of the machine.**
8.     **Unoriginal spare parts have been used.**

JF cannot be held responsible for loss of income or legal claim as a result of faults either of the owner or of a third party. Nor is JF responsible for wages beyond current agreements in connection with replacement of warranty parts.

JF is not responsible for the following costs:

1.     **Normal maintenance such as expenses for oil, grease and minor adjustments.**
2.     **Transport of machine to and from workshop.**
3.     **The dealer's travelling expenses or freight charges to and from the user.**

Warranty is not granted on wearing parts unless it can clearly be proved that JF has committed a fault.

The following is regarded as wearing parts:

**Protective canvases, blades, blade suspensions, wearing bars, guide shoes, stone protections, discs, rotor skirts, crimper parts, tyres, tubes, brake shoes, chain tightener parts, guards, hydraulic hoses, conveyors, vertical auger and tub, wheel-fixing bolts and nuts, snap rings, sockets, PTO-shafts, clutches, gaskets and seals, tooth belts, V-belts, chains, sprocket wheels, carriers, conveyor chain slats, rake- and pick-up tines, rubber seals, rubber paddles, cutter blades, chute liner and lining for spreading platform, shredding blades incl. bolts and nuts, spreading rotors and vanes for farmyard manure spreaders.**

In addition, the user must note the following:

1.     **The warranty is only valid if the dealer has undertaken a pre-delivery check and has given instruction to the end user in the use of the machine.**
2.     **The warranty cannot be transferred to others without JF's written permission.**
3.     **The warranty can be nullified if repair is not undertaken immediately.**



## Specialist in grassland machinery and complete diet mixers

When it comes to green feed techniques, JF-STOLL has gained a reputation as one of the world's leading suppliers and specialists. As a specialist manufacturer for over 50 years, we have gained a vast amount of experience from right around the world and, more importantly, unique regional requirements.

We also receive important inspiration in our development work through a close and continuous dialogue with customers, dealers and agricultural researchers.

No matter which type of JF-STOLL-machine you chose, you can be sure to obtain the best result to obtain a top result - in the shape of high performance and operational reliability, minimum maintenance, flexible working possibilities and optimal operating economy.

Dealer

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