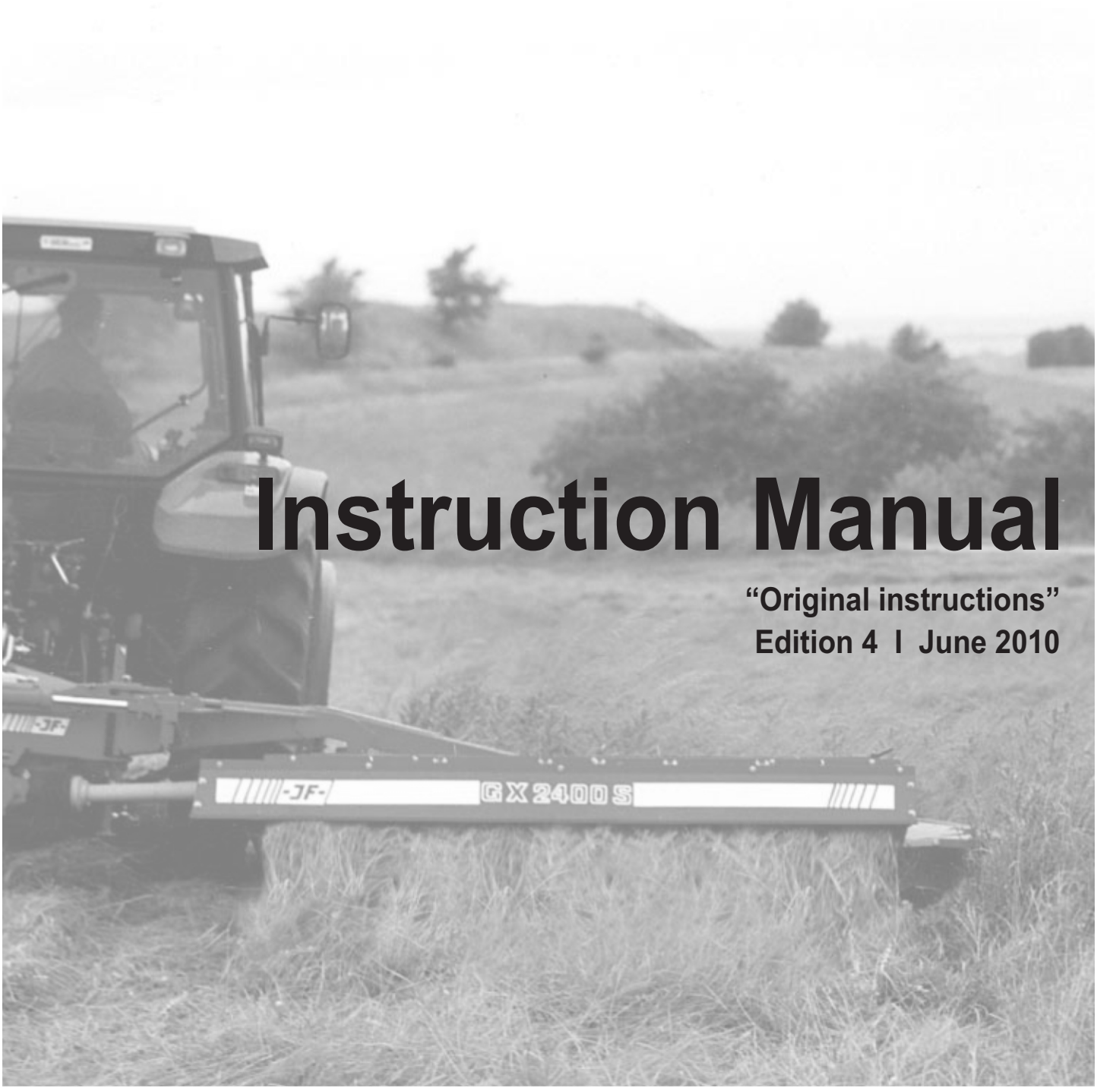
JF-STOLL

Disc Mower

GX 2400 S I GX 2800 S I GX 3200 S



Instruction Manual

“Original instructions”
Edition 4 I June 2010

JF-STOLL

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
wedlug 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 Dichiara 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 resposibilidad propia que el producto:
PT declaramos com responsabilidade próqria 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 :

GX 2400 S
GX 2800 S
GX 3200 S

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 exigencias 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 mainituja perusturvallisuus- ja terveysvaatimuksia (soveltuvin osin) sekä muita siihen kuuluvia EY direktiivejä:
2006/42/EC

CE

Konstruktion (Design) + Produktion (Production)
Sønderborg, 15.04.2010 Jørn Freudendahl

FOREWORD

DEAR CUSTOMER!

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

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

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

However, this first introduction cannot replace a more thorough knowledge of the different tasks, functions and the technical 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 operating conditions to use and maintenance. Besides, there are illustrations with text.

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

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

JF-Fabriken reserve the right to modify and improve design and construction without any obligation to make these modifications on machines delivered previously.

CONTENTS

1. INTRODUCTION

INTENDED USE

The JF disc mowers are designed for normal jobs in agricultural work. They must only be mounted on tractors, and driven by the power take-out of the tractor.

The disc mowers are solely made for:

> *Cutting off natural or planted grass and stem crops for animal feeding purposes by the ground.*
>
> *It is taken for granted that the work is done under reasonable conditions, including the fields to be normally cultivated and considerably cleaned for stones and foreign matter.*

Every use beyond what is mentioned above is not included in intended use. JF-Fabriken A/S will not be responsible for any damage resulting from such use, only the user has the risk.
If changes are made on the machine without a written permission from JF-Fabriken, JF-Fabriken cannot be held responsible for any injuries or damage.

Intended use also means that the information that JF-Fabriken prescribes in this instruction manual and the spare parts book must be observed, and that you use original spare parts and contact an authorized workshop if necessary.
The following instructions that prevent injuries and damage as well as general acknowledged technical safety rules, medical and traffic regulations **must absolutely** be observed.

The disc mower must only be used, maintained and repaired by persons who by reading this instruction manual are confident with the machine in question and especially informed about possible risks.

SAFETY

Generally much damage in agriculture occurs in consequence of misuse and insufficient instruction. The safety of persons and machine 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 mower 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 the user of the machine pay attention and use the machine correctly and thereby avoid exposing yourself or others to unnecessary danger.

The machine demands a skilled operation, which means that **you should read the safety instructions and the instruction manual before you connect the machine to the tractor**. Even though you have been driving 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 unless you have made sure that they have the necessary knowledge to operate the machine safely.

DEFINITIONS

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

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

In this 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 manual instruction of how to protect himself and 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.

GENERAL SAFETY INSTRUCTIONS

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

TRANSPORT

1 Always lower the cutting unit to the ground or engage the transport safety device when the machine is parked.
2 Never stay between tractor and machine when engaging or disengaging.
3 Always drive with the lights and the traffic marking during transport on public roads and at night.
4 Remember to use the transport safety device of the cutting unit and the hydraulic cylinders' stop valves during transport of the machine.
5 Limit the transport speed to max. 30 km/h if the machine has not been marked with another maximum speed limit.

WORKING

6 During work never wear loose clothes, which can be pulled in by movable parts in the machine.
7 Always use hearing protectors if the tractor has not been silenced sufficiently.
8 Make sure that all guards are intact and have been mounted correctly.
9 When engaging the PTO drive shaft check for 540/1000 RPM.
10 Never start the tractor until all persons are safely away from the machine.
11 Never stay near the machine while it is working.
12 Do not allow children to be near when you are working with the machine.
13 Never use the machine for other purposes than what it has been constructed for.
14 Do not stay near the protections of the cutting unit and do not lift the protections until all revolving parts have stopped. This also goes for the adjustment of the machine!
15 Always disengage the PTO drive shaft, activate the parking brake of the tractor and stop the tractor engine before you adjust the machine.

MAINTENANCE

16 Never work under a raised cutting unit, unless it has been secured by means of stop blocks or other mechanical securing.
17 Always block the wheels before you work under the machine.
18 Always disengage the PTO drive shaft, activate the parking brake of the tractor and stop the tractor engine before you:
- lubricate the machine
- clean the machine
- disassemble any part of the machine
- adjust the machine

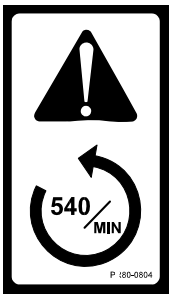
19 Before the tractor is started, check that all tools have been removed from the machine.

SAFETY JF MOWERS

CHOICE OF TRACTOR

Always follow the recommendations specified in the instruction manual of the tractor. If this is not possible seek technical assistance.

In order to obtain full capacity under all conditions we recommend that you to choose a tractor with 15 kW more than what is described as the necessary tractor size.
If the power of the tractor is considerably larger than the normal demand of the machine the machine should be secured against overload with a friction clutch on the PTO drive shaft.



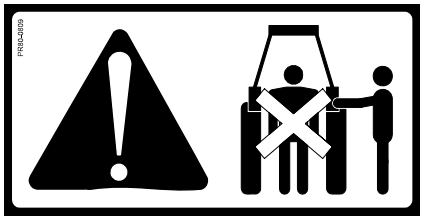
If you have chosen a version of the machine, which is made for 540 RPM you must make sure that the wrong power take-out is not used by mistake. It is very **dangerous** to engage a machine intended for 540 RPM to a power take-out running at 1000 RPM for a long period.
Considerable or long lasting overload can damage the machine and at worst result in parts being thrown out.

Choose a tractor with a suitable own weight and track width so that it can drive steadily in the ground conditions. Also make sure that the lift arms of the tractor are intended to carry machines with the weight in question.
In order to have full control of the tractor in all conditions at least 20% of the tractor's own weight must be on the front axle. It might be necessary to use front weights in order to meet this requirement.

Always choose a tractor with a closed cabin when working with a disc mower.

You must also make sure that the tractor's hydraulic system cannot transmit a higher pressure than **210 bar**.

CONNECTION AND DISCONNECTION



Always make sure that nobody is standing between the tractor and the machine during connection and disconnection.
An unintentional manoeuvre with the tractor might jam persons.

Make sure that the PTO drive shaft has been mounted correctly, which means that the shear pin is in mesh and that the support chain has been fastened in both ends.
The PTO drive shaft must be correctly protected. If the guard is defect it must be replaced immediately.

Check that all hydraulic clutches are tight and that all hoses and fittings are undamaged before the hydraulic system is activated.
When the engine of the tractor has stopped make sure that there is *no* pressure in the hydraulic hoses by activating the hydraulic tractor valves.

Hydraulic oil under pressure can penetrate the skin and cause serious infections. You should always protect your skin and your eyes against oil splashes. If, by accident, the hydraulic oil under pressure hits you, consult a doctor immediately.

Make sure that no persons are near the machine when starting it, as there might be some air in the hydraulic system and the air might cause sudden movements.
In order to remove possible air in the oil all hydraulic cylinders must be checked after the connection to the tractor. Especially before driving on public roads.

TRANSPORT

Never drive faster than the conditions allow.
It is important to block the hydraulic transport adjustment. Unintentional operation of the drawbar cylinder can cause the mower to move to the roadway of oncoming traffic or to the cycle path or the footpath. The same might happen if there is air in the hydraulic cylinders or by a sudden loss of oil from hydraulic hoses.
Always check that the mechanical transport safety devices are engaged before transporting the machine.

WORKING

Before you start working, check if knives and discs have cracks or other damages. It is necessary to replace damaged knives and discs.
Periodically check if knives and knife bolts are worn according to the regulations stated in the instruction manual (see the section about maintenance).

Stone and foreign matter in the field might get in contact with the revolving discs and get thrown out again at a very high speed.
Therefore all guards must always be correctly mounted and intact when the machine is working.
Furthermore, on stony ground the stubble height must be adjusted to a maximum (which means no angle on the knives).
It is important that the cutting unit is correctly relieved in order to ensure perfect work in the field and to reduce the risk of damaging the disc bed.

In case of blocking of the cutting unit stop the tractor engine, activate the parking brake and wait until all the revolving tools have stopped before removing the foreign matter.

When working with a side-mounted mower you should not drive faster than you will be able to avoid large stones, ditches and other obstacles that may cause the tractor to turn over.
Also remember to adjust the speed when making sharp turns up hillsides or when lifting the machine in the three-point suspension.

The side-mounted mowers are equipped with a spring-loaded safety release, which will ensure the direction stability of the tractor and limit the damage at collisions.

Check that the safety release is activated and that it is not locked.

If the vibrations or the noise of the machine increases markedly during a period of time you should stop immediately. Do not continue the work until the fault has been corrected.

MAINTENANCE

Always make sure that the spare parts have been tightened to the correct torque setting.

When replacing parts in the hydraulic system make sure that the cutting unit is resting on the ground or if the lifting cylinders have been blocked.

Hydraulic hoses must, before they are put into service, and then at least once a year, be controlled by an expert. If required they must be replaced. The useful life for hydraulic hoses must not exceed 6 years, incl. max. 2 years storage time.
Always use hoses complying with the requirements informed by the manufacturer of the equipment. All hoses are marked with date of production.

MACHINE SAFETY

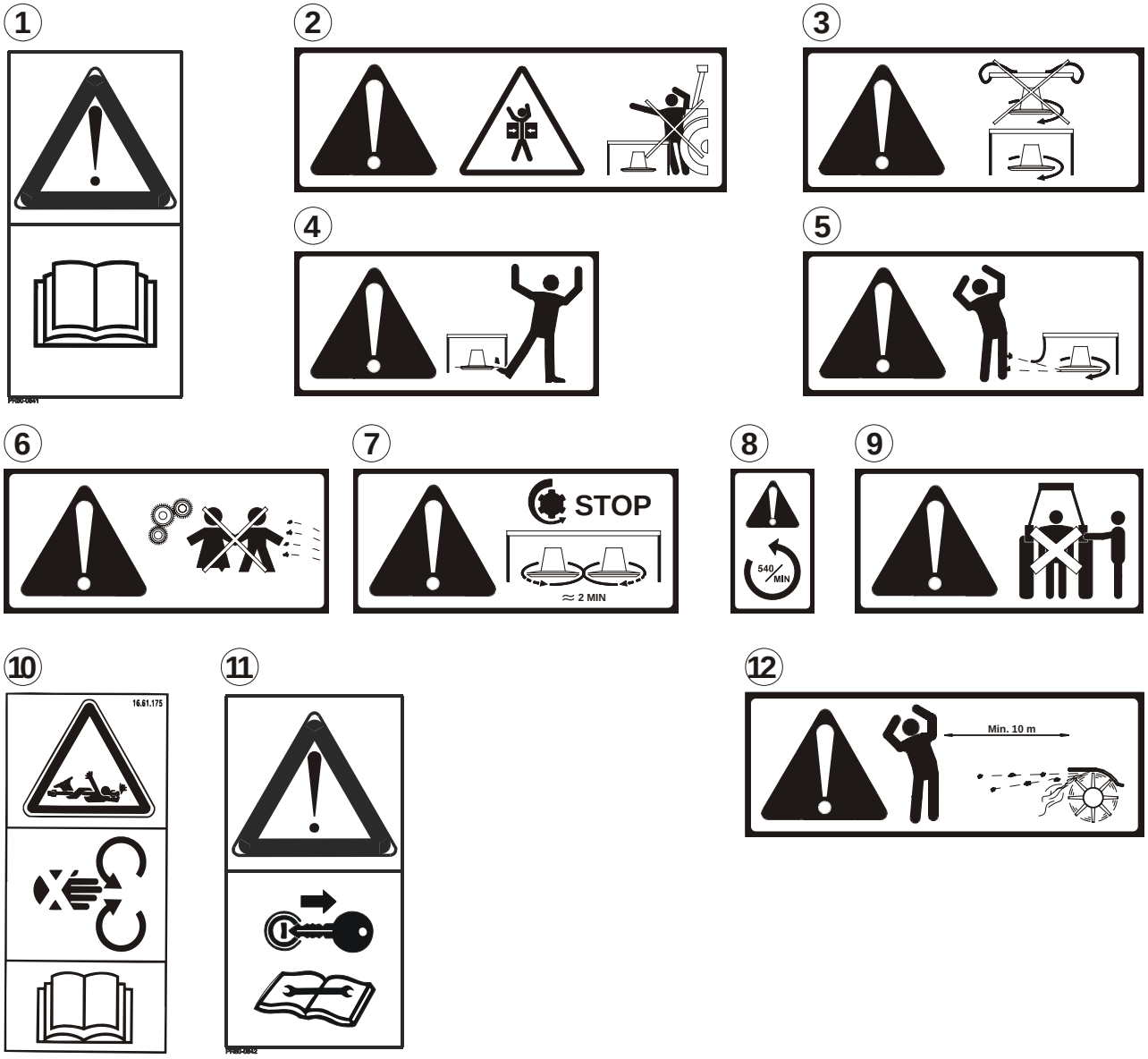
On JF-Fabriken all the revolving tools are balanced by means of a special machine with electronic sensors. If it appears that a part has a remaining unbalance small counter weights are fastened.

As the discs work at up to 3000 RPM even the slightest unbalance will cause vibrations, which might lead to fatigue fractures.

When knives are replaced both knives on the disc in question must be replaced as not to create an unbalance.

During the season you should check several times every day that no knives, carriers or bolts are missing. If any of these are missing you should mount the parts immediately.

At regular intervals clean hats (if mounted) and flow intensifiers by removing earth and grass.
Also check and "air" the friction clutches at regular intervals to make sure that they do not seize.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STOP
≈ 2 MIN
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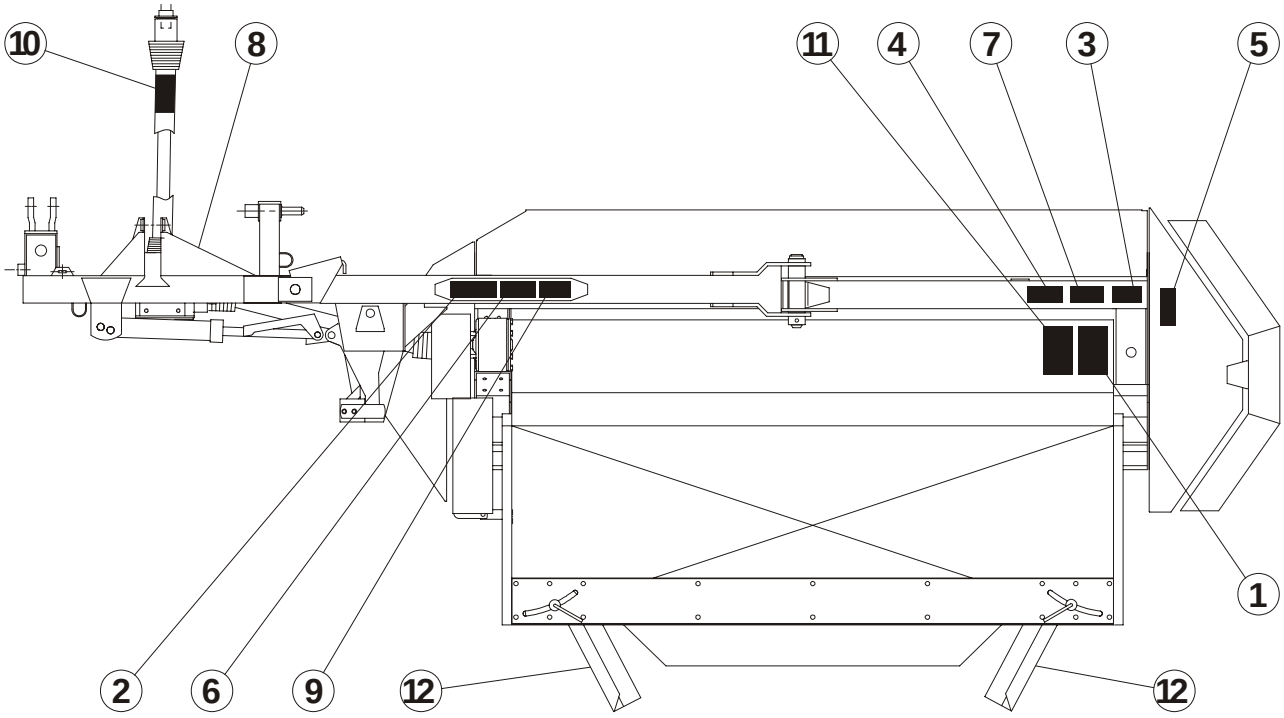
10
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WARNING DECALS

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

1 Read the instruction manualand 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 Risk of getting jammed
Never let anybody stay between the machine and the tractor when the machine is connected to the tractor. Unintentional manoeuvres and incorrect operation might result in serious personal injury.

3 Operation without canvas
Do not start the machine unless canvas and guards are intact and in their right position. The machine may throw stones and other foreign matters during the operation. The purpose of the canvas and the guards is to reduce such danger.

4 Do not under any circumstances let anybody get near or stay near the machine during operation. The machine's rotating knives can without difficulty cause serious injury on any part of the body hit by such a knife.

5 Stones being thrown
The machine may throw stones even if all canvases and guards are mounted. Therefore, always make sure that nobody is standing near the machine when it is working.

6 Children
Never let children stay near the machine during the operation. Especially not small children as they have a tendency to do unforeseen things.

7 Time to stand still
After the machine's PTO-shaft has stopped, the rotating knives of the machine will keep rotating for up to 2 minutes. Wait until the knives have come to a complete stop before removing canvas and guards for inspection and maintenance.

8 Number and direction of rotations
Check that the PTO shaft is running with the correct number of rotations, and in the correct direction. A wrong number and/or direction will damage the machine in time with the risk of personal damage.

9 Risk of getting jammed
Never let anybody stay between the machine and the tractor when the machine is connected to the tractor. Unintentional manoeuvres and incorrect operation might result in serious personal injury.

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

11 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 remember to remove the ignition key to ensure that nobody starts the engine before the work has been completed.

12 The risk of stones being thrown.
The conditioner is driving at a very high number of revolutions, and if there are stones in the field the machine is capable of throwing them 10 meters backwards or to the sides at a very high speed. Therefore always make sure that no persons are closer to the machine when it is working.

13 Guard missing (*United States only*).
If the guard of the PTO-shaft is missing or defect do not use the PTO-shaft before the guard has been replaced with a new one.

TECHNICAL DATA

			GX 2400 S	GX 2800 S	GX 3200 S
Working width [m]			2,4	2,8	3,2
Power requirement, PTO [kW/HP]			40/54	50/68	65/88
Gearbox for 1000 RPM			Extra	Standard	Standard
Gearbox for 540 RPM			Standard	Extra	Extra
Three-point suspension			Cat. II		
Oil take-outs			1 double		
With M-Unit			660	760	820
Weight (kg) With C-Unit [kg]			690	790	-
With Twin-Unit					-
Field pressure [kg]			30	35	40
Driving speed [km/h]			8 – 15		
Number of discs [pcs.]			6	7	8
Number of knives [pcs.]			12	14	16
Variable stubble height [mm]			45 – 90		
Swath width standard [m]			0,8-2,4	1,2-2,8	1,4-3,2
Transport width [m]			< 3		
Wide spreading Top Dry [m]			Standard		
Stone release			Standard		
Overrun			Standard		
Friction clutch			Extra		
Noise level in the tractor cabin	Machine connected	Window closed	76.5 dB(A)		
		Window open	82.5 dB(A)		
	Machine disconnected	Window closed	76.5 dB(A)		
		Window open	78 dB(A)		

We reserve the right to change the construction and specifications.

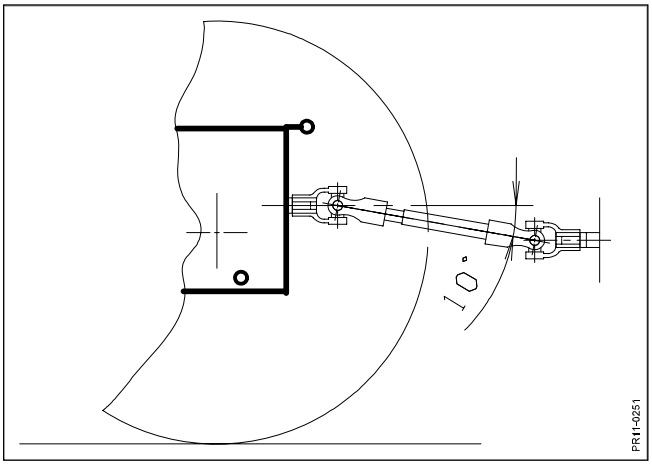


Fig. 2-1

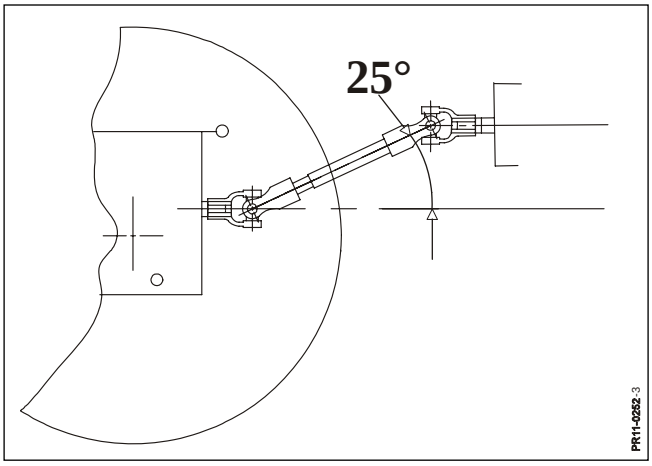


Fig. 2-2

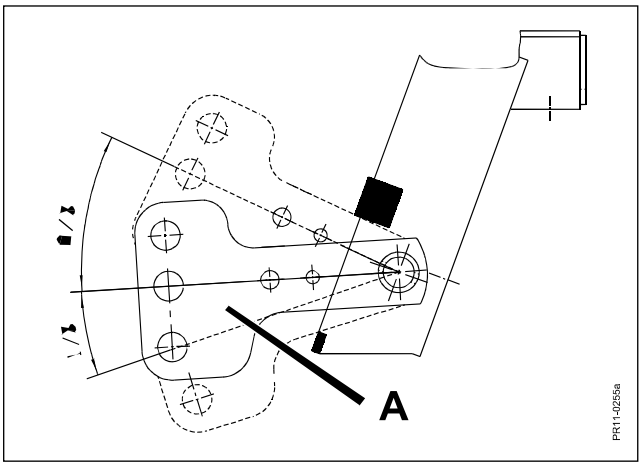


Fig. 2-3

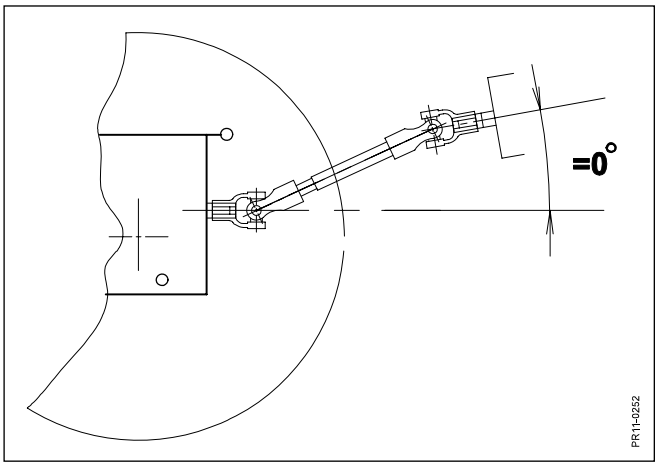


Fig. 2-4

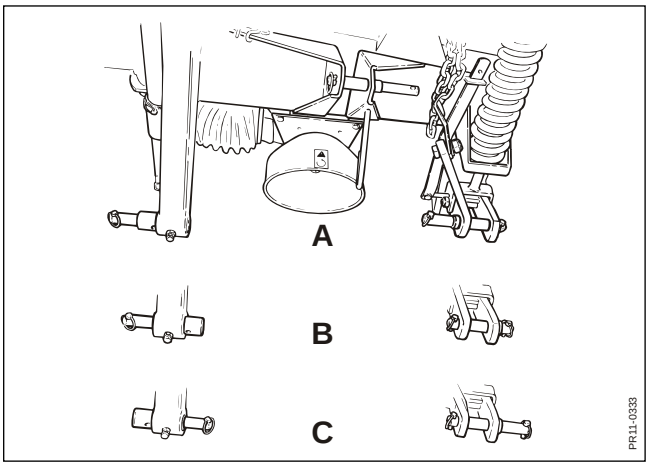


Fig. 2-5

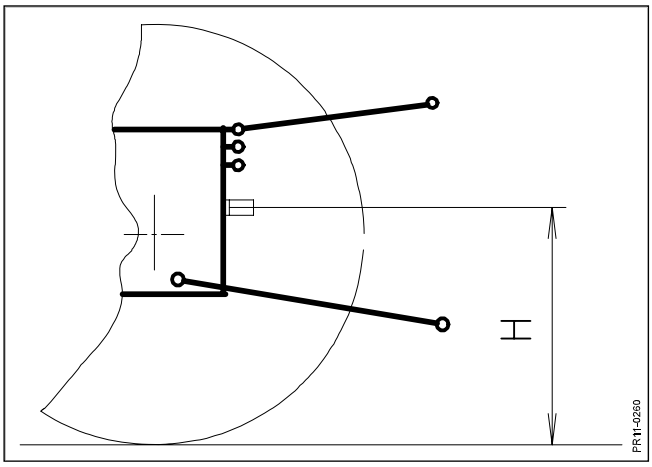


Fig. 2-6

2. CONNECTION AND TEST RUN

CONNECTION TO TRACTOR

REQUIREMENTS AND WISHES FOR THE CONNECTION

a) The length of the PTO shaft must have sufficient overlap of the profile tubes and at the same time it must not be jammed in the shortest position.

Fig. 2-1 Fig. 2-2 b) The angle of the PTO shaft must be in the area -10° to + 25° compared to horizontal in the working and raised position for transport, respectively.

Fig. 2-3 c) The connection is made so that the ground contour following ability is optimal, and the lever arm **A** is as far as possible able to move 1/3 downwards and 2/3 upwards.

d) The relief is adjusted until the disc bed pressure to the ground is 30 to 40 kg.

Fig. 2-4 e) The PTO of the tractor and the PIC (power in-take) of the machine must be parallel, i.e. the angle between the two must be as close to 0° as possible.

GUIDANCE

Adjust the machine to the track width of the tractor.

Fig. 2-5 There are 3 settings (**A**, **B** and **C**) of the pins on the headstock corresponding to the following track width sizes:

Track width [mm]	Pin position
< 1550	A
1550 – 1750	B
> 1750	C

The adjustment of the pins are made by loosening and adjusting the fixed pin position and adjusting the loose pin position according to fig. 2-5.

Fig. 2-6 1) Measure the height **H** from the tractor PTO shaft (power take-out) and to the ground.

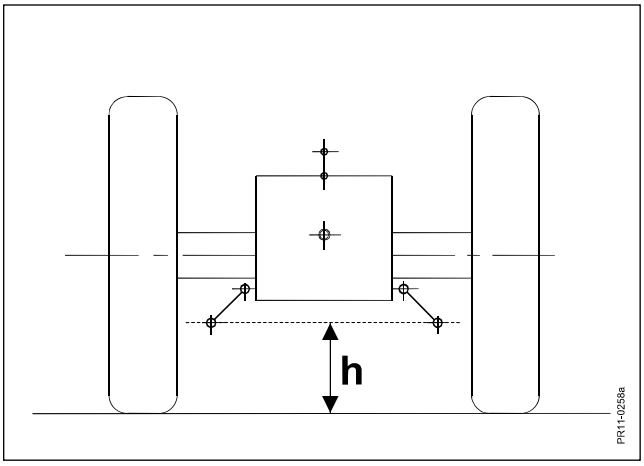


Fig. 2-7

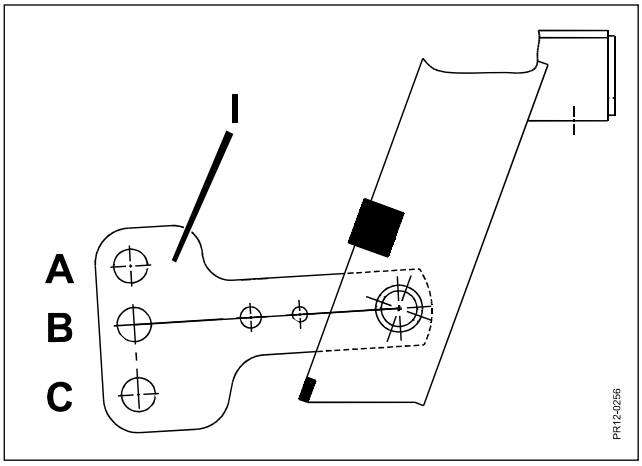


Fig. 2-8

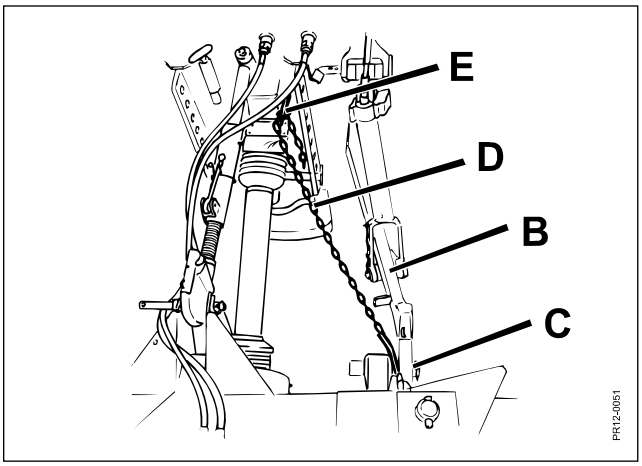


Fig. 2-9

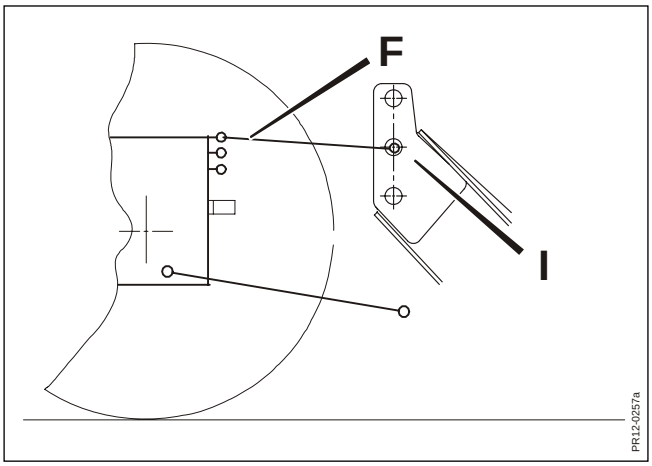


Fig. 2-10

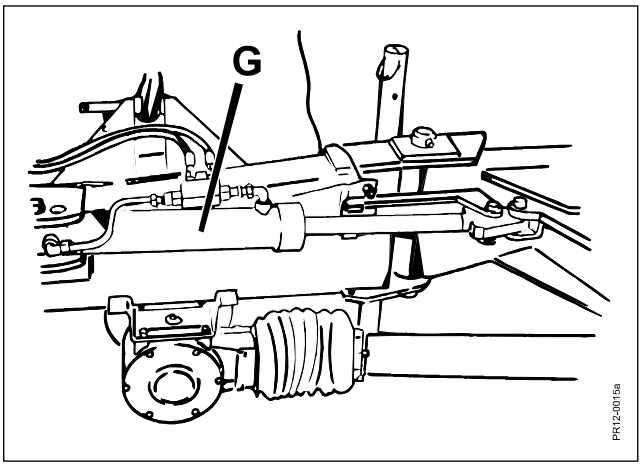


Fig. 2-11

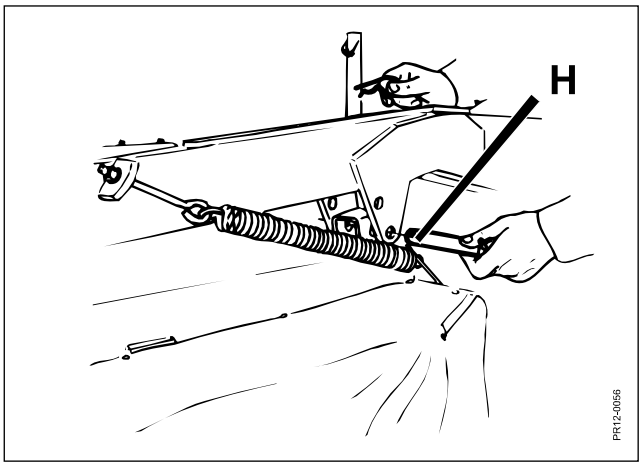


Fig. 2-12

Fig. 2-7 2) Adjust the lower links of the tractor, so that they have the same distance **h** to the ground.

Fig. 2-8 3) Choose a hole in the lever arm **I** at the left pin positions.
The top hole A may and can not be used when the tractor is equipped with category III link arms.

The height H of the tractor PTO:	Pin positions for the left lower link:
H < 650 mm	A = upper hole
650 < H < 750 mm	B = middle hole
H > 750 mm	C = lower hole

Fig. 2-9 4) Engage the lower links **B** of the tractor in the pin position **C** of the machine. At the same time the support chain **D** is mounted on the right mounting pin, and its chain lock at the top link fix point **E**.

Fig. 2-10 5) Mount the top link **F**. It is placed in a high position on the tractor side, and the coupling point **I** on the top frame is chosen so that the top rod is almost parallel with the tractor's lift arms. This will ensure appropriate movements when raising the machine and optimum conditions for later connection and disconnection of the machine.

Fig. 2-11 6) The swivel cylinder **G** is connected to a double acting hydraulic outlet on the tractor.

Fig. 2-12 7) The machine is lifted with the lower links and put into working position. The pin of the stabiliser **H** is removed.

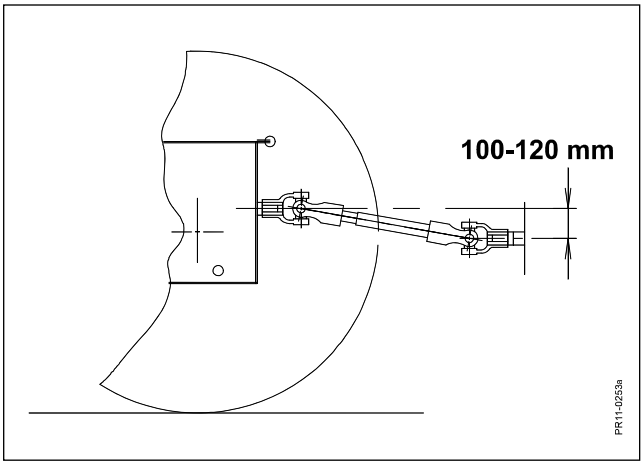


Fig. 2-13

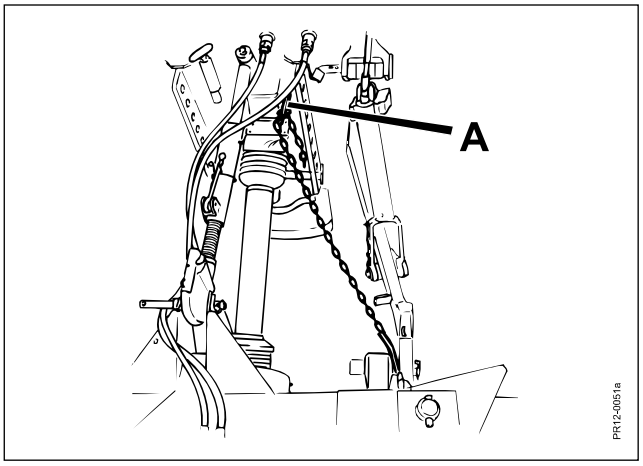


Fig. 2-14

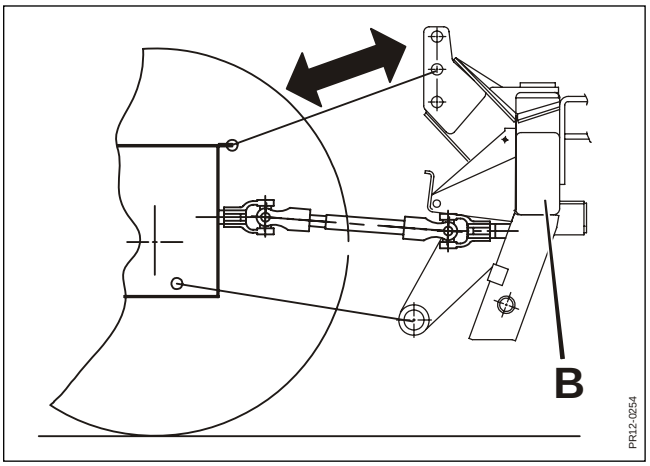


Fig. 2-15

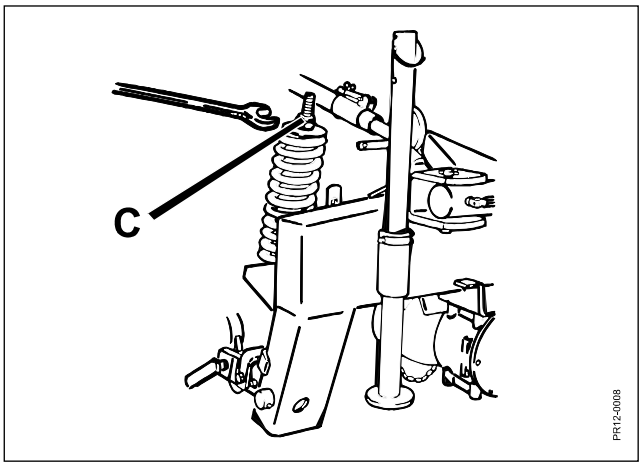


Fig. 2-16

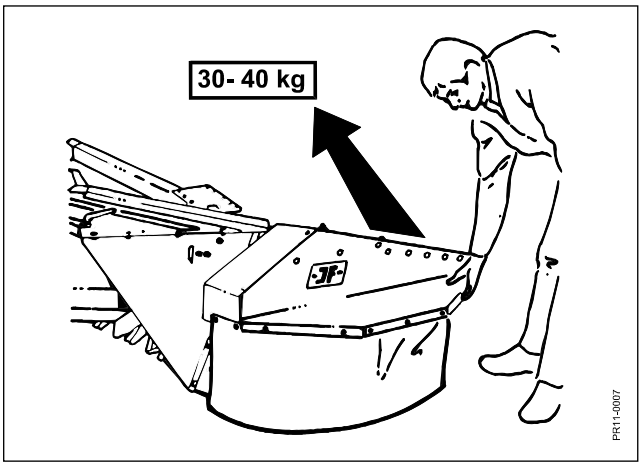


Fig. 2-17

Fig. 2-13 8) The working position of the machine is determined, as the power take-in (PIC) on the right angel gear on the headstock must be 100 - 120 mm lower than the PTO shaft of the tractor. This corresponds to an inclination of the PTO shaft of approx. 10°.

Fig. 2-14 9) The length of the support chain is adjusted by **A**, so that the lift arms are kept at the required working position.

Fig. 2-15 10) The machine is lowered to working position and the length of the top link is adjusted so that the headstock **B** is in vertical position.

Fig. 2-16 11) The relief spring is adjusted to the required relief at the spindle **C**.
Fig. 2-17 JF-Fabriken recommends that the relief is adjusted, so that the outer end of the machine can be lifted with force of 30 - 40 kg.

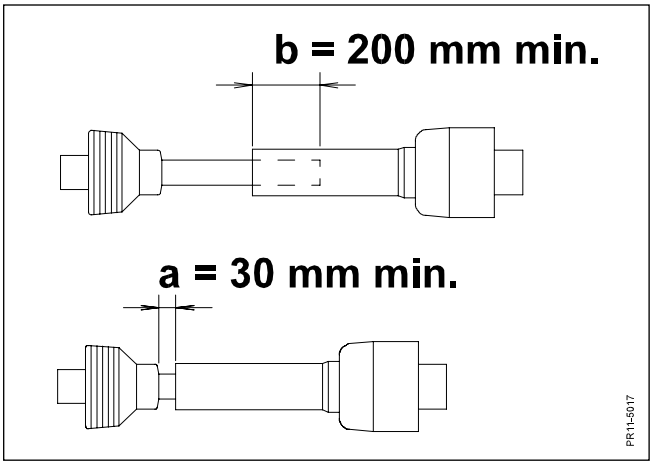


Fig. 2-19

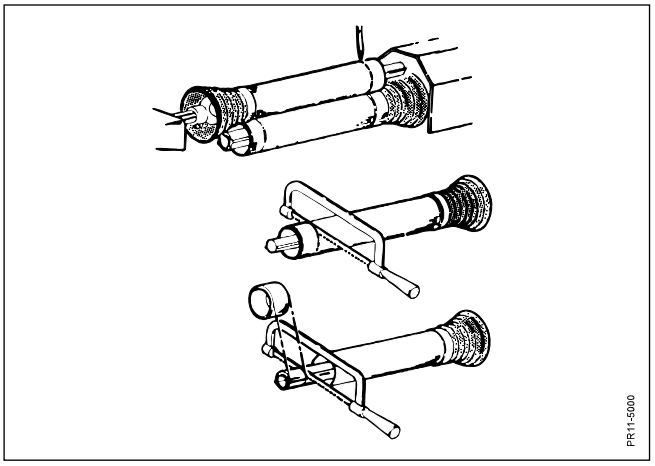


Fig. 2-20

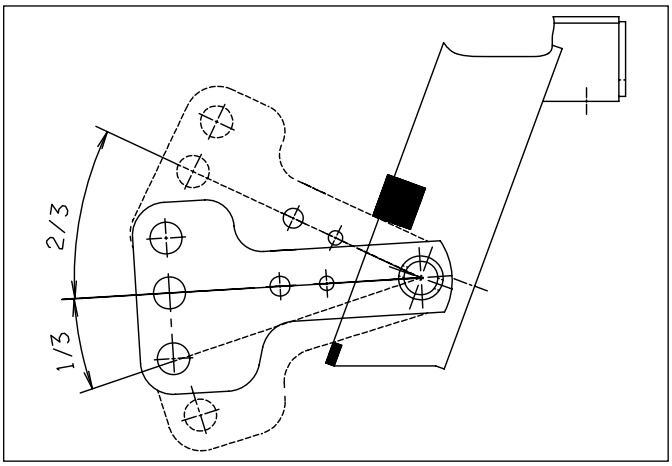


Fig. 2-21

Fig. 2-19 14) Adjust the length of the PTO shaft in such a way that:

- in working position it has minimum 200 mm overlap on the profile tubes.
- in no position it has less than 30 mm safety distance.
- in the longest position it has minimum 100 mm overlap.

Fig. 2-20 Be aware that when shortening the tubes all 4 tubes must be shortened equally. Remember to deburr the shortened ends, clean them for any dirt and swarfs, and grease the profile tubes before the PTO shaft is assembled again.

Fig. 2-21 15) Make sure that the lever arm is able to move approx. 1/3 downward and approx. 2/3 upward when the disc bed is on the ground and the lift arms are lowered, so that the support chain is tight. This ensures that the connection of the machine results in optimal ground following capability.

IMPORTANT: In order for the guarantee of the PTO shaft to be valid, and to maintain the life of the PTO shaft, the following must be observed:

- Always start the machine at a low number of revolutions.
- Always start the machine with the PTO shaft in a position of max. 10° from vertical.
- A strong increase of the number of revolutions of the machine, for instance when you have turned and then drive into a swath, must only happen when the PTO shaft is in a position of maximum 10^{o} compared to horizontal.
- *Last, but not least:* Grease the PTO shaft and especially the profile tubes every 8 working hours.

Finally, the PTO shaft can be mounted, the free wheel must be fitted on the machine.

FRICTION CLUTCH

Some versions of the PTO shafts are equipped with a build-in friction clutch. The purpose of this friction clutch is to ensure the transmission against overload when working in the field and when starting the machine (connection of the power take-out (PTO)). The friction clutch must be ”aired” before starting a new machine. See further information in section 5. MAINTENANCE – FRICTION CLUTCH, and "air" the friction clutch when testing the machine.

TEST RUN

When all protections are correctly mounted and the machine has been lowered to working position it can be test run.
Before you connect the power take-out (PTO) you must make sure that all tools have been removed from the machine and that there are no persons near the machine. Carefully connect and let the engine run at a low number of revolutions for some minutes. If there is no unusual noise or abnormal vibrations the speed is increased to the normal number of revolutions.
Apart from the tractor driver, no one should be near the machine.

IMPORTANT: Screws and bolts must be retightened before the machine is started.

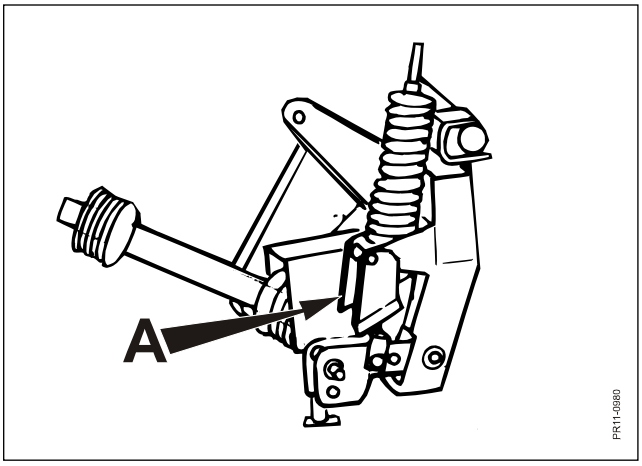


Fig. 3-1

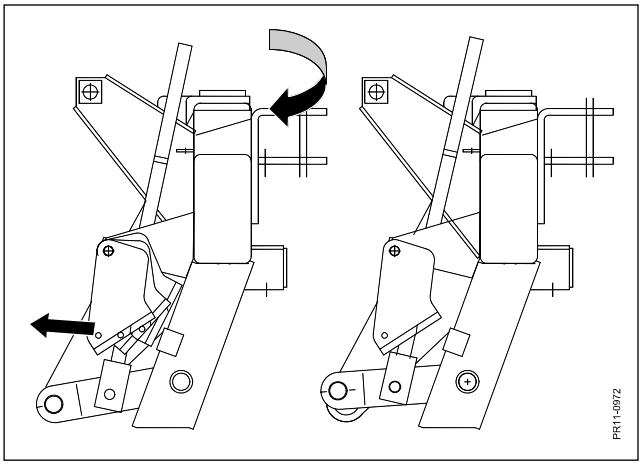


Fig. 3-2

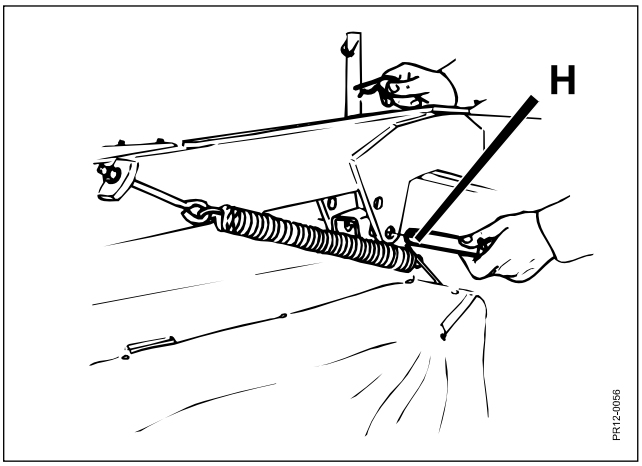


Fig. 3-3

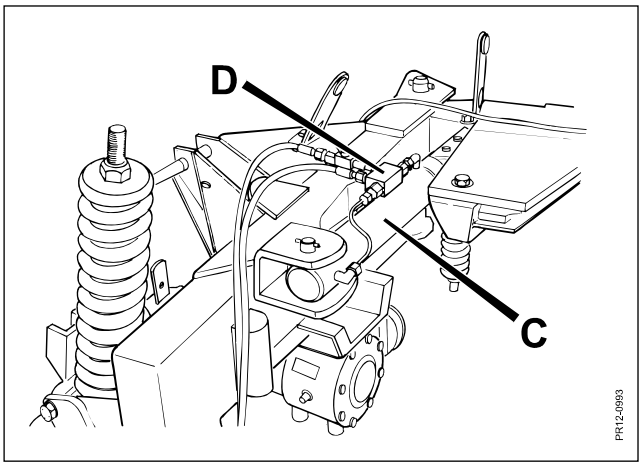


Fig. 3-4

3. ADJUSTMENTS AND DRIVING

CONNECTION

Note:
The starting point for the following guidance is that the machine is ready, adjusted to the tractor and test run according to section 2. CONNECTION AND TEST RUN.

Guidance for normal connection:

1) The tractor is parked right in front of the three-point suspension of the machine.
2) Make sure that the lift arms of the tractor are at the same height.
3) The machine is connected to the lift arms of the tractor. Choose a hole in the lever arm at the left pin position.
4) The lift arms are raised so that the jacks are lifted off the ground.
5) The lift arms are lowered again and the top link is mounted.
6) The swivel cylinder is connected to the external hydraulic outlets of the tractor.

Fig. 3-1 7) If the parking lock **A** is mounted on the machine, its rope is carried into the tractor cabin.

TRANSPORT CONVERSION

Fig. 3-2 Before the machine is swivelled from working position and backwards the parking lock is activated through the rope.

IMPORTANT: The conversion must not take place with revolving PTO shafts.

Fig. 3-3 The pendulum suspension must be locked at the pin **H**, in order to transport damage, but also to prevents the PTO shaft from bottoming during transport.
If this is omitted shock from the pendulum suspension could damage the cross of the PTO shaft and possibly also parts in the gearboxes.

Fig. 3-4 The swivel cylinder **C** ”is locked” in transport position by closing ball valve **D**.

DANGER **TRAFFIC MARKING:** Before the machine is transported on public roads you must make sure that the traffic rules in force are observed. Of course, it means that the machine must not cover the tractor's light and signalling equipment.

PARKING

Fig. 3-2

1) Before the machine is swivelled from working position and backwards the parking lock is activated via the robe. REMEMBER: Conversion must never happen with revolving PTO shafts.
2) Lift lift arms slightly
3) The lift arms are lowered until the top link can be dismounted.
4) The jack of the machine is lowered.
5) Hydraulic hoses, cords and PTO shaft are disconnected from the tractor.
6) The lift arms are lowered until the machine is on the ground. Then the lift arms are disengaged and the tractor is disengaged from the machine.

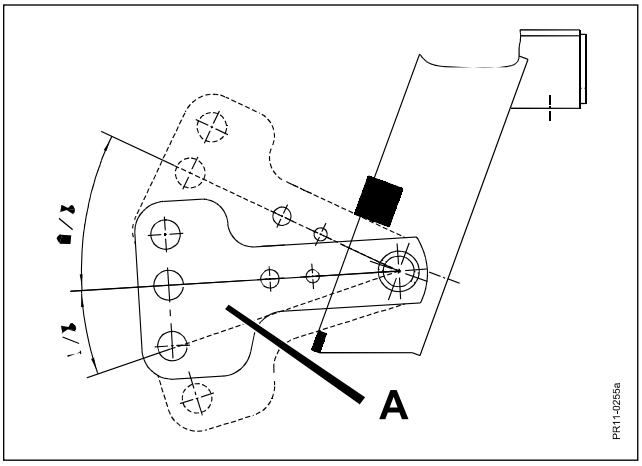


Fig. 3-5

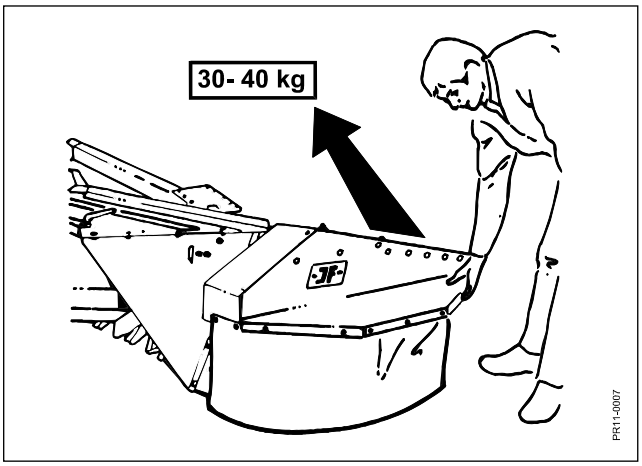


Fig. 3-7

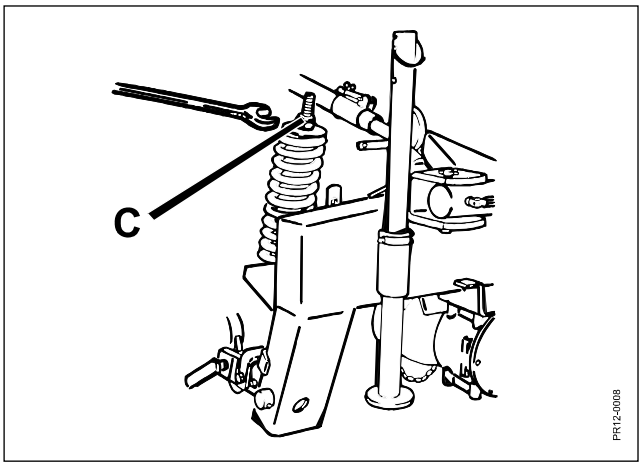


Fig. 3-8

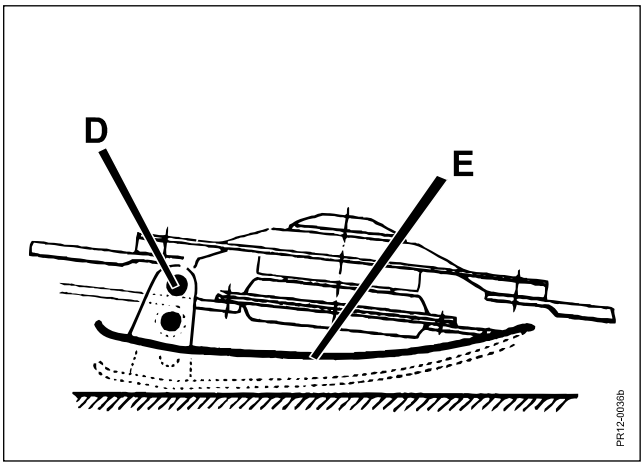


Fig. 3-9

WORKING IN THE FIELD

BASIC ADJUSTMENTS

The pendulum suspension is disengaged from its transport securing and the ball valve for the swivel cylinder is opened. The machine is put into working position next to the tractor.

Fig. 3-5 The lift arms are raised/lowered until the support chain is tight according to the guidance in section 2, and the machine has the correct height to operate. This corresponds as known to the fact that lever arm **A** at the left lift arm can move 1/3 downwards and 2/3 upwards.

CAUTION: Before you make changes on the adjustments of the machine you must stop the tractor engine, remove the ignition key and activate the parking brakes of the tractor.

RELIEF

Fig. 3-7 The relief of the machine is checked before driving. The easiest way to check the springs is by lifting the right side of the cutting unit. The relief should be adjusted so that the machine can be lifted with a force of 30-40 kg.

Fig. 3-8 If the relief must be adjusted it is made with the spindle **C** at the large springs at the left hand side of the headstock.

IMPORTANT: Too much relief might result in the disc bed jumping on uneven ground, which then again might cause uneven stubble.
Too little relief might result in too much wear on the skids and might damage the grass roots.

STUBBLE HEIGHT

From the factory the machine is designed to cut with a theoretical stubble height of 20 to 60 mm. This means that the actual stubble height will be from approx. 40 mm to approx. 120 mm.
(Normally the stubble height is calculated to be 2 x the theoretical stubble height.

Fig. 3-9 Rough adjustment of the stubble height with the pin **D** at guide shoe **E** in the right and left-hand side. (Lower hole gives a low stubble). Adjustment can be made by extending or shortening the top link of the tractor.

For extra high stubble, for instance when topping fallow land, it is possible to mount extra high skids that can be delivered as accessories. See the spare parts catalogue.

IMPORTANT: In order to reduce the wear of the knives and discs and improve the possibility of regrowth the stubble should never be higher than 60 mm.
In stony fields you must always choose maximum stubble height and you must be extra careful.

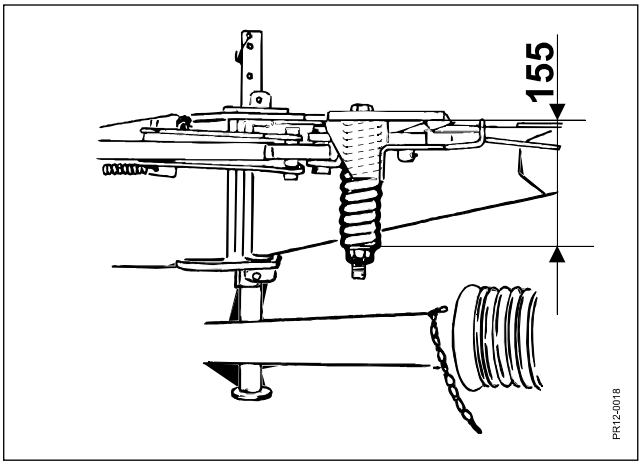


Fig. 3-10

STARTING UP

CAUTION: Before starting make sure that all protections are correctly mounted and that no persons are near the machine.

Before driving into the material the revolutions of the power take-out are increased to 540/1000 RPM.
Always make sure that the number of revolutions is not reduced during the operation, as you then risk that the cutting will be unsatisfactory.

The forwarding speed must, of course, be adjusted to the ground conditions.

THE BREAKAWAY MECHANISM

Fig. 3-10 A stone release enables the cutting unit to swivel backwards at collisions with a foreign body.

When the stone release is activated you must immediately disengage the power take-out and stop the tractor.

The disengagement is important, as the PTO shafts otherwise will be exposed to an acute angle when swivelling the cutting unit backwards.

Reversing the tractor with lowered cutting unit can reverse the stone release.

From the factory the stone release has been adjusted to most conditions.

The spring is tightened to 145 mm (5 mm = 3 rounds with the nut).

If the breakaway mechanism is often activated, there is the possibility of increasing the initial tightening of the spring. Never tighten the spring so much that it blocks the breakaway mechanism because of insufficient spring travel.

SECURING AGAINST OVERLOAD

IMPORTANT: The tractor driver can do a lot himself to secure the transmission against overload!

The following conditions should be observed in the daily work:

1) Always start the machine at a low number of revolutions, especially if using a tractor with electronic hydraulic activation of the power take-out/PTO-shaft.

2) You should start the machine in working position.

3) Increase of the machine’s number of revolutions, e.g. when opening the field or after turning in the field, should be made close to the working position.

4) Listen to the number of revolutions of the tractor when working in the field. If the number of revolutions is reduced slowly or suddenly it might be a sign of overload of the transmission caused by too high forwarding speed or foreign matters in the cutting unit. In this situation the friction clutch will slip and you must immediately disengage the P.T.O. and let the machine "reengage".

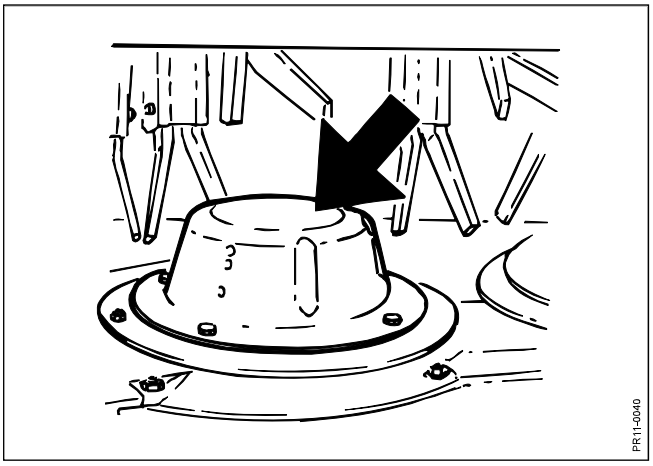


Fig. 3-11

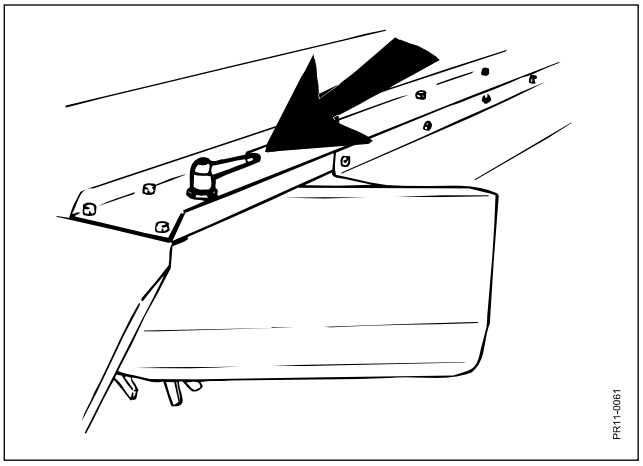


Fig. 3-12

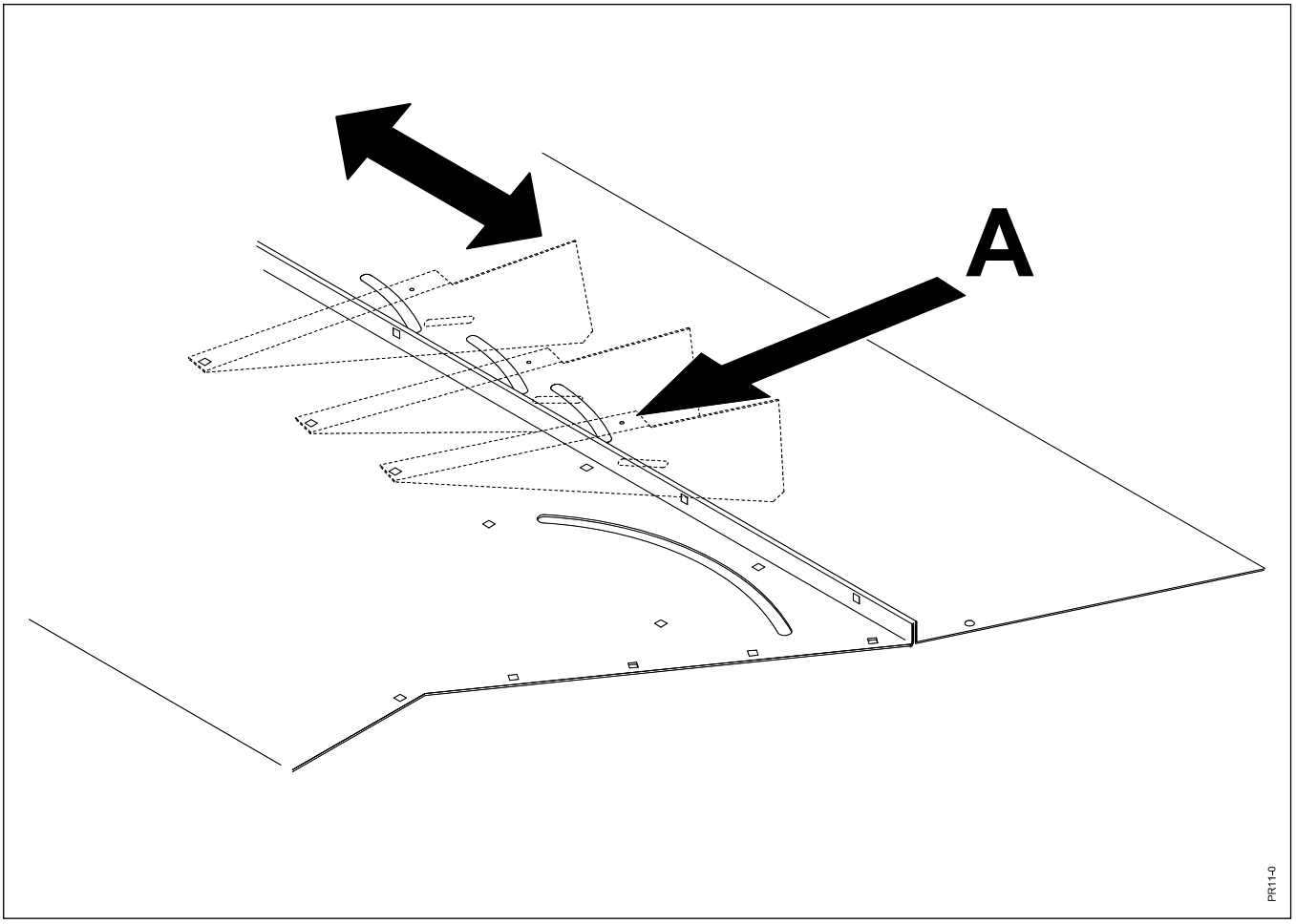


Fig. 3-13

FLOW CAPS

Fig. 3-11 The discs are equipped with flow caps in order to lift the harvesting material away from the knives faster. This reduces the risk of stripes and recutting.

If the power requirement seems too high the flow caps can be dismounted. The quantity of crop and the driving technique decide the need for flow caps.

For example:
For heavy, wet, crops or high cutting speed = dismount flow caps.

For light, dry crops or steep, hilly ground or slow cutting speed = mount flow caps.

SWATH GUARDS

The swath guards on the machine have the purpose of ensuring that the swath has the wanted form and width. The crop is thrown from the conditioner rotor and backwards to the swath guards that form the crop to an airy and narrow swath with a rectangular transverse sectional view.
Such a swath gives optimum conditions for an efficient drying and a subsequent unproblematic gathering for a precision chopper or a baler.

Fig. 3-12 The width of the swath can be adjusted by turning the guards. The bolts/handles of the upper plate is loosened and it is possible to displace the guards outwards or inwards.

EQUIPMENT FOR WIDE SPREADING (TOP DRY)

The machine is equipped with spreader blades for dispersing the crop in full working width for obtaining optimum pre-drying.

Fig. 3-13 All spreader blades can be adjusted individually in the banana holes. It is done by loosening the eye nut and placing the spreader blade in the wanted position.

The factory adjustment for each individual spreader plate is marked by an indicator hole **A**.

NB: For doubling of swaths it is necessary to dismount the outer spreader plates in both sides.

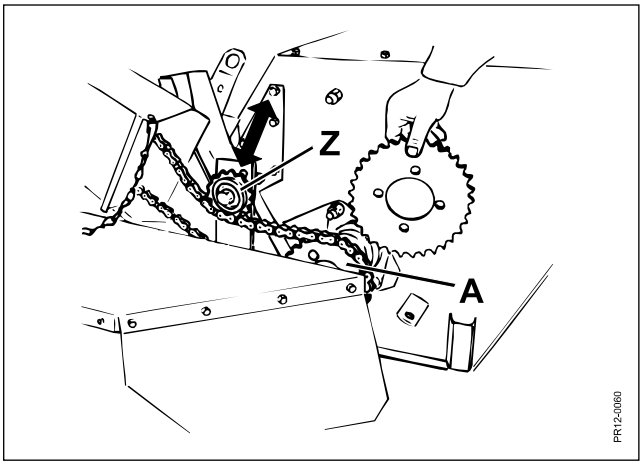
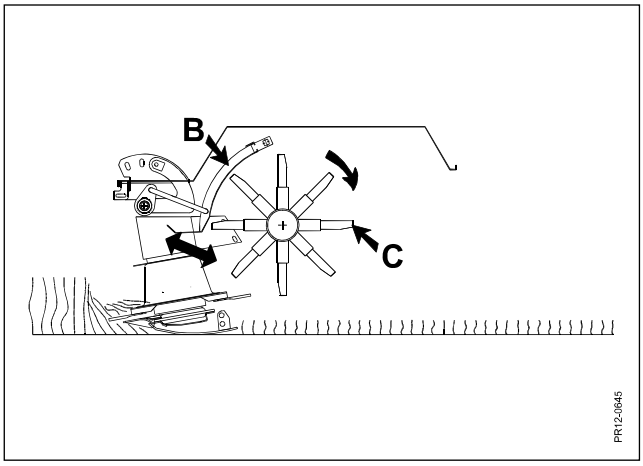


Fig. 3-14



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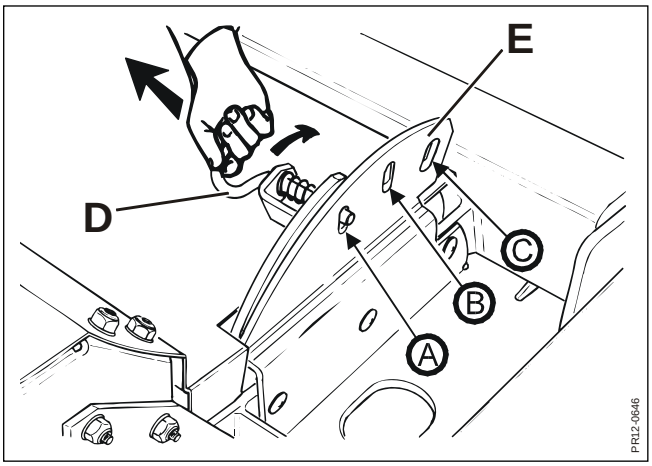


Fig. 3-16

FINGER CONDITIONER

CONDITIONER SPEED

The conditioner on the machine can drive at two speeds.

Normal = 860 rpm
Reduced = 700 rpm

From the factory the machine is mounted to run at the normal speed : 860 rpm.

Fig. 3-14 If you want to reduce the rotor speed you replace the 27 teeth chain wheel placed on the rotor shaft by the33 teeth chain wheel from the spare parts packet delivered with the machine. This is done in the following way.

1) Tightening wheel **Z** is loosened and moved upwards so that the chain is loose.
2) Chain wheel **A** on the rotor shaft is dismounted.
3) The other (larger) chain wheel from the spare parts packet is mounted on the machine.
4) The tightening wheel **Z** is pressed down against the chain and the chain wheel is tightened.

CONDITIONER PLATE ADJUSTMENT

The machine is equipped with a simple and easily controlled system for central adjustment of the degree of conditioning.

Fig. 3-15 The degree of conditioning is modified by adjusting the distance between conditioner plate **B** and the conditioner fingers **C** on the rotor. (The smaller the distance the stronger the conditioning of the crop).

Fig. 3-16 The system is controlled by the handle **D** that can be placed in 3 positions on the bracket **E**. If the handle is placed in pos. (A), the distance between the conditioner plate and the conditioner fingers is small, in pos. (B) the distance is medium and in pos. (C) the distance is big.

The adjustment of the system depends on several things. The optimum conditioning of the crop is obtained by below adjustment of the conditioner plate :

If you have a	Succulent green crop			or	Strawy, more ripe crop	
You want to drive	above 8 km/h	under 8 km/h			above 8 km/h	under 8 km/h
The following adjustment of **GMS** is recommended:						

Conditioner rotor speed	high				X	X
	low	X	X			
Distance between conditioner plate and rotor	big (C)		X			
	medium (B)	X				X
	small (A)				X	

At the factory the machine has been adjusted to a medium degree of conditioning in pos. (B). This adjustment gives a satisfactory result under normal conditions.

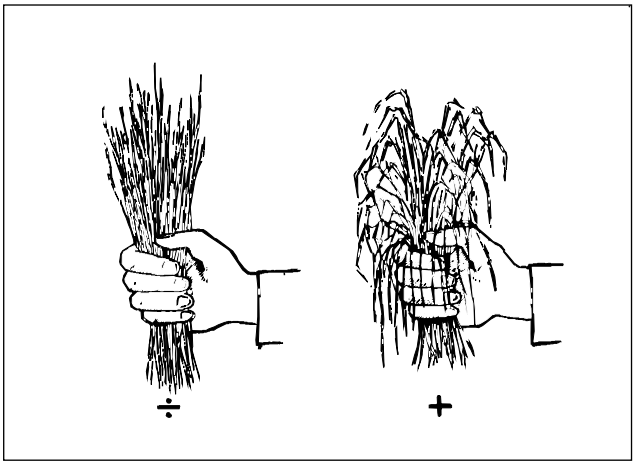


Fig. 3-17

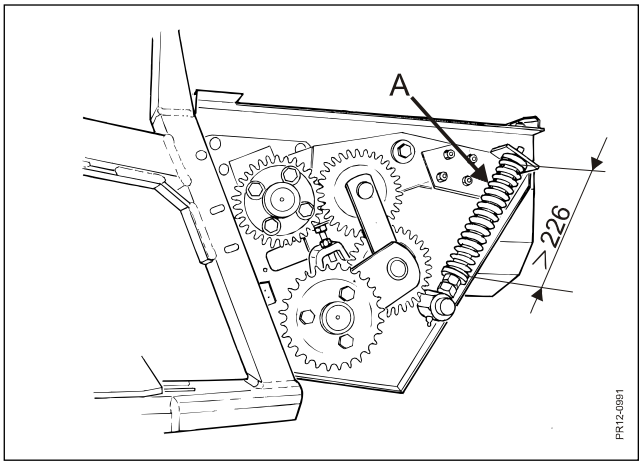


Fig. 3-18

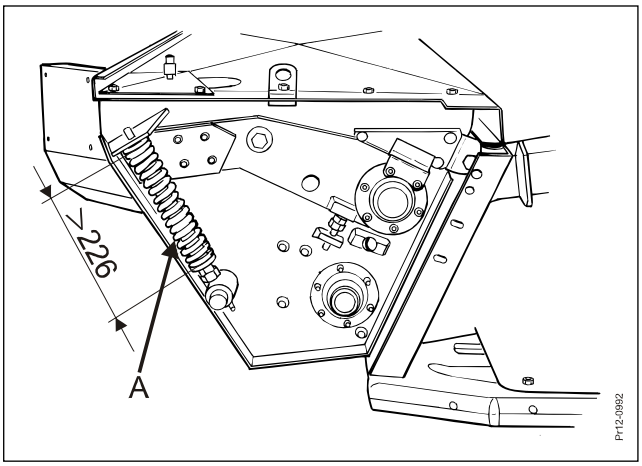


Fig. 3-19

ROLLER CONDITIONER

From the factory the machine with a roller conditioner of the chevron type is fitted with a gear wheel giving **1000 RPM** on the rollers. This is the standard speed on the machines with rollers.

CONDITIONING

The conditioning should not be stronger as required for obtaining a quick drying. The correct degree of conditioning may be difficult to judge, especially in grass crops. The straws must be broken, but not crushed. Crushed leaves and stems give unnecessary waist.

Too strong conditioning can be seen by the stems having a dark green colour and giving off liquid.

The reason may be :
- that the rollers are too close together
- that the roller pressure is too high and
- that the driving speed is possibly too low

Fig. 3-17 **Too light conditioning** is characterised by the straws keeping upright, when a bunch is held in the hand

The reason may be :
- that the roller distance is too big
- that the roller pressure is too low
- that the driving speed is possibly too high

It may be a little difficult to decide if the conditioning is sufficient, but do not be tempted to exaggerate the conditioning. Normally it is sufficient, even if it cannot immediately be seen on the grass.

ROLLER PRESSURE

Fig. 3-18 Fig. 3-19 In order to ensure a suitable roller pressure, both by large and small quantities of grass, the upper roller is spring loaded and the springs also give the rollers the possibility of receding when a foreign body gets between the rollers.

The roller pressure is adjusted on both sides of the machine at the springs **A**.

The following lines of direction can be given:

- In pure grass crops the springs are **tightened**

- In clover, lucerne and leafy crops the springs are **loosened**

Attention : The springs must be equally adjusted in both sides. In order to ensure sufficient travel the spring must not be tightened more than 24 mm. **This means that the length of the spring must not be less than 226 mm.**

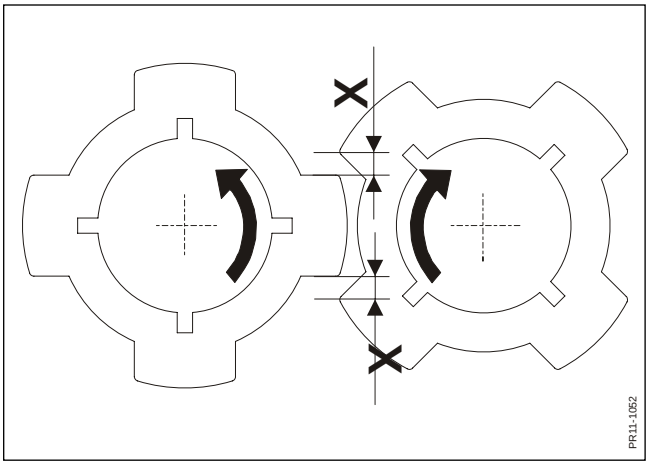


Fig. 3-20

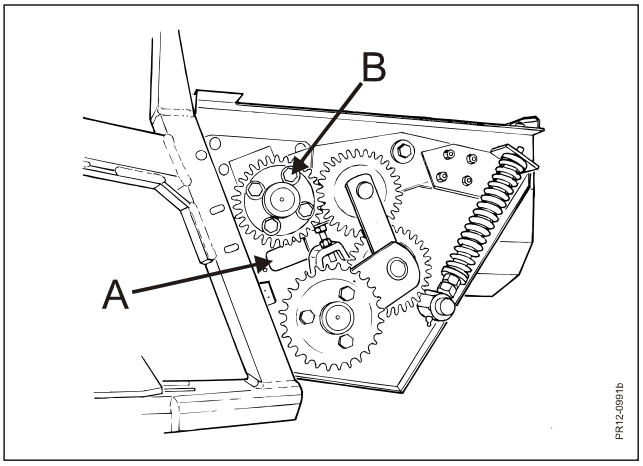


Fig. 3-21

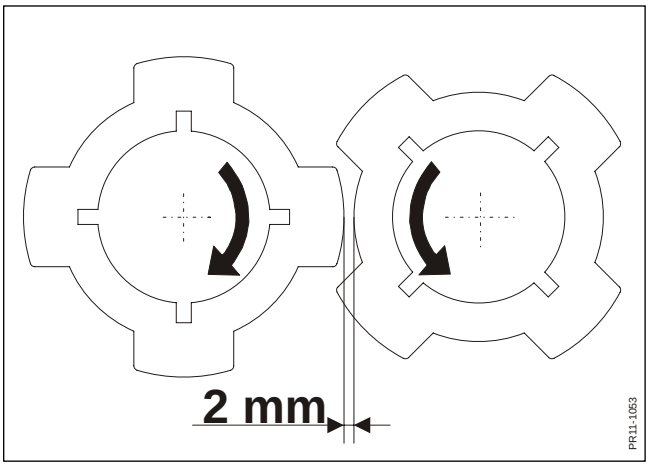


Fig. 3-22

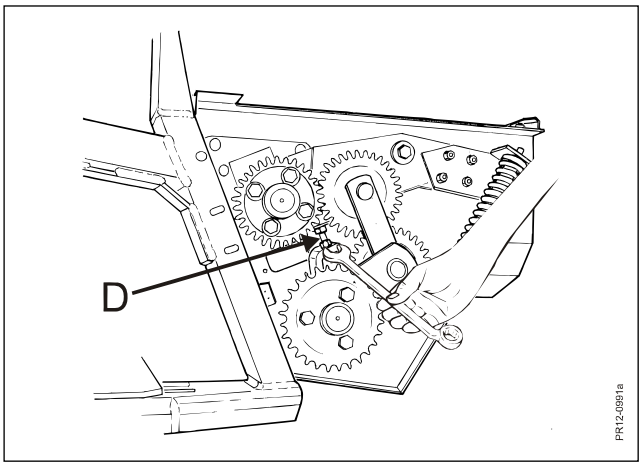


Fig. 3-23

SYNCHRONIZATION OF THE ROLLERS

Fig. 3-20 The rollers **must never** touch each other, this will give a poor result and many vibrations in the machine.
The rollers must always be correctly synchronised, i.e. be in time with each other, so that the roller profiles on one roller go precisely into the roller profiles on the other roller. the rollers are correctly synchronized when the distance **X** is approximately the same in both sides.

Fig. 3-21 The synchronisation can be checked through the peephole **A** between the rollers. For readjustment the 4 bolts **B** are loosened, and the roller is turned into the correct position. The bolts are tightened with 200 Nm (20 kgm).

DISTANCE BETWEEN ROLLERS

Fig. 3-22 The distance between the rollers must be min. 2 mm.

The distance is checked with a finger nail, it should just be possible to stick it between the rubber profiles where the dimension 2 mm is indicated in the figure.

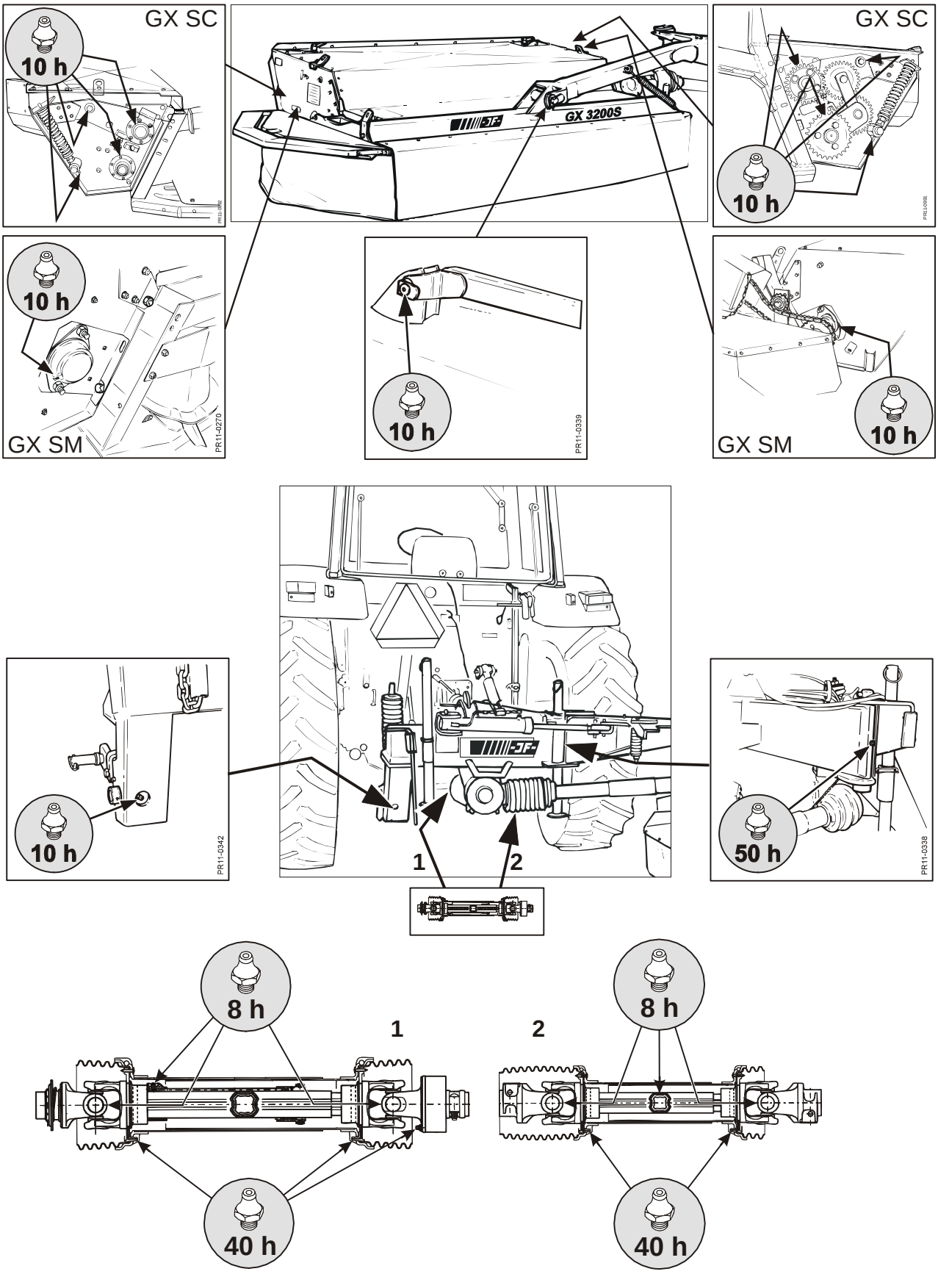
Fig. 3-23 Adjustment of the distance, if required, is made at the screw **D** that is provided with a counter nut that must be retightened well after adjustment. The adjustment is made on both sides of the machine.

If there are jarring sounds or vibrations it may be due to the rollers being too close or the synchronisation being incorrect.

IMPORTANT: Check these adjustments frequently.

Lubrication chart for disc mower type: GX

The lubricating spots shown **must** be lubricated according to the stated working hours



4. GREASING

GREASE

Always make sure that the machine is sufficiently greased before you start to work with the machine.

Go through the greasing scheme.

TYPE OF GREASE: Universal grease of good quality.

Movable mechanical connections are greased or oiled as required.

CAUTION - REMEMBER: **PTO-shafts are greased every 10the operating hour**

Pay special attention to the PTO shafts' sliding profile tubes. They must be able to slide freely while under load.
If you do not grease the profile tubes sufficiently there will soon be considerable frictional force in the profile tubes, which will be damaged, and in time also result in damage of shaft pins and gearboxes.

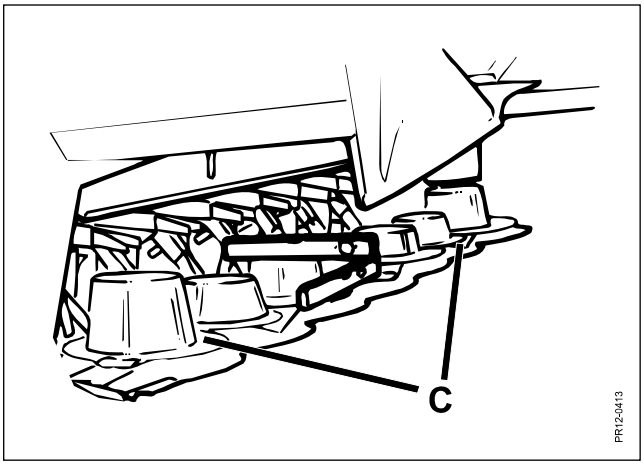


Fig. 4-1

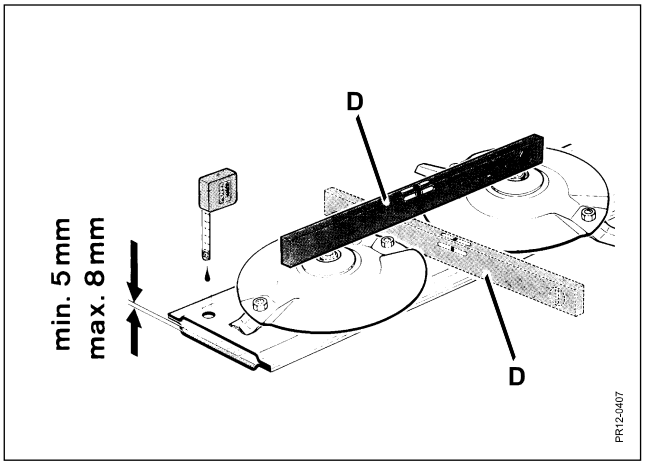


Fig. 4-2

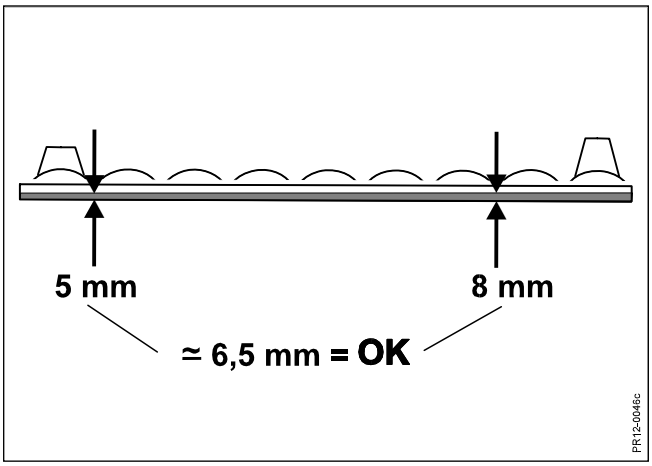


Fig. 4-3

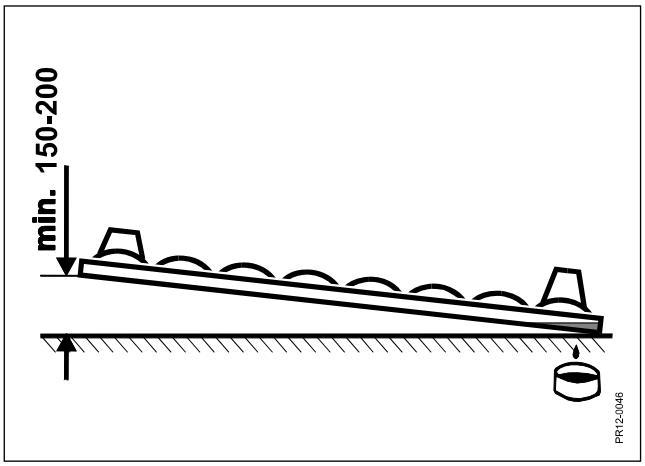


Fig. 4-4

OIL CHANGE

CUTTERBAR

Oil Content:	2400	1,70 litres
	2800	2,00 litres
	3200	2,25 litres

Filling plugs, 2 pcs are placed on top of the cutterbar.

2400- between 1st and 2nd disc in the right **and** left hand side.

2800- between 1st and 2nd disc in the **right hand side**, and between 2nd and 3rd disc in the **left-hand side**.

3200- between 1st and 2nd disc in the right **and** left -hand side.

Fig. 4-1 **The oil level must be checked every day during the harvesting season.**

Fig. 4-2 In order to check the oil level the cutterbar is placed horizontally, which is checked by a level tube **D**, possibly both lengthways and crosswise.
In order to facilitate the daily oil check we can recommend to have a permanent “oil measuring place” meaning that the check for ”horizontal cutter bar” as shown on Fig. 4-4 need not be repeated by every check of oil level.

Fig. 4-3 **Correct oil level:** **5-8 mm. (**Average value)
This oil level must be an average of measuring at both filling holes.
When the oil level has been checked, wait 3 minutes if the oil is warm, and check again.
If the oil is cold, you should wait for 15 minutes, before rechecking the oil level.

Oil change: The first change of oil is made after 10 working hours and then after every 200 working hours, however, at least once per season.

The oil change is easier if you have the machine run a couple of minutes so that the oil gets warm. This will also ensure that possible impurities are mixed with the oil and removed at the oil change.

Fig. 4-4 **For oil change the cutter bar is raised at least 150-200 mm in the right hand side to ensure optimum emptying.**

In order to have access to the emptying plug in the left hand side the outer guide shoe is dismounted. after that the plug can be unscrewed and the oil can run from the bar.

ATTENTION: Do not forget to mount the plug again after emptying. The plug has a magnetic piece for assembling metallic impurities. Therefore always rinse the plug before screwing it on again.

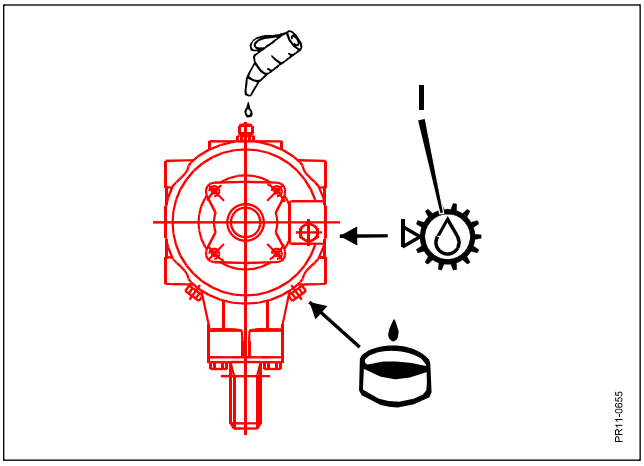


Fig. 4-5

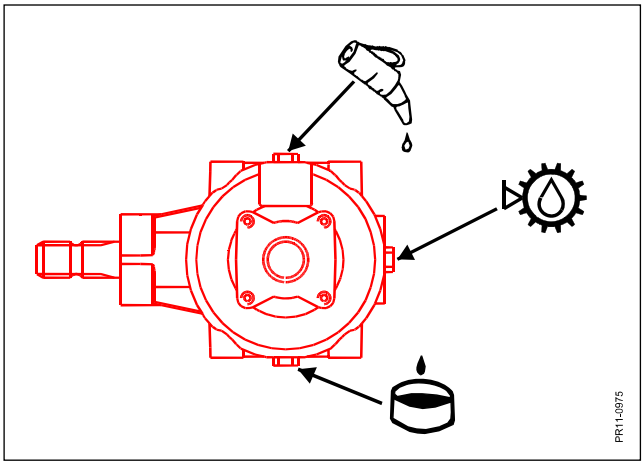


Fig. 4-6

You should lower the bar again before refilling with oil.

Correct oil type: **Only quality : API GL-4 SAE 80W**

In some countries this oil is not available. In these cases an API GL-4 or API GL-5 SAE 80W-90 multigrade oil can be used as an acceptable alternative. Never use a mere SAE 90W oil in the cutterbar.

WARNING: Never fill with more or less oil than described here.
To much oil, as well as too little oil in the cutterbar may cause unintentional pressure and overheating that will in time destroy the bearings in the cutterbar.

BEVEL GEAR OVER THE CUTTERBAR

Correct oil content: 1.1 litre

Correct oil type: API GL4 or GL5 SAE 80W - 90

Correct oil level: The oil level must be checked every 80 working hours at the level indicator **I**.

Oil change: The first change of oil is made after 50 working hours and then after every 500 working hours, however, at least once per season.

Fig. 4-6 **BEVEL GEAR ON TOP FRAME**

Correct oil content: **540 rpm = 1.1 l**
1000rpm = 1.2 l

Correct oil type: API GL4 or GL5 SAE 80W - 90

Correct oil level: **The oil level must be checked every 80 working hours.**

Oil change: The first change of oil is made after 50 working hours and then after every 500 working hours, however, at least once per season.

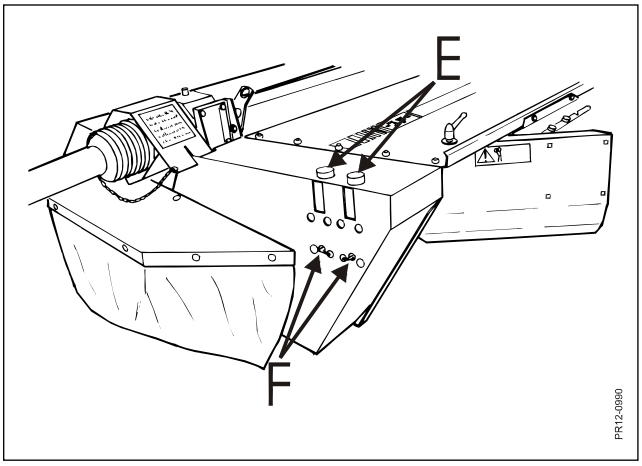


Fig. 4-7

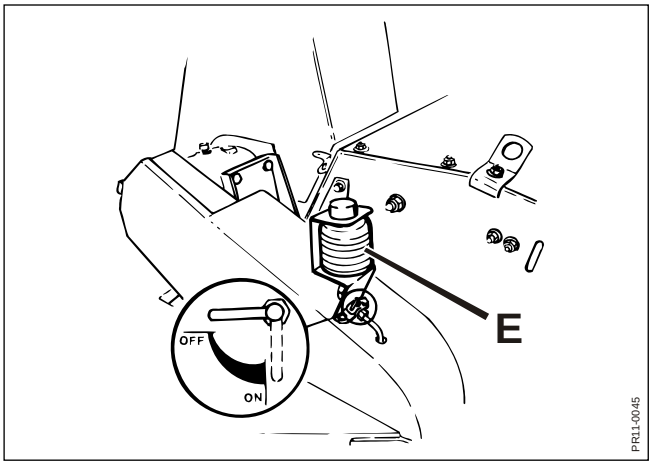


Fig. 4-8

DRIP-FEED LUBRICATION

THE CHAIN DRIVE AND THE ROLLERS (GX SC) GEAR WHEEL DRIVE

Fig. 4-7 Chain drive and gear wheel drive are drip-feed lubricated. Fill the oil container **E** (1 pc on GX-SM and 2 pcs on GX-SC) with chain saw oil. Fill up after approx. every 20 working hours (0.5 litres). Be careful not to have dirt in the container that might choke up the oil pipe.

When the machine is started the oil feed is opened by turning the tap at **F** to approx. half open.

IMPORTANT: Do not forget the close the tap again when the machine is stopped.

The dripping interval must be 2-3 drops/min. This corresponds to a consumption of 0.2 litres of oil in a working day (10 hours). Therefore adjust the dripping interval by setting the tap to half open. Be aware that the oil temperature etc. may make it necessary to correct the adjustment.

A **Ø**	Class **8.8** **M_A** [Nm]	Class **10.9** **M_A** [Nm]	Class **12.9** **M_A** [Nm]
M 8	25	33	40
M 10	48	65	80
M 12	80	120	135
M12 x 1.25	90	125	146
M 14	135	180	215
M 14 X 1.5	145	190	230
M 16	200	280	325
M 16 X 1.5	215	295	350
M 18	270	380	440
M 20	400	550	650
M 24	640	900	1100
M 24 x 1.5	690	960	1175
M 30	1300	1800	2300

Fig. 5-1

5. MAINTENANCE

IN GENERAL

WARNING: In case of repair or maintenance of the machine it is especially important to ensure correct personal safety. You must therefore always park the tractor (if mounted) and the machine in accordance with the GENERAL SAFETY RULES points 1-20 in the beginning of this instruction manual.

IMPORTANT: Screws and bolts on your new machine must be retightened after some hours of work. Retightening is also required after repair.

Fig 5-1 Tightening moment $\mathbf{M_A}$. (If there is no other indication)

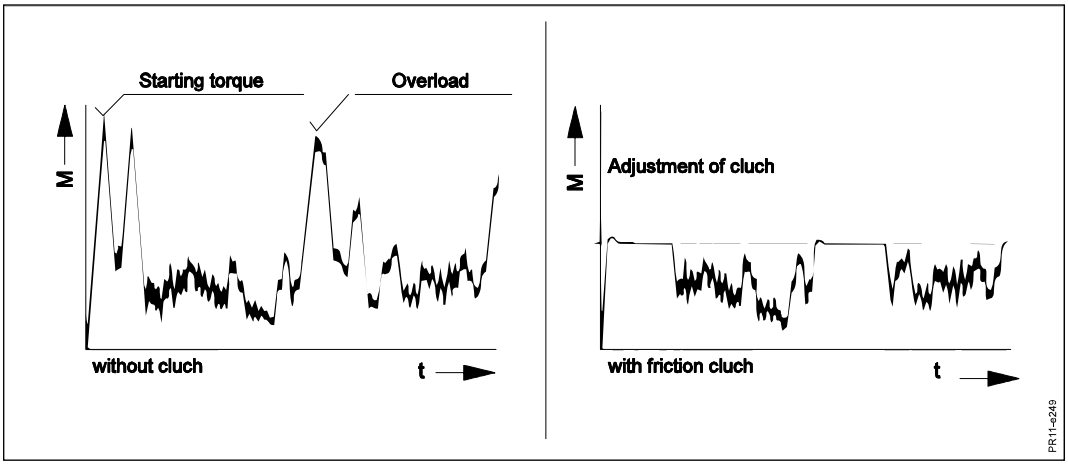


Fig. 5-2

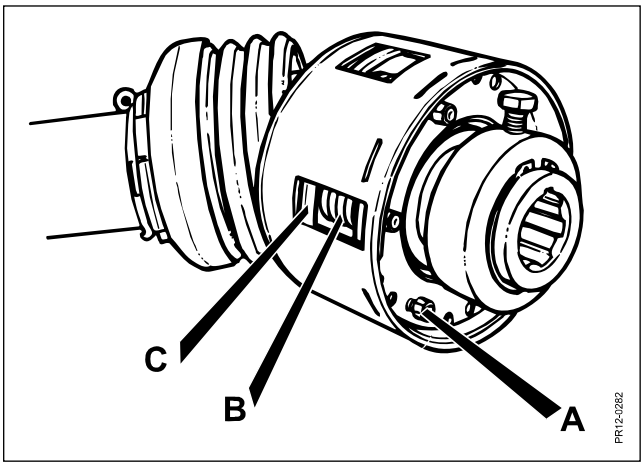
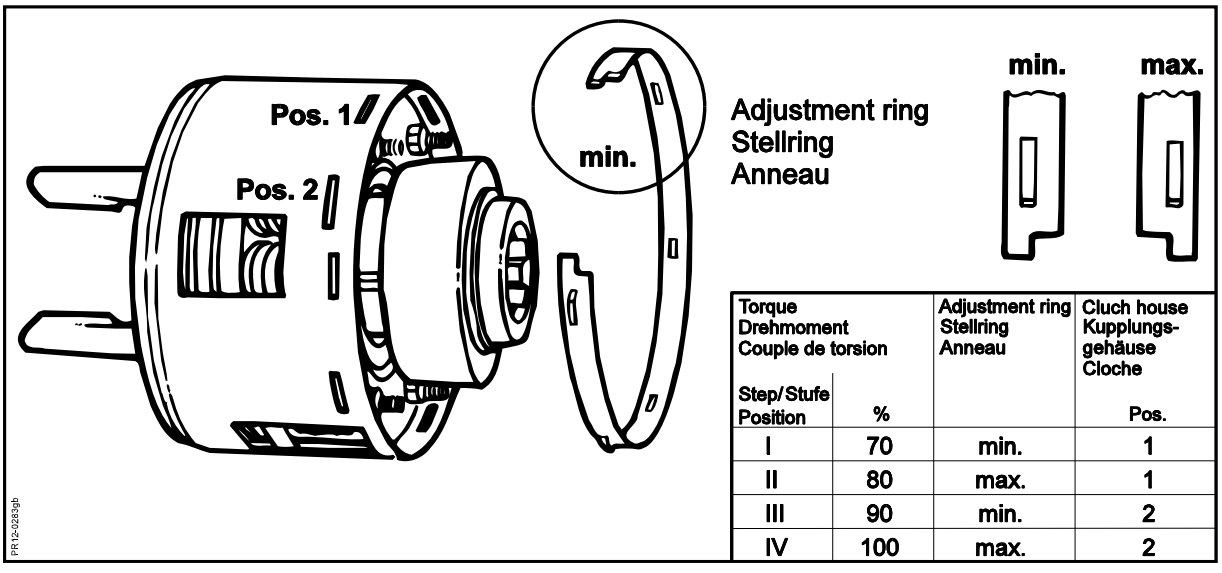


Fig. 5-3



Torque Drehmoment Couple de torsion		Adjustment ring Stellring Anneau	Cluch house Kupplungs-gehäuse Cloche
Step/ Stufe Position	%		Pos.
I	70	min.	1
II	80	max.	1
III	90	min.	2
IV	100	max.	2

Fig. 5-4

FRICTION CLUTCH

FRONT PTO (TRACTORS WITH MORE THAN 90 HP)

Fig. 5-2 **In order to ensure a long life for your tractor and machine** the machine is delivered with **friction clutch** on the front PTO drive shaft. On the figure is shown how the friction clutch protects the transmission against high torque peaks and at the same time being capable of transmitting the nominal torque while it slips.

In order to ensure that the clutch works as intended it must be "aired" at regular intervals **as dirt and moisture may cause the clutch to get "stuck".**

Fig. 5-3 Before the upstart of a new machine and after a long period of standstill, e.g. winter storage **the clutch is "aired" as follows:**

1) The six nuts on the flange are tightened. Hereby the springs are compressed so that they do not press on the clutch plates and the clutch can rotate freely.

2) **Have the clutch rotate for half a minute** to remove dirt and possible rust on the plates.

3) **The nuts A are loosened again** until they are level with the threads of the bolts, and the springs can again press on the clutch plates **C**.

Fig. 5-4 The torque in the friction clutch has 4 different torque adjustments. Do not, however, change the factory adjustment until after having contacted your dealer or JF-Fabriken's Service Department.

The friction clutch has four different adjustment of the torque. The adjustment can be done by turning the adjustment ring **D** and choose between 2 different adjustments in the clutch housing.

1) The adjustment ring has a **minimum** and a **maximum** position.

2) The clutch housing has two sets of slots **E** in the height into which the adjusting ring **D** can be mounted, pos. 1 and pos. 2.

TORQUE ADJUSTMENT GUIDE

PTO	Moment	Adjustment
540	1500Nm	Step IV
1000	1200 Nm	Step II

The adjustment can only be made when the six nuts are tightened. After having made the adjustment the nuts are loosened again to the end of the bolt.

WARNING: If the clutch is overloaded it will slip and heat up, and will wear quickly. Overheating will damage the friction plates. If the clutch is blocked or put out of function in other ways the factory warranty is no longer valid

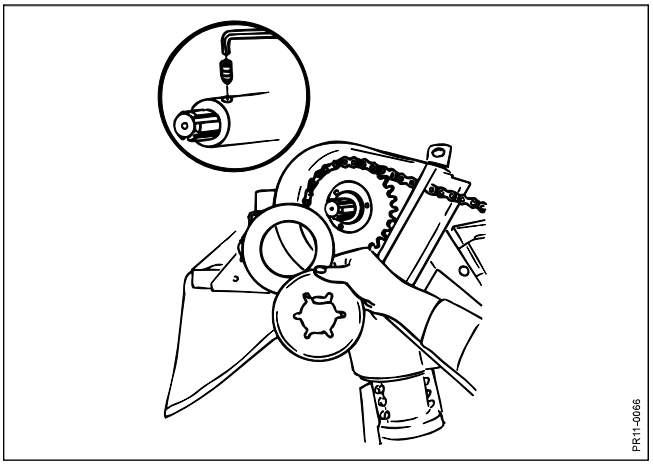


Fig. 5-5

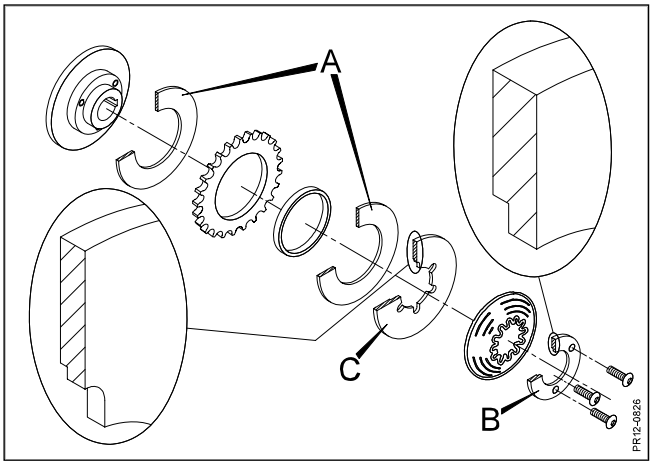


Fig. 5-6

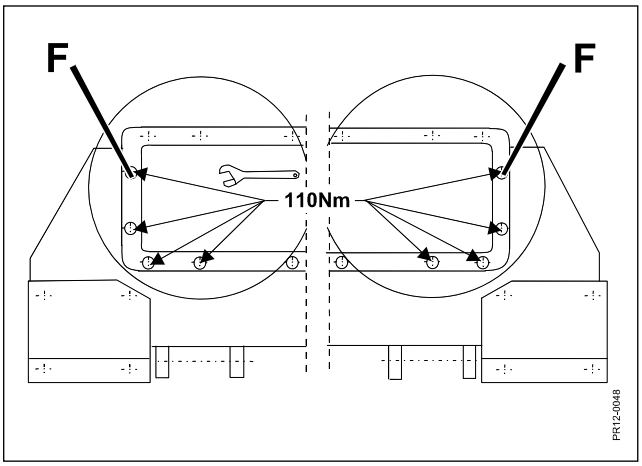


Fig. 5-7

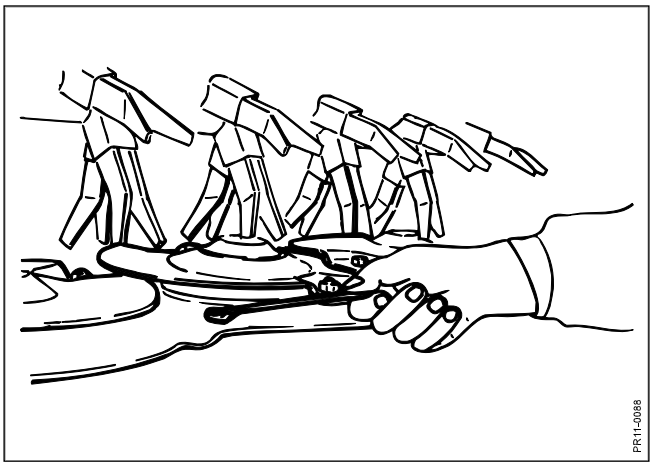


Fig. 5-8

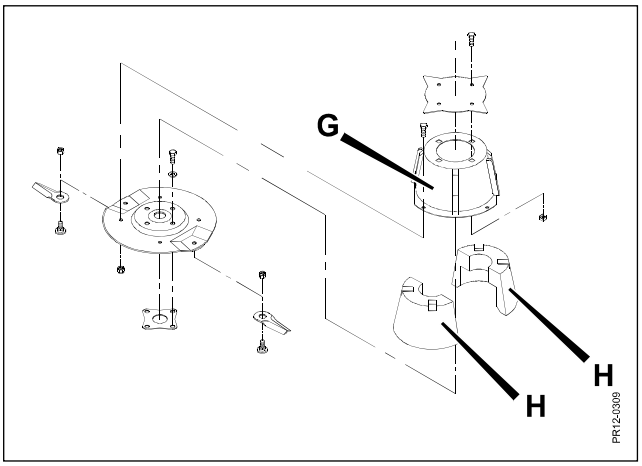


Fig. 5-9

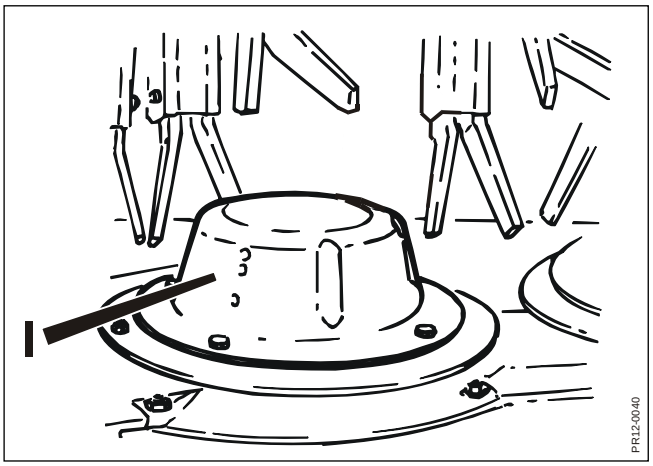


Fig. 5-10

SAFETY CLUTCH FOR ROLLERS (GX SC)

Fig. 5-5 In order to ensure a long life for your tractor and machine a friction clutch is built into chain drive for rollers.

If a foreign body of some size gets into the rollers the friction clutch will slip. It is important to stop the P.T.O. as soon as possible after it has started to slip.

Fig. 5-6 Every time the friction clutch slips the coupling plates **A** are worn.
When the friction clutch slips at regular intervals the coupling plates must be replaced.

After a long time of standstill, e.g. winter storage, the clutch must be dismounted and cleaned.

When the friction clutch is assembled you must make sure that the pressure flange **B** and the pressure disc **C** are placed as shown. The 3 screws are tightened with 30Nm (3 kpm).

CONTROL OF UNBALANCE

WARNING: When driving in the field you must always pay attention if the machine starts vibrating more than usual, or if it has jarring sounds. The discs rotate at approx. 3000 RPM, and one broken knife may cause serious injury to persons or material damage resulting from unbalance.
If working with a modern closed cabin the symptoms may be difficult to discover, and once in a while you have to get out and check if all blades and rotor fingers are intact. In the long run unbalance will cause fatigue fractures and serious damage.

All machines manufactured at JF-Fabriken are tested and checked for vibrations with special tools.

The first time the machine is started you should notice the noise and vibration level in order to have a future basis of comparison.

Fig. 5-7 To avoid damaging vibrations the cutter bar must be correctly tightened. The 4 bolts F in each side are tightened with a torquewrench to 110 NM (11 Kpm).

Fig. 5-8 Bolts at stone protectors and shear bar must be checked at regular intervals. To avoid damaging vibrations the cutter bar must be correctly tightened. The 4 bolts F

Fig. 5-9 The two large flow intensifiers **G** on the outer discs are filled with inserts of foam **H** to avoid unbalance. It is important that the foam blocks remain undamaged so that the flow intensifiers are not filled with dust and dirt that may cause unbalance.

Fig. 5-10 The low flow caps I on the rest of the discs should be straightened if they are deformed or replaced by new ones if required. They should be checked for dust and earth 2 – 3 times per season.

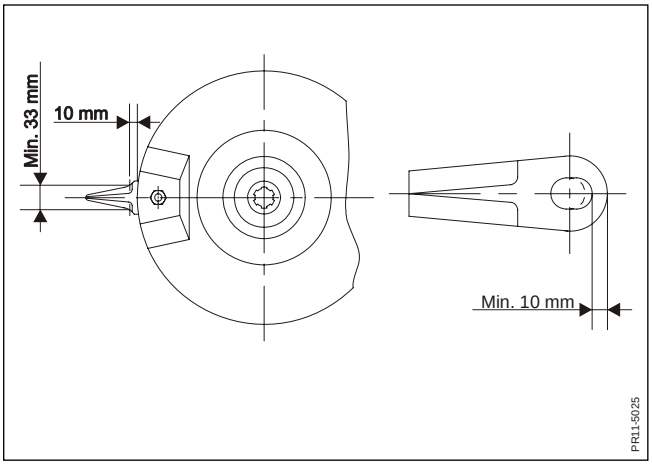


Fig. 5-11

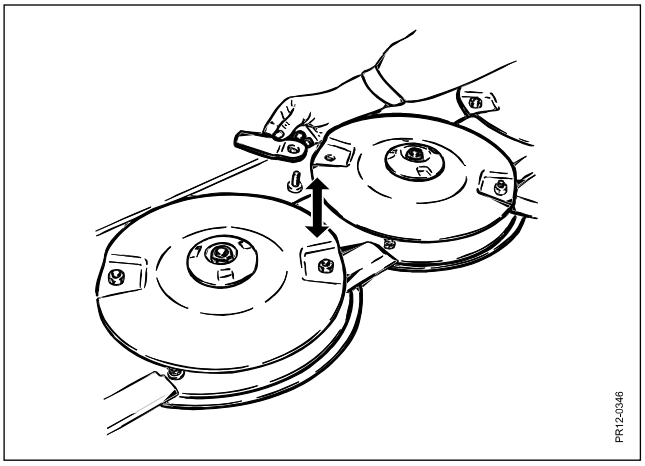


Fig. 5-11

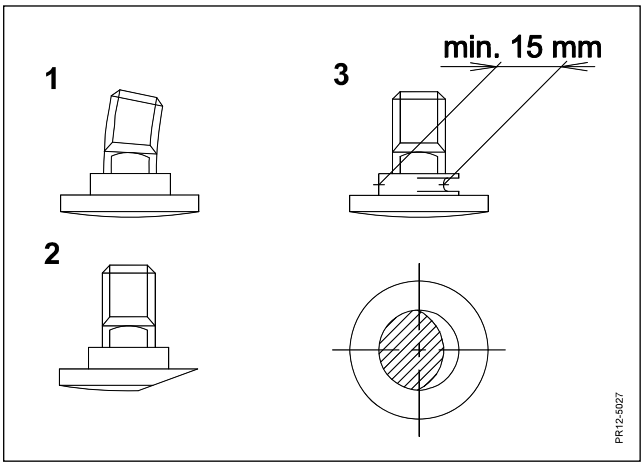


Fig. 5-13

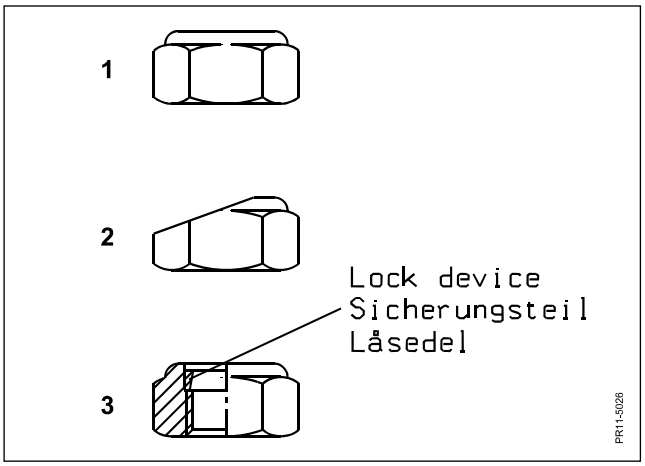


Fig. 5-14

CUTTING UNIT – DISCS AND KNIVES

Discs, knife bolts and knives are made of hardened, high-alloyed materials. This heat treatment results in especially hard and ductile material, which can stand extreme stress. If a knife or disc is damaged no attempt must be made to weld the parts together as the heat development will damage the material quality.

Damaged knives, discs, bolts and nuts **must be replaced by original JF spare parts to ensure safe operation.**

IMPORTANT: Damaged knives, discs, knife bolts and nuts must be replaced by original JF spare parts in order to obtain safety at work.

WARNING: When replacing knives both knives on the disc in question must be replaced to avoid unbalance.

CAUTION: Always lower the cutting unit to the ground before replacing knives, knife bolts, discs and the like.

KNIVES

Fig. 5-11 Knives must be replaced if:

- knives are bent or cracked
- the knife width is less than 33 mm measured 10 mm from disc edge
- the metal thickness around the knife hole is less than 10 mm

Knife bolts and nuts must also be checked periodically, in particular the tightening of the nuts. Always check these parts after a collision with foreign bodies, after replacement of knives and the first time the machine is operating.

Fig. 5-12 The knives can cut on both sides. To make use of this knives are moved from one disc to another with the opposite direction of rotation.
In order to obtain a sufficient cutting it is important that knives and shear bars are intact and sharp. If the knives are not sharp the power requirement will rise more than necessary, and the cutting will be irregular resulting in slower regrowth.

KNIFE BOLTS

Fig. 5-13 Knife bolts must be replaced if:

- they are deformed
- they have been worn one-sided
- the diameter is less than 15 mm.

NUTS

Fig. 5-14 The special nut must be replaced if:

- it has been used more than 5 (five) times
- the height of the hexagon is less than half of the original
- the locking device is worn and loose.

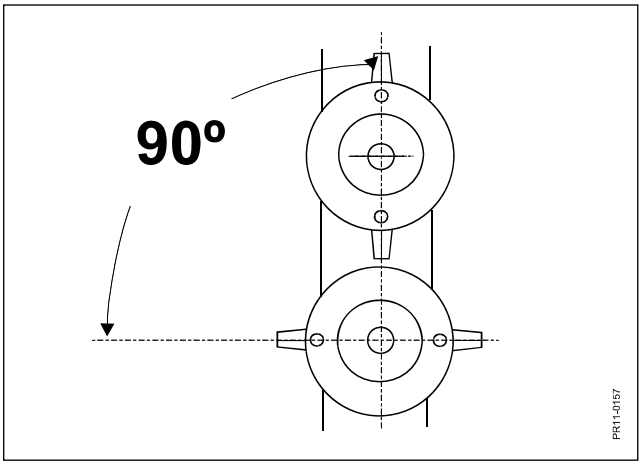


Fig. 5-15

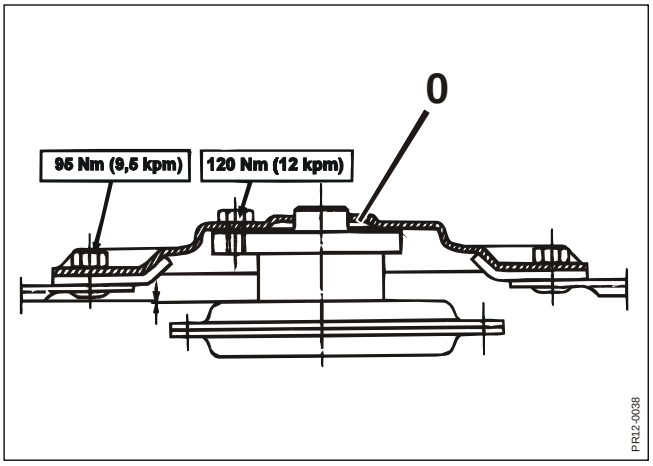


Fig. 5-16

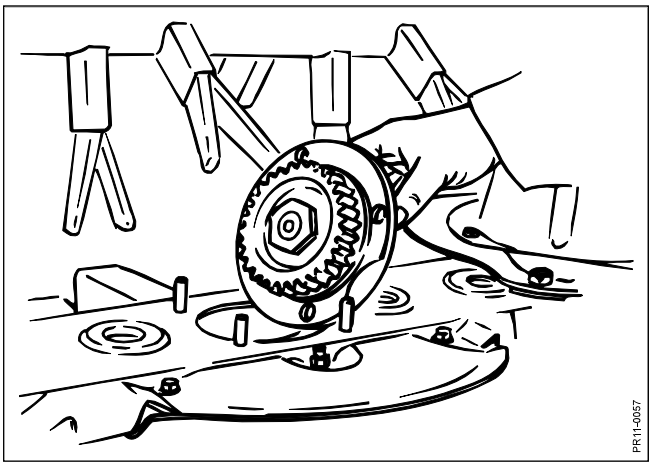


Fig. 5-17

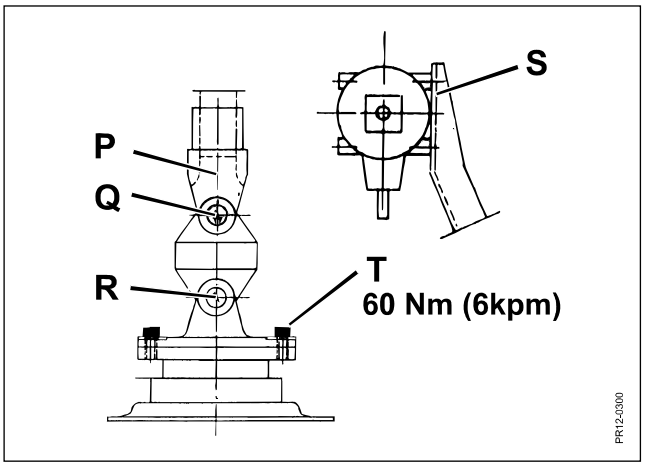


Fig. 5-18

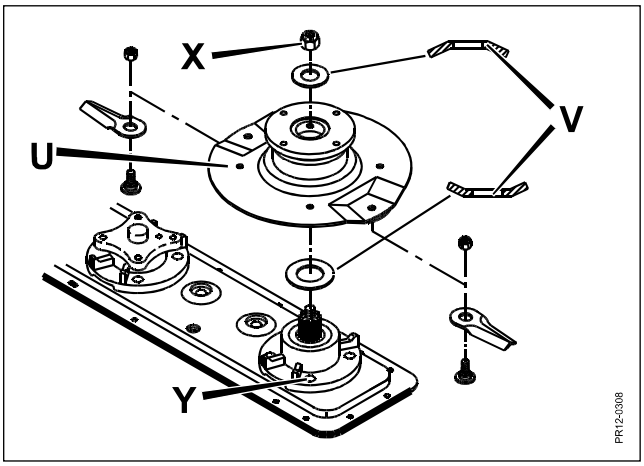


Fig. 5-19

REPLACEMENT OF KNIVES

Knives are replaced by dismounting the knife bolt and pulling it down and out of the disc. This is easier if the knife is in the front position and the bolt is just above the hole in the middle of the stone protection.
The old knife is removed and a new one is mounted with the knife bolt.

Fig. 5-15 If the discs have been dismounted, they must be remounted staggered 90^{o} in relation to each other.

Fig. 5-16 Make sure that the bolts are tightened as shown.

- Discs fixed with four bolts must each be tightened to **120 Nm** (12 kpm).
- Discs fixed with central hub bolt must be tightened to 190 Nm (19 kpm).
- Knife bolts must be tightened to 95 Nm (9.5 kpm).

The height of the disc can be adjusted by mounting spacers **O** under the disc. This might be necessary when replacing discs and if the knives are not at the same height.

WARNING: After replacement of knives, knife bolts, discs and the like it should be checked that no tools have been left on the machine.

BY REPAIR

Fig. 5-17 On the machine a bar is mounted where the disc bearing housing can be dismounted as a whole, this is called a Top Service bar.

Fig. 5-18 The PTO drive shaft **P** for the cutter bar has been greased for life.
For this PTO-shaft the following must be observed:

- it should run with minimum angular deviation,
- the measure difference at **Q** and **R** should max. be 6 mm (+/- 3),
- An alignment is made at the overhead gear by moving the gear box in the oblong holes or by placing a filler at **S**.
- The bolts **T** are locked by LocTite and tightened with torque of 60 Mn (6 Kpm).

Fig. 5-19 When mounting the drive disc **U** in the left hand side:

1) The spring washers V are placed as shown, with the curved side upwards and downwards respectively.
2) The nut **X** is tightened to 190 Nm.
3) The bolts **Y** fixing the disc bearing housing to the bar are tightened to 85 Nm.

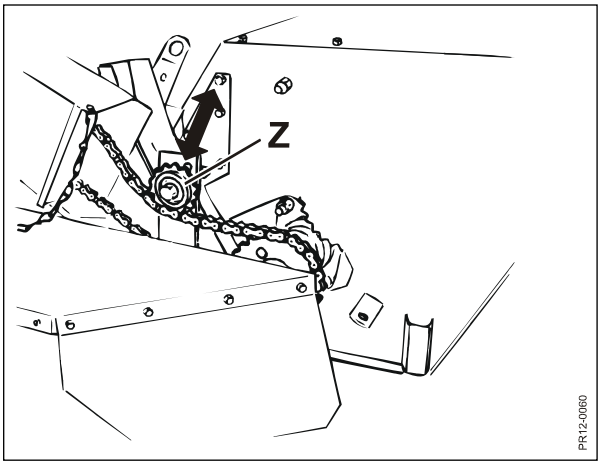


Fig. 5-20

CONDITIONER

Defective fingers on the conditioner are replaced by new ones to ensure optimum conditioning and transport of the crop. Missing fingers or partly missing fingers will cause unbalance of the rotor and result in shorter life for the bearings, among other things.

TIGHTENING OF ROLLER CHAIN

Fig. 5-20 The chain wheel **Z** is pressed against the chain and tightened.

WINTER STORAGE

When the season is over the machine should be made ready for winter storage. First clean the machine thoroughly as dust and dirt absorb moistness and hereby increases rusting. Be alert when cleaning with a high pressure cleaner. Never clean directly on the bearings and grease nipples both before and after the cleaning, so that any water is squeezed out of the bearings.

Below items are guiding instructions when preparing the machine for winter storage:

- The machine is checked for wear and other defects, - write down the wearing parts needed before the next season and order the spare parts.
- The PTO shafts are dismounted, the profile tubes are cleaned, greased and the PTO shafts must be stored in a dry place.
- Spray the machine with a thin coat of rust-preventing oil. This is especially important as regards all parts polished with use.
- Change the oil in the disc bed and the gearboxes.
- The machine is stored in a ventilated engine house.

6. VARIOUS

DRIVING TIPS AND TROUBLE SHOOTING

Problem	Possible reason	Remedy
Stubble uneven or bad cutting	Cutting platform relieved too much	Check the basic adjustment of the machine and reduce the relief by loosening the springs.
	Tractor RPM too low	Check that the tractor's rotation speed on PTO is correct. Keep the number of revolutions constant
	Knives are worn	Turn/move the knives to another disc or replace knives
	Discs, stone protections or flow hats are deformed	Replace deformed parts.
Stripes in stubble	The cutting angle is too big, the grass does not pass over the cutter bar.	Adjust the cutter bar more horizontal by enlarging the top rod.
	Accumulation of material in front of the cutter bar.	Increase the driving speed, if possible. Possibly mount flow caps on discs.
	Earth and grass gathers round the cutter bar between discs.	Mount specially sharp shear bars or replace worn shear bars
	You work early in the morning where the grass is still very moist.	Increase the driving speed, if possible. Mount flow caps.
Uneven flow through the machine	Conditioner fingers/rubber blocks may be worn or defective.	Replace worn fingers/rubber blocks and mount new where they are missing.
	Distance between conditioner plate and rotor is too big.	Adjust the conditioner plate for smaller distance to rotor. Driving speed is increased.
The machine is shaking/uneven running	Knives may be deformed, damaged or missing	Replace or damaged knives and mount new knives where missing.
	Defective PTO-shafts	Check that the shafts are intact. Repair if necessary
	Defective bearings in bar or conditioner rotor	Check if bearings are loose or damaged. Replace if necessary.
	Defective flow caps and - intensifiers	Replace flow caps and – intensifiers
	Clean flow caps and mount new foam inserts, if necessary.	Clean flow caps and mount new foam inserts, if necessary.
Gear or bar are overheated	Oil level is not correct	Oil level is checked, and filled up/drained out, if required NB: Gear temperature max. 80 degrees, Cutter bar temperature max. 90-100 degrees.
The power requirement is unusually high	Part of the crop and dust has gathered under the discs	Stop the tractor motor. Dismount the discs and clean cutter bar and discs. Check that the friction clutch is intact.
	String or wire has wrapped round a disc.	Remove foreign bodies.

EXTRA EQUIPMENT

HIGH GUIDE SHOES

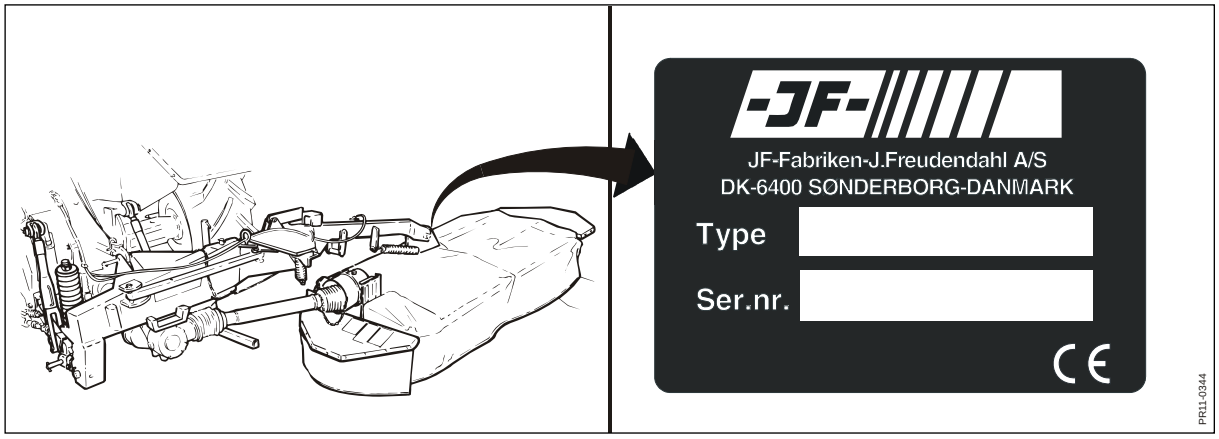
For topping of fallow fields it is possible to mount guide shoes that will give a higher stubble.

SHARP SHEARBARS

When working in certain heavy crops it may be necessary to sharpen the shearbars between the discs. The shearbars reduce the risk of the crop hanging on the cutterbar and thereby make stripes.

SPARE PARTS ORDERS

When ordering spare parts, please state type designation and serial No. This information is on the machine plate. Soonest possible after delivery we request that you write these information on the first page of your spare parts book supplied with the machine, so that you have the information at hand when ordering spare parts.



SCRAPPING OF THE MACHINE

When the machine is worn-down it must be scrapped in a proper way. Therefore, observe the following:

- The machine must not be placed somewhere outside and gear boxes, cylinders and disc bed must be emptied of oil. These oils must be handed over to a destruction company.

- Disassemble the machine and separate the individual recycling parts, for instance wheels, hydraulic hoses, hydraulic valves etc.

- Hand over usable parts to an authorised recycling centre. The large scrapping parts are 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 machines from authorised JF 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 fallen 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 result of faults either of the owner or of a third party. JF is also not 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 be clearly proved that JF has committed a fault.

The following is regarded as wearing parts:
Protective canvases, knives, knife suspensions, shear bars, skids, stone protections, conditioner parts, tyres, tubes, PTO shafts, clutches, V-belts, chains, rake and pick-up tines, and beater bars 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 instructions 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 the repair is not undertaken immediately.**

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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

JF-STOLL

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