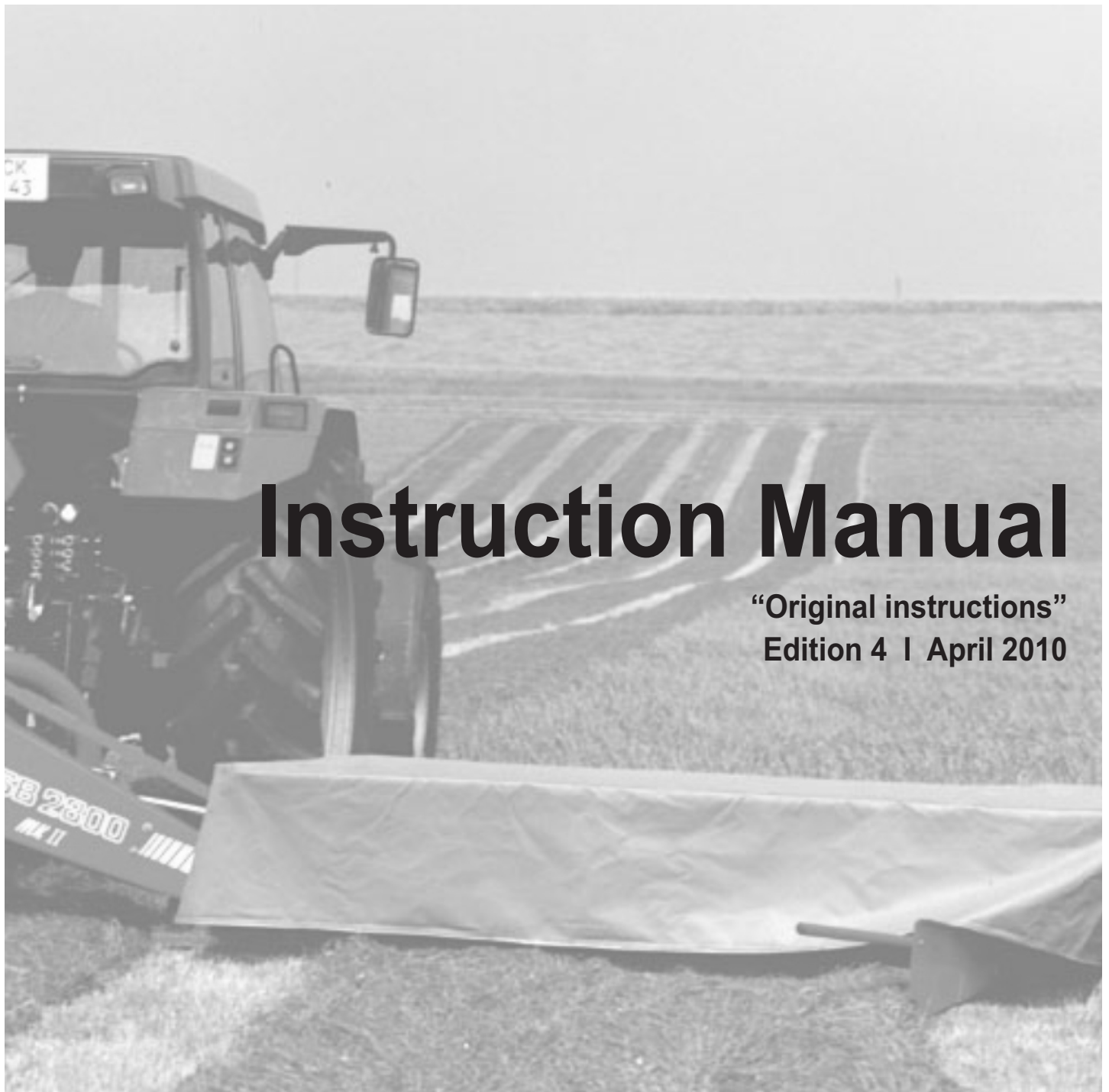


Disc Mover

SB 1600 | SB 2000 | SB 2400 | SB 2800



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 Nös,

JF-Fabriken - J. Freudendahl A/S
Linde Allé 7
DK 6400 Sønderborg
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 :

SB 1600
SB 2000
SB 2400
SB 2800

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



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-STOLL 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 this machine you have received 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 must 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" are defined from a position behind the machine facing the direction of travel.

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

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

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1. INTRODUCTION

INTENDED USE

The disc mowers **SB 1600 / 2000 / 2400 / 2800** are solely made for agricultural work, i.e. they are only intended for cutting growing grass and straw chop on the ground and other green crop to produce roughage. The material is laid in a swath allowing it to be picked up.

Of course, the machine must only be connected to a tractor that meets the specifications of the disc mower and is legal to use.

Every use beyond the above-mentioned is not included in the intended use. JF-Fabriken A/S will not be responsible for any damage resulting from such use, only the user has the risk.

The machine's performance will depend on the material, i.e. the crop field, field conditions, and the ground where the field is, and finally, the weather.

The machine is delivered either with round discs, which ensure a poor recutting of the material, or oval discs, which ensure that the discs are not broken in the case that a blade is bend upwards.

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

Intended use also means that the information that JF-Fabriken A/S prescribes in this instruction manual and the spare parts book must be observed.

The disc mower SB 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.

The following instructions that prevent injuries and damage as well as general acknowledged technical, labour medical and traffical regulations **must absolutely** be observed.

If changes are made on the machines without permission from JF-Fabriken A/S, JF-Fabriken A/S cannot be held responsible for any injuries or damage.

SAFETY

Generally much damage occur when working in agriculture in consequence of misuse and insufficient instruction. Therefore, the safety of persons and machines is an integrated part of JF-Fabriken A/S'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 disc 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. Therefore, 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 before 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 increase 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.

1. INTRODUCTION

GENERAL SAFETY INSTRUCTIONS

Before starting the machine the tractor driver must ensure that tractor and machine are in conformity with general labour regulations and that the Road Traffic Act can be observed.

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 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.
2. Always lower the cutting unit to the ground or engage the transport safety device when the machine is parked.
3. Remember to use the transport safety device of the cutting unit and the hydraulic cylinders' stop valves during transport of the machine.
4. Never work under a raised cutting unit, unless it has been secured by means of stop blocks or other mechanical securing.
5. Always block the wheels before you work under the machine.
6. Never start the tractor until all persons are safely away from the machine.
7. Before the tractor is started, check that all tools have been removed from the machine.
8. See to that all guards have been mounted correctly.
9. During work never wear loose clothes, which can be pulled in by movable parts in the machine.
10. Do not change a guard or work with the guard if part of it is missing.
11. Always drive with the lights and the traffic marking during transport on public roads and at night.
12. Limit the transport speed to max. 30 km/h if the machine has not been marked with another max. speed limit.
13. Never stay near the machine while it is running.

1. INTRODUCTION

14. When mounting the PTO drive shaft check that the number of rpm of the tractor fits the machine.
15. Always use hearing protectors if the noise from the machine is trying or if you are working with the machine for a considerable period of time in a tractor cabin, which has not been silenced sufficiently.
16. Before the cutting unit is raised or lowered it should be checked that nobody is near the machine – or touching it.
17. Do not stay near the guards of the cutting unit and do not lift the guard before all revolving parts have stopped.
18. Never use the machine for other purposes than what it has been constructed for.
19. Do not allow children to be near when you are operating the machine.
20. Never stay between the tractor and the mower during engagement and disengagement.

SPECIAL SAFETY INSTRUCTIONS

When working with mowers please observe the following:

1. Use a tractor with a cabin with safety glass. It is also recommended to cover the tractor interior with polycarbonate sheets or outside with a fine-mesh net. The cabin should be closed while working in the field.
2. Keep away from the cutting unit as soon as the machine's tools revolve.
3. It is important to follow the rules in the instruction manual when replacing blades in order to observe the safety demands. When replacing parts always use the delivered original parts.
4. Before starting the machine the rotating tools (blades, blade bolts, discs and flow caps) must be checked. If parts of the tools are damaged, worn or simply missing they must be replaced immediately.
5. Damaged, worn or missing blades must be replaced in pairs in order to avoid unbalance of the machine.
6. Canvasses and guards must be checked regularly. Worn or damaged canvasses must be replaced.
7. Canvasses and guards are intended to secure against throwing of stones or the like. Before starting the machine canvasses and guards must be placed correctly.

1. INTRODUCTION

8. Before starting the PTO the machine's cutting unit must be lowered to working position.
9. The field should be kept free of stones and other obstacles.
10. Even with correct adjustment and operation of the machine it is possible that stones or the like in the field are thrown out of the cutting unit. For that reason nobody should be near the cutting unit in surroundings you are not familiar with. You should be especially cautious when working along public roads or public grounds (schools, parks and the like).
11. Although it is possible you should never reverse with the cutting unit in working position. The stone release only works when driving forward.
12. The rotating tools take some time to stand still after the PTO has been stopped. For that reason you must wait until the tools' movements have come to a complete stop before getting near the cutting unit.
13. If any doubt always 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 corresponding power on the PTO drive shaft.

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.

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.

The tractor specifications have many variations within the individual tractor brand. For that reason it may at worst be necessary to adjust the weight distribution with a couple of front weights.

The machine is made for 540 rpm so you must make sure that the wrong power take-out is not used by mistake.

In order to use the machine's hydraulic functions it is necessary that the tractor has a single-acting hydraulic take-out that can be placed in floating position.

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

Finally, choose a tractor with a closed cabin if working with a disc mower.

1. INTRODUCTION

CONNECTION AND DISCONNECTION

Always make sure that nobody is standing between the tractor and the machine during connection or disconnection. An unintentional manoeuvre with the tractor might jam persons (see fig. 1-1).



Fig. 1-1

Check that the machine is intended for the number of revolutions and direction of rotation of the tractor (see fig. 1-2). A wrongly chosen rpm for a considerable period of time can damage the machine and at worst lead to parts being thrown out.

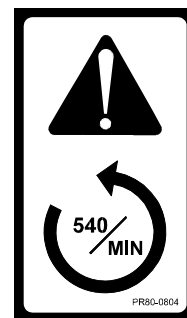


Fig. 1-2

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 (see fig. 1-3).



Fig. 1-3

Check that the cutting unit can move freely before you activate the hydraulic cylinder. Make sure that no persons are near the machine when starting as there might be some air in the hydraulic system and the air might cause sudden movements.

ADJUSTMENT

Never adjust the mower while the PTO drive shaft is engaged. Disengage the PTO drive shaft and stop the engine of the tractor before you change the adjustment of the machine. Do not lift the guard until all the revolving tools/blades have stopped.

Before you start working check that all blades are present, not damaged and can be turned. Furthermore, you must check that the blades bolts are not loose or damaged. Damaged blades and blade bolts must be replaced (see section 5: MAINTENANCE).

According to the instructions mentioned in the instruction manual check periodically if blades and blade bolts are worn (see section 5: MAINTENANCE).

TRANSPORT

Never drive faster than the conditions allow, and max. 30 km/h.

1. INTRODUCTION

It is important to lock the cutting unit in transport position with the mechanical transport safety device. Unintentional operation of the drawbar cylinder by sudden leakage from hoses or fittings, or air in the system might cause that the cutting unit is lowered and might hit the ground.

Therefore, always make sure that the transport safety device is correctly engaged before transport of the machine (see section 3: ADJUSTMENTS AND DRIVING).

To remove possible air in the hydraulic system the hydraulic cylinder must be tested after connection to the tractor. Otherwise, you might risk a sudden movement of the cutting unit downwards, after having dismantled the transport safety lock.

WORKING

During the daily work it should be considered that loose stones or the like could get in contact with the revolving tools and get thrown out again at very high speed.

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

Never allow anybody to stay near the mower during work, and especially not children.

On stony ground the stubble height must be adjusted to a maximum, and the cutting angle must be as small as possible.

The side mounted mowers are equipped with a spring relieved safety device, which can be activated when forwarding and it must ensure the direction stability of the tractor and limit the damage when colliding.

However, there is no safety against collision if you reverse with the cutting unit lowered and hereby **risk damaging the machine**. Check that the safety device can be activated and that it is not locked.

In case of blocking of the cutting unit caused by a stone or the like, you must immediately stop the tractor engine, activate the parking brake and wait until all revolving tools have stopped. Then you can remove the obstacle.

Gear down when working with the mower on very hilly ground. When working with a trailed mower along hillsides and steep range of hills never drive faster than you can avoid stones, ditches and other obstacles causing the tractor to overturn.

Also adjust the speed of the tractor to sharp turns on range of hills or when lifting the machine in the 3-point linkage.

LUBRICATION

When lubricating or maintaining the machine the cutting unit must be resting on the ground or secured by the transport lock.

Never clean, lubricate or adjust the machine before the PTO drive shaft has been disengaged, the tractor engine has stopped, and the parking brake has been activated.

MAINTENANCE

It is important that the cutting unit is correctly relieved to ensure perfect work in the field and to reduce the risk of damage to the cutter bar.

1. INTRODUCTION

If the adjustment thread of the spring suspension has been damaged, you must have a workshop to do the repair job, as the spring will be tightened and unintentional release of it is dangerous.

Always make sure that the spare parts have been tightened to the correct torque, and that some parts on the machine are tightened at intervals (see the section about maintenance).

Never use other spare parts than the ones prescribed by the manufacturer.

When replacing parts in the hydraulic system make sure that the cutting unit is resting on the ground.

MACHINE SAFETY

All the revolving tools are checked 100% and balanced by means of special machines with electronic sensors.

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

If the vibrations or the noise of the machine increases markedly during a period of time you should stop immediately and check if there is any damage on the revolving parts. Do not continue the work until the fault has been corrected.

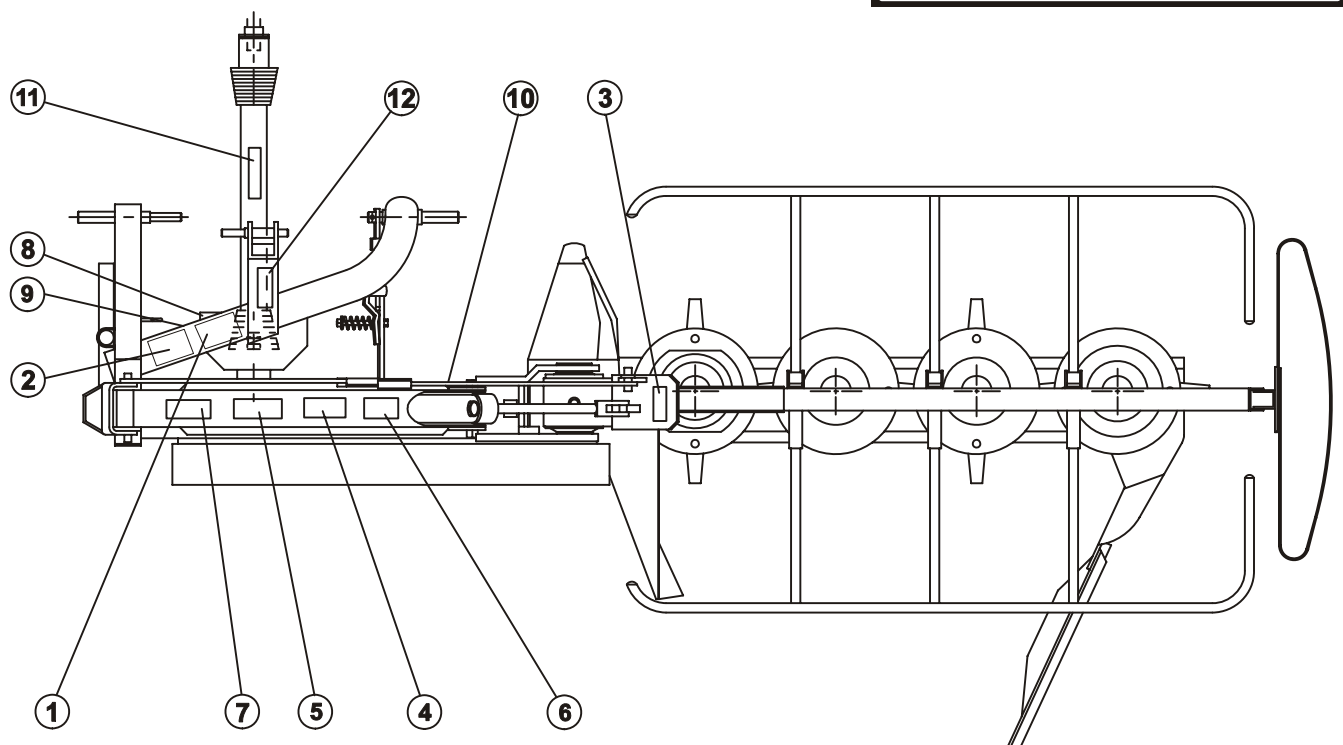
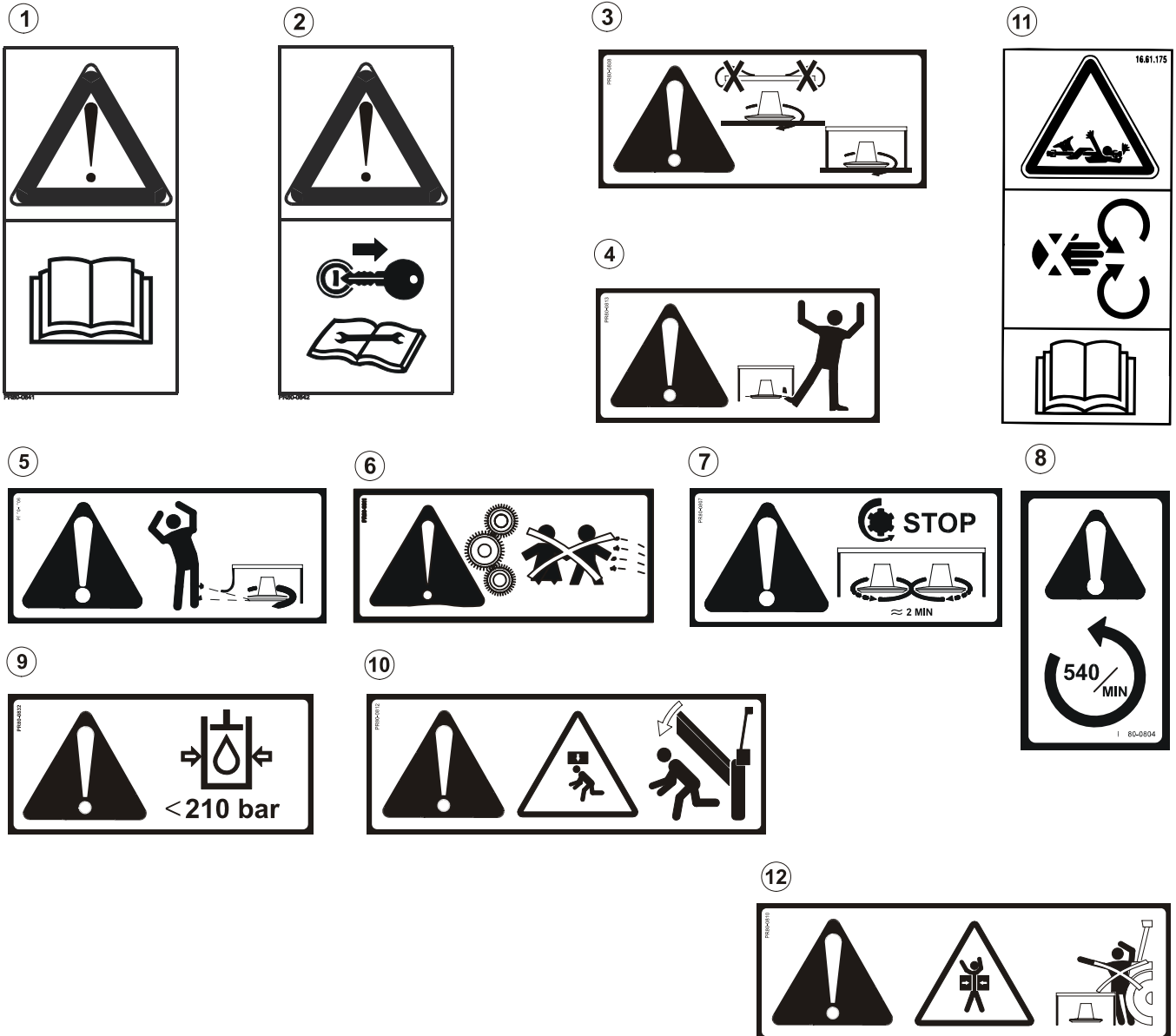
During the season you should check several times every day that no blades, carriers or bolts are missing. If any of these are missing you should mount the parts immediately.

When replacing blades both blades on the disc in question must be replaced as not to create unbalance.

At regular intervals clean discs and flow intensifiers by removing earth and grass and at the same time check that all parts are intact.

At regular intervals also check that all parts at mortise joints (pins, ball heads and cotters) are intact and greased sufficiently.

1. INTRODUCTION

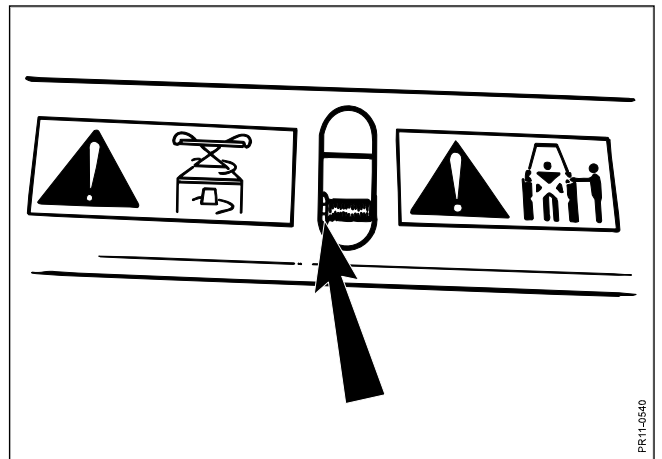
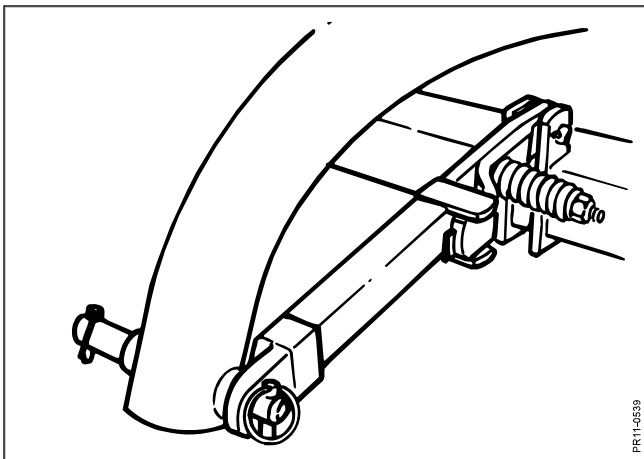
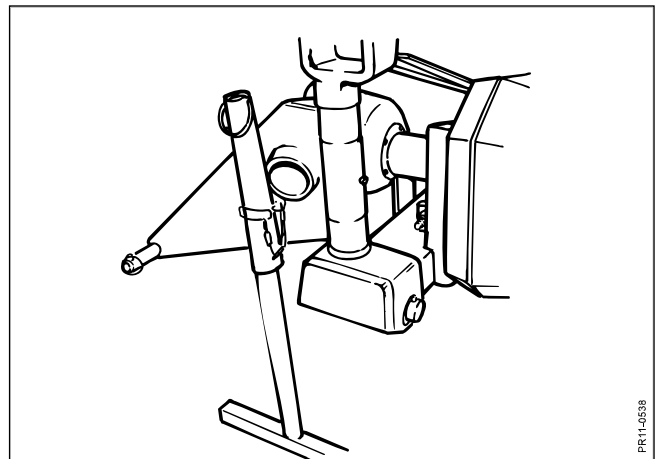
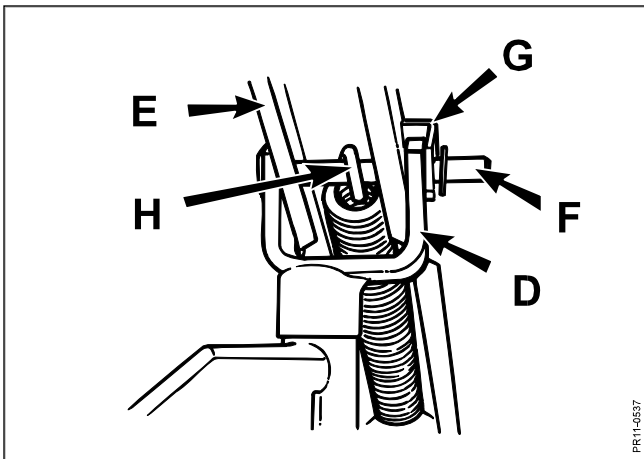
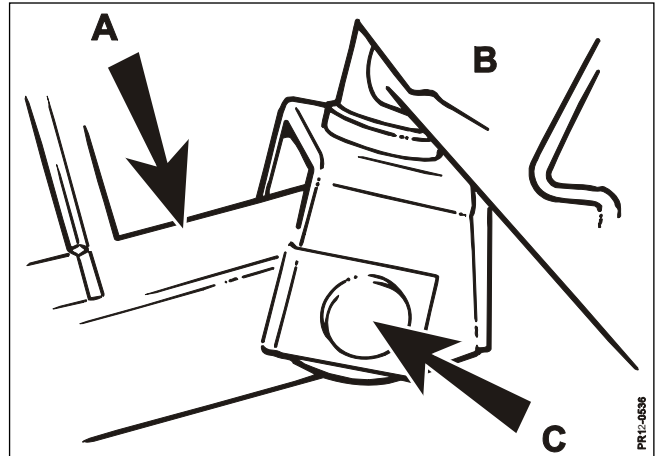
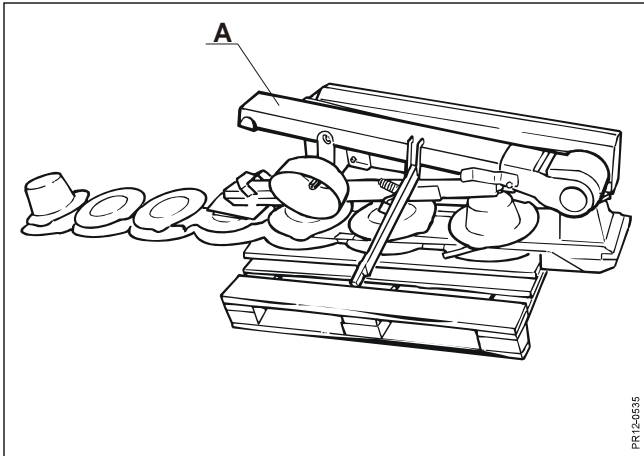


WARNING DECALS

The warning decals shown on the previous page are positioned as shown on the drawing below on the same 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 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 remember to remove the ignition key to ensure that nobody starts the engine before the work is completed.
- 3 **Operation without canvas.**
Do not start the machine unless canvasses and guards are intact and in their right place. The machine can throw out stones or the like during the operation. The purpose of the canvas and the guards is to reduce such danger.
- 4 **Rotating blades.**
Do not under any circumstances let anybody get near or stay near the machine during operation. The machine's rotating blades can without difficulty cause serious injury on any part of the body hit by such a blade.
- 5 **The risk of stones being thrown.**
The meaning is almost the same as No. 3. However, it points out that even if all canvasses and guards are in the correct positions there is still a risk of stones etc. being thrown out. Therefore, do not allow anybody to stay near the machine during the operation.
- 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 drive shaft has stopped, the rotating blades of the machine will keep rotating for up to 2 minutes. Wait until the blades have come to a complete stop before removing canvasses and guards for inspection and maintenance.
- 8 **Number and direction of rotations.**
Check that the PTO drive shaft is running with the correct number of revolutions, and in the correct direction. A wrong number and/or direction will damage the machine in time with the risk of personal damage.
- 9 **Maximum 210 bar.**
Make sure that all hydraulics are not exposed to more pressure than max. 210 bar, as there could be a risk of explosive damage of parts. Hereby you put yourself and other persons in danger of getting hit by metal parts with high speed or oil under high pressure.
- 10 **Remember the transport lock.**
Always remember to activate the transport lock before transport of the machine on public roads. Defects in the hydraulic system and unintentional manoeuvres can make the machine swivel into working position during transport and thereby cause serious machine damage and personal injury.
- 11 **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.
- 12 **Risk of getting jammed.**
Never let anybody stay between the machine and the tractor during connection to the tractor. An unintentional manoeuvre can result in persons getting jammed.

1. INTRODUCTION



TECHNICAL DATA

Type	SB 1600	SB 2000	SB 2400	SB2800
Working width	1.6 m	2.0 m	2.4 m	2.8 m
Number of discs	4	5	6	7
Power requirement at 540 RPM	25kW/34HP	30kW/40HP	35kW/50HP	40kW/54HP
Capacity	1.5 ha/h	2.0 ha/h	2.5 ha/h	3.0 ha/h
No. of revolutions, PTO	540 RPM	540 RPM	540 RPM	540 RPM
No. of revolutions, discs	3100 RPM	3100 RPM	3100 RPM	3100 RPM
Swath width, standard	1.0 m	1.4 m	1.8 m	2.2 m
Swath width with extra swath plate	0.7 m	1.1 m	1.5 m	1.9 m
Lifting the cutting unit	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Weight	390 kg	420 kg	460 kg	520 kg
Transport width	Tractor width + 0.25 m	Tractor width + 0.25 m	Tractor width + 0.25 m	Tractor width + 0.25 m

Type			SB 1600 / SB 2000 / SB2400 / SB 2800
Noise level in the tractor cabin	Machine connected	Window closed	76.5 dB(A)
		Window open	90 dB(A)
	Machine disconnected	Window closed	76.5 dB(A)
		Window open	78 dB(A)

We reserve the right to change the construction and specification details without previous notice.

ASSEMBLING INSTRUCTIONS

In order to make it easier and less expensive to dispatch the machine, it is to some markets delivered partly assembled. When assembling the machine the following are the assembling instructions:

- Fig. 1-1:** All loose parts are liberated from the transport package.
The cutter bar must temporarily stay attached to the transport pallet.
The boom A is tipped into working position.
- Fig. 1-2:** The headstock B is attached to the boom A with the pin C.
- Fig. 1-3:** The yoke D of the headstock is connected to the relief device E by means of the pin F. At the same time remember to mount the parking lock G and the relief spring H.
- Fig. 1-4:** The jack is mounted on the headstock.
- Fig. 1-5:** The stone release mechanism is mounted on the headstock.
- Fig. 1-6:** The relief spring is tightened. The spring is tightened until the nut is as far as it will go.

1. INTRODUCTION

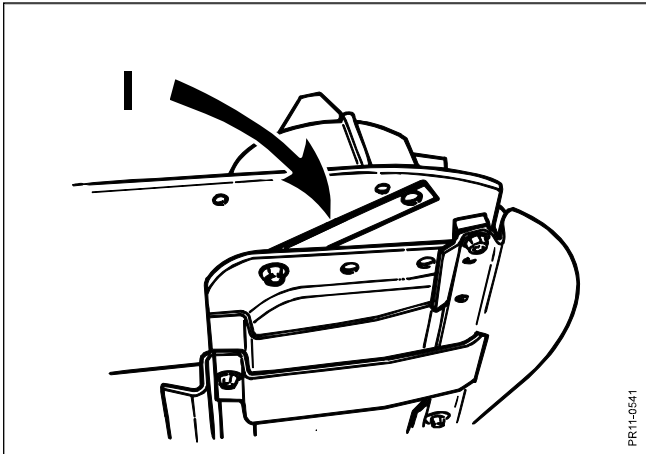


Fig. 1-7

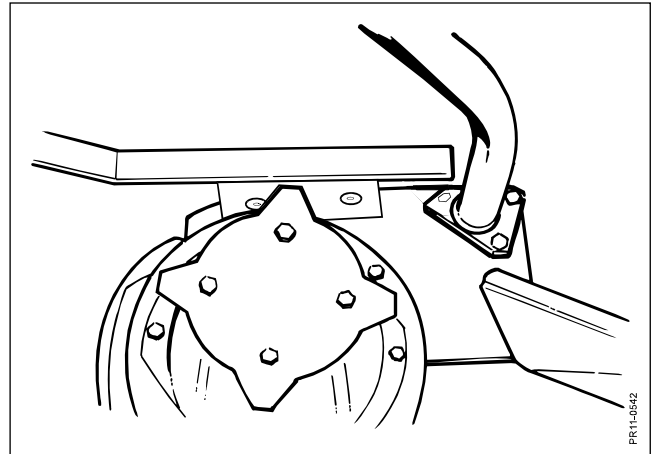


Fig. 1-8

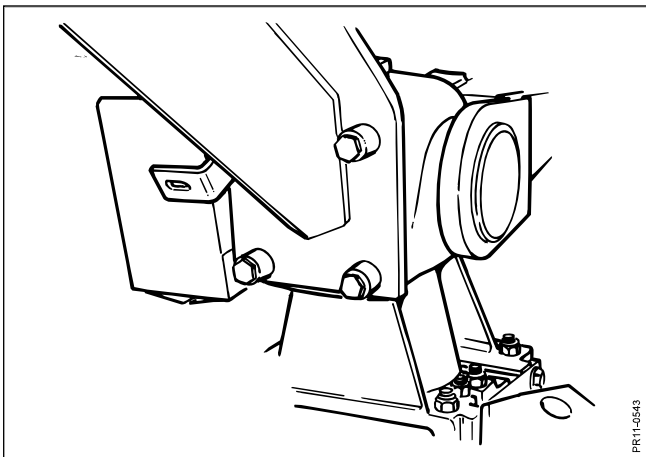


Fig. 1-9

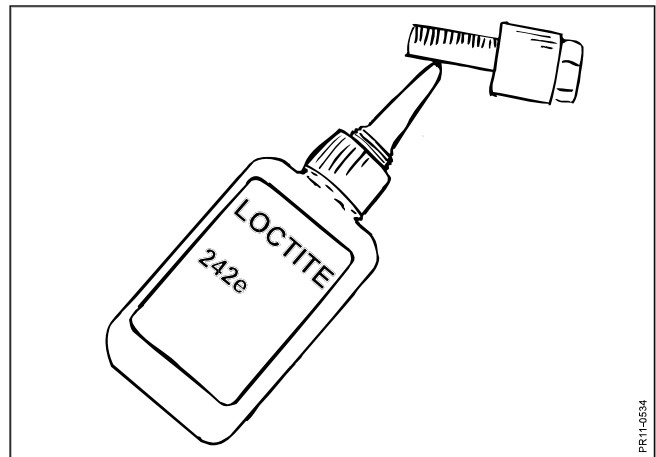


Fig. 1-10

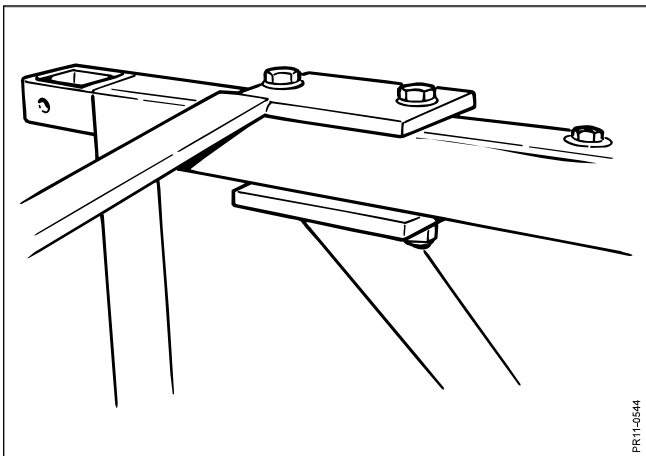


Fig. 1-11

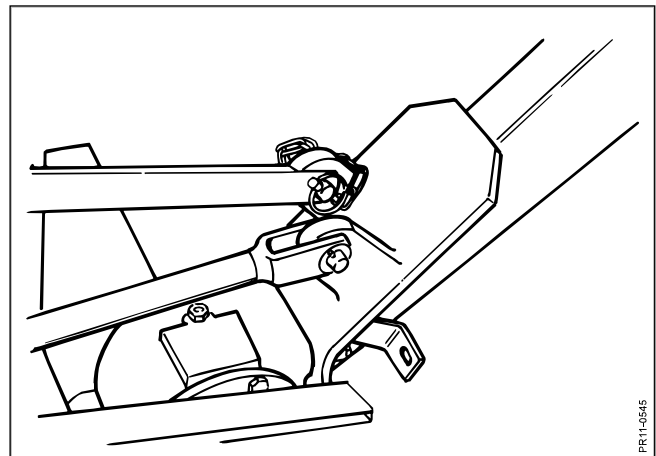


Fig. 1-12

1. INTRODUCTION

Fig. 1-7: The anchor plate for the right swath plate is mounted on the outer end of the cutter bar - if it was dismounted at all. Remember to position the filler I.

Fig. 1-8: (Only SB 2800). The brace and the straw divider are mounted.

Fig. 1-9: The boom for canvas is mounted on the gearbox. To ensure that the bolts do

Fig. 1-10: not get loose add a drop of LocTite (screw thread lock) 242. The bolts are tightened with a torque of 120 Nm.

Fig. 1-11: (Only SB 2800). The brace and the straw divider are mounted on the cutting unit.

Fig. 1-12: The lifting cylinder is mounted on the cutting unit. The easiest way to do this is to pull out the piston rod. In order to do this the oil in the cylinder has to be pressed out through the quick coupling of the hydraulic hose into an empty oilcan.

1. INTRODUCTION

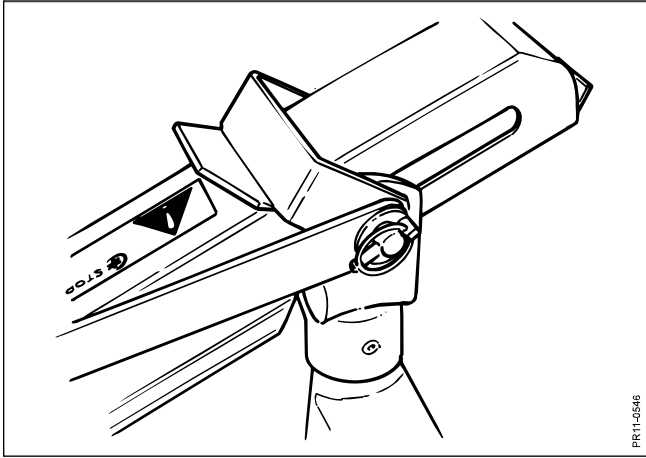


Fig. 1-13

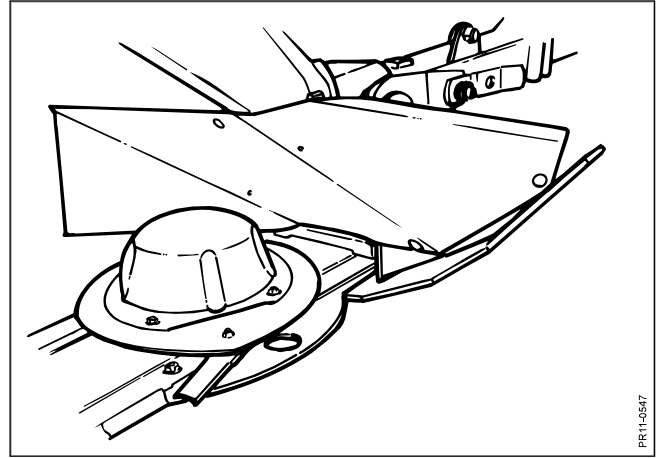


Fig. 1-14

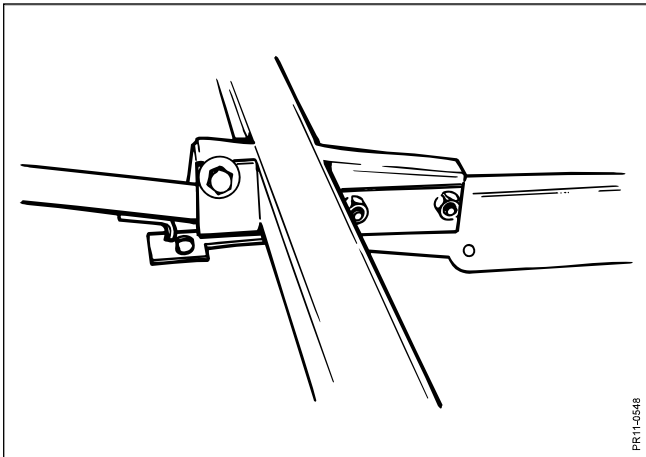


Fig. 1-15

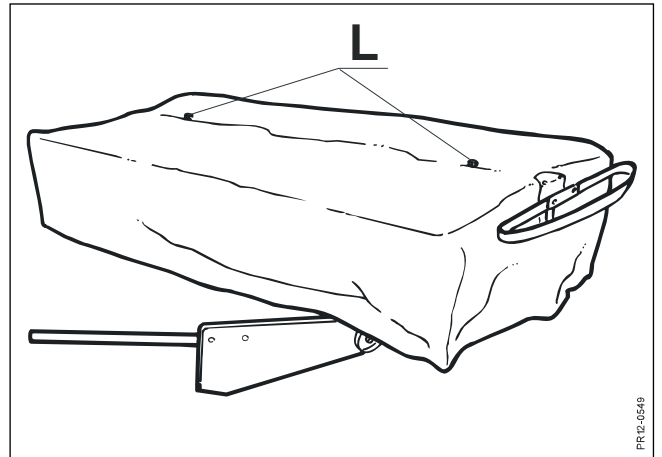


Fig. 1-16

1. INTRODUCTION

Fig. 1-13: The two parts of the stabilizer unit are assembled and mounted on the pin at the yoke of the headstock and the cutting unit.

Fig. 1-14: The fixed swath plate is mounted on the right side of the gearbox.

Fig. 1-15: The rear protection hoop is mounted with the long, bend end out towards the end of the cutter bar. Remember to mount the retaining spring together with the centre brace (the right one on SB 1600).

Fig. 1-16: The right hand swath plate is mounted on the anchor plate.
The protection canvas is pulled out over the protection hoops and is attached to the boom with the screws L.
Now the side protection hoop can be mounted at the end of the boom.
The rod is mounted in the pocket in front of the protection canvas and attached with one screw.

Then the machine is ready to be connected to a tractor.

2. CONNECTION AND TEST DRIVING

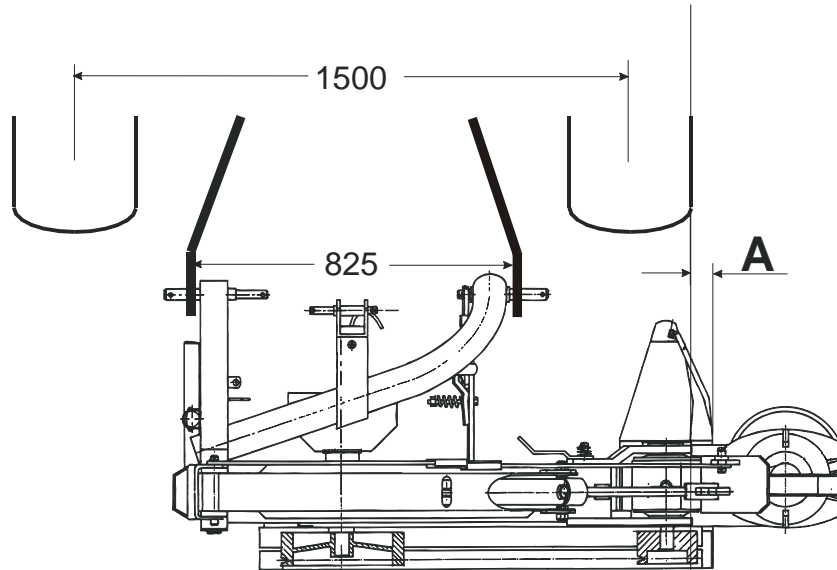


Fig. 2-1

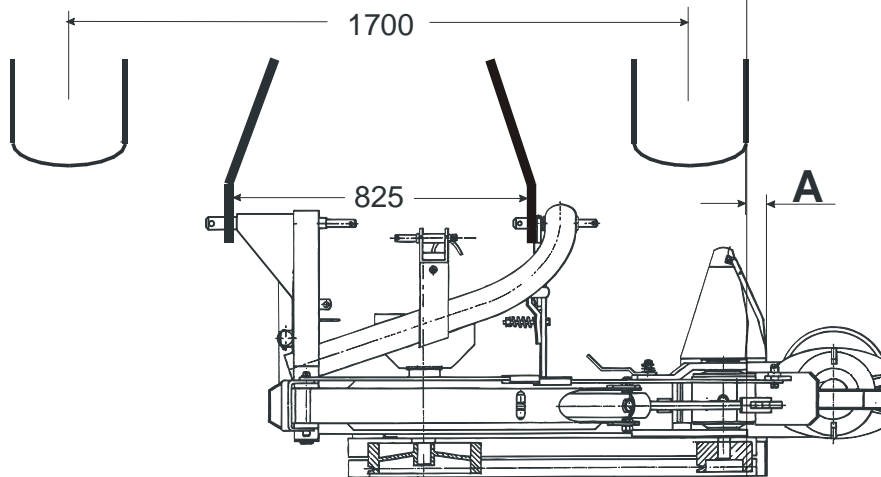
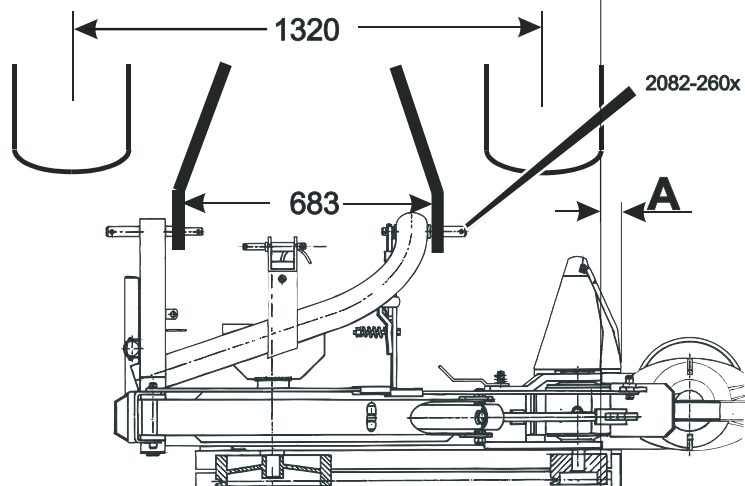


Fig. 2-2



Pr110813

2. CONNECTION AND TEST DRIVING

MOUNTING ON TRACTOR

PLACING SIDEWAYS

The machine can be adjusted to the tractor's 3-point linkage and track width in three ways:

- Fig. 2-1:** Connection of tractors with normal track width and category II 3-point suspension.
- Fig. 2-2:** Connection of tractors with large track width, large wheels and category II 3-point linkage. This requires a modification set to be welded on –JF– no.: consult spare parts list. See section 6: MISCELLANEOUS.
- Fig. 2-3:** Connection of tractors with small track width and category I 3-point linkage. This requires a replacement of the right lift pin to –JF– no.: consult spare parts list.

CONNECTION

1. Place the tractor right in front of the 3-point linkage of the machine.
2. Adjust the lift arms of the tractor so that they are level.
3. Slowly back the tractor while lifting the lift arms until the draw pins of the machine can be connected to the tractor. Connect the pins.
4. Mount the upper link of the tractor and place it parallel to the lift arms of the tractor.
5. Connect the lifting cylinder to the single-acting hydraulic take-out of the tractor.
6. Lock the lift arms of the tractor to prevent them from moving sideways.

HYDRAULIC CONNECTION

The machine is equipped with a lifting cylinder for transport.



DANGER: The hydraulic components must not be exposed to a pressure larger than 210 bar as a higher pressure might damage parts and cause serious personal injury.
Make sure that nobody is near when the hydraulic is activated for the first time.

NB: Remember to disconnect the hydraulic quick-coupling when the machine is disengaged.

2. CONNECTION AND TEST DRIVING

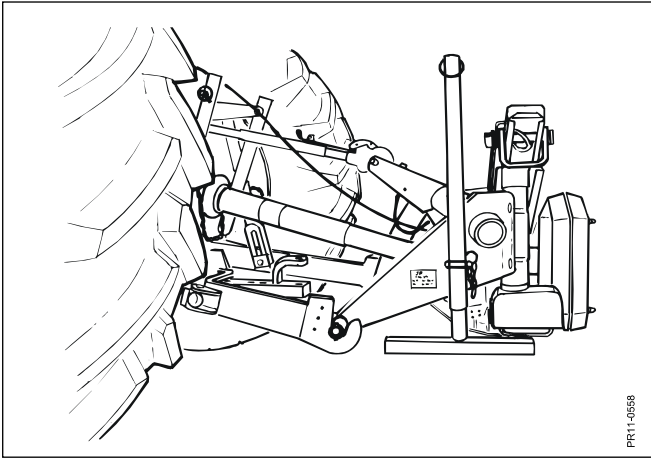


Fig. 2-4

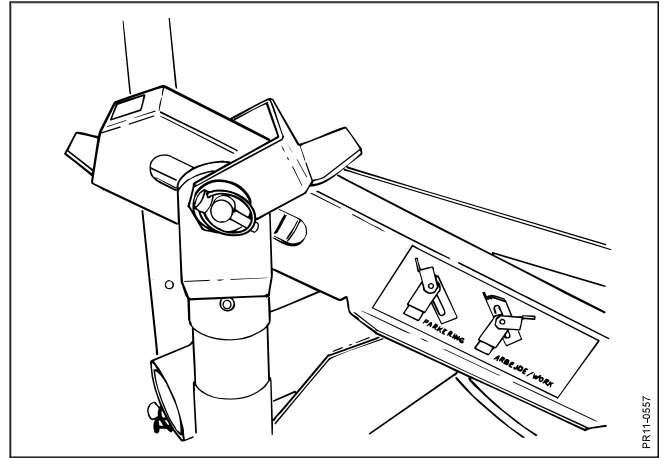


Fig. 2-5

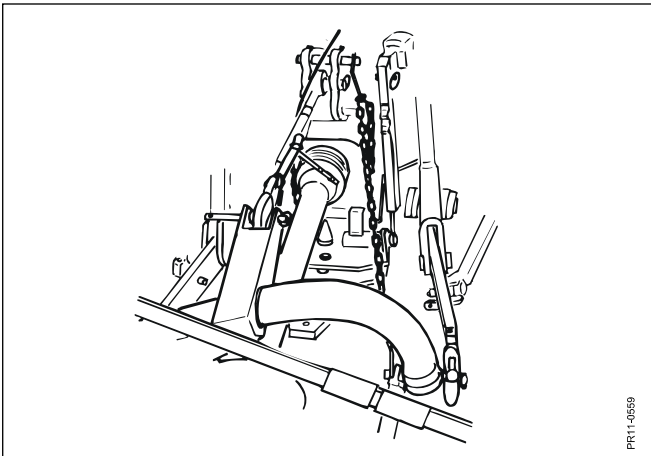


Fig. 2-6

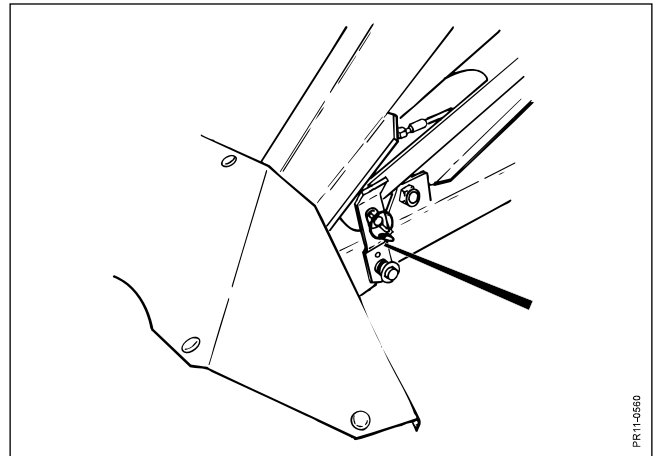


Fig. 2-7

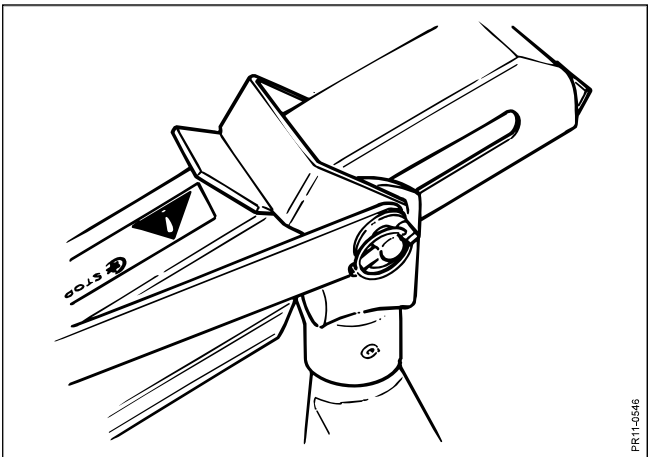


Fig. 2-8

JACK

- Fig. 2-4:** When the machine is to stand disengaged, the jack must be lowered to rest on the ground and secured by the special pin.
When the machine is connected to the tractor the jack must be lifted so that the machine can move freely within the operating area. Secure the jack by the special pin.

ADJUSTMENT OF DEPTH STOP ON LIFT ARMS

- Fig. 2-5:** The depth stop on the lift arms must be adjusted so that there is a 2 cm slot above the pin in the relief device.

SUPPORT CHAIN

- Fig. 2-6:** A support chain can be supplied to stabilise the depth stop, -JF- no.: consult spare parts list.

TRANSPORT LOCK

The machine has a mechanical transport lock. When the machine is engaged and the cutting unit lifted by the hydraulic lifting cylinder, you must secure it before transporting the machine. The transport lock ensures that the cutting unit is fixed in its top position and prevents it from falling down if the hydraulic is misused or if a hose is damaged.

- Fig. 2-7:** Before transport of the machine, release the spring transport lock from the support pin by turning it 90° upwards over the pin and secure it by the cotter pin.



IMPORTANT: The lock must always be in the position shown at fig. 2-7 when transporting the machine.

After transport, when the machine is to be prepared for work, remove the cotter pin from the pin, tip the transport lock and turn it 90° over the support pin until the pin is released.

- Fig. 2-8:** In addition, the machine is equipped with a parking lock (yellow) which must be tipped back before working in the field.

ADJUSTMENT OF THE PTO DRIVE SHAFT

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

The dimensions and motion of the 3-point linkage of the individual tractor brands are not standardised. Therefore, the distance from the PTO shaft of the tractor to the PIC shaft of the machine will depend on which tractor being used.

For that reason, it might be necessary to shorten the PTO drive shaft before use to ensure that it works correctly.



IMPORTANT: Do not shorten your new PTO drive shaft without being sure that it is necessary. The shaft is adjusted from the factory to fit the distance from PTO to PIC, which is standard on most tractors.

2. CONNECTION AND TEST DRIVING

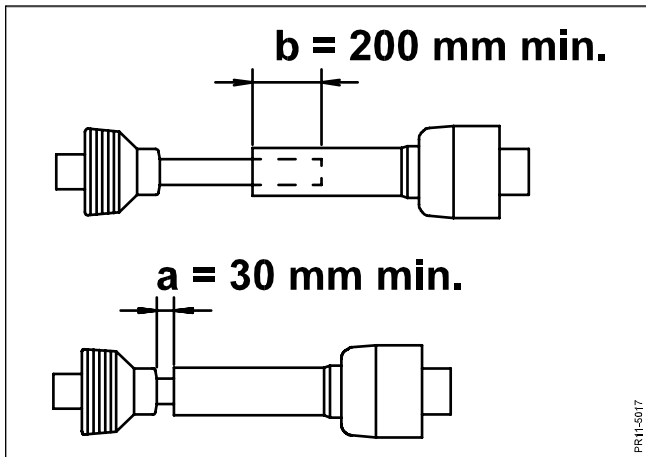


Fig. 2-9

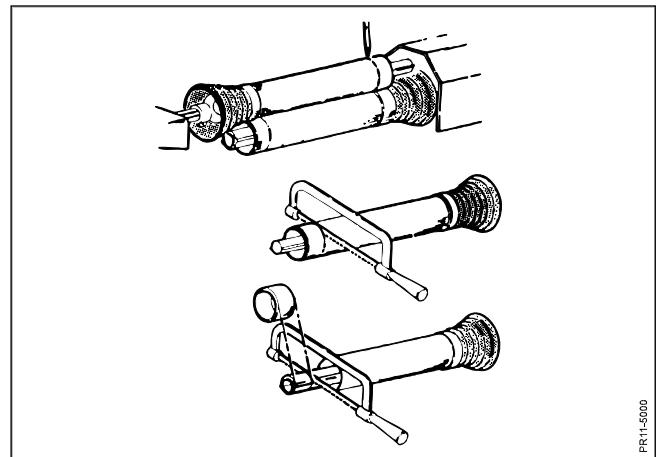


Fig. 2-10

2. CONNECTION AND TEST DRIVING

IF SHORTENING IS NECESSARY:

Fig. 2-9: Adjust the PTO drive shaft so that it has:

- **the largest possible overlap**
- **more than 200 mm overlap in working position** (there must be a sufficient overlap in both extreme positions as the distance from PTO to PIC varies when the machine is moving up and down within the normal operating area).
- **a minimum distance of 30 mm in any position in order not to bottom the shaft.**



IMPORTANT: The overlap measurements indicated for the tubes of the PTO drive shaft must be observed as shown at fig. 2-9.

Fig. 2-10: How to shorten:

- 1) Fasten the PTO drive shaft half parts to PTO and PIC respectively when these are at the same horizontal level. This is the shortest possible length of the shaft and corresponds normally to working position when the machine is standing on plane ground.
- 2) Keep the shaft ends parallel and mark 30 mm (minimum). See also fig. 2-10.
- 3) Shorten all 4 tubes equally.
- 4) The profile tube ends must be rounded and any burrs must be removed carefully with a file until they are quite smooth. It is important that **the outer tube is deburred on the inside and that the inner tube is deburred on the outside.** The deburring protects the surface of the profile tubes against damages caused by sharp edges or impurities.
- 5) Clean the profile tube ends.



WARNING: Grease the tubes carefully before re-assembly, otherwise they are exposed to large frictional forces that might damage the transmission.

When the PTO shaft has been reassembled, the end with the overrunning clutch must be fixed to the PIC shaft on the machine.

Check that the PTO shaft has a sufficient overlap in all positions by lifting and lowering the machine hydraulically.

Finally, check that the PTO of the tractor is running at 540 rpm.

If the shaft speed is too high it can be very dangerous. On the other hand, if the speed is too low it might result in a bad cutting and an unnecessarily heavy torque on the transmission.

2. CONNECTION AND TEST DRIVING

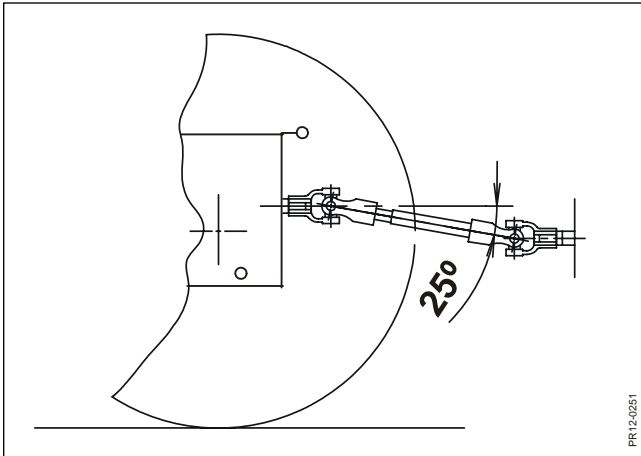


Fig. 2-11

MAXIMUM ANGLES

Fig. 2-11: The following angles are recommended as a maximum for the universal joints of a standard PTO drive shaft.

Constant operation	25°
Short-time operation	45°
Inactivity	90°

The angles of each universal joint must be approximately equal, i.e. the deviation must not be larger than 5°. If the deviations are larger, the position of the top link at the side of the tractor must be adjusted and the upper link and the lift arms must be more parallel.

When working daily with the machine the following points should be considered:

- 1) The machine should only be started while the engine is running at few rpm. This particularly applies to tractors with electro-hydraulic connection of the PTO shaft.
- 2) The machine should only be started in working position.
- 3) The machine should also be in working position if the rpm are to be increased heavily, e.g. when opening a field or when turning in a field.
- 3) Pay attention to the rpm of the tractor when working in the field. If the rpm are decreasing slowly or are suddenly reduced it might be a sign of the transmission being overloaded because of too much speed or foreign objects in the cutting unit. If this is the case, you must declutch immediately and let the machine "get some air".

TEST DRIVING

CHECK BEFORE TEST DRIVING

Following items should be checked before test-driving:

- 1) the hydraulic components are connected and tightened correctly.
- 2) the speed of the PTO-drive shaft is correct (540 rpm).
- 3) the oil level of the cutter bar and the bevel gearbox is correct, see section 4: LUBRICATION.
- 4) all greasing spots have been greased, see section 4: LUBRICATION.

2. CONNECTION AND TEST DRIVING

2. CONNECTION AND TEST DRIVING

- 5) all blades on the discs are intact and tightened correctly.
- 6) the cutting unit is lowered to the ground and the machine is in working position when the PTO shaft of the tractor is engaged.
- 7) the engine speed is low when the PTO shaft of the tractor is engaged.
- 8) the power transmission shaft between the PTO of the tractor and the PIC of the machine does not get jammed when the lift arms of the tractor are cautiously lifted and lowered.
- 9) the guard of the PTO drive does not "run along" and that the security chains are correctly fixed.
- 10) the protections (guards and canvases) of the machine are complete, intact and secured correctly.
- 11) all tools have been removed from the machine.
- 12) nobody is standing near the machine when it is working.

THE TEST DRIVING

The PTO drive should be connected cautiously and the engine should run with a low number of revolutions for a couple of minutes.

If there are no unusual noises or vibrations the speed can be increased gradually until the number of rpm is normal (PTO = 540 rpm).

Except from the driver, nobody should stay near the machine.

NB: All machines are submitted to a vibration test before leaving the factory. This is an important part of the company's quality control.

Nevertheless, you must regularly check if the machine starts vibrating more than usual, especially during the test-driving.



WARNING: When discs and blades rotate by more than 3000 rpm even small damages on the rotating parts (blades, discs and caps) may cause vibrations which may result in cracks or fractures.

Even though the machine is shock and vibration resistant there will always be a certain, however small, risk.

During the season, check each day if blades, discs or caps are damaged and replace if necessary.

3. ADJUSTING AND WORKING

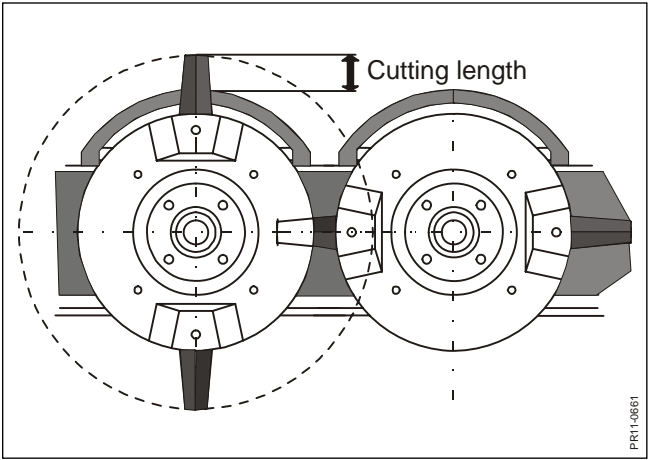


Fig. 3-1

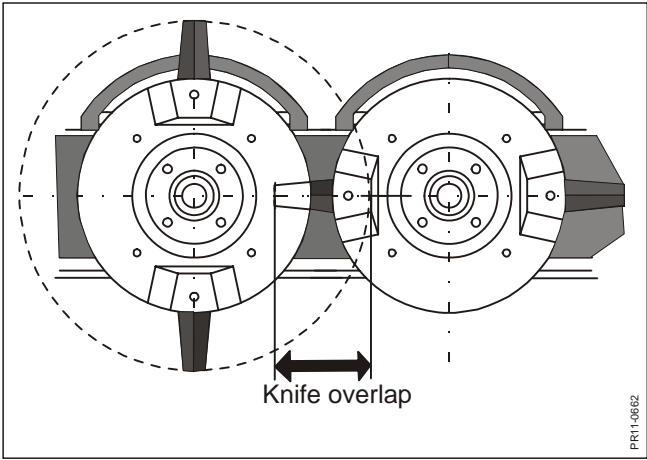


Fig. 3-2

3. ADJUSTING AND WORKING

STRUCTURE AND OPERATION

The **SB 1600 / 2000 / 2400 / 2800** is a disc mower designed to be mounted behind a tractor and to lay a compact swath on the right side of the wheels of the tractor.

IMPORTANT PARTS OF THE MACHINE

BLADES

A set of profile blades is bolted on each of the round discs of the machine. These blades are made of 4 mm hardened high strength steel.

Remember: Before working with the machine, please check:



- that no blades are missing and that they are mounted correctly.
- that no blades are bent or broken.
- that all blades are able to turn freely around the blade bolt.

A distinctive characteristic of the machine and the cutter bar is the large effective cutting length of the blades.

Fig. 3-1: The cutting length of a blade is defined by the distance from the front edge of the stone protectors to the point of the blade.

The larger cutting length of the blade, the higher speed is possible for the machine before the cutting becomes irregular.

The following example illustrates this:

Cutting length of the blade	0.05 m
Number of blades per disc	2
RPM of the blade	3040
Minutes per hour	60
Metres per kilometre	1000
Maximum speed	<u>18.24 km/h</u>

This demonstrates that the large effective cutting length of the knives creates a surplus capacity with regard to speed.

Fig. 3-2: At the same time, the cutter bar has a large blade overlap between the discs. Other things being equal, this will reduce the tendency of stripes between the discs. The blade overlap helps keeping the bar clean and reduces the risk of the crop being wrapped round the hubs under the discs.

3. ADJUSTING AND WORKING

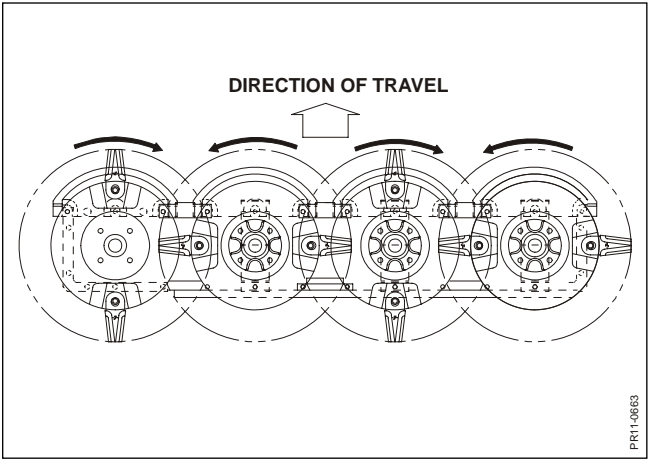


Fig. 3-3

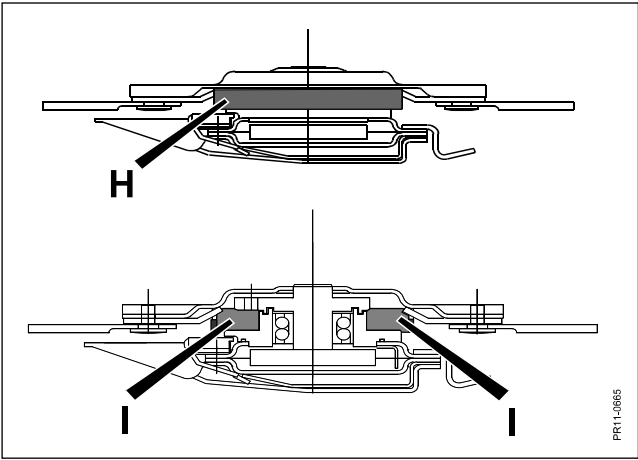


Fig. 3-4

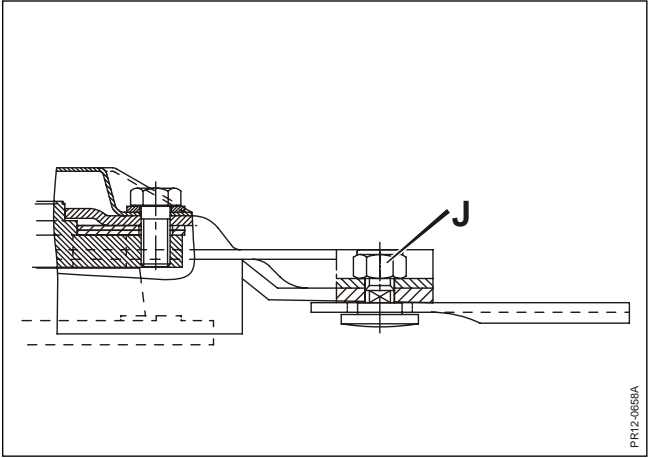


Fig. 3-5

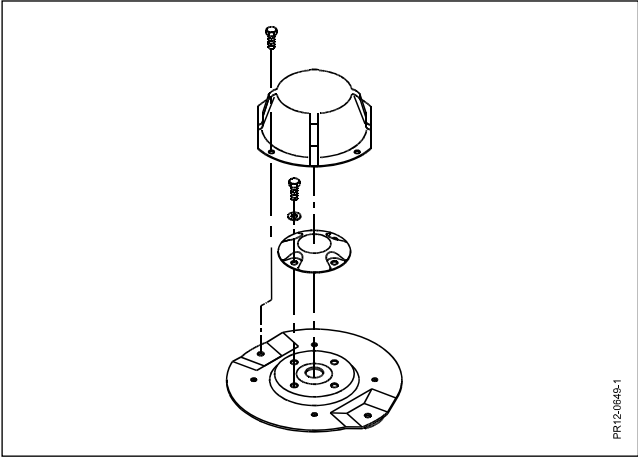


Fig. 3-6

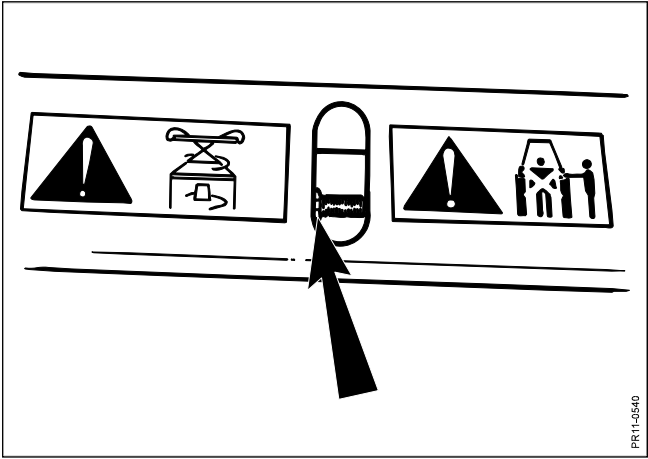


Fig. 3-7

3. ADJUSTING AND WORKING

DISCS

Fig. 3-3: Two by two, the discs turn towards each other which means that the crop is assured the shortest passage across the bar and that the crop flow is optimum. This assures for one thing that the cutting is not blocked by the crop that has already been cut, for another that the cut grass is not left on the bar with the possibility of being re-cut.

NB: It is not possible to modify the direction of rotation of the individual discs.

Fig. 3-4: An anti-wrapping ring, **H**, is placed under the discs to assure that no strings, threads or wires, etc., are being wrapped round the discs or their hubs which would block the rotary motion.

Regularly, the discs should be dismounted and dust and other impurities that accumulate between the discs and the hubs of the cutter bar (in the shaded areas **I**) should be removed.

Fig. 3-5: On the discs, the nuts **J** of the blade bolts are countersunk and hence protected against wear. As the countersink is open towards the edge of the disc, dust and dirt cannot stick to the countersinking which would make a future replacement of the blades difficult.

Flow intensifiers

Fig. 3-6: To ensure that the machine forms a compact swath behind the machine, a flow intensifier (a so-called cap) is mounted on the outer discs which optimizes the crop flow across the cutter bar. The two caps assure that the crop is transported the right way round the disc (towards the centre) and across the bar.

WORKING ADJUSTMENTS

In order to benefit the most from all of the functions of the SB 1600 / 2000 / 2400 / 2800, several parts have to be adjusted correctly.

RELIEF

In order to spare the stubble during the work, to reduce the wear of the guide shoes and to assure a good ground following capability, the machine is relieved by a strong spring.

Fig. 3-7: If the machine has a tendency to lift in the end closest to the tractor, the relief spring is tightened too much. Loosening the nut by a couple of rounds can rectify this.

3. ADJUSTING AND WORKING

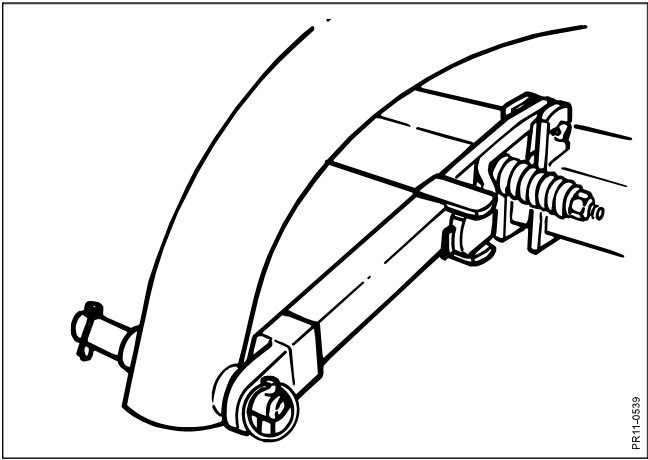


Fig. 3-8

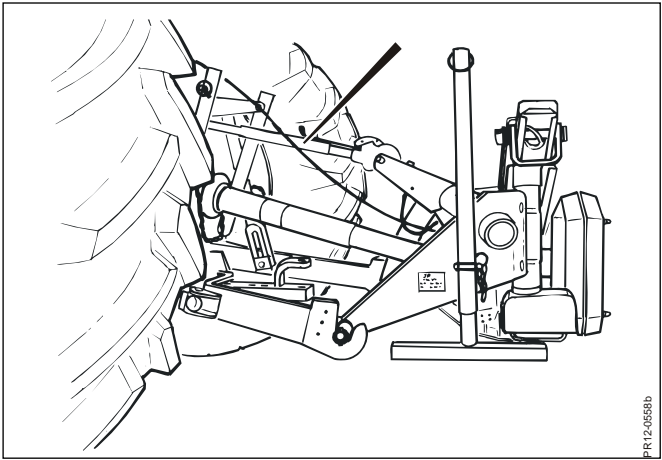


Fig. 3-9

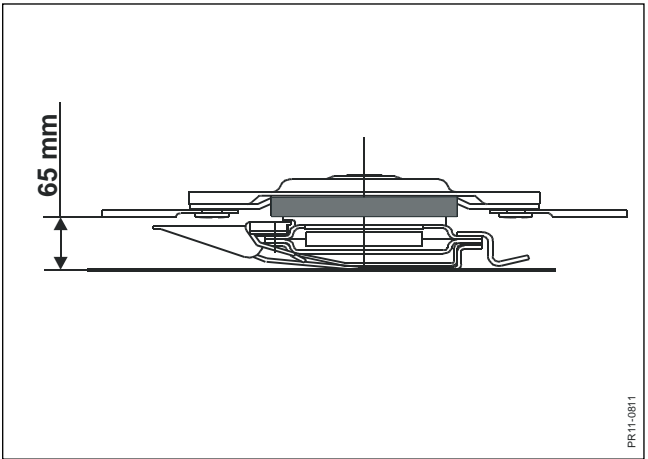


Fig. 3-10

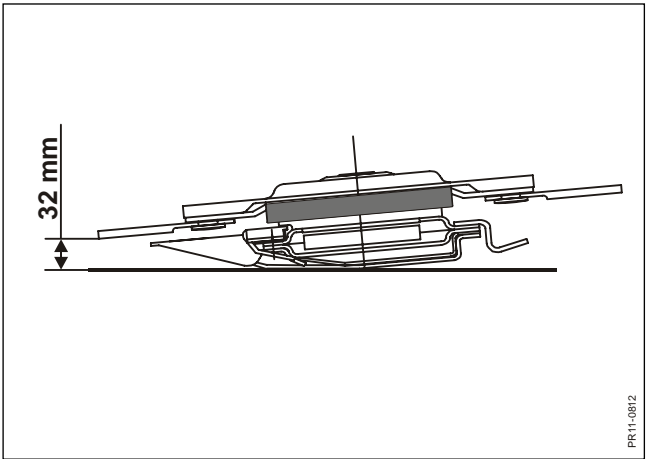


Fig. 3-11

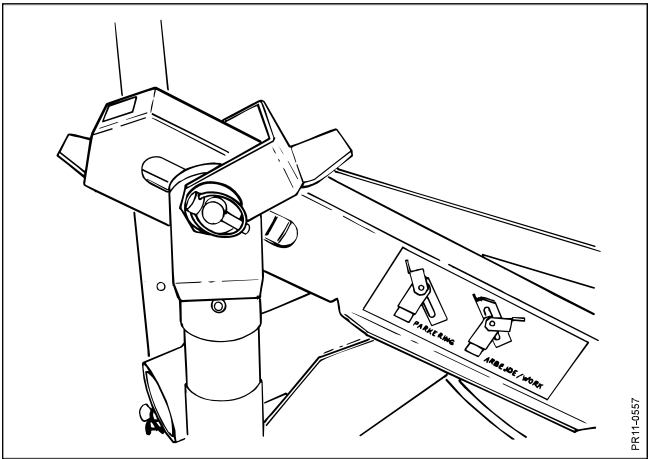


Fig. 3-12

SAFETY RELEASE

- Fig. 3-8:** The machine is equipped with a safety release allowing the cutting unit to swivel backwards when the pressure from the front gets too high, e.g. if the machine collides with a tree, a pole, a large stone or the like.
Having been released, the easiest way to engage the safety release in working position is to back the tractor with a jerk.
If the machine release too easily, it is possible to make the safety release more slow by tightening the spring.
However, the machine is not shock-resistant if it is backed with a lowered cutter bar and there is a **risk of damage** by doing this.



WARNING: Do not tighten the spring to such an extent that the safety release is blocked. By doing this, the machine might be damaged unnecessarily in case of collision.

ADJUSTMENT OF CUTTING HEIGHT

- Fig. 3-9:** The cutting height can be adjusted by the upper link.
Fig. 3-10: A machine in horizontal position has a theoretical cutting height of 65 mm.
Fig. 3-11: If the front of the machine is inclined about 7°, a cutting height of 32 mm is achieved.
Do not incline the machine further as this might damage the PTO shaft, wear the discs and the blades too much and soil the forage.

If you should want the stubble to be extraordinary high, e.g. when cutting fallow fields, it is possible to lift the cutter bar by mounting high guide shoes on the machine. These are available as additional equipment. See section 6: MISCELLANEOUS.

PARKING

Park the machine with the cutting unit resting on the ground.

The machine should always be parked on plane and stable ground. Otherwise, support blocks or plates must be used.

- Fig. 3-12:** Activate the parking lock:
- Lower the jack
 - Disengage the hydraulic connection
 - Lower the lift until the machine is standing on the jack
 - Disengage the lift arms and the upper link. Remember to hang the PTO shaft on the support hoop to avoid dirt.

WORKING WITH THE MACHINE

START

When arriving to the field, follow this procedure:

- 1) Lower the cutter bar to the ground before entering the crop.
- 2) Connect the PTO of the tractor while the engine is running idle.
- 3) Gradually increase the number of rpm of the engine until 540 rpm is reached on the PTO.
- 4) Start driving and lead the cutting unit into the crop.

NB: It is normal that the cutting tools (cutter bar, discs and blades) make a noise when starting because of the very high number of revolutions of the discs (3000 rpm).
The noise will be reduced from the moment the machine starts working in the crop.



IMPORTANT: When the machine is in working position and swathing, the single-acting hydraulic cylinder that lifts the cutting unit must be in floating position so that the cutting unit is able to move freely.

WORKING IN THE FIELD

When swathing with the machine, several important conditions must be taken into consideration.

Theoretically, it is possible to work at a speed of 18 km/h. However, you should always adjust the speed to the working conditions, i.e. the crop quantity and the condition of the field.

The driver must always have control of the tractor and be able to avoid irregularities of the ground or stones or the like in front of the tractor or the machine.

The speed must be lower than normal if:

- the ground is uneven or hilly
- the crop is lying down
- the crop is exceptionally high and dense

On the other hand, the speed must be increased if:

- the crop is low and thin
- the crop is mixed with e.g. peas.

3. ADJUSTING AND WORKING

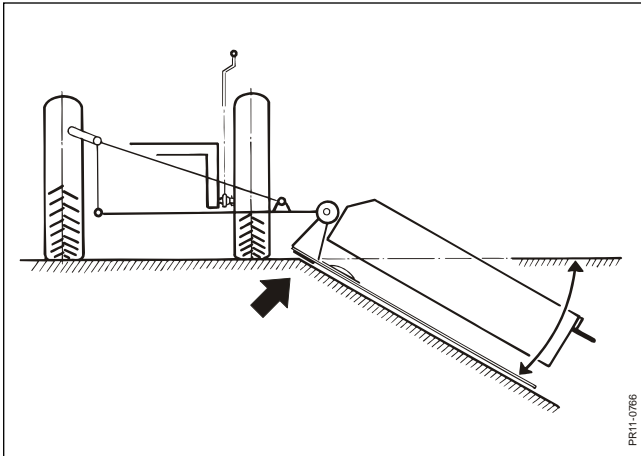


Fig. 3-13

3. ADJUSTING AND WORKING

As mentioned earlier, it is important to pay special attention when working on hilly ground. The speed must be reduced and you must pay attention to the movements of the machine.

On hilly ground there is a larger risk of hitting a bank of earth or another obstacle with the machine so the driver must be careful and try to minimise the risk of damages on the machine.

REMEMBER: As long as the stubble stays regular and the machine is working in a constant and sliding way across the field, the speed level is right.



DANGER: When driving along field boundaries or slopes, always be careful not to drive too fast as there can be obstacles or varying soil conditions.

When swathing the rpm of the PTO shaft must be constant (540 rpm) so that the cutting tools of the machine are able to work in the best way.



DANGER: After having worked with the machine for a long time, the cutter bar will have a temperature of about 80 degrees and you must be aware of the risk of burns if you wish to replace blades or other parts.

MOWING A SLOPE

Fig. 3-13: When mowing edges of ditches, the cutter bar must be placed out over the ditch so that the left guide shoe rests on the edge and the cutter bar is hanging freely out over the ditch.

Lower the lift of the tractor (past the depth stop). The cutter bar will now go down to the slope.

The lifting cylinder must still be in floating position.

TURNING

When turning in the field the cutter bar must be lifted by the lift of the tractor and the rpm must be reduced.

NB: The PTO shaft between the tractor and the machine may make a noise when the machine is totally lifted. This is caused by the angle of the shaft and has no practical importance, as the torque of the shaft is extremely light in this situation.

Before increasing the rpm again, the cutter bar must be lowered to working position.

When turning on hilly ground or on steep slopes you should try to turn when the machine is up against the hill/the slope in order to ensure sufficient stability of the tractor.

3. ADJUSTING AND WORKING

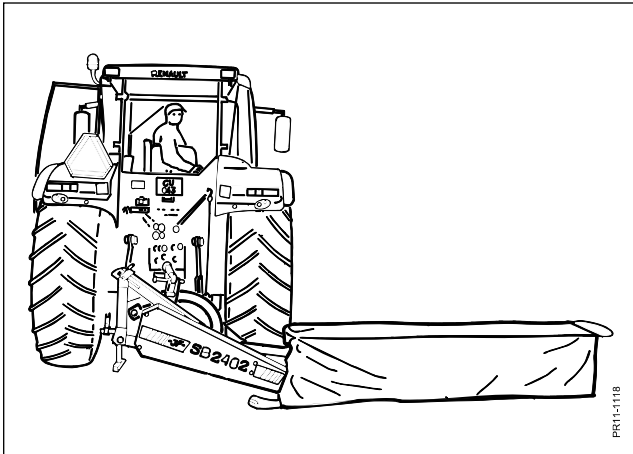


Fig. 3-14

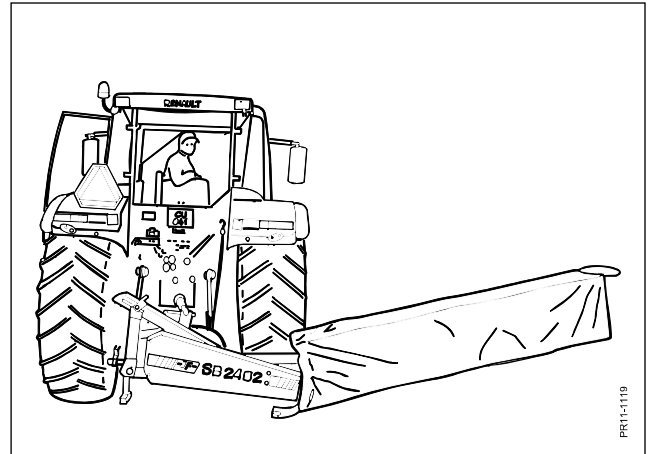


Fig. 3-15

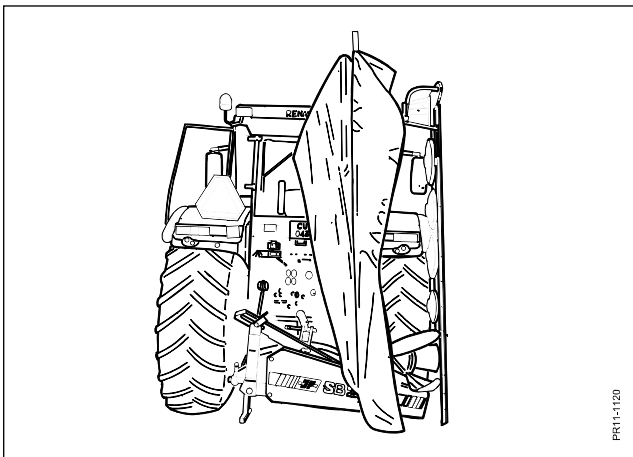


Fig. 3-16

3. ADJUSTING AND WORKING



In any case the speed should be reduced when turning in the field.

IMPORTANT: The machine is not designed to be able to back in working position. Therefore, the cutting unit should **always** be lifted clear of the ground when turning.



IMPORTANT: After a collision the machine should always be checked for damages. This is especially important for the structural parts and the cutting tools.

TRANSPORT

When driving on public roads or outside fields, the machine must be lifted by the lifting cylinder and the **transport lock must be properly secured**.

EASY LIFT

This additional equipment allows the link arms of the tractor and thus the headstock of the machine to be adjusted to a fixed height. The cutter bar is raised and lowered simply by means of one of the control handles of the tractor, i.e. the one which controls the remote outlet.

Fig. 3-14: Working position

Lower the cutter bar until it rests on even ground and the control handle is in floating position. Lower the link arms of the tractor / the headstock of the machine until there is 2 cm slot above the pin. During working, the control handle must be in floating position.

Fig. 3-15: Turning in the field

Raise the cutter bar with the control handle until the cylinder reaches the stop. Then you can turn with the machine.

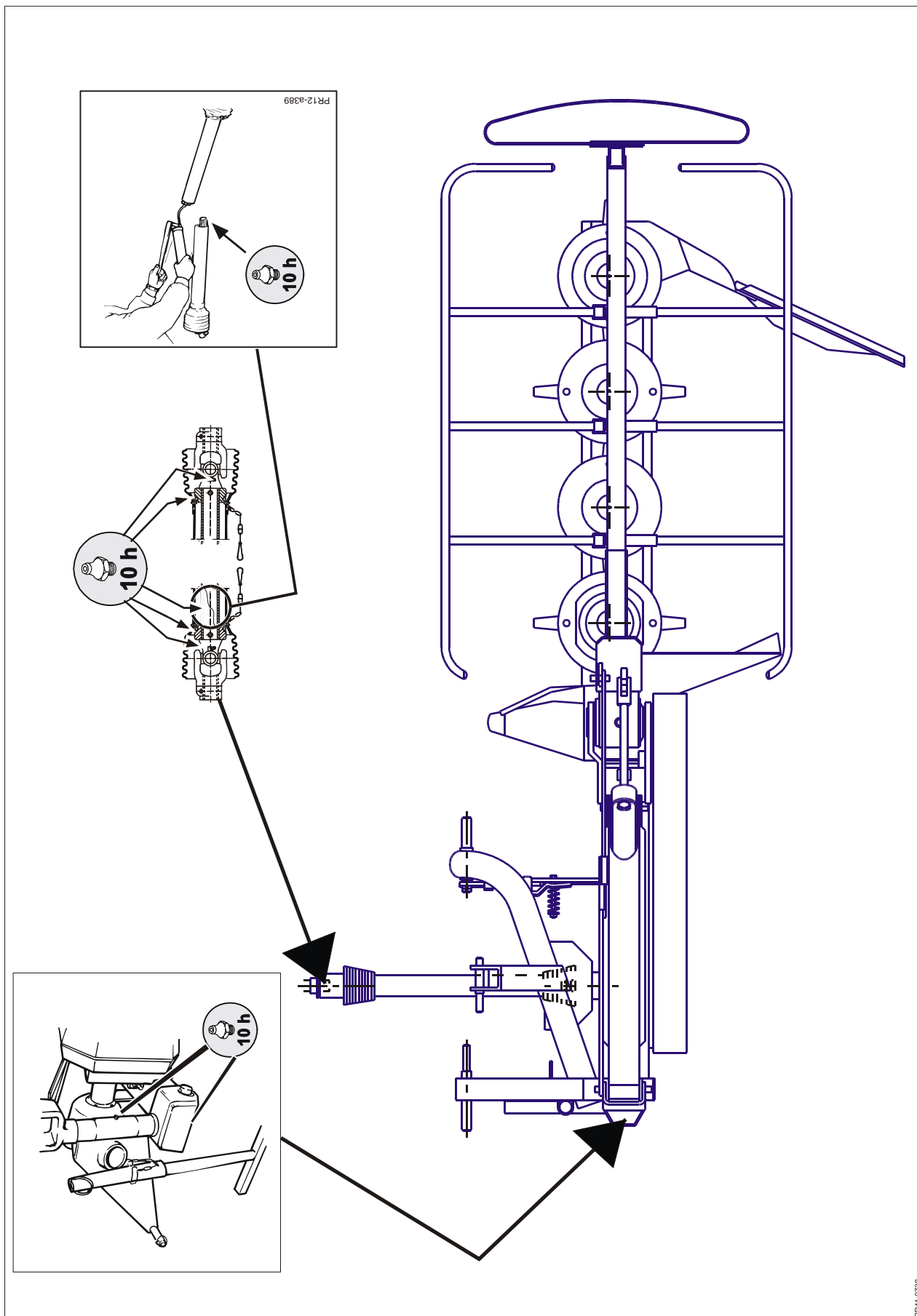
Fig. 3-16: Transport

Pull the cord for the stop and then raise the cutter bar to vertical by means of the control handle. Engage the spring transport lock with the dowel and secure it with the spring pin (see Fig. 2-7).

4. LUBRICATION

Greasing chart for disc mower type SB 1600 / SB 2000 / SB 2400 / SB 2800

Below grease spots must be greased according to the working hour intervals indicated.



4. LUBRICATION

GREASE

Always make sure that the machine has been properly greased before it starts operating.

Go through the greasing chart

TYPE OF GREASE: Universal grease of good quality.

Lubricate rotating mechanical components with grease or oil as required.



IMPORTANT – REMEMBER:

PTO-DRIVE SHAFTS ARE GREASED EVERY 10TH WORKING HOUR

Pay special attention to the PTO's **sliding profile tubes**. They must be able to slide back and forth even when the torque is heavy.

Neglecting to grease the profile tubes sufficiently will result in high axial forces, which will damage the profile tubes, and subsequently connecting shafts and gearboxes.

OIL IN THE CUTTER BAR

THE CUTTER BAR

Correct oil content: depends on the size of the cutter bar:

SB 1600:	1,4 litres
SB 2000:	1,7 litres
SB 2400:	2,0 litres
SB 2800:	2,0 litres

4. LUBRICATION

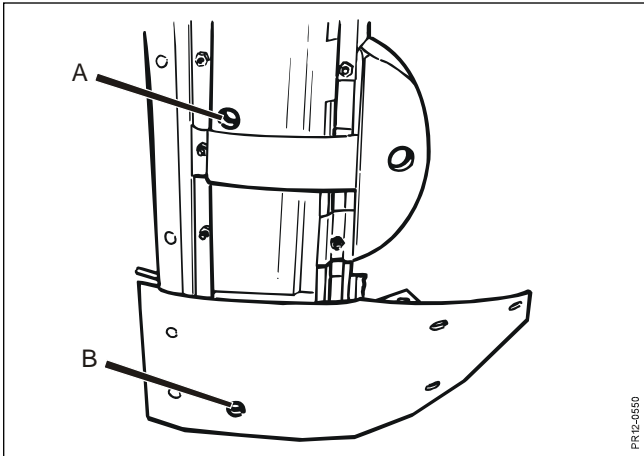


Fig. 4-1

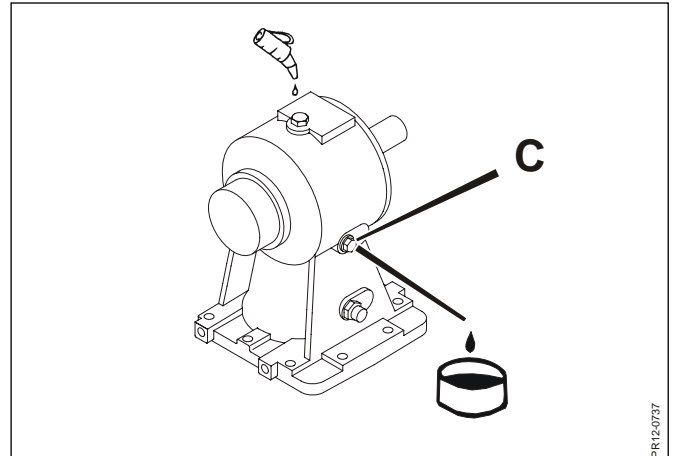


Fig. 4-2

4. LUBRICATION

Fig. 4-1: The oil level is correct when the oil is filled up to **A**, while the machine is lifted to vertical position.

To drain the oil, lower the cutter bar to 45°, dismount the two plugs **A** and **B** and drain the oil.

Oil change:



The first oil change in the cutter bar should be made after 10 working hours and then after every 200 hours of work or at least once a year.

The easiest way to change the oil is to let the machine run a couple of minutes until the oil is hot. At the same time, this will assure that any impurities are mixed with the oil and disappear when the oil is changed.

REMEMBER: to mount the plug again after the draining. The drain plug is fitted with a magnet to collect metallic impurities. The plug should therefore always be cleaned before it is mounted.

When refilling with oil you must be sure to use a suitable oil type.

Correct oil type:

Quality recommended: API GL-4 SAE 80W

In some countries the API GL-4 SAE 80W oil is not available. In these cases API GL-4 or GL-5 SAE 80W-90 oil can be used. Never use straight SAE 90W oils in the cutter bar.



WARNING:

Never fill with more oil than prescribed.

Too much oil as well as too little oil in the cutter bar may cause unintentional overheating which in the long term will damage the bearings.

OIL IN BEVEL GEARBOX

Fig. 4-2: This bevel gearbox drives the cutter bar.
Lift the cutter bar to vertical position when draining oil.

Correct oil content:



0,7 litres

Correct oil type:

API GL-4 or GL-5 SAE 80W – 90

Oil change:



First oil change after 50 working hours and then after every 500 working hours or at least once a year.

Correct oil level:



The oil level is correct when the oil is filled up to **C**, while the machine is in horizontal position.

5. MAINTENANCE

IN GENERAL



WARNING: For repair or maintenance of the machine 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** items 1-20 in the beginning of this instruction manual.

TIGHTENING OF BOLTS



IMPORTANT: Screws and bolts on your new machine must be retightened after a few hours of operation. The same must be done if a repair has been made.

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

Correct torque **M_A** (unless otherwise stated) for the bolts of the machine.

5. MAINTENANCE

5. MAINTENANCE

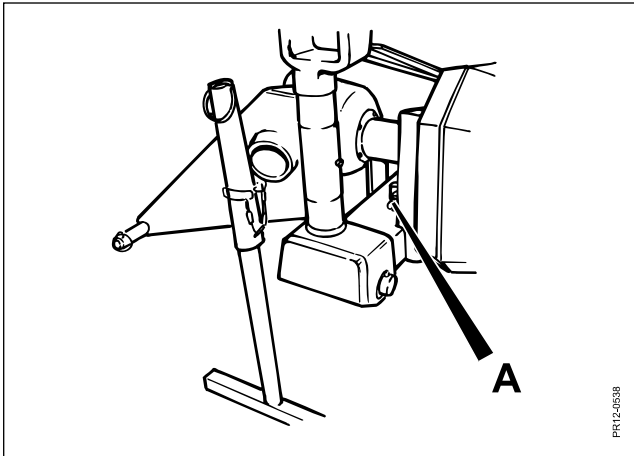


Fig. 5-1

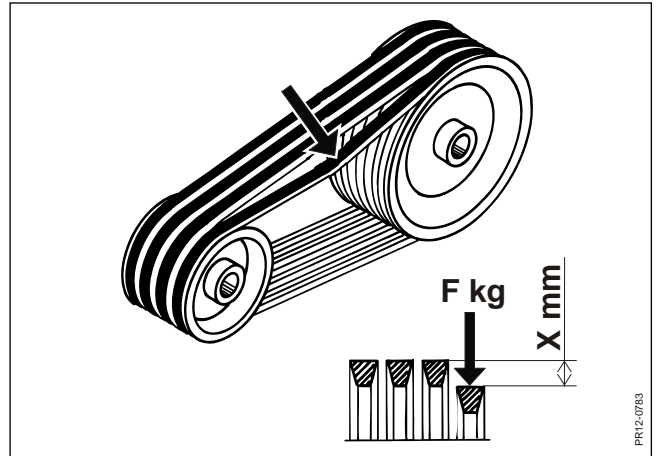


Fig. 5-2

UNBALANCE CHECK / CONTROL



WARNING: When working in the field always pay attention if the machine starts vibrating more than usual or if it has jarring sounds. The discs rotate with over 3000 rpm, and one broken blade may cause serious injury to persons or material damage resulting from an imbalance.

When working with a closed cabin the symptoms may be difficult to discover, and once in a while it is necessary to get out and check if all blades are intact. In the long run an imbalance will cause fatigue fractures and serious damage.

All machines made by JF-Fabriken are tested and checked for vibrations by means of special tools.

The first time that the machine is started, notice the level of noise and vibrations in order to have a standard of reference in future.

Bolts at stone protectors and shear bars at the front of the cutter bar must be checked at regular intervals.

V-BELTS

BELT DRIVE

The belt drive of the machine has 4 belts running from the PIC-shaft to the bevel gearbox above the cutting unit. Check that the tightening of the belt drive is correct before starting the machine, especially when the machine is new and after a replacement of blades.

Fig. 5-1: Adjust the tightening of the belt at nut **A**.



IMPORTANT: If one of the belts of the belt drive must be replaced it is necessary to replace all belts to ensure that the machine is working satisfactorily.

Fig. 5-2: Normally, the belt is tightened correctly when a force of $F=7,5$ daN (kg) gives a deflection of $X = 30 - 35$ mm on the middle of the belt.

5. MAINTENANCE

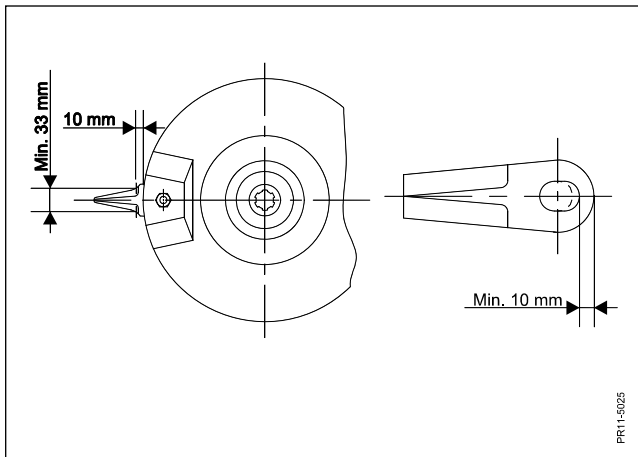


Fig. 5-3

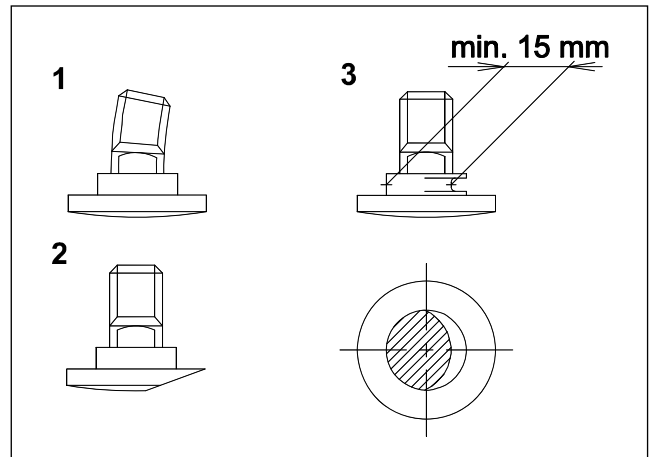


Fig. 5-4

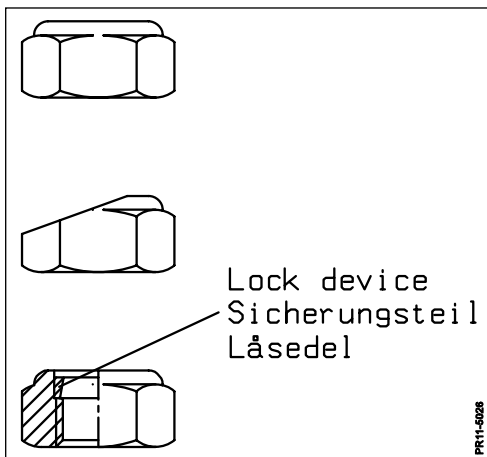


Fig. 5-5

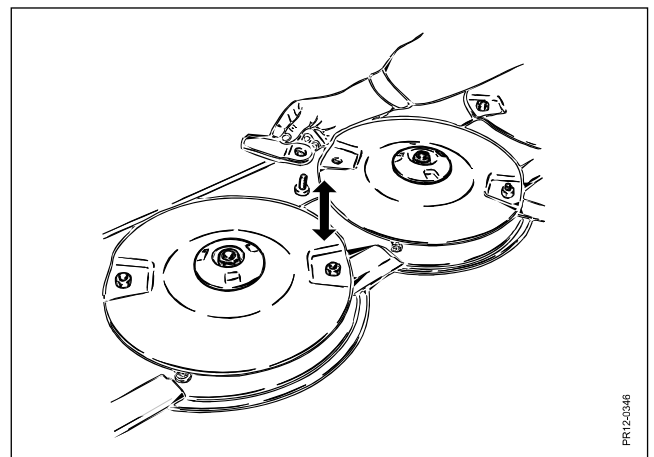


Fig. 5-6

CUTTER BAR - DISCS AND BLADES

Discs, blade bolts and blades are made from hardened, high-alloy steel. A special heat treatment results in a particularly hard and ductile material able to withstand extreme stress. If a blade or a disc is damaged no attempt must be done to weld the parts together as the generation of heat weakens the parts.

IMPORTANT: To obtain a safe operation, damaged blades, discs, blade bolts or nuts must be replaced by original -JF- spare parts.



WARNING: When replacing blades, both blades on the disc in question must be replaced as not to create an imbalance.

CAREFUL: Always lower the cutting unit to the ground before replacing blades, blade bolts, discs or the like.

BLADES

Fig. 5-3: Blades must be replaced if:

- 1) they are bent or broken,
- 2) their width is less than 33 mm measured 10 mm from the edge of the disc,
- 3) the metal thickness around the blade hole is less than 10 mm.

Blade bolts and nuts must also be checked regularly, in particular the tightening of nuts. Always check these parts after collision with obstacles, replacement of blades and the first time the machine is operating.

BLADE BOLTS

Fig. 5-4: Blade bolts must be replaced if:

- 1) they are deformed,
- 2) they have been worn severely on one side,
- 3) their diameter is less than 15 mm.

NUTS

Fig. 5-5: The special nut for the blade bolts must be replaced if:

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

Fig. 5-6: The blades can be used on both sides:

- Move the H-D-blades from one disc to another disc with opposite direction of rotation.
- Cranked blades are turned 180° to engage the unworn edge.

5. MAINTENANCE

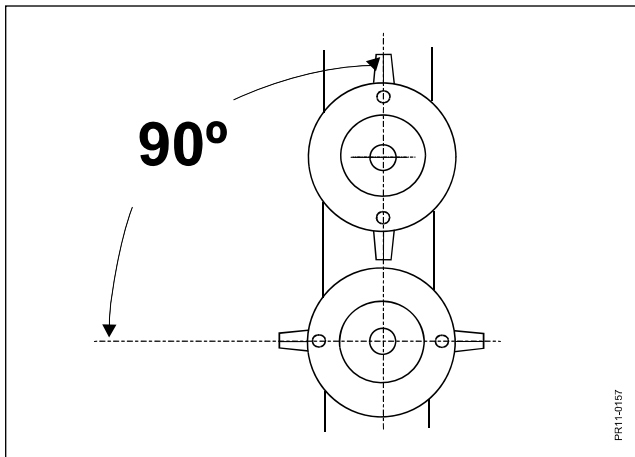


Fig. 5-7

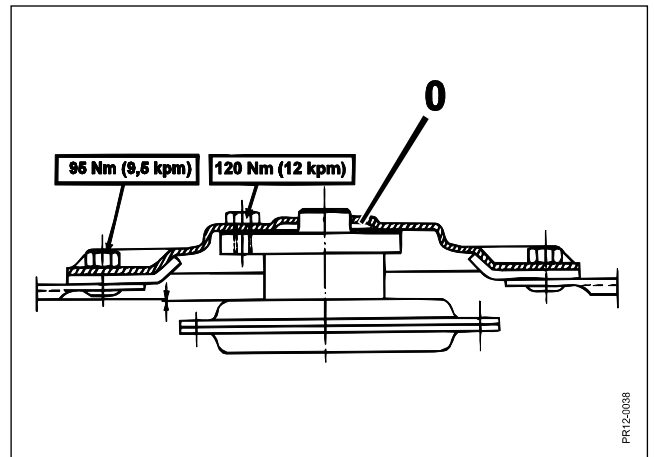


Fig. 5-8

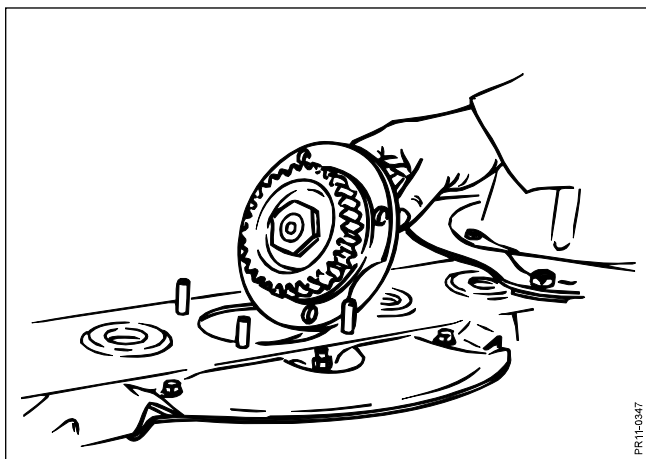


Fig. 5-9

5. MAINTENANCE

To obtain a satisfactory harvesting, it is important that blades and shear bars are intact and sharp. In case the blades are not sharp the power consumption will increase unnecessarily. Likewise, the cutting will become irregular which will mean that the grass will grow slower.

REPLACEMENT OF BLADES

Blades are replaced by dismounting the blade bolt and pulling it down and out of the disc. This can only happen when the blade is in the front position and the bolt is right above the hole in the middle of the stone protector. Remove the old blade and mount the new one with the blade bolt.

Fig. 5-7: If the discs have been removed they must be re-mounted correctly **staggered at 90° in relation to each other**.

Fig. 5-8: Make sure that the tightening torque of the bolts is as follows:

- Bolts on discs fixed with 4 bolts must be tightened to **120 Nm** (12 kpm).
- Bolts on discs fixed with a central hub bolt must be tightened to **190 Nm** (19 kpm).
- Blade bolts must be tightened to **95 Nm** (9.5 kpm).

The height of the disc can be adjusted by mounting a filler O under the disc. This need can arise after discs have been replaced if the blades afterwards are not at the same level.



WARNING: After replacement of blades, blade bolts, discs and the like check that no tools have been left on the machine.

WHEN REPAIRING

Fig. 5-9: The SB MK II has a cutter bar, the so-called Top Service bar, whereby the complete disc bearing housing can be dismounted at the same time.

6. MISCELLANEOUS

TIPS AND FAULT FINDING

Problem	Possible cause	Remedy
Stubble uneven or bad cutting	<p>Wrong relief spring setting</p> <p>Number of rpm on the tractor is too low</p> <p>Number of rpm on the machine is too low</p> <p>Blades are worn</p> <p>Discs, stone protectors or flow caps deformed</p>	<p>Relief springs must be rechecked and loosened if necessary.</p> <p>Check that the number of rpm is 540 and not 1000). The number must be constant.</p> <p>Check the tightening of the belt.</p> <p>Turn/move the blades to another disc or replace them.</p> <p>Replace the deformed parts.</p>
Stripes in stubble	<p>The cutting angle is too large, the grass is not transported across the bar</p> <p>Accumulation of grass in front of the cutter bar</p> <p>Earth and grass round the cutter bar between the discs</p> <p>The machine operates early in the morning when the grass is still very wet</p>	<p>Extend the upper link</p> <p>Increase the speed if possible and mount flow caps on the discs if necessary</p> <p>Mount special, sharp shear bars or replace worn shear bars</p> <p>Increase the speed if possible and mount flow caps is necessary</p>
Machine shaking/uneven operation	<p>Blades bent, damaged or missing.</p> <p>Defect PTO-drive shafts</p> <p>Defect bearings</p> <p>Defect disc(s)</p> <p>Defect flow caps and flow intensifiers</p> <p>Earth and grass in flow caps</p>	<p>Replace or move damaged blades or mount new blades.</p> <p>Check the shafts and repair if necessary</p> <p>Check if bearings are loose or damaged and replace if necessary</p> <p>Replace disc(s)</p> <p>Replace flow caps and flow intensifiers</p> <p>Clean flow caps</p>
Gear or bar heats	Wrong oil level	<p>Check the oil level and refill/drain if necessary</p> <p>NB: Max temperature in the gear 80° C, in the bar max 90-100° C</p>
Power consumption seems too big	<p>Crop or dust under the discs</p> <p>Wrapping of string or steel wire around a disc</p>	<p>Stop the tractor engine. Dismount the discs and clean cutter bar and discs. Check that the friction clutch is intact</p> <p>Remove strings or wires</p>

STORAGE (WINTER STORAGE)

When the season is over, the machine should be made ready for winter storage right away. First clean the machine thoroughly. Dust and dirt absorb moisture, which in turn increases rusting.

**CAREFUL:**

Be alert when cleaning with a high pressure cleaner. Never clean directly on the bearings.

**IMPORTANT:**

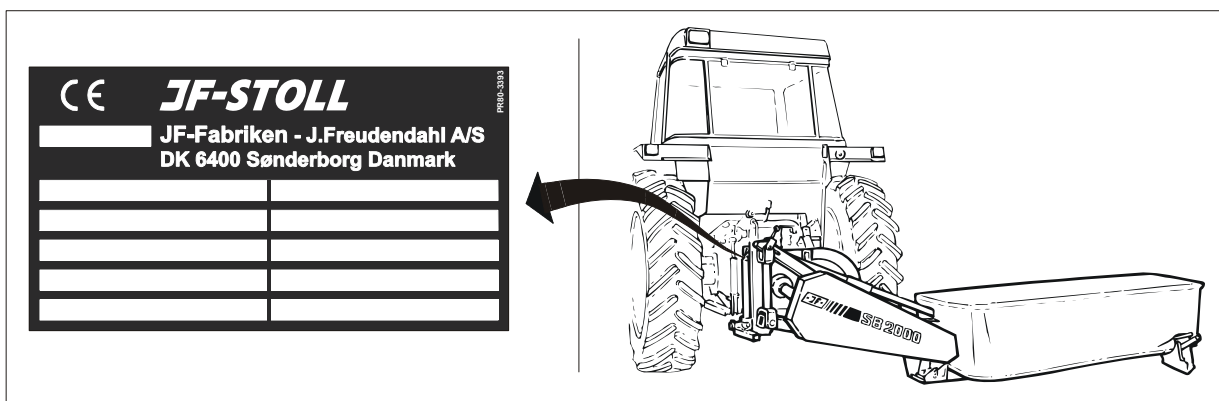
Lubricate all greasing spots carefully after having cleaned as to squeeze any water out of the bearings.

The following points are guiding instructions as to how to perform the winter storage:

- Check the machine for wear and defects.
Write down the parts needed before the next season and order the spare parts.
- Slacken the V-belts
- Dismount the PTO drive shaft, clean and lubricate it and the profile tubes.
Keep the PTO drive shaft in a dry place.
- Spray the machine with rust-inhibiting oil. This is especially important as regards all parts polished with use.
- Store the machine in a ventilated shed.

ORDERING SPARE PARTS

When ordering spare parts please state the model, serial number and year of production. This information is printed on the machine I.D. plate. As soon as possible after delivery we request you to write this 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.



6. MISCELLANEOUS

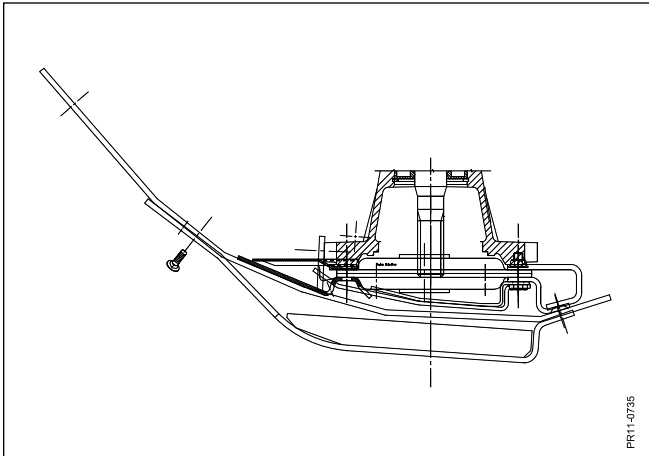


Fig. 6-1

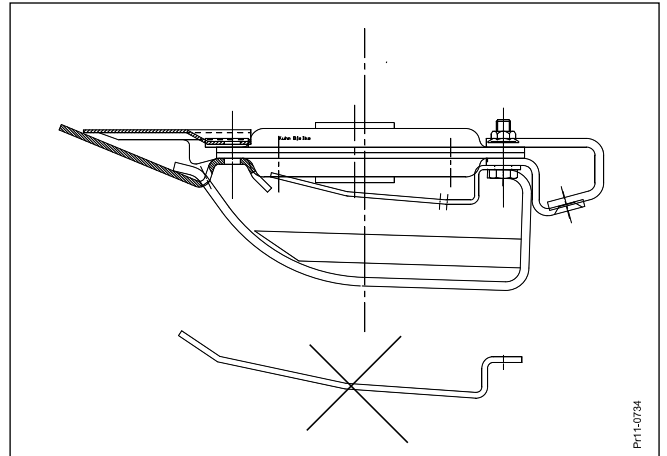


Fig. 6-2

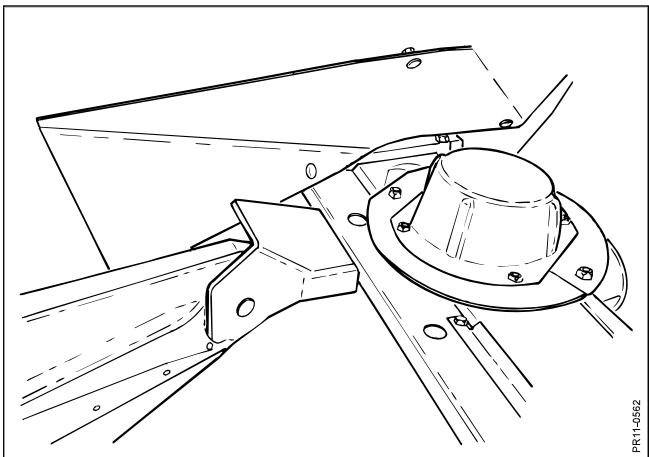


Fig. 6-3

ADDITIONAL EQUIPMENT

Concerning order no.: consult spare parts list.

TRIMMING EQUIPMENT

Guide shoes can be mounted for the cutting of fallow fields which will give a 7.5 cm higher stubble.

One small guide shoe are used for each disc, and one large under the gearbox.

Fig. 6-1: Mount the large guide shoe under the existing shoe, under the gearbox.

Fig. 6-2: Mount the small guide shoes in stead of the original shoes under the discs.

LEFT SWATH BOARD

Fig. 6-3: An additional swath board can be mounted in the left side, which will give a more compact (narrow) swath.

SEED GRASS

Equipment can be mounted for the cutting of seed grass that will swath the crop more gently.

FLOW INTENSIFIERS

If there is a problem transporting the grass across the cutter bar, flow caps can be mounted on all discs. Flow intensifiers are already mounted on the two outer discs, however only on machines equipped with round discs.

SUPPORT CHAIN

A special support chain can be supplied in order to maintain and stabilise the depth stop of the lift arms.

CAT. I, RIGHT PIN

Another lift pin is required in the right side for tractors with category I 3-point linkage.

EASY LIFT

See page 43, fig. 3-14, 15, and 16.

SCRAPPING

When the machine is worn out it must be disposed in a proper manner.

Please observe the following:

- The machine must **not** be placed somewhere outside - it must be emptied of oil (gear, cylinders and bars). These oils must be handed over to a recycling company.
- Disassemble the machine and separate the individual recycling parts, for instance PTO shafts, hydraulic tubes, and other components.
- Hand over the usable parts to an authorised recycling centre. Take large scrap parts to an authorised scrap metal merchant.

Warranty

JF-Fabriken - J. Freudendahl A/S, 6400 Sønderborg, Denmark, hereafter called "**JF**", grants warranty to any buyer of new JF machines from authorized 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 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. 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 clearly be proved that JF has committed a fault.

The following is regarded as wearing parts:

Protective canvases, blades, blade suspensions, shearbars, guide shoes, 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 predelivery 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 the repair is not undertaken immediately.**



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

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Dealer

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