



Order-No. 9900.01.40GB01

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Serial-No.

Operating Instructions

**Flail Mower
Chopper 230, 250, 280**



1. Intended purpose

The Chopper mulcher is designed exclusively for working on fallow land, disused land and grazing and meadow land. It can also be used for the mulching of green manure, maize, sunflowers and crop residues.

Any use for a purpose other than or exceeding this description shall be regarded as incorrect operation. The manufacturer will accept no liability whatsoever for resulting loss or damage in these circumstances. The user bears sole responsibility in these circumstances.

The definition of "use for intended purpose" also covers observance of the specified operating, maintenance and servicing instructions, along with the exclusive use of original RABE spare parts.

Ensure that all relevant accident prevention regulations are observed, along with generally accepted safety procedures, health and safety regulations and road traffic laws. Ensure also that the safety instructions on the stickers attached to the machine are closely followed.

The manufacturer will accept no liability whatsoever for loss or damage caused by the carrying out of unauthorised modifications to the machine.

Carefully read through the operating instructions BEFORE starting up the machine for the first time!

Please ensure that this manual is handed over to the new owner if the machine is sold or otherwise disposed of.

KEY TO SYMBOLS

Important note

Technical note

Safety precaution

Mulchers are designed for intensive use in the care of fallow land, disused land and grazing and meadow land. They can also be used for the mulching of green manure, maize, sunflowers and crop residues.

1.1 Warranty cover

The buyer's rights under the terms of the warranty can only be exercised if the corresponding conditions have been observed.

All claims must be submitted to the manufacturer in writing.

The manufacturer shall bear no liability if interim repairs have been carried out by the user without the consent of the RABE company, nor for any loss or damage resulting from the installation of items other than genuine original spare parts.

Please observe the operating instructions contained in this manual.

Failure to use the machine for its intended purpose will void all liability on the part of the manufacturer.

Examine the machine upon delivery and check it for signs of transport damage or missing items. Note that all claims must be submitted to the manufacturer in writing within eight (8) days.

The warranty will also be voided in the following circumstances:

- If the user commits an error while manoeuvring the machine
- If damage is due to insufficient maintenance
- If interim repairs have been carried out by the user without the consent of the RABE company, and if loss or damage results from the installation of items other than genuine original spare parts
- If the user has failed to observe the operating instructions contained in this manual
- If the permitted performance limits have been exceeded (see table 1 in the section entitled "Technical data").

1.2 Machine identification plate

Each implement is fitted with a machine identification plate (fig. 1.) containing the following data:

Designation (mulching implement)

Company name and address of the manufacturer

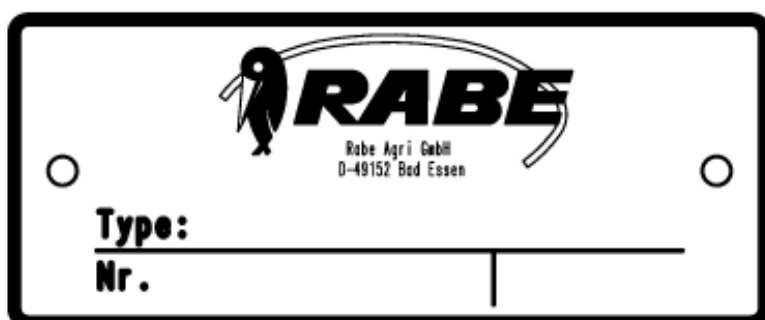
Type

Weight in kg

Year of construction

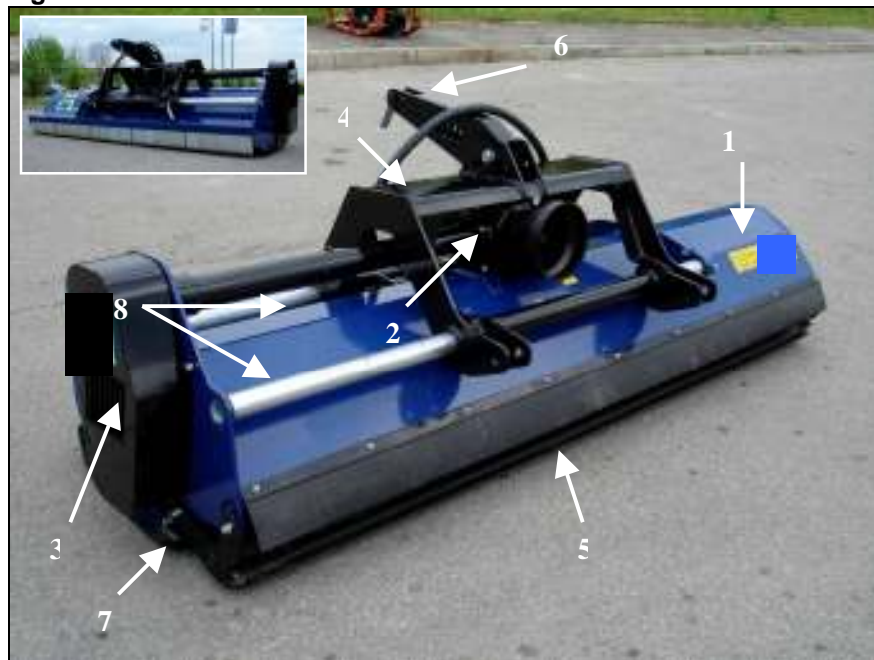
These data must accompany all technical enquiries or orders for spare parts.

Fig. 1



2. Technical data

Fig. 2



- | | |
|-----------------------|------------------------|
| 1. Housing | 5. Roller |
| 2. Transmission | 6. Three-point linkage |
| 3. V-belt | 7. Slide |
| 4. Hook trestle - 3FS | 8. Slide bars |

2.1 Noise prevention

The implement operates at a noise level of 70 – 90 dB. Noise is a particular hazard when the rear window of the tractor is open. We therefore strongly recommend the use of hearing protection.

2.2 Options

Depending on the operating conditions, the following cutting implements can be used:

- Optional Y-blades (for stalks/trunks of up to 3 cm in diameter)
- Standard bootee flails (for stalks/trunks of up to 5 cm in diameter)

The maximum diameter of the items being cut depends on the type and strength of their stalks and trunks. Note that the data given here correspond to the trunks and stalks of living plants.

The crosscut blade option improves performance, allowing the mulched material to be broken up into smaller fragments.

2.3 Technical specifications

Table 1

Type		Chopper 230	Chopper 250	Chopper 280
Operating width	cm	216	232	265
Min. towing capacity	PS	55-60	65-75	75-85
Power take-off shaft	rpm	540/1000	540/1000	540/1000
Y-blades	Number	78	84	96
Bootee flails	Number	26	28	32
Weight	kg	695	730	780
Lateral displacement	cm	500	500	500
Three-point linkage	Cat.	II.	II.	II.
Width	mm	2510	2670	3000
Length	mm	1010	1010	1010
Height	mm	1050	1050	1050
Rotor turning speed	rpm	2243	2243	2243

3. Safety measures

3.1 General safety and accident prevention regulations

1. Please observe the points on safety and accident prevention, in addition to the general instructions contained in this manual.
2. The warning and indication signs attached to the implement contain important instructions on how to operate it safely. Prevent danger by observing them at all times.
3. Be sure to observe all relevant traffic laws when using public roads.
4. Familiarise yourself with all devices, control elements and their respective functions BEFORE starting work. DO NOT wait until the implement is already in operation.
5. Machine operators should wear tight-fitting clothing. Do not wear loose or hanging items of any kind.
6. Keeping the machine clean will reduce the danger of fire.
7. You are recommended to use a tractor fitted with a safety cab.
8. Check the area of operation carefully (watch out for children) BEFORE starting up or carrying out any manoeuvres. Ensure that you have an adequate field of vision at all times.
9. Passengers MUST NOT ride on the tractor or implement while it is being operated or towed. The implement must not be used as a load-carrying trailer.

10. Hitch the implement up as instructed, and connect it only to the specified devices.
11. Observe the maximum permitted axle loads of the tractor (see vehicle documentation).
12. Keep to the limits regarding maximum external trailer dimensions (German StVZO traffic regulations or your local equivalent).
13. Ensure that regulation towing equipment, such as lights, warning triangles and additional safety devices, is attached and in full working order.
14. The release cables of the quick-action couplings should hang loosely, and must not trip of their own accord when the implement is lowered.
15. NEVER leave the driver's seat while the vehicle is in operation.
16. Note that towed implements and the use of ballast weights affect driving performance, steering and braking.
You should take this into account when estimating turning circles and braking distances.
17. Take into account the overhang dimensions and centrifugal mass of the towed implement when driving into bends. Secure the lower arm of the three-point hydraulic linkage to stop the implement rocking back and forth.
18. Ensure that all safety devices are attached and in full working order BEFORE you operate the implement.
19. DO NOT remain within the turning circle or operating area of the implement. Beware of flying fragments of stone and vegetable matter. Before activating the unit, ensure that no one is standing within the ejection range of the mulcher . Keep away from rotating machine parts.
20. DO NOT remain within the turning or pivoting range of the implement.
21. Beware of the danger of crushing and cutting from components run from external power sources (e.g. hydraulic items).
22. Before leaving the tractor unattended, lower the implement to the ground, switch off the engine and remove the ignition key.
23. DO NOT walk between the tractor and implement without first applying the handbrake and/or chocking the wheels to stop the outfit rolling away.

3.2 Towed implements and their transport

1. Adjust the operating controls accordingly before coupling or uncoupling implements via the three-point linkage.
 2. Before hitching up via the three-point linkage, ensure that the tractor and implement are fully compatible with one another.
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3. Note that there is a danger of crushing and cutting injuries occurring in the area of the three-point linkage.
4. DO NOT pass between the tractor and implement once the three-point linkage has been connected to the vehicle mounted controls.
5. Always ensure, when the implement is raised for towing, that the tractor's three-point linkage is adequately secured at the sides.
6. Before driving the outfit on the road, ensure that the operating lever is secured to stop the implement being lowered by accident.
7. Hitch up and connect implements in accordance with regulations. Check the trailer braking system for correct functioning. Observe the manufacturer's instructions.
8. Working implements should only be towed and operated using tractors designed for the purpose,



3.3 Operation from the power take-off shaft

1. All power take-off shafts must be fitted with the regulation protection and safety devices specified by the manufacturer.
 2. The protective tube and cowling fitted to the drive shaft and the guard on the power take-off shaft must be correctly fitted and in full working order at both ends.
 3. Ensure that drive shafts are fitted with the specified tube protectors for towing and operation. (See the operating instructions provided by the supplier of the drive shaft).
 4. Before attaching or removing the drive shaft, disengage the power take-off shaft, switch off the engine and remove the ignition key.
 5. Ensure that the drive shaft is correctly fitted and secured at all times.
 6. Attach chains to stop the drive shaft guards rotating at the same time.
 7. Before engaging the power take-off shaft, ensure that the turning speed selected at the tractor is within the maximum permitted turning speed limit (operating speed) of the shaft. A turning speed of 540 rpm is normal for the power take-off shaft (see table of settings).
 8. Gentle handling of the coupling elements will help ensure a long service life for both the tractor and the mulching implement.
 9. Clear the area of bystanders before engaging the power take-off shaft.
 10. NEVER engage the power take-off shaft with the engine stopped.
 11. Keep away from the rotating power take-off and drive shafts during operation.
 12. Always disengage the power take-off shaft if the angle of tilt is excessive, or if it is no longer required. Disengage the power take-off shaft as soon as the shutoff valves are closed.
 13. IMPORTANT! Beware of continued running due to remaining momentum after disengaging the power take-off shaft. Keep away until the mechanism has come to a complete stop. And then wait before attempting to carry out further work of any kind.
 14. Always disengage the power take-off shaft, switch off the engine and remove the ignition key BEFORE cleaning, lubricating or adjusting any shaft-driven item.
 15. Place the disconnected drive shaft in the support rest provided.
 16. After detaching the drive shaft, fit the protective cover to the shaft end.
 17. Repair any damage before working with the implement.
- 1.
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3.4 Hydraulic system

1. Note that the hydraulic system operates at high pressure.
 2. Ensure that the hydraulic hoses are connected as specified before operating the hydraulic cylinders and motors.
Release pressure at both the tractor and implement end before connecting the hoses to the tractor's hydraulic system.
 3. The hydraulic function plugs and sockets used to connect the tractor and implement should be clearly marked to prevent incorrect connection. Accidental swapping of connections may lead, for example, to the implement being lowered when it should be raised.
Danger of accident!
 4. Check the hydraulic hoses regularly and replace at the first sign of wear or ageing. Ensure that the replacement hoses conform to the technical requirements of the implement manufacturer.
 5. Prevent possible injury. Always use appropriate detection equipment when checking for leaks.
 6. Pressurised fluids (hydraulic oil) are apt to escape without warning, possibly resulting in skin penetration and serious injury. Seek immediate medical help if an injury does occur, as there is a danger of infection.
 7. Before working on the hydraulic system, lower the device, release the hydraulic pressure and switch off the engine.
 8. The hose conduits should not be used for any longer than six years (including up to two years' storage time). Hose conduits are subject to natural ageing, even if stored correctly and subjected only to permitted loads. This is why their storage and service life is limited. You should determine, on the basis of experience and given the potential danger of accidents, if actual operating conditions make shorter replacement intervals advisable. Note that different conditions may apply to hoses made of thermoplastic material.
 9. Dispose of waste oil and lubricants correctly.
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3.5 General safety and accident prevention regulations

1. You should normally disengage the drive mechanism and switch off the engine before carrying out maintenance, servicing or cleaning work of any kind, or before attempting repairs. Always remove the ignition key.
 2. Check all screws and nuts at regular intervals for correct tightness, and retighten as required.
 3. Insert adequate props and/or axle stands before working on the raised implement.
 4. Dispose of waste oil, lubricants and filters correctly.
 5. Disconnect the tractor's alternator and battery before carrying out electrical welding work on the tractor or attached implement.
 6. All spare parts must conform to the implement manufacturer's minimum technical requirements. This is guaranteed by the exclusive use of ORIGINAL GENUINE PARTS.
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3.6 Safety devices

Fig. 3



- | | |
|----------------------|----------------------------|
| 1. Drive shaft guard | 4. Protective flaps |
| 2. V-belt guard | 5. Protective rubber skirt |
| 3. Safety stickers | |

4. Description and function of the implement

In the standard configuration, the rotor shaft is fitted with bootee flails (fig. 5) designed for heavy-duty operating conditions (stalks/trunks of up to 5 cm in diameter). Optional Y-blades (fig. 4) are available for lighter mulching tasks (stalks/trunks of up to 3 cm). The rotor shaft turns in the opposite direction to the direction of travel at a rate of 2,243 rpm. The implement is operated via the drive shaft, transmission and belt-drive system. The cutting tool attachments clear away the vegetable matter and feed it into the lower housing for (optional) further processing with the crosscut blades, which break the material up into smaller fragments. The mulched material is deposited at the back of the implement.

Fig. 4



Fig.5

Fig.6



5. Transport and attachment

5.1 Transporting and unloading

The machine should be unloaded with great care, using lifting equipment designed to handle an object of its size and weight.

Do not allow the implement to knock against neighbouring objects, and do not perform any other action that is likely to damage it.

Examine the machine carefully for signs of transit damage.

Check that all screws and nuts are correctly tightened. Check that screws and bolts in the cutting area of blade attachments are free of damage and correctly attached, and also that the tool attachments are free to rotate without touching these screws and bolts.

5.2 Coupling and uncoupling the implement

Before coupling, check:

- that the implement is in full working order
- that all safety devices are in their correct positions
- that all cutting tool attachments fitted to the rotor shaft are in full working order
- that grease has been applied at all lubrication points, and that the level of the transmission oil is correct
- that the V-belts are correctly tensioned
- that the coupling rating and turning speed (540 or 1,000 rpm) and drive direction of the tractor and implement are compatible and that they match accordingly

Reverse the tractor up to the implement. Secure the lower arm of the tractor to the lower-arm bolt and insert the linch pin. Secure the upper arm and insert the stop pin. Adjust the upper arm so that the implement is horizontal to the ground surface.

When the implement is raised, there should be only minimum play on the lower arms of the tractor. This is to stop the machine swaying back and forth during operation.

Secure the lower arms of the tractor with stabilising struts or chains. The same procedure applies to FRONT END attachment. Once the machine has been attached, connect the hydraulic hoses to the tractor and check them for correct functioning.



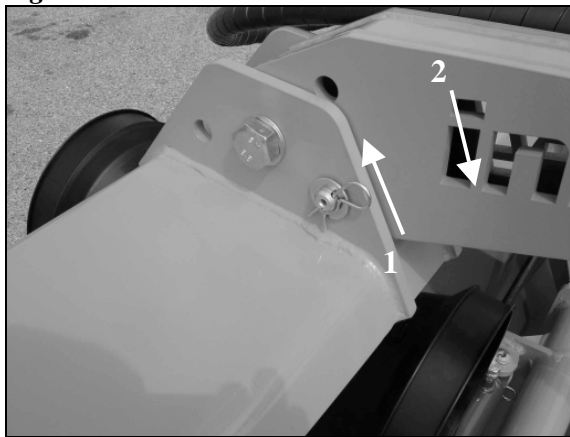
Attach the hook trestle in such a way that the implement is horizontal to the tractor.

The trestle attachment permits both rear- and front-end coupling of the machine. Once the machine has been attached, carefully adjust the connecting bolt (fig. 7.).



If you change from rear- to front-end attachment, always check to ensure that the drive direction of the tractor still coincides with that of the implement, and that the turning speed of the power take-off shaft is correct.

Fig. 7



5.3 Fitting and adjusting the drive shaft

Before connecting the drive shaft to the input shaft, clean the drive input shaft on the machine and grease the drive shaft. Before using the drive shaft for the first time, ensure that it is compatible with the tractor. As the adjustment procedure only applies to this type of tractor, the procedure must be checked and, if necessary, repeated whenever a different tractor is used.

Whenever you fit a new drive shaft element to the power-take off point on the tractor for the first time, do so without connecting the drive shaft tubes to each other. When the drive shaft tubes are pushed together, they must not collide with the forks of the universal joint. A minimum safety distance of 4-5 cm must be maintained. To adjust to the correct length, hold the two sections of drive shaft next to one another in the shortest operating position and mark their positions. Shorten the inner and outer protective tubes by the same amount. Shorten the inner and outer push-in profiles by the same length as the protective tube. Smooth down the cut edges with a file and carefully remove all swarf and other debris. Grease the push-in profiles before inserting them into each other.



Note that an excessively long drive shaft can cause damage to both the tractor and the implement.



Attach the drive shaft to the implement and tractor, along with the complete drive shaft assembly and guard extension.

Fig.8: Length of the drive shaft with the implement lowered

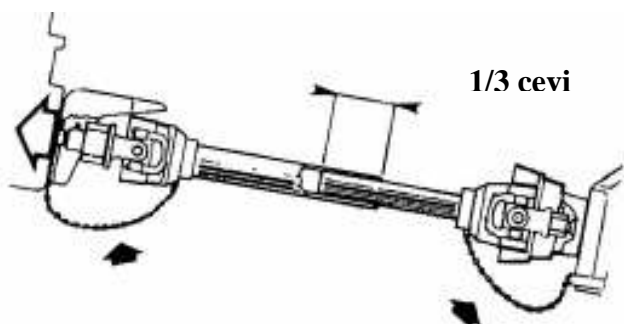
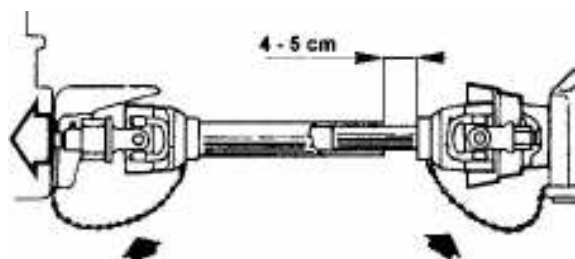


Fig.9: Length of the drive shaft with the implement in its horizontal position

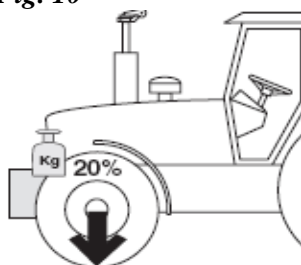


5.4 Tractor stability



Depending on the size of the tractor, the load on its front axle will be relieved to some degree or other as the implement is raised. Ensure that the tractor's specified front axle load (20% of tractor weight) is maintained.

Fig. 10



6. Adjustment settings

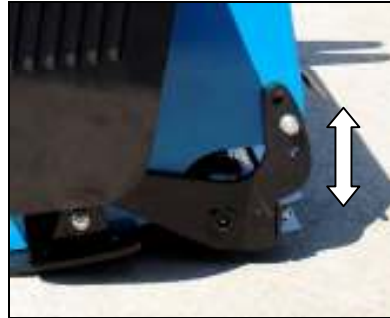
6.1 Adjustment of the cutting height

The cutting height adjustment depends on the vegetable matter being handled. The cutting height is regulated by the tractor's hydraulic system. Ensure that the implement is raised at least 1-3 cm off the ground (fig. 11), and that it runs on its roller. The roller must be adjusted if the cutting height is to be increased. (Fig. 12).

Fig. 11



Fig. 12

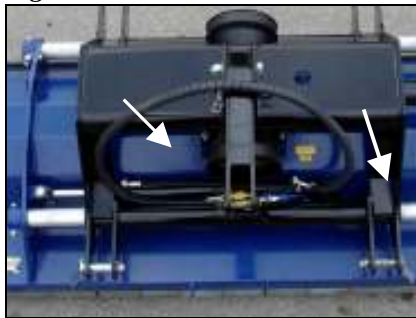


Neither the tool attachments nor slides must not touch the ground. The slides are fitted only for protection purposes. The implement actually runs on the roller.

6.2 Lateral displacement adjustment

Lateral displacement is adjusted using the hydraulic cylinder (fig. 13.). The maximum displacement is 50 cm.

Fig. 13

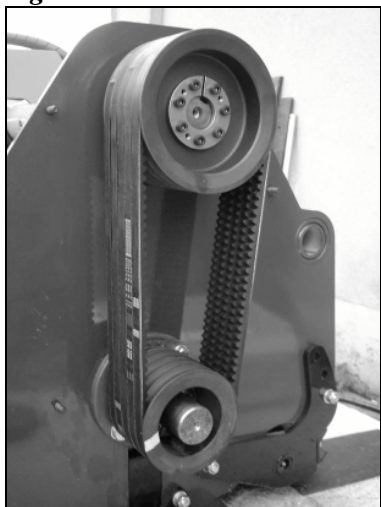


6.3 V-belt tension

Correct adjustment of the V-belt will ensure optimum operation of the implement and a long service life for the belt.

See description of V-belt tension on page 28 of this manual.

Fig. 14



Always disengage the power take-off shaft, switch off the engine and remove the ignition key before tensioning the V-belt.



The V-belt is normally correctly tensioned if a force of 100 N (10 kg weight) results in around 1.5 cm of play when applied at the mid-point of the belt.

7. Initial startup



Examine the ground surface before starting up the machine. Fields in a fallow state may be strewn with stones, rocks, tree stumps, large branches and similar objects.



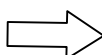
Observe the drive shaft turning speed of the implement. The limit is 540 rpm; the ideal speed 1,000 rpm.

Fig. 15



The operating speed of the implement depends on the vegetable matter being cut. The ideal operating speed is 3-8 km/h.

Fig. 16



NEVER reverse with the implement in its operating position (fig. 16). This can result in damage to the machine components.



Always raise the implement into its transport position when turning.

8. After work

At the end of each shift, disengage the power take-off shaft and raise the implement into its transport position. The implement can now be towed away.



Adapt your driving speed to the conditions of the towing route. Take the lateral overhang and swaying motion of the implement into account. Prevent damage to the implement: keep vibration to a minimum.



Disengage the power take-off shaft for towing.



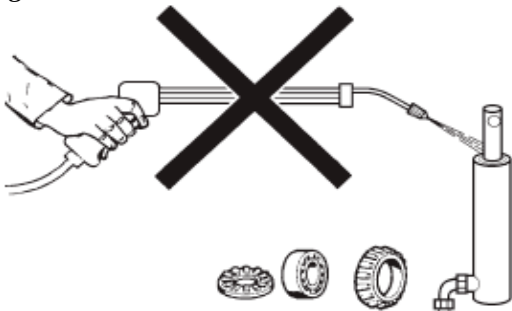
When uncoupling the implement, observe the safety precautions listed on page 10 under “Coupling”.

Always park the implement on a dry and even surface after use. We recommend that you rest it on wooden supports.

8.1 Maintenance

Rinse the implement down with water after use, dry it, apply grease (to prevent rust) and park it under cover. If you use a high-pressure hose, take care to avoid the bearings, hydraulic components and similar items. High-pressure cleaning can damage these parts of the implement.

Fig. 17



9. Caring for the implement



Before carrying out cleaning, maintenance or repair work on the implement, ensure that it is uncoupled from the tractor. Park the implement on an even, firm, non-slip surface.



The maintenance intervals indicated correspond to normal operating conditions. If the implement is subjected to heavier use, these intervals should be reduced accordingly.



Keep the lubrication points clean at all times.



Once maintenance and servicing work is complete, ensure that all safety devices are refitted.

9.1 Checking the transmission oil level

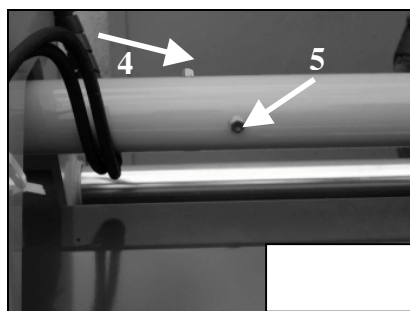
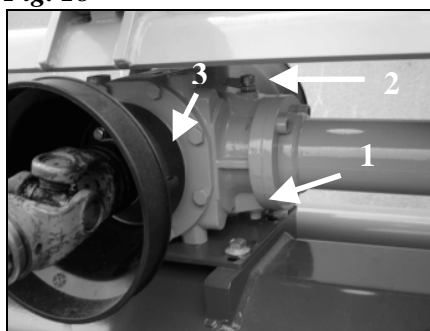
Always use the same type of lubricant for transmission oil changes (SAE 90).

To change the oil, proceed as follows:

- Unscrew the plug at the bottom of the transmission unit (fig. 18, item. 1) and let the oil drain out. Use suitable containers for this purpose. Screw the plug back in.
- Now unscrew the second plug on the transmission unit (fig. 18, item. 2), rotate the axle shaft (fig. 19 item 4) and pour in about 3 litres of oil, using a funnel.

The oil level should come up the plug (fig. 18, item. 3) on the transmission unit (located under the transmission guard – it should be removed for checking purposes) and up to the plug on the axle shaft (fig. 19, item 5)

Fig. 18



9.2 Lubrication points



Carefully read through the operating instructions before applying lubricant.

Lubrication nipples on the implement:

- Running roller bearing – left (fig. 20/2) 1 x
- Running roller bearing – right (fig. 21/3) 1 x
- Rotor shaft bearing – left (fig. 20/1) 1 x
- Rotor shaft bearing – right (fig. 21/4) 1 x

Fig. 20

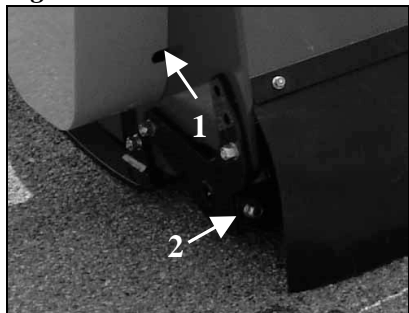
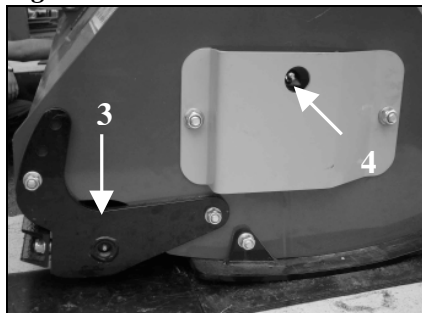


Fig. 21



Always wear protective gloves when greasing the implement, and wash your hands thoroughly afterwards.



Use a high-grade lubricating grease (LIS 3).

9.3 V-belt tension

If the drive belt shows signs of slackness, proceed as follows:

- Remove the V-belt guard
- Loosen the locknut (fig. 22/2), the bolt on the axle shaft flange (fig. 22/1) and the 4 bolts on the transmission mounting.
- Turn the straining screw to adjust the tension, then retighten the locknut.
- Refit the V-belt guard.

Fig. 22

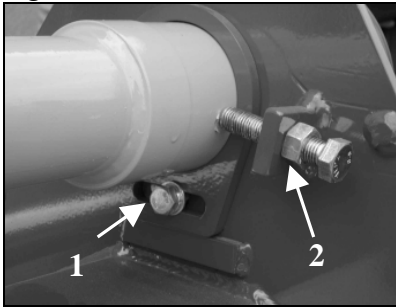


Fig. 23

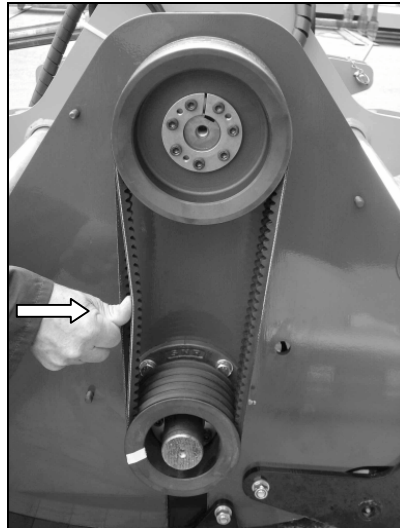
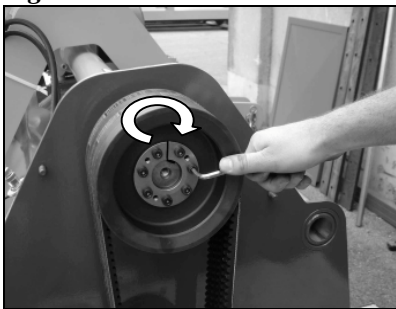



Fig. 24

 **The V-belts are normally correctly tensioned if a force of 100 N (10 kg weight) results in around 1.5 cm of play when applied at the mid-point of the belt (fig. 24).**



After two (2) hours of operation, remove the V-belt guard and retighten the bolts on the coupling (fig. 23). Tighten the bolts in sequence, working in a clockwise direction. Repeat this procedure at least four (4) times.

9.4 Maintenance procedures

1. After two (2) hours of operation, you are recommended to:

- Check the V-belt tension
- Check the bolts on the V-belt pulley (see *page 28*).

Repeat this procedure whenever you replace a V-belt.

2. You are recommended to check the following items after every eight (8) hours of operation:

- Nuts for correct tightness
- Condition of the cutting tool attachments
- V-belts and bolts on the coupling elements (*page 28*)
- Condition of the safety devices (*page 16*)
- Transmission oil level (*page 26*)
- Remove any foreign bodies that may be wrapped around the rotor shaft (wire, etc.)
- Check the hook trestle and housing for signs of cracks
- Reapply grease, as required, at each lubrication point (*page 27*)

3. After every 100 hours of operation:

- Examine and grease the drive shaft

4. At regular intervals (every 12 months):

- Complete change of transmission oil

9.5 Replacement of cutting tool attachments

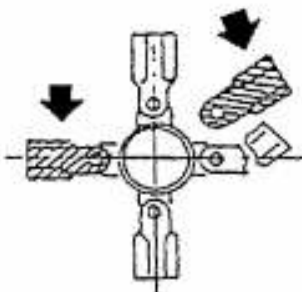
Replace any worn or damaged cutting tool attachments.

If only some of the cutting tool attachments are worn or damaged, ensure that flails and blades are replaced in symmetrical pairs.

In both cases (partial or complete replacement), you are recommended to rebalance the rotor shaft.

You should also rebalance the rotor shaft whenever vibration occurs.

Fig. 22





9.6 At the end of the season

Rinse the implement down with water at the end of the season. You are recommended to give the implement a general clean, retighten all screws, bolts and screw-in items, apply grease to all lubrication points and apply anti-rust treatment.

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9.7 Eventual scrapping

The implement should be properly disposed of when it reaches the end of its service life.

10. Troubleshooting guide

FAULT	POSSIBLE CAUSE	SUGGESTED REMEDY
Uneven cutting	Broken, bent or worn cutting tool attachments	Replace cutting tool attachments
	Turning speed of power take-off shaft too low	Increase turning speed
	Machine not running level	Check coupling alignment
	Cutting tool attachments clogged due to excessive driving speed	Reduce driving speed
Noise	Loose screws and bolts	Retighten
	Machine damage	Contact service workshop
	Out-of-true running	Rebalance rotor shaft
Transmission noise	Lack of oil	Top up to correct level
	Worn components	Replace
	Damaged bearings	Replace
Out-of-true running	Worn or damaged cutting tool attachment(s)	Replace
	Rotor unbalanced	Workshop replacement
	Worn rotor bearing	Replace
Machine sways from side to side	Worn securing pins	Replace
Damaged bearings	Soiling and/or lack of grease	Clean and grease
	Excessive lowering speed	Lower more slowly
Belts overheating	Belt-slip	Check belt tension
	Cutting tool attachments digging into ground	Height adjustment
	Operating speed too high for density of material being mulched	Reduce driving speed