

Operating instructions



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Swivel Rake

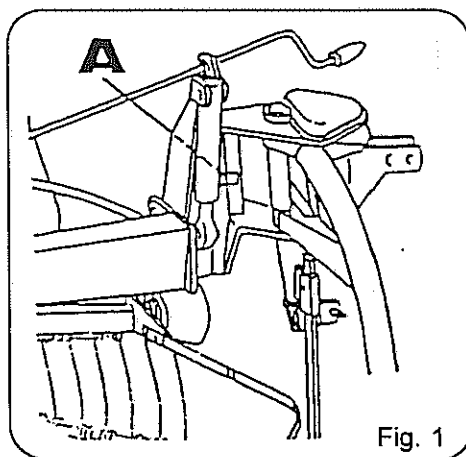
RS 380-DH
RS 465-DH
TWIN 395-DH
TWIN 470-DH

This Operating Instruction contains valuable and important information. Read this instruction before using the machine and observe the instructions provided in order to ensure effective and safe working.

Keep this Operating Instruction in a safe place. Every user of the rotor hay tedder must first familiarize himself or herself with the contents before beginning work.

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Each machine is provided with a serial plate (see fig. 1, pos. A) which contains the details about Model (fig. 2, pos. C), Serial No.(fig. 2, pos. D) and year of manufacture (fig. 2, pos. E).

This information must be communicated for customer service or when reordering spare parts.

The weight indicated on the identification plate gives you an indication of the lifting unit required when the machine has to be raised. The raised weight may be increased by the use of accessories.

Pos. F= Direction of rotation of the power take-off in driving direction, right (clockwise)

or

Pos. G = Direction of rotation of the power take-off in driving direction, left (anti clockwise).

The rate of revolution and direction of rotation not crossed out are applicable.

Pos. H = The max. indicated driving speed of the tractor power take off should not be exceeded.


NIEMEYER			
C	Typ: <input type="text"/>		
D	Masch.-Nr. <input type="text"/>	Gewicht	kg
E	Baujahr: <input type="text"/>	Max. Drehzahl (min ⁻¹)	
	<input type="checkbox"/> <input type="checkbox"/>		
	NIEMEYER Landmaschinen GmbH Postfach 1165 • D-48466 Hörstel		
	H	F	G

Fig. 2

Scope of delivery

1 Swivel rake RS 380-DH
 1 Operating instruction
 1 EC Declaration of Compliance

1 Swivel rake RS 465-DH
 1 Operating instruction
 1 EC Declaration of Compliance

1 DRS-swivel rake TWIN 395-DH
 1 Operating instruction
 1 EC Declaration of Compliance

1 DRS-swivel rake TWIN 470-DH
 1 Operating instruction
 1 EC Declaration of Compliance

Technical data

	RS 380-DH	RS 465-DH	TWIN 395-DH	TWIN 470-DH
Weight:* (Basicmaschine)	approx. 475 kg	approx. 635 kg	approx. 595 kg	approx. 680 kg
Max. drive speed	540 rpm	540 rpm	540 rpm	540 rpm
Dir. of rotation of pto-shaft (in driving direction)	right	right	right	right
Noise emission value (under operating conditions)	< 70 dB (A)	< 70 dB (A)	< 70 dB (A)	< 70 dB (A)
Working width	approx. 3,80 m	approx. 4,50 m	approx. 3,90 m	approx. 4,60 m
Transport width	approx. 1,40 m	approx. 1,60 m	approx. 1,40 m	approx. 1,60 m
Transport height	approx. 3,80 m	approx. 4,00 m	approx. 3,85 m	approx. 4,00 m
Storage height	approx. 3,20 m	approx. 3,60 m	approx. 3,25 m	approx. 3,65 m
Tractor drive output	from 33 kW(45 bhp)	from 45 kW(62 bhp)	from 40 kW(55 bhp)	from 45 kW(62 bhp)
Power	approx 5,6 ha/h	approx. 6,5 ha/h	approx. 6,5 ha/h	ca. 7,8 ha/h

* The given weights may be increased by the use of accessories.

Safety Instructions



We have indicated all those instances in these operating instructions involving your safety with this symbol. Please let other users also know about all these safety instructions.

Proper use

The swivel rake may only be used for the purposes intended (to handle mown straw lying on the ground). Otherwise the manufacturer accepts no liability whatsoever for resulting damage. Any other or additional use, such as the raking together of pieces of wood, is considered not to be proper use. Use of the machine in accordance with its intended purpose also includes observance of operating conditions specified by the manufacturer and the undertaking of necessary care and maintenance work at the specified intervals.

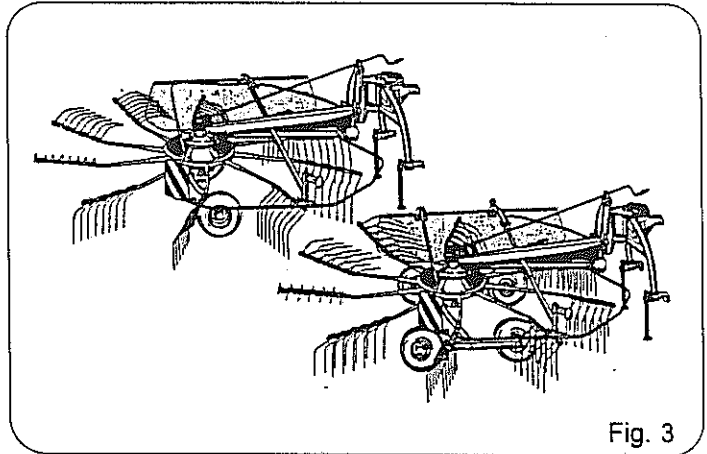


Fig. 3

The swivel rake may only be used, maintained and repaired by persons familiar with it and cognizant of the risks involved. The pertinent accident prevention regulations as well as all the other generally recognized industrial-medical, safety and traffic regulations shall be observed.

All machines must be provided with appropriate lighting when being transported on public highways in accordance with the valid Road Traffic Act. The corresponding holders can also be supplied by us when required.

Basic rule



Please read the operating and safety instructions prior to initial start-up (see warning symbol on page 19, pos. C).

Check the swather for traffic and operational safety each time before use.

Safety and Accident Prevention Regulations

General

1. As well as this Operating Instruction, also observe the generally valid safety and accident prevention regulations.
2. The attached warning signs and notices provide important information for safe operation; observance of the instructions contained on them is for your own safety!
3. When using public roads, observe all local road traffic regulations.
4. Before beginning work, familiarize yourself with all the features and control elements of the machine and their functions. It is too late to do this during operation !
5. The user's clothing should be tight-fitting. Avoid loose-fitting clothing!
6. To prevent the risk of fire, keep the machine clean!
7. Before the machine is lifted and the tractor sets off, check the immediate vicinity. Make sure you have sufficient visibility and watch out for children!
8. The carrying of passengers on the machine when working or in transit is not permitted.
9. Hitch the machine in accordance with regulations and only attach and secure it to the appliances for which it is intended.
10. When hitching and unhitching, set the support components to the appropriate positions! (stability!)
11. Particular care and attention is required when hitching and unhitching appliances to and from the tractor!
12. Always mount ballast weights in accordance with regulations and at the securing points provided!
13. Observe permissible axle loads and maximum laden weights!
14. Observe permissible transport dimensions!
15. Check and affix the necessary transport equipment, such as lighting, hazard warning signs and protective devices and guards!
16. Operating elements (cables, chains, linkages etc.) of remote-controlled devices must be aligned in such a way that they do not cause unintentional motion in any transit or working positions!
17. Make sure that the machine is in the specified condition for road travel, and secure it in accordance with manufacturer's regulations!
18. Never leave the driver's station whilst the machine is in motion!
19. The running speed of the machine must always be adapted to the environmental conditions! Avoid sudden cornering movements when driving up or down hill, or when driving transverse to the slope of the hill!
20. The handling, steering and braking characteristics of the tractor are affected by hitched machinery and ballast weights! You should therefore make sure of sufficient steerability and braking capability!
21. When cornering, take into account the overhang and the centrifugal mass of the machine!

22. The machine may only be started up when all protective devices and guards have been mounted and are in position!
23. Keep away from the working area and the danger areas of the machine!
24. Keep away from the rotating and swivelling areas of the machine!
25. Danger of crushing and shearing on (hydraulically) powered components!
26. Secure the machine before leaving the tractor! Fully lower all hitched appliances! Turn off the engine and remove the ignition key!
27. No one must enter the area between the tractor and the machine unless the vehicle is secured against rolling by means of the parking brake and/or chocks.
28. Where, when fitted with front-mounted appliances, the front mounting dimension of 3.5 m (measured from the center of the steering wheel to the front point of the machine) is exceeded, the operator must ensure that the restricted field of vision when exiting from farmyards, pulling onto roads and at crossroads is compensated by suitable measures. This may be achieved, for example, by an accompanying person acting as lookout for the driver in such situations.

Hitched appliances

1. Before hitching and unhitching to and from the three-point linkage, set the operating device to a position which guards against unintentional raising or lowering!
2. In three-point hitching, it is essential that the hitching categories of the tractor and the machine are identical or adapted to each other!
3. There is risk of injury resulting from crushing and shearing in the vicinity of the three-point linkage!
4. When the external control for the three-point hitching is operated, do not enter the area between the tractor and the machine!
5. In the transit position of the machine, always ensure sufficient lateral arresting of the tractor three-point linkage!
6. When driving on the road with the machine lifted, the operating lever for the three point hydraulic must be secured against lowering!

Towed machinery

1. Secure the machines against rolling!
2. Observe max. permissible support load of trailer coupling, drawbar or hitch!
3. With drawbar towing, ensure adequate mobility at the drawbar connection point!

Power take-off shaft operation

1. Only the powershafts specified by the manufacturer may be used!
2. The protective pipe and funnel guard of the powershaft and the power take-off shaft guard must always be fitted and fully functional!
3. In the case of powershafts, ensure observance of the specified pipe overlaps in transit and working positions!

4. The powershaft must only be mounted and removed with the power take-off shaft and the engine switched off, and with the ignition key removed!
5. When using powershafts with overload or freewheel clutches which are not covered by the protective guards on the tractor, overload or freewheel clutches must be attached on the machine side!
6. Always ensure correct assembly and securing of the powershaft!
7. Secure the powershaft guard against being pulled along by attaching the chain!
8. Before switching on the power take-off shaft, ensure that the selected speed and direction of rotation of the tractor power take-off shaft correspond to those of the machine, as shown on the serial plate!
9. Before switching on the power take-off shaft, ensure that no one is in the danger area of the machine!
10. Never switch on the power take-off shaft with the engine switched off!
11. When working with the power take-off shaft, no one must be allowed in the area of the rotating shaft or the powershaft!
12. Always switch off the power take-off shaft if excessive offset angles of the pto-shaft occur, or when it is not required!
13. Caution: when the power take-off shaft has been switched off, danger from running-on as a result of centrifugal mass! During this time the machine must not be approached too closely. Work may only be carried out on the machine when all machine parts have come to a standstill!
14. Cleaning, lubrication or setting of the power take-off shaft driven machine or of the powershaft only with the power take-off shaft and the engine switched off, and with the ignition key removed!
15. Place the decoupled powershaft on the mounting provided!
16. After removing the powershaft, push the protective sheath onto the stump of the power take-off shaft!
17. Damage to the machine is to be rectified immediately, and the machine should not be used until this has been done!

Hydraulic system

1. The hydraulic system is under high pressure!
2. When connecting hydraulic cylinders, attention must be paid to ensure the prescribed connection of the hydraulic hoses!
3. When connecting hydraulic hoses to the tractor hydraulics, ensure that pressure is switched off both on the tractor side and on the machine side!
4. On hydraulic functional links between the tractor and the machine, the coupling sleeve and coupler plug should be clearly marked in order to prevent incorrect operation! If the links are wrongly connected the reverse function results (e.g. raising/lowering) - danger of accidents!
5. Regularly check hydraulic hose lines and replace if damage or ageing has occurred! The replacement lines must meet the technical requirements of the machine manufacturer! The service life of the hose lines should not exceed 6 years, including a storage life of not more than 2 years.
6. When searching for leaks use the proper equipment, otherwise there is danger of injury!

7. Fluids emerging under high pressure (hydraulic oil) may penetrate the skin and cause serious injury! If an injury occurs, see a doctor immediately! Danger of infection!
8. Before working on the hydraulic system, lower all appliances/assemblies, remove the pressure and switch off the engine!

Tyres

1. When working on the tyres it should be ensured that the machine is safely parked and secured against rolling (chocks)!
2. The fitting of tyres and wheels requires adequate knowledge and the proper tools!
3. Repair work to tyres and wheels may only be carried out by specialists using the appropriate tools and equipment!
4. Regularly check the air pressure! Observe specified air pressure!

Maintenance

1. Repair, maintenance and cleaning work, as well as the rectification of malfunctions, should only be carried out with the drive switched off and the engine at a standstill!- Remove the ignition key!
2. Regularly check nuts and screws for tightness, and retighten as necessary!
3. During maintenance work on raised appliances/assemblies, always secure with suitable support elements!
4. When replacing working equipment, use suitable tools and gloves!
5. Properly dispose of oils, greases and filters!
6. Before working on the electrical system, always disconnect the power!
7. If protective guards are subject to wear, they must be checked regularly and replaced at the appropriate times!
8. Spare parts must at least meet the technical requirements specified by the machine manufacturer! This is ensured, for example, by the use of original spare parts!
9. When carrying out electrical welding work on the tractor and hitched appliances, detach cables on the alternator and battery!

Haymaking machinery

1. The haymaker is designed, and suitable for, the processing of mown crop material lying on the ground!
2. When swivelling the drawbar from the transit position to the working position and vice versa, danger of crushing and shearing occurs at specific points! Particular care should be taken during swivelling!
3. Repairs to preloaded energy stores (springs, pressure accumulators etc.) require adequate knowledge and the proper tools, and may only be carried out in specialist workshops!

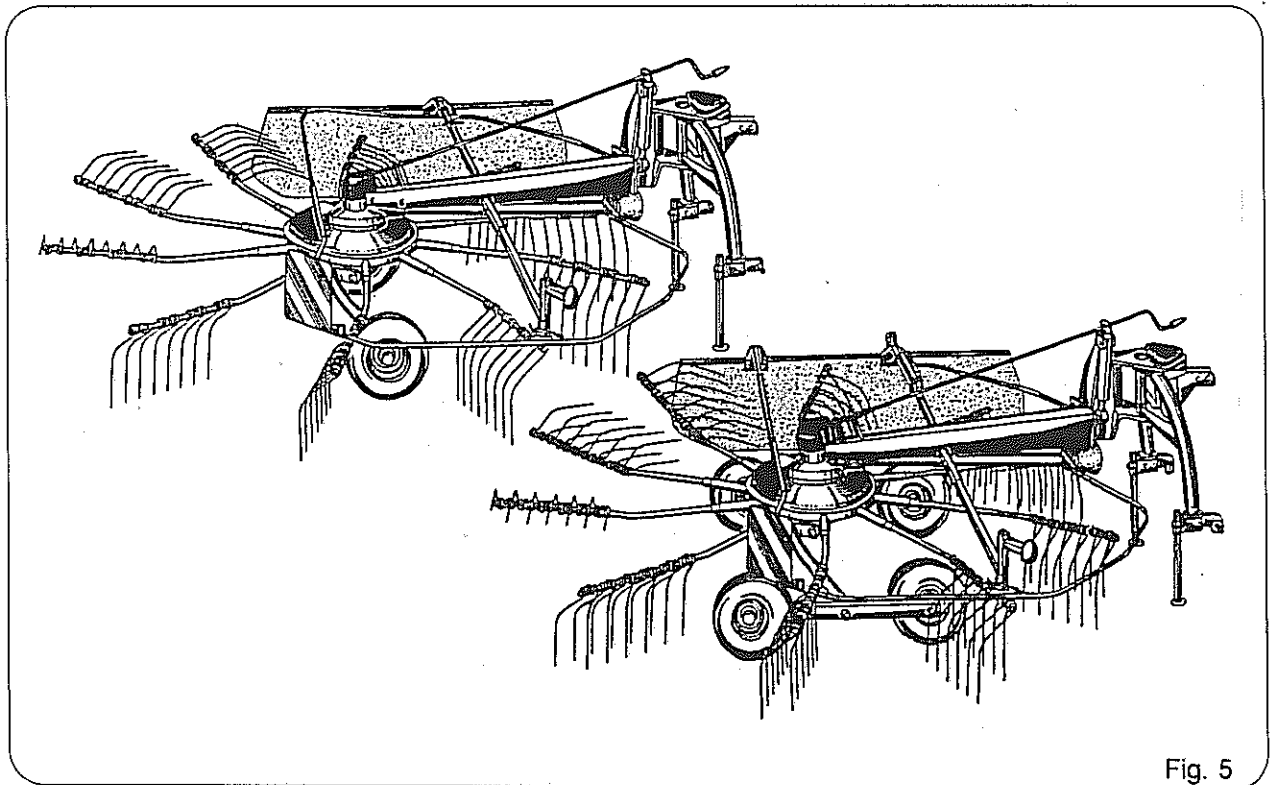


Fig. 5

Please observe the following before starting the rake:

1. Attach the protective equipment and warning sign and move into protective position.
2. N.B. Change any damaged or deformed prongs, as they increase the risk of accidents.
3. The parts turning in the swivel rake work at high speed. Always bear this in mind. Lubricate all the bearings and moving parts frequently and thoroughly. The rakes operation and service life depend directly on good lubrication and maintenance.
4. Keep all persons well away from the hazard zone, since there is the danger of objects being picked up and thrown by the rake. (see warning symbol on page 19, pos. A). Take special care when operating in the vicinity of highways.
5. A drive shaft with an overload safety and freerunning is recommended when a power take-off is used on the tractor in locked position.
6. The following details in these operating instructions are to be observed precisely in order to prevent any human error.
7. The user has to replace the warning symbols which are fallen off or are unreadable.



Only use ORIGINAL NIEMEYER SPARE PARTS. Incorporation of other marks may cause serious damage and lead to the guarantee being declared invalid.

Copied parts and special parts subject to wear rarely fall in line with the requirements made. Material quality cannot be tested visually.

Assembly of the pto-shaft

A free-running pto-shaft is required for tractors with a power take-off lock. The pto-shaft can be requested from the works.



Prior to initial operation check the length of the pto-shaft - particularly when going around bends and stripping with the tractor hydraulic unit - and shorten where necessary.

The pto-shaft may only be adjusted in the working position.

Pay special attention to the pto-shaft when the swivel rake is being turned to the transport position.

The pto-shaft must not be wedged into its end position nor be too short: The metal pipes of the pto-shaft must enmesh by at least 400 mm.

N.B. Otherwise there is the risk of the pto-shaft facturing.

Measures to shorten the pto-shaft are described in the pto-shaft operating instructions.

When shortening the pto-shaft use a steel saw to saw off the sliding and protective pipes. Grinders and the like would damage the sliding pipes due to the heat generated. Completely remove the burrs and chips after shortening.

Lubrication: After the pto-shaft has been shortened and during operation the outer sliding pipe must be lubricated regularly from inside.

To prevent accidents the outer protective pipes of the pto-shaft must, under all circumstances, be attached to the frame with chains.

The manufacturer gives important tips and instructions as to how the pto-shaft should be used in the pto-shaft operating instructions.

Hydraulic diagram

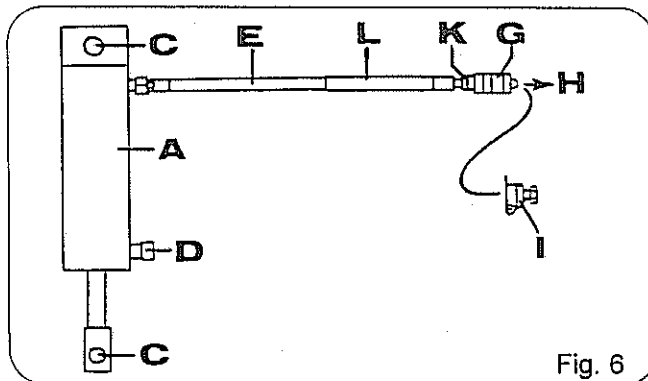


Fig. 6 = RS 380-DH below mach.no. 60399

- A = Hydraulic cylinder
- C = Equipment connection
- D = Bleeding filter
- E = Hydraulic hose
- G = Coupling connector
- H = Tractor
- I = Connector bracket
- K = Sharp-edged orifice
- L = Protective hose
- N = Screws
- O = Self-closing valve

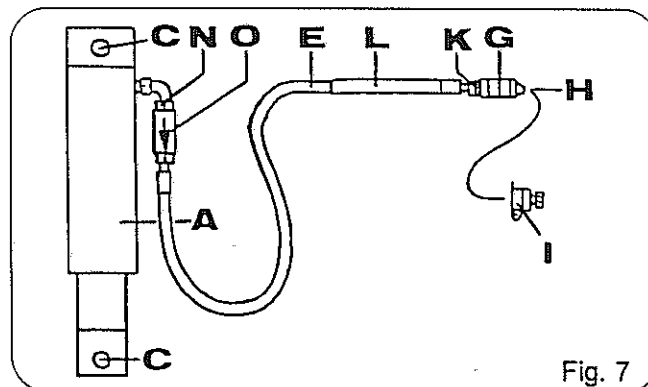


Fig. 6 = RS 380-DH above mach.no. 60400
RS 465-DH, TWIN 395-DH and
TWIN 470-DH

Mounting on the tractor

Switch off the tractor engine and take out the ignition key before going between the tractor and unit for attachment.

The swivel rake can be mounted both in the working as well as in the transport position.

Pull out and secure the two rest supports on the three-point hitch support. Attach the swivel rake to the triangle of the tractor and connect the hydraulic line. After attachment raise the unit and push in and secure the parking supports.

In the vicinity of the triangle and on all hydraulically operated parts there is a risk of injury from crushing or shearing. The hydraulic swivel process should only be carried out when there is no one within working range (see warning symbols page 19 item N and O).



The hydraulic unit is mostly highly pressurised. Before working on the hydraulic unit depressurise it and switch off the tractor engine.

Hydraulic lines should be checked regularly and changed if damaged or old (see also page 6 "Hydraulic unit").

N.B. When lifting the rake take care to avoid any contact with the tractor cab.

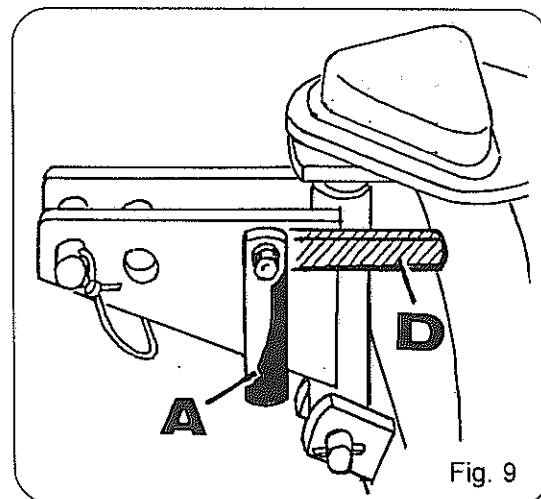
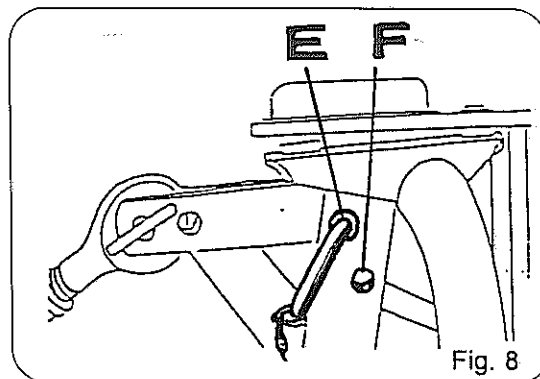
Pay attention to relief of the front axle! Remaining load at least 20 % of the tractor weight.

Transport

On public ways and roads, the rake may travel in the raised condition. Otherwise the maximum transport width (StVZO - Road Traffic Ordinance) of 3 m will be exceeded.

Attach, then raise the rake. Insert the bolt behind the catch (Fig. 8, Pos. E) or turn the protection lever into the horizontal (Fig. 9, Pos. D).

This secures the swivel rake for transport, preventing it from sluing out.



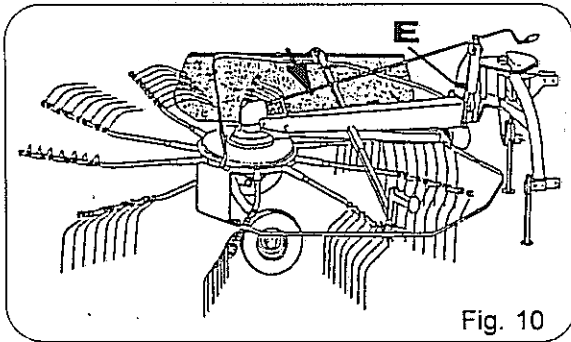


Fig. 10



Before beginning to swivel the rake upwards, it is essential to up to 1994 year of construction at RS 380-DH swivel the swath shaper onto the support frame from 1994 year of construction after loosening the tommy screw, slide into the support frame to the stop and secure again (fig. 10). push in hydraulically at the TWIN 470-DH

To unlock actuate the draw cable, execute sluing via the control valve (singleacting) and release the draw cable again, so that the locking bolt re-engages. Otherwise re-adjust the guide (fig. 10, pos. E).

For further safety close the hydraulic shutoff valve.

Set the hydraulic stop cock to "Close" for further securing.

Swivel the warning sign to inside the of the machine and lock in position (fig. 11, pos. A and L). Push the three protective caps (6 for TWIN 395-DH and TWIN-470-DH) over the tine ends and secure (fig. 11, pos. G).

Retract the bow wing skid and secure with pins.

Pay attention to mount the safety frame correct (fig. 11, pos. N), as if not the safety frame is not foldable.

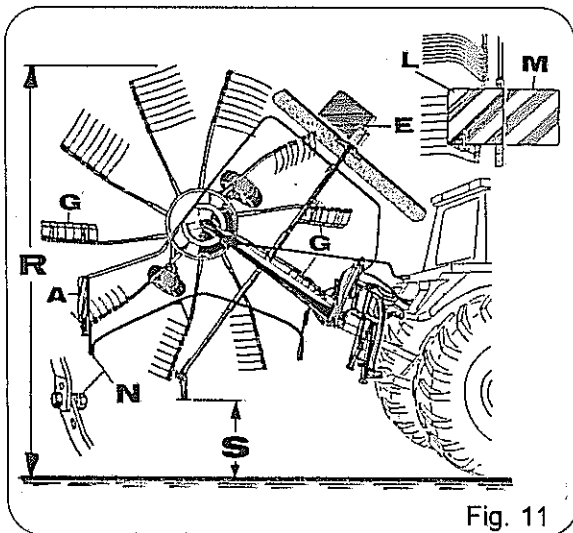


Fig. 11



The dimension "S" (fig. 11) should be with
 RS 380-DH = 60 cm
 RS 465-DH = 40 cm
 TWIN 395-DH = 60 cm
 TWIN 470-DH = 40 cm
 maximum as with this distance the traffic oriented position of the warning sign (pos. A) is guaranteed and the maximum admissible transport height of 4.00 m is not exceeded.

Caution! During the swing into the transport position the side swath former can in particularly bad cases come into contact with the tractor cab.

To prevent this the side swath former must be turned by 90° when drawn out and put back in again (fig. 10, pos. E).

When the side delivery rake is swung back to the work position, the former must be brought back to the normal position before deposit on the ground and secured with the capstan-head screw.

Pay attention to sideways movement rotor/support hitch (see warning symbol on page 19, pos. N).

The presence of persons in the swivel and working area of the rake is forbidden (see warning symbol on page 19, pos. D and L).

The transport height of 4,00 m, with 60 cm ground clearance, is to be observed (underpasses, gates).



Parking the rotary rake

The swivel rake can be parked both in the working (page 9, fig. 5) as well as in the transport position (fig. 12).

After harvesting or when parking outside for protracted periods clean the hydraulic cylinder's piston rod and treat it with acid-free grease.

The rotary rake may only be parked in the transport position on a level, paved and hard surface (fig. 14).

Before parking, the following points are to be observed:

- Swing the swath former onto the support frame or slide into the support frame and secure.
- *- Bring the rake into the transport position.
- Make sure that pin between three-point support and intermediate member is engaged.
- When there are any, loosen the eyebolts.
- Retract the bow wing skid (pos. C) and secure with pins.
- *- Slide the support holder (pos. D) into the holder as far as the stop.
- *- If available wheel retainer to the holder (pos. E) with the tommy screw (pos. A).
- Pull out both rest supports (pos. F) and lock them in position.
- Park the swivel rake.
- *- Pay attention to the danger of tipping.
- Place the pto-shaft in the holder provided.
- Remove coupling connector from tractor and insert in connector holder (see page 12, fig. 11, pos. I).

The points with * are omitted for stopping in the work position.

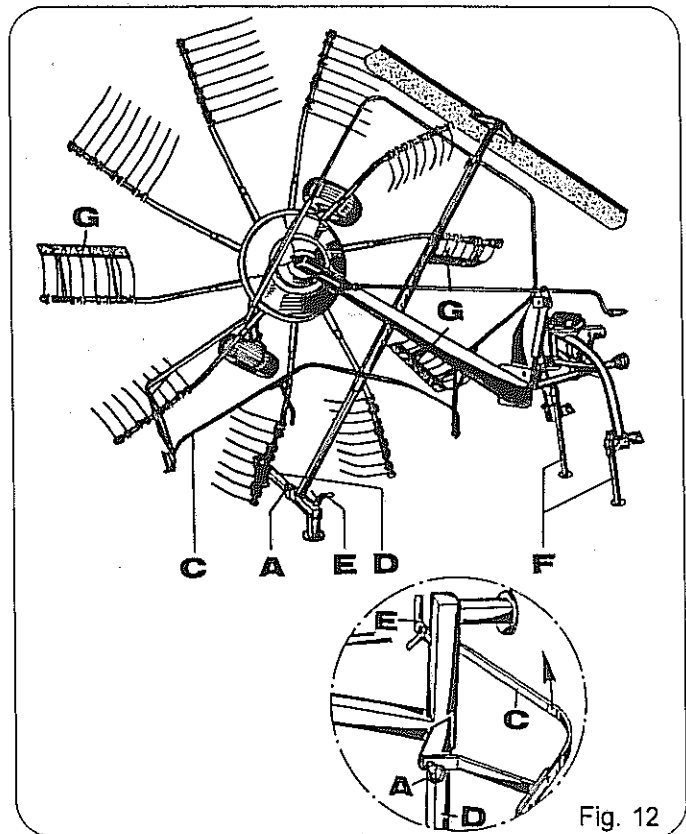


Fig. 12



In order to prevent possible injury from the tine ends the 3 or 6 protection caps are inverted over the tine ends and secured (fig. 12, pos. G).

The removable rest support is required only for parking in the barn in the transport position and must without fail be taken out of the holder before beginning work (fig. 13, pos. D). To do this, loosen the tommy screw (fig. 13, pos. A). Fold down the protective frame again (fig. 13, pos. C) and lock in position again with the tommy screw (see warning symbol page 19, pos. O).

Before beginning work it is essential to swing back the warning sign from the machine and to lock it in position, and to remove the protective caps on the tine ends (see page 12, fig. 11, pos. M and G).

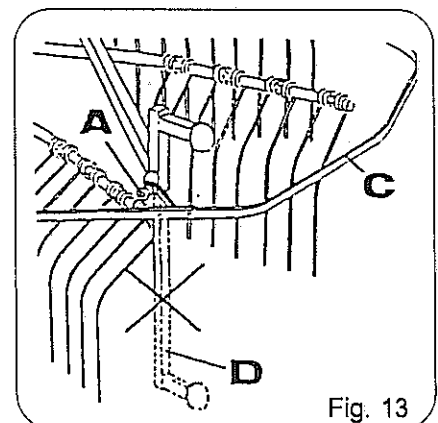


Fig. 13

Parking the rotary rake

The swivel rake can be parked both in the working (page 9, fig. 5) as well as in the transport position (fig. 12).

After harvesting or when parking outside for protracted periods clean the hydraulic cylinder's piston rod and treat it with acid-free grease.

The rotary rake may only be parked in the transport position on a level, paved and hard surface (fig. 14).

Before parking, the following points are to be observed:

- Swing the swath former onto the support frame or slide into the support frame and secure.
- *- Bring the rake into the transport position.
- Make sure that pin between three-point support and intermediate member is engaged.
- When there are any, loosen the eyebolts.
- Retract the bow wing skid (pos. C) and secure with pins.
- *- Slide the support holder (pos. D) into the holder as far as the stop.
- *- If available wheel retainer to the holder (pos. E) with the tommy screw (pos. A).
- Pull out both rest supports (pos. F) and lock them in position.
- Park the swivel rake.
- *- Pay attention to the danger of tipping.
- Place the pto-shaft in the holder provided.
- Remove coupling connector from tractor and insert in connector holder (see page 12, fig. 11, pos. I).

The points with * are omitted for stopping in the work position.

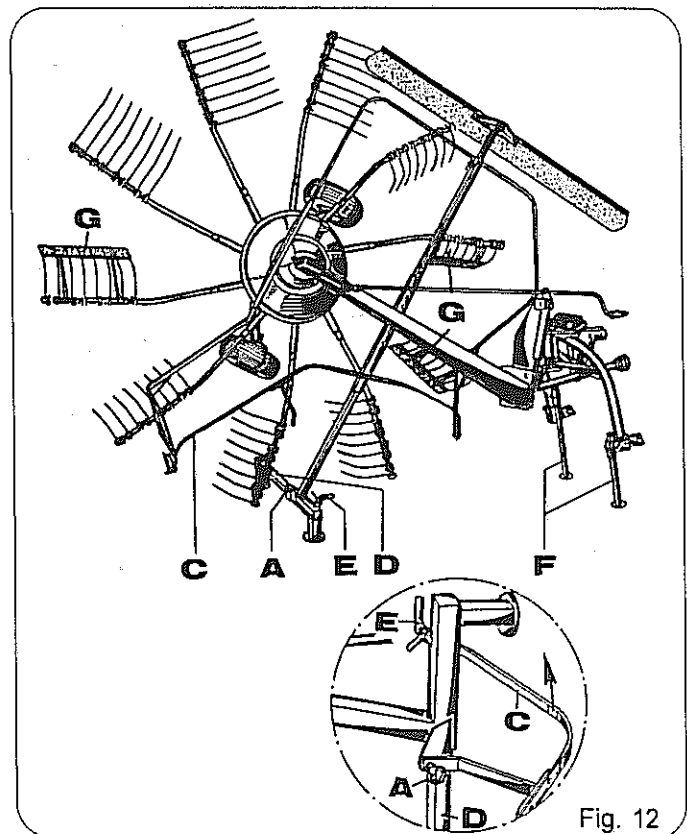


Fig. 12



In order to prevent possible injury from the tine ends the 3 or 6 protection caps are inverted over the tine ends and secured (fig. 12, pos. G).

The removable rest support is required only for parking in the barn in the transport position and must without fail be taken out of the holder before beginning work (fig. 13, pos. D). To do this, loosen the tommy screw (fig. 13, pos. A). Fold down the protective frame again (fig. 13, pos. C) and lock in position again with the tommy screw (see warning symbol page 19, pos. O).

Before beginning work it is essential to swing back the warning sign from the machine and to lock it in position, and to remove the protective caps on the tine ends (see page 12, fig. 11, pos. M and G).

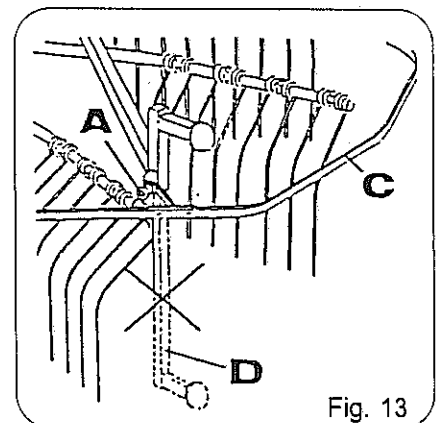


Fig. 13

Operation

Before beginning work:

- Remove the support holder (fig. 12, pos. D)
- Fold down the protective frame (fig. 13, pos. C, see also warning symbol page 20, Pos. O)
- Swing the warning sign back from inside the machine (see page 12, fig. 11, pos. M)
- Remove the protective caps on the tine ends (fig. 13, pos. G).

First, suspend the swath moulder in accordance with the desired width of the swath and fold into the working position or pull out of the support frame far enough, then attach and secure with the tommy screw; with the TWIN 470-DH push out hydraulically.

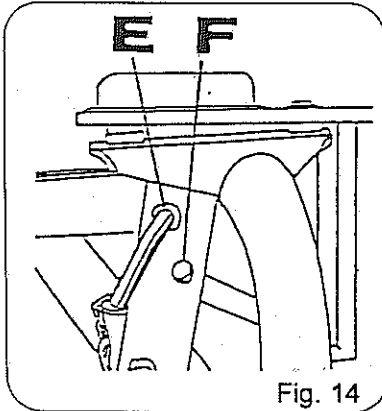


Fig. 14

Pull out the bolt behind the ratchet at the headstock and insert it into the hole (fig. 14) or turn the protection lever down (fig. 15, pos. A).

This will release the otherwise rigid connection of the three-point support and swather in the working position.

Lower the 3-point-hydraulic so far until the ratchet tappet rests at the back slot.

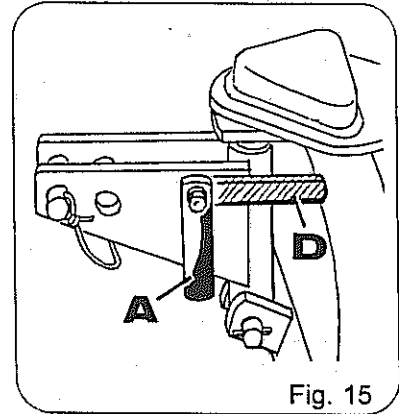


Fig. 15

Turn down the rotor with the spindle until the tines just do not touch the ground. When in use the rotor should be horizontal to the ground or slightly tilted forwards.

Swathing deposit can be altered in difficult cases depending on the kind of crops available by the cam (fig. 16 and 17).

RS 380-DH

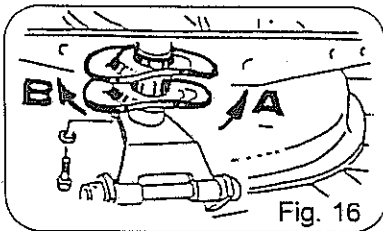


Fig. 16

The hexagonal shoulder under the cam (key width the same as for hexagonal screws) is used for turning the cam slightly.

Turning counterclockwise (A) = crops deposited later
Turning clockwise (B) = crops deposited earlier

RS 465-DH / TWIN 395-DH / TWIN 470-DH

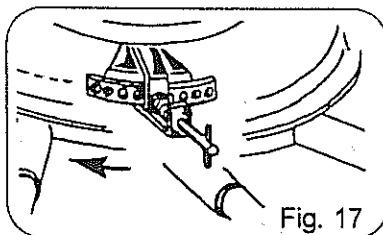


Fig. 17

By putting the pin in another hole (fig. 17) the swathe collector is adjusted to the respective fodder ratios.



If the adjustment of the cam plate is done with the machine raised, this must be supported and secured against accidentally dropping down.

Adjustment of the Swath former

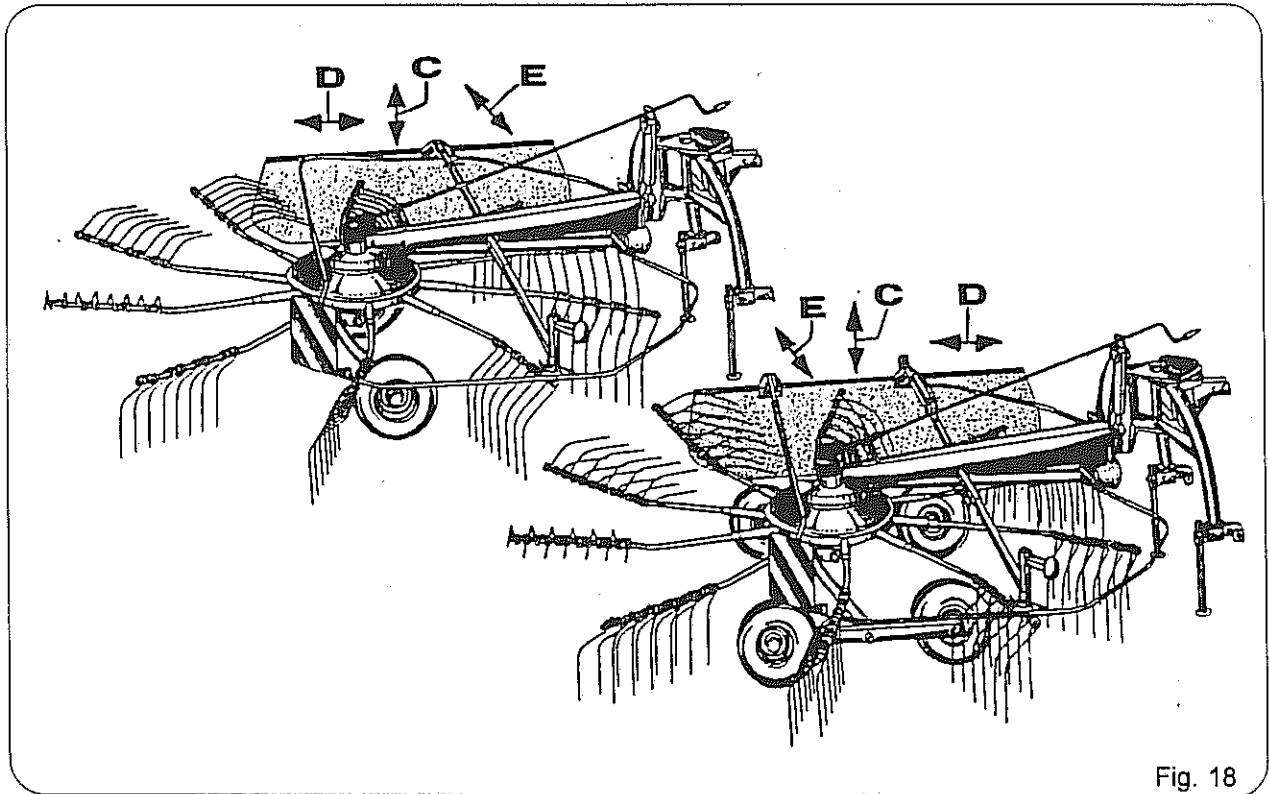


Fig. 18

The side swath former is adjustable for height (fig. 18, pos. C) as well as backwards or forwards (fig. 18, pos. D) by changing the screws on the swath cloth holder.

It is recommended that the swath cloth is not set too near to the ground so as to prevent premature wear of the underside of the cloth.

The required swath width can be achieved by changing the swath cloth holder or by loosening the capstan-head screw and sliding the swath cloth holder (fig. 18, pos. E).

Hydraulic Adjustment of the Swath Former



During the swing into the transport position the side swath former can in particularly bad cases come into contact with the tractor cab.

To prevent this the side swath former must be turned by 90° when drawn out and put back in again. Beforehand the bolts of the hydraulic cylinder must be loosened (fig. 19, pos. E).

When the side delivery rake is swung back to the work position, the former must be brought back to the normal position before deposit on the ground.

The required swath width can be achieved by the hydraulic adjustment of the swath cloth holder.

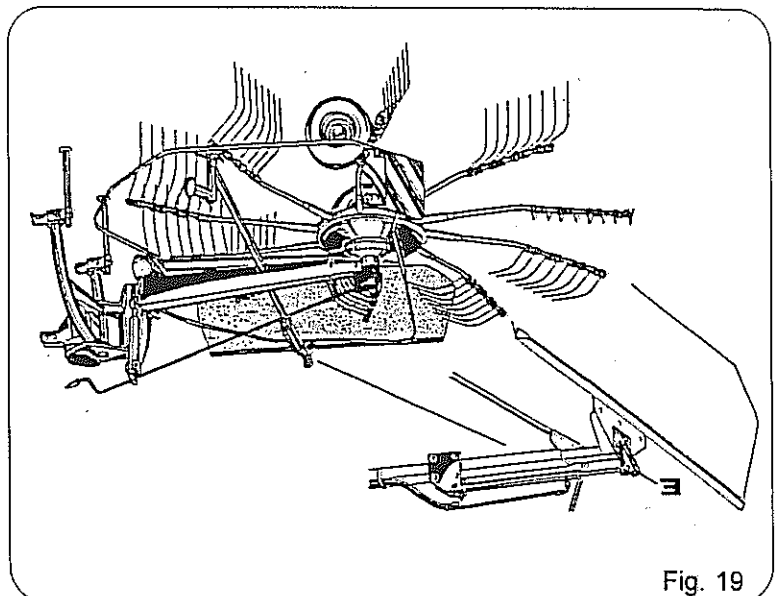


Fig. 19

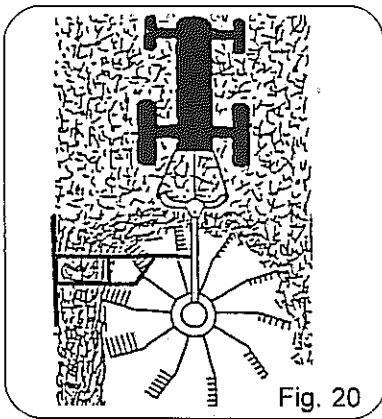


Fig. 20

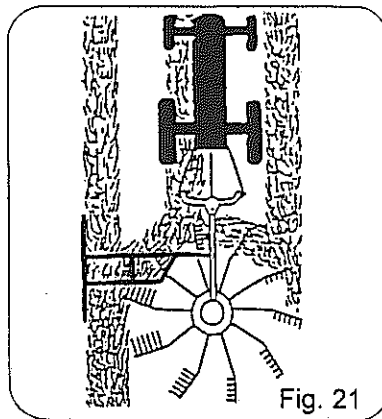


Fig. 21

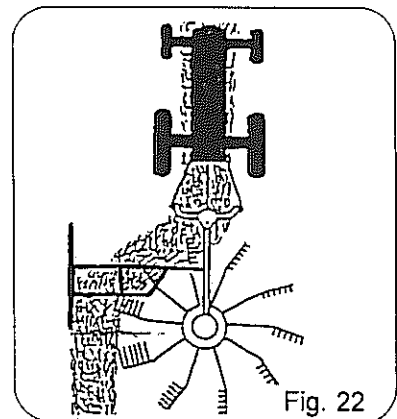


Fig. 22

Select the speed of travel and the rate of revolution of the power take off so that all harvested crop is collected cleanly by the tines. The method of travel is chosen in accordance with Figures 20, 21 and 22.

For optimal swathing the pto-shaft speed is approx. **450 U/min.**

If the overload protection of the drive shaft trips in repeatedly (e.g. too much fodder), switch to a slower pace. If the overload protection translates for longer than 10 seconds, stop immediately and discover the reason so as to prevent damage to the overload protection.



Do not stop in the work area of the machine (see warning symbols page 19, pos. E).

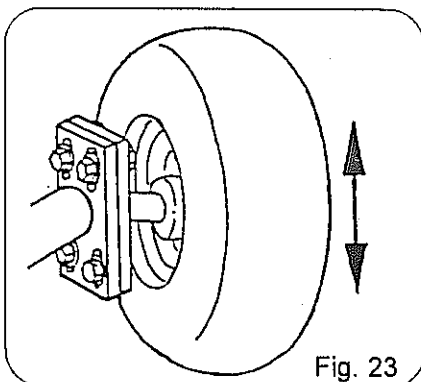


Fig. 23

If the understructure beneath the rotor is fitted on one side with a flange connection, then the rotor can be infinitely adjusted by about 1.5 cm upwards and pushed downwards into the oblong holes.

By this means an even raking from the left to the right side of a rotor can be adapted correspondingly to the fodder ratios (see fig. 23).

After adjustment the screws are screwed up again tightly.



The adjustment should be made with the machine raised. Here the rake must be secured against accidentally dropping down.

Care and maintenance

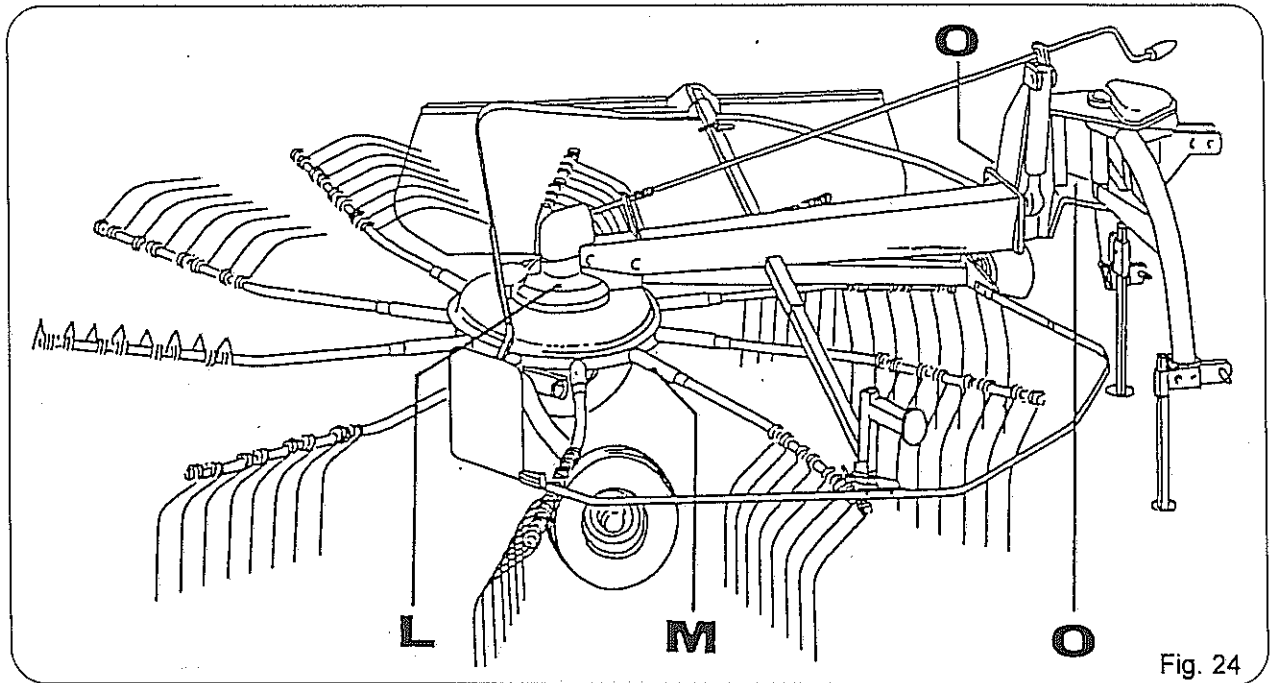


Fig. 24



Before performing maintenance and repair work, stop the tractor motor and remove the key (see warning symbol on page 19, pos. F).
If the rotary rake is raised, it must be secured against accidentally dropping down.

Lubricate the swather gear (fig. 24, pos. L) prior to initial operation with high quality grease (lubrication nipple on the gear). To distribute the grease better turn the rotary slowly by hand. Re-lubricate approx. every 8 operating hours.

During operation lubricate the lubrication nipples (fig. 24, pos. L, M, O) periodically and oil the spindles as well as all the locking and swivel pins. Grease the catch rollers on the three-point support.

Prior to initial operation and thereafter lubricate the lubrication nipples of the pronged arm bearing (fig. 24, pos. M) in such a manner that the grease comes out on either side. After initial operation check all the screws and tighten them up where necessary.

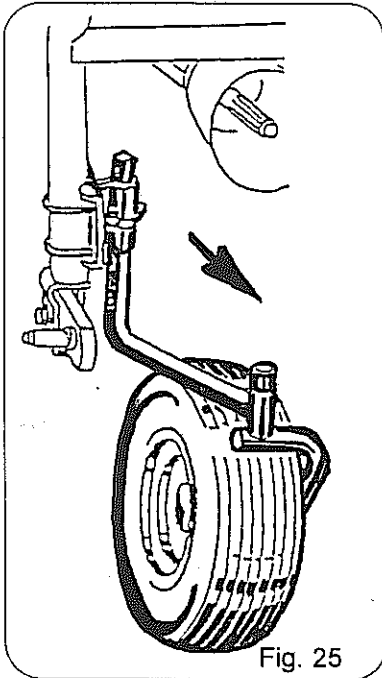
Check the pneumatic-tyred wheels for the correct pressure (1.5 bar).

After harvesting, or where the machine is parked for long period in the open air, the piston rod of the hydraulic cylinder must be cleaned and preserved with acid-free grease.

For increasing the life of the machine, it is advisable to use a thick sticking type grease applied to the roller track guide when assembling the crank lever and at regular intervals thereafter.

Spare parts

Front roller feeler



See fig. 25 for roller feeler assembly.

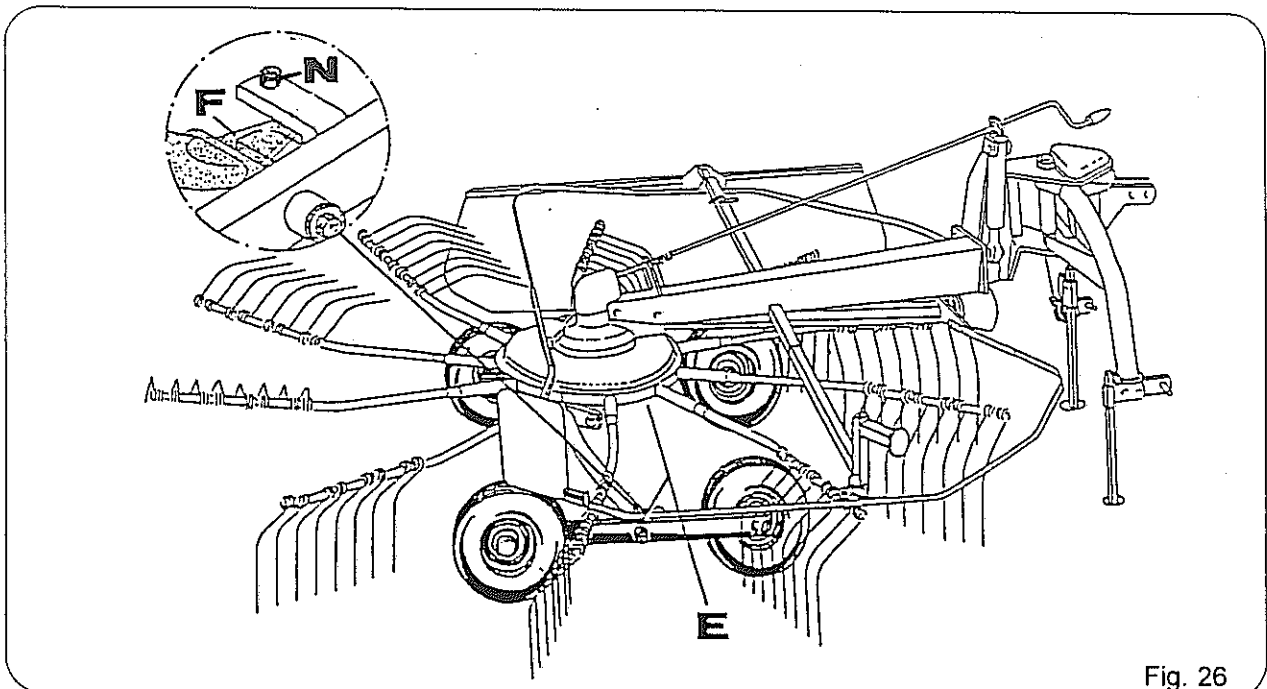


Transport in connection with the top chain rod

If the rake is driven in the transport position (with the rotary slued up), be sure to exchange the top chain rod for a rigid top rod.

RISK OF ACCIDENT! (Due to swather swinging forward during downhill driving.)

Quadro chassis



Pay attention to proper of the Quadro chassis!

The axles of the Quadro chassis are placed on the wheel of the chassis instead of the running wheels (see fig. 26). The stops (fig. 26, pos. F) must lie in the clamps. The stop screw, if available, (fig. 26, pos. N) must point downwards left and right. The nuts must then be tightened securely on the wheel axles again. During operation, lubrication nipples (fig. 26, pos. E).

Warning symbols

The user has to replace the warning symbols which are fallen off or are unreadable. The warning symbols can be ordered. The art.-no. are next to the symbols, straight numbers (646404) = vertical format, not straight numbers = oblong format.

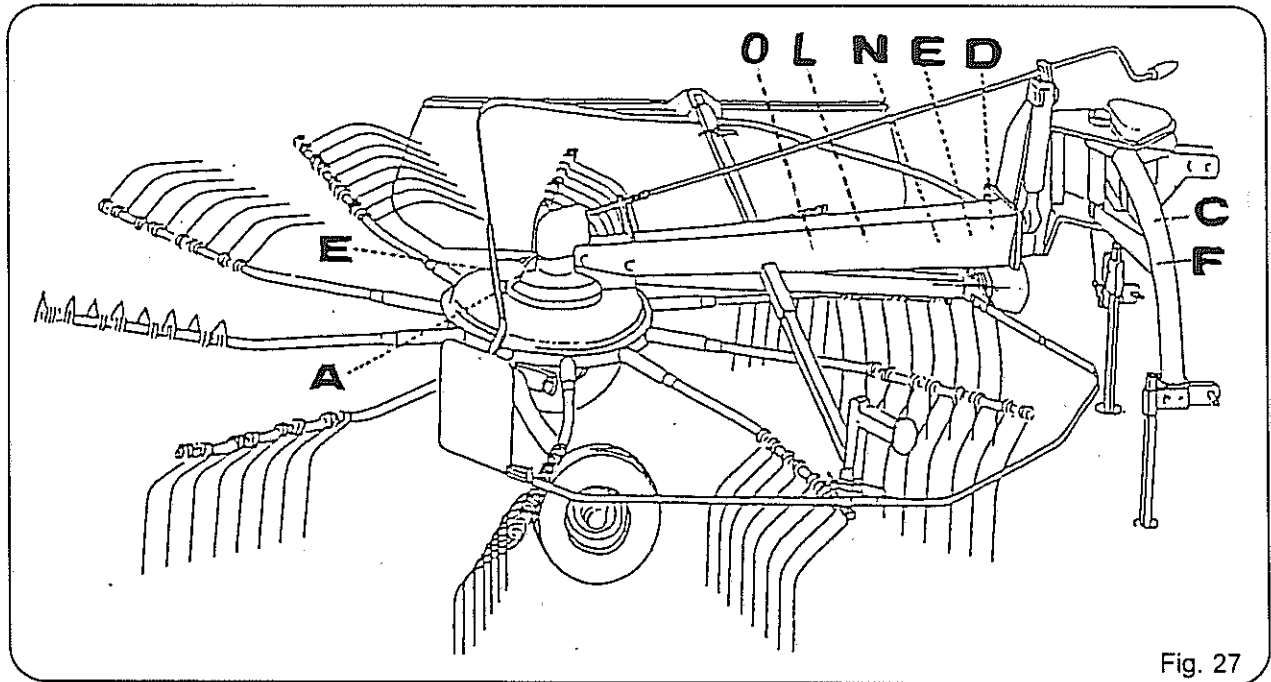
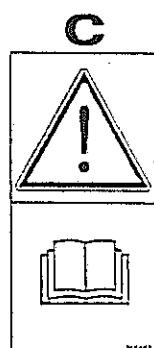


Fig. 27



646405
646404

Keep distance with motor running.



646407
646406

Read and pay attention to operating instructions and safety information before starting for the first time.



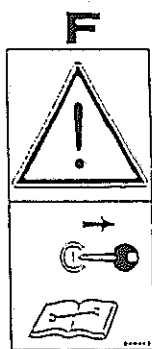
646409
646408

Maintain adequate safety distance to the swing area of the machine.



646411
646410

Do not touch any moving machine parts. Wait until they have come to a complete standstill.



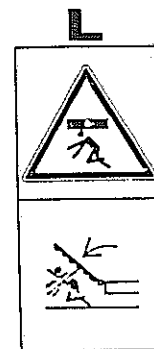
646413
646412

Before maintenance and repair work, stop the motor and remove the key.



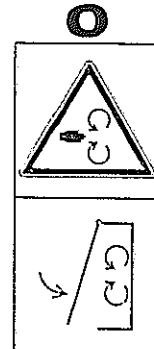
646415
646414

Never reach into the crushing danger zone as long as parts are moving there.



646840
646841

Do not stay in the swivel area of the machine.



646936
646937

Before starting the first time close the protective devices.

Warning symbols

The user has to replace the warning symbols which are fallen off or are unreadable. The warning symbols can be ordered. The art.-no. are next to the symbols, straight numbers (646404) = vertical format, not straight numbers = oblong format.

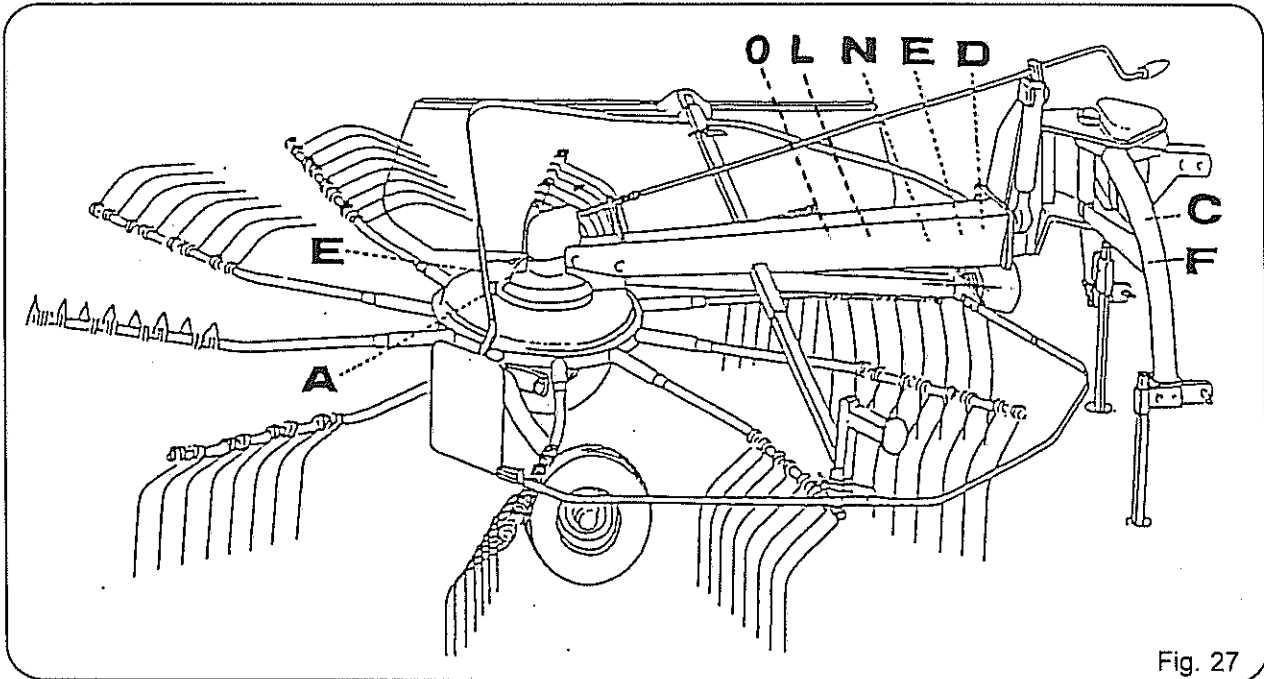
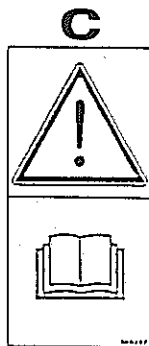


Fig. 27



646405
646404

Keep distance with motor running.



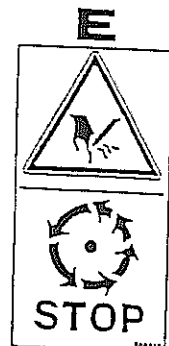
646407
646406

Read and pay attention to operating instructions and safety information before starting for the first time.



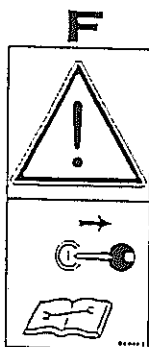
646409
646408

Maintain adequate safety distance to the swing area of the machine.



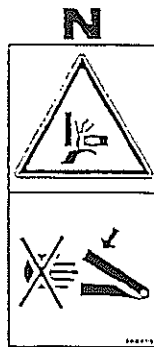
646411
646410

Do not touch any moving machine parts. Wait until they have come to a complete standstill.



646413
646412

Before maintenance and repair work, stop the motor and remove the key.



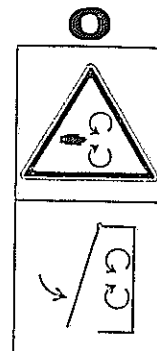
646415
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Never reach into the crushing danger zone as long as parts are moving there.



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Before starting the first time close the protective devices.