

LEVEL-SPIKE 1700 / 2200



Translation of the original user manual



2201 English 913.120.402 EN

EU – DECLARATION OF CONFORMITY



We,

Redexim Handel- en Exploitatie Maatschappij B.V.
Kwekerijweg 8
3709 JA Zeist, The Netherlands

declare that this “EU - DECLARATION OF CONFORMITY” is issued under our sole responsibility and belongs to the following product:

LEVEL-SPIKE WITH MACHINE NUMBER AS INDICATED ON THE MACHINE AND IN THIS MANUAL,

to which this declaration refers, complies with stipulation of:

2006/42/EC Machinery Directive

and with the standards:

- **ISO 12100-1:2010** Safety of machinery - General principles for design - Risk assessment and risk reduction
- **ISO 13857:2019** Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
- **ISO 4254-1:2015** Agricultural machinery - Safety - Part 1: General requirements

Zeist, 03-01-2022

A handwritten signature in blue ink, appearing to read 'C.H.G. de Bree', written over a horizontal line.

C.H.G. de Bree

Redexim Handel- en Exploitatie Maatschappij B.V.

UK – DECLARATION OF CONFORMITY



We,

Redexim Handel- en Exploitatie Maatschappij B.V.
Kwekerijweg 8
3709 JA Zeist, The Netherlands

declare that this “UK - DECLARATION OF CONFORMITY” is issued under our sole responsibility and belongs to the following product:

LEVEL-SPIKE WITH MACHINE NUMBER AS INDICATED ON THE MACHINE AND IN THIS MANUAL,

to which this declaration refers, complies with stipulation of:

S.I. 2008 No. 1597 HEALTH AND SAFETY The Supply of Machinery (Safety) Regulations 2008

and with the standards:

- **ISO 12100-1:2010** Safety of machinery - General principles for design - Risk assessment and risk reduction
- **ISO 13857:2019** Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
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Redexim Handel- en Exploitatie Maatschappij B.V.

FOREWORD

Congratulations on the purchase of your **Redexim- Charterhouse** LEVEL-SPIKE. To ensure the safe and lasting operations of this LEVEL-SPIKE you (and anyone using the machine) should read and understand this user's manual. A complete knowledge of the contents of the manual is necessary in order to ensure the safe use of this machine.

The LEVEL-SPIKE is not an independently operating machine. It is the responsibility of the user to use the correct tractor. The user will also need to check the tractor / LEVEL-SPIKE combination on safety aspects, noise level, user instructions and risk assessment.

The LEVEL-SPIKE is intended exclusively for grass fields or areas on which grass can grow.

On the following page, we will begin with the safety instructions. Every user must be familiar with these instructions and must follow them carefully. Attached and below you will find a registration card, which should be returned to us so that we are able to process any future claims.

In this manual, many instructions are given which are stated in a number sequence. The user must follow the instructions according to this sequence. If the * appears this refers to safety instructions. If the @ is used, this refers to a tip and/ or note.

All information and technical specifications provided at the moment that this document is published are the most recent ones. Design specifications may be changed without prior notice.

This document is a translation of the original operating instructions.

Upon request, the original operating instructions are available in Dutch.

GUARANTEE CONDITIONS

THIS MULTI-SPIKE PRODUCT IS DELIVERED TO THE CUSTOMER ACCOMPANIED BY A GUARANTEE AGAINST DEFECTS IN THE MATERIALS USED. THIS GUARANTEE APPLIES FOR A PERIOD OF 12 MONTHS AS OF THE DATE OF PURCHASE.

Redexim- Charterhouse GUARANTEES ARE SUBJECTED TO THE "GENERAL CONDITIONS FOR SUPPLY OF PLANT AND MACHINERY FOR EXPORT, NUMBER 188", WHICH ARE PUBLISHED UNDER THE AUSPICES OF THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE.

REGISTRATION CARD

For your own record, copy the information from the registration card to the table hereunder. Mail the attached card back to us.

Serial number of machine	
Name of your distributor	
Date of purchase	
Any remarks	

SAFETY INSTRUCTIONS

1. Always **use** the MULTI-SPIKE with the **correct tractor** as described in the technical information
2. The user is responsible for a **safe Tractor/LEVEL-SPIKE combination**. The **combination must be tested** for noise, safety, risk and easy usage. It is also necessary to draw up user instructions.
3. The LEVEL-SPIKE is suited **exclusively to grass fields**.
4. Every LEVEL-SPIKE **user must be fully informed** of the information contained in the user manual.
5. **Inspect the ground** where the LEVEL-SPIKE is to be applied. Remove loose obstacles, avoid uneven ground.
6. **Never step off the tractor** if the engine is still running.
7. Ensure that other people are **standing at least 4 mtr. (14') away** from the LEVEL-SPIKE
8. **Use appropriate clothing**. Wear strong shoes with a steel enforced toe cap, long trousers, tie up long hair. Do not have any loose pieces of clothing.
9. **Never try to force the LEVEL-SPIKE**, a situation which is visible in unstable behavior of the MULTI-SPIKE.
10. **Check the LEVEL-SPIKE once a week** to ensure there are no loose screws or nuts and bolts.
11. The LEVEL-SPIKE may **never be used without protection covers** and safety stickers.
12. **NEVER crawl underneath the LEVEL-SPIKE**. If you need to work underneath, turn the LEVEL-SPIKE on its front.
13. **Always switch off the engine**, before starting any maintenance, adjustment or repair. Also block the LEVEL-SPIKE against sinking and block it against forward/backward movement or sliding.
14. **Use only the original LEVEL-SPIKE spare parts/ tines** in order to ensure the safe operation of the machine.
15. **Never use the LEVEL-SPIKE** in the dark, in heavy rain, on frozen ground, stormy conditions or on slopes greater than 20 degrees.
16. **Maintain a log book of repairs**.
17. If any modifications are carried out on the machine **the CE certification mark will be no longer valid**. The User/Dealer himself must then have the machine re-certified.

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1.0 TECHNICAL SPECIFICATIONS

<u>Model</u>	<u>1700</u>	<u>2200</u>
Working width	1800 mm (72")	2400 mm (96")
Working depth	Up to 250 mm (10")	Up to 250 mm (10")
Weight	405 Kg (890 lbs)	495 Kg (1090 lbs)
Hole spacing side-to-side	75 mm (3"), with fine slit knives 150 mm (6"), with all other knives/ tines	75 mm (3"), with fine slit knives 150 mm (6"), with all other knives/ tines
Hole spacing in driving direction, at maximum depth center-to center	With 3 knives/ disk: 440 mm(18") With 4 knives/ disk: 330 mm(13") With 6 knives/ disk: 220 mm (9") With 12 knives/disk:110 mm(4½")	With 3 knives/ disk: 440 mm (18") With 4 knives/ disk:330 mm (13") With 6 knives/ disk: 220 mm (9") With 12 knives/disk:110 mm(4½")
Recommended minimum tractor size	35 HP with lift capacity of minimum 500 Kg (1100 lbs)	45 HP with lift capacity of minimum 600 Kg (1300 lbs)
Capacity:	At 5 km/hour (3.1 mph) 9000 m ² (81,000 sq ft)/hour At 10km/hour (6.2 mph) 18000m ² (162,000sq.ft)/hour At 15km/hour (9.4 mph) 27000m ² (244,000sq.ft)/hour	At 5 km/hour (3.1 mph) 12000 m ² (108,000 sq ft)/hour At 10km/hour (6.2 mph) 24000m ² (216,000sq.ft)/hour At 15km/hour (9.4 mph) 36000m ² (324,000sq.ft)/hour
Shipping dimensions	1860 x 550 x 1400 mm (74"x 22"x 56") L x W x H	2470 x 550 x 1400 mm (99"x 22"x 56") L x W x H
Three point linkage	3- point CAT 1 & 2	3- point CAT 1 & 2
Lubrication grease	EP 2	EP 2
Standard items	Deep slit knife kit (4 per disk) Manual Support jack	Deep slit knife kit (4 per disk) Manual Support jack

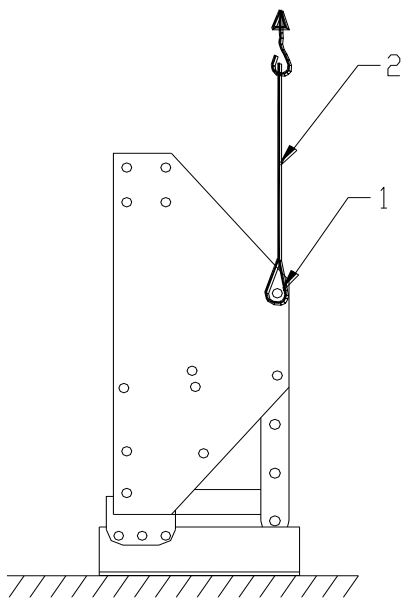


Fig. 1.

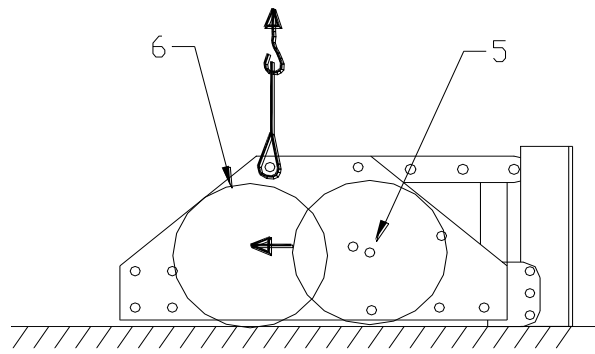


Fig. 2.

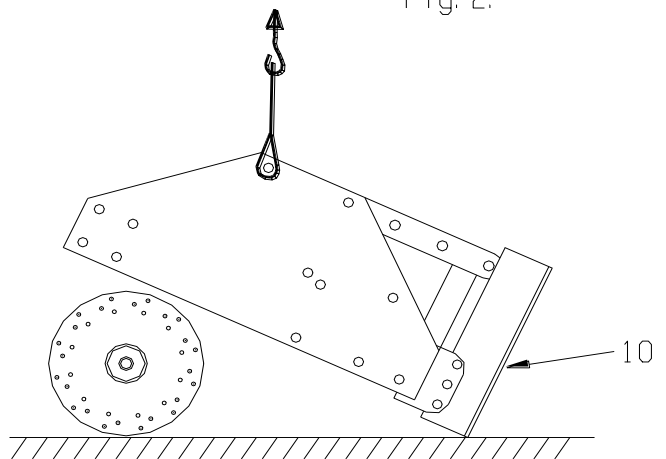


Fig. 3.

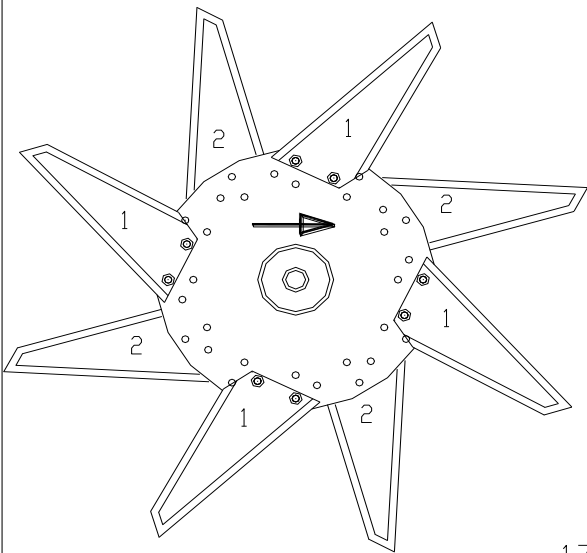


Fig. 4.

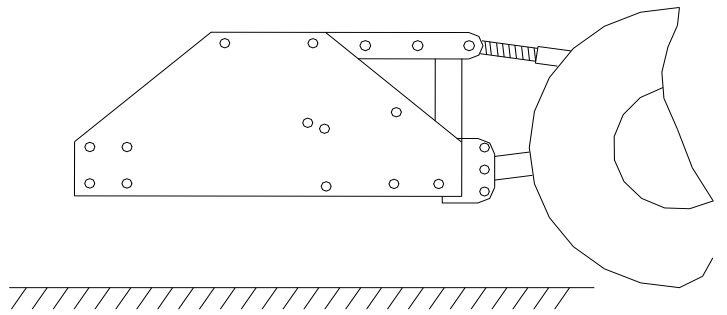


Fig. 5.

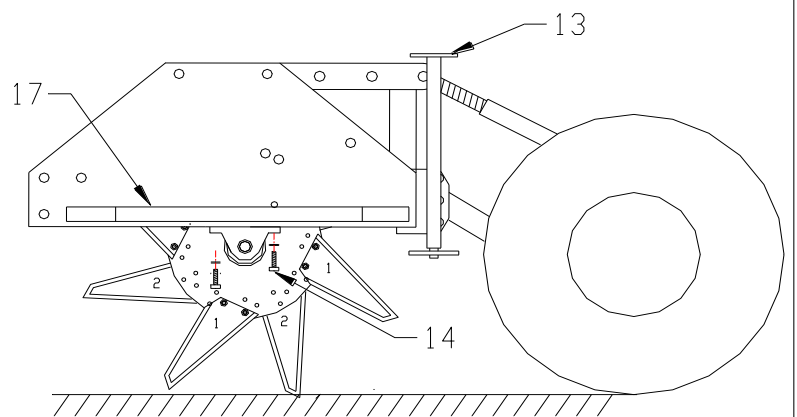


Fig. 6.

2.0 FIRST SETUP

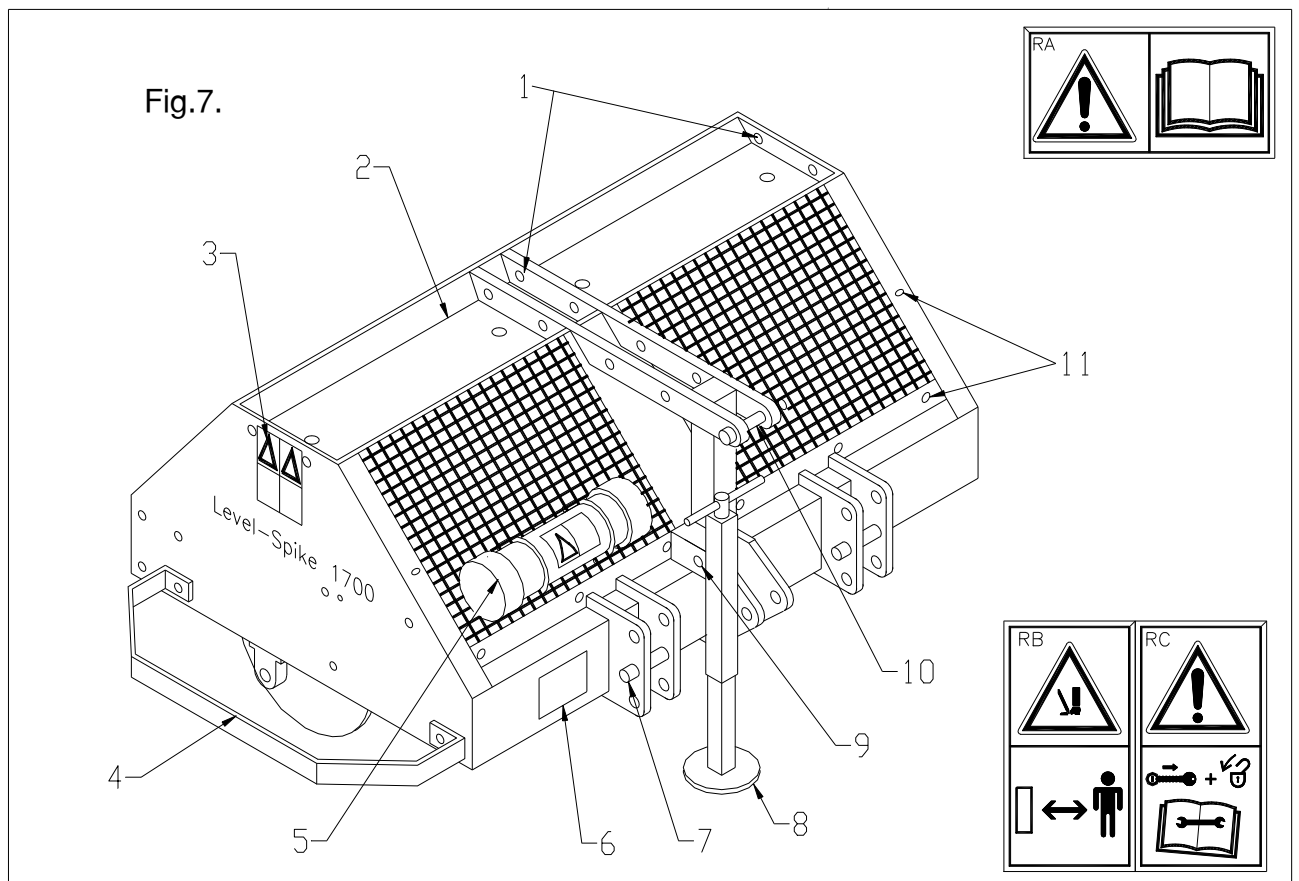
The machine is delivered on a pallet. To install the machine behind a tractor, handle as follows (see fig.1, 2, 3, 4, 5 and 6)

1. Remove all boxes from the machine, which contain knives, bearings, safety bars, bolts/nuts and a jack.
 2. Firmly connect a sling 2 of approximately 3.5 mtr (11 ‘) with D- shackles to the holes 1 at each side of the machines as shown in Fig.1.
 3. Lift the machine slowly. Be aware that the machine may be unstable during the tip over, however it will not drop on the ground.
 4. Lay the machine horizontal on a flat floor, as shown in Fig.2.
 5. Remove the two bolts 5 that hold the main rotor. Check that the main rotor lays on the ground. When both bolts 5 are out, the rotor can be rolled back till it is in position 6.
 6. Slowly lift the machine again, see Fig.3., till the rotor can be rolled away.
 7. The deep slit knives (standard delivered with machine), can be mounted on the rotor, as shown in Fig.4. In Fig.4. four knives are evenly fitted at a disk. On the next disk, the knives should be mounted with an offset. In Fig.4 this is indicated with a number on the knives. One means the first disk etc. Mount the knives exactly the same way as drawn in Fig.4. For more information on knives and the assembly, see Chapter 12.
 8. Lower the machine back on the ground. Remove the Pallet and connect the machine to a tractor. (Leave the rear roller fixed).
 9. Lift the unit with the tractor as much as possible. Shorten the toplinek when necessary. Roll the rotor with mounted knives under the machine. Assemble the rotor bearing on the rotor ends and use the bolts/ washers 14 and nuts to firmly mount the rotor to the main frame. When everything fits well, tighten the grub screw of the bearings.
 10. The last items to assemble are the safety bars 17, that are identical. They should be on. Use two bolts/ nuts at each side.
 11. Slide the jack 13 upside down on and lock it with the lock pin.
 - Be very careful during all operations and do not take any unsafe steps.
 - Be aware of the knives during handling. They are sharp and can seriously hurt you. Stay away with your hands and feet as much as possible. Use protection gloves.
 - If you prefer, you can exchange or mount the knives, via the top cover gaps. Mount the rotor first in the unit, remove the two front or rear covers and assemble the knives from the top. LOCK the machine.
- @ If the tractor can't lift high enough, use the sling again or assemble the knives afterwards, see above.
- @ The position of the blades at the rotor and the position of the rotor in the main frame is critical for the final job done. So check this carefully with the figures 1 to 6 and Chapter 12.

3.0 GENERAL CONTROLS

In fig.2. some key details of the machine are shown, as follows:

1. Hook up points or securing points when weights are added.
2. Area for extra weights. NOTE. The maximum load applied may not exceed 400 Kg (880 lbs).
3. Safety decal **RB and RC. Keep 4 mtr (14') distance to the machine/ Turn engine off when maintaining or repairing the machine.**
4. Safety bar at each side of machine. **Should be on all the time**
5. Manual box with manual enclosed and safety decal RA: **Read manual before using machine.**
6. Serial number plate.
7. Cat. 1 & 2 bottom link pin.
8. Jack for supporting and securing machine during storage and repair.
9. Pin to lock jack to machine. Jack can be reversed when fixed to a tractor.
10. Cat 2 top link pin.
11. Bolts/ nuts/ washers for keeping safety covers in place.

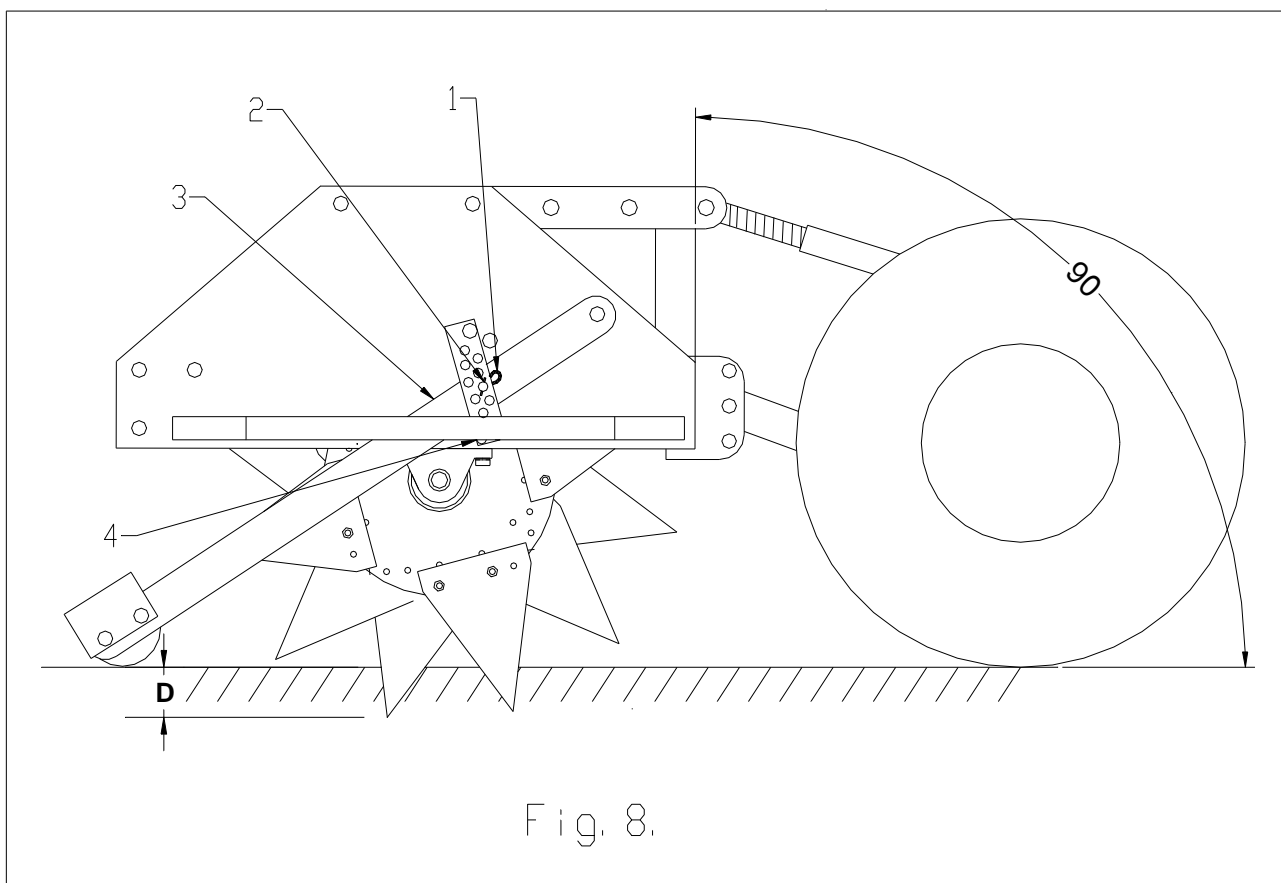


4.0 WORKING DEPTH ADJUSTMENT

The rear roller is an option for the LEVEL-SPIKE 1700 & 2200, see chapter 12. In case the rear roller is added, the depth can be regulated.

The working depth can be set by locking the rear roller supports 3 with pin 2 at a certain level. When the machine is at 90 degrees behind the tractor, the depth D is maintained. The lock pin is a coarse setting. The fine tuning can be done with the top link of the tractor. If the rear roller has to float, store the lock pin 2 in hole 4.

@ The rear roller locking may ONLY be used when no Weight Transfer System or extra weights are used. Otherwise serious damage may appear.



@ The rear roller may be locked for storage as well, however only when the roller rests ON the ground. If that does not happen the machine may tip.

@ Use the 90 degrees setting always as the starting point.

5.0 GROUNDSPEED

The forward speed during work, should be limited till 15 km/hour (9.4 mph). Faster is not allowed. The faster we go, the less time a knife has for penetration. So working slower may give a better result in the end. This depends on the soil as well.

@ Make only straight passes with a 3-point linkage model.

@ The unit can be lowered into the ground and raised without stopping the tractor.

* Be aware that the rotor may continue to run when raised during forward motion. Don't come close to the machine, but drop it first in the ground to stop

6.0 GENERAL USAGE OF THE LEVEL-SPIKE

The LEVEL-SPIKE can only be used when the circumstances are right. Check the following items:

1. Are there any loose objects on the field. If so, these must be removed first.
2. Are there any slopes. The maximum slope for the LEVEL-SPIKE is 20 degrees. Always operate the LEVEL-SPIKE from the top to the bottom of a slope.
3. Are there any pipes/wires/cables in the ground. If so, ascertain at what depth and set the working depth at a maximum of 60% of the pipe etc. depth.
4. Are there any hard objects in the ground. If so, operate the LEVEL-SPIKE with a very low speed, or adjust working depth.
5. Is there any danger of flying objects such as golf balls, which could distract the attention of the driver ? If so, the LEVEL-SPIKE can not be operated at that moment.
6. Is there any danger of subsidence or land/mud slides ? If so, the LEVEL-SPIKE cannot be operated on the field at that moment.
7. Is the ground frozen or very wet. Postpone operation till circumstances are better.

7.0 TRANSPORT OF THE LEVEL-SPIKE

The user is responsible for the transport of the LEVEL-SPIKE behind the tractor along the public streets. Check on the national legislations. Across open ground a maximum speed of 20 km/h (13 mph) applies. In view of the weight of the LEVEL-SPIKE, a higher speed could be dangerous for the driver and bystanders. The machine could also suffer damage due to jolt which can occur with higher speeds.

* At least 20% of the tractor weight should rest on the front axle when machine is lifted.

8.0 UNCOUPLING OF THE LEVEL-SPIKE

The machine can be disconnected from the tractor as follows,

1. Look for a flat area.
2. Lock the rear roller in bottom position, or leave it free floating (when mounted).
3. Reverse the jack.
4. Gently lower the machine with the knives on the ground.
5. Drop the jack, till the machine is well supported.
6. Remove the top link
7. Remove the bottom link.
 - The area needs to be level.
 - Additional weight has to be taken off first..

9.0 PROBLEM ANALYSIS

Slits/ holes are badly shaped	Wrong type of knife Weak soil Knives at wrong position	Use other type Reduce working depth Use other type of knife Check correct position Try other position
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10.0 MAINTENANCE

Pre-Delivery-Inspection	Check bolts/ nuts Connect the unit to a tractor Mount the tines/ knives	See instructions in this manual See Chapter 2 and 12
Weekly	Clean machine	
After first 20 hours (new or repaired)	Grease rotor and roller bearings Check bolts/nuts	2 shots each EP 2
After every 100 hours	Grease rotor and roller bearings. Check bolts/ nuts	2 shots each EP 2

11.0 OPTIONS (see fig.8.)

Standard the LEVEL-SPIKE 1700 & 2200 are delivered with a set of deep slit knives (4 per disk)

Basically, depending on the knife or tine size, we can mount 3,4,6 or 12 knives evenly per disk. With the standard kit, we can mount 4 per disk, as is shown in Fig.8. It is important to mount the knives in the holes as shown in Fig.8. Use bolt 3 and nut 1. In the figure the preferred rotation direction is given as well. Be aware that the rotor is mounted correctly in the main frame, so the rotation direction works out well.

@ In almost all cases the LEVEL-SPIKE is towed behind a tractor. However in case the unit is pushed, the rotor should be reversed.

@ Under some conditions, the knives may do a better job when reversed. The best way to try is reversing the drive direction and look at the results. If the results are better, reverse the rotor in the main frame.

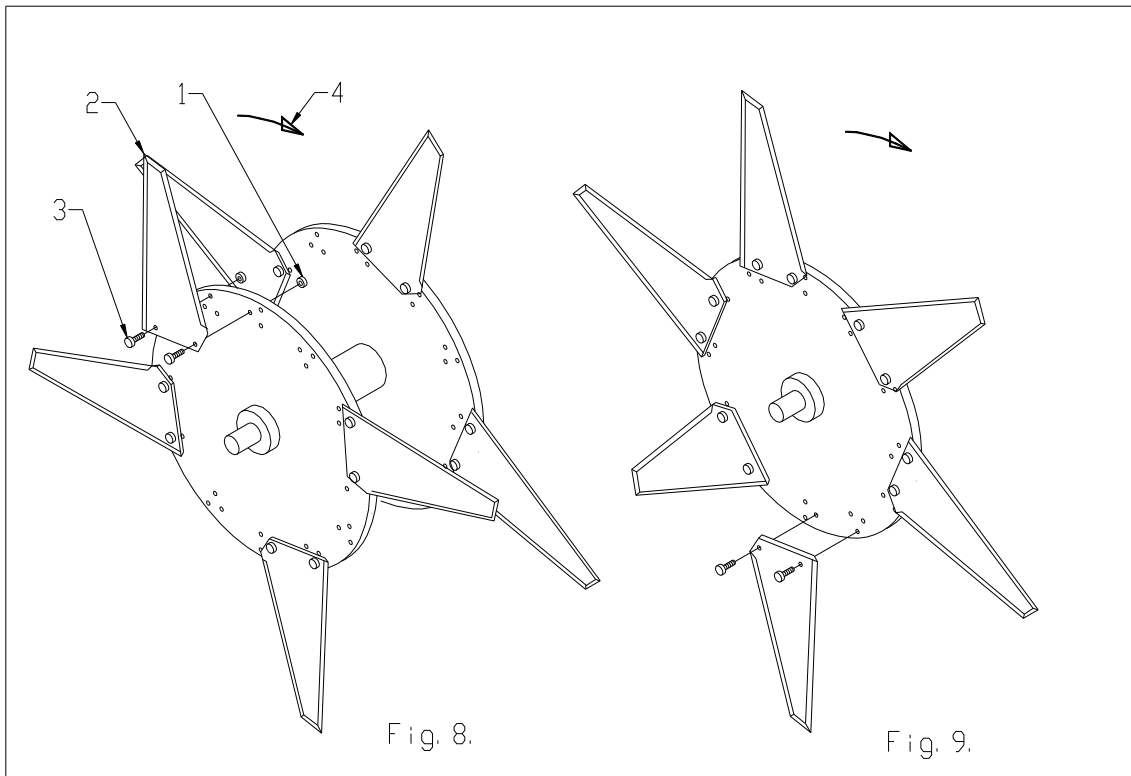
@ The more knives/ tines are assembled, the closer the pattern. However the more weight is needed for penetration either. So if you require depth, use less knives.

@ The disks are welded offset to each other, so we can create a spiral (4 in Fig.11.), which makes the machine run smoother. Be aware of this when more knives are added.

@ Changing or adding knives/ tines can be done in two ways:

1. Remove the whole rotor and change/ add knives, see instructions in Chapter 2.
2. Remove the covers, see # 15 in Fig.7, and work from the top

- Be aware of sharp items. Work carefully. Secure the machine all the time with the jack
- Never crawl under the machine or rotor
- Always secure the rotor from rolling away.



11.1 ADDITIONAL DEEP SLIT KNIFE KIT (see fig.9)

In case you want to use 6 Deep slit knives per disk, instead of the 4 we standard deliver, an additional kit (# 213.170.012 for 1700 and 213.220.012 for 2200) is available, that contains 24/ 32 more deep slit knives with bolts and nuts.

When 6 deep slit knives per disk are used, it is important to mount them the same way as drawn in Fig.9. Use the holes as given in Fig. 8.

11.2 FINE SLIT KNIFE KIT (See fig.10)

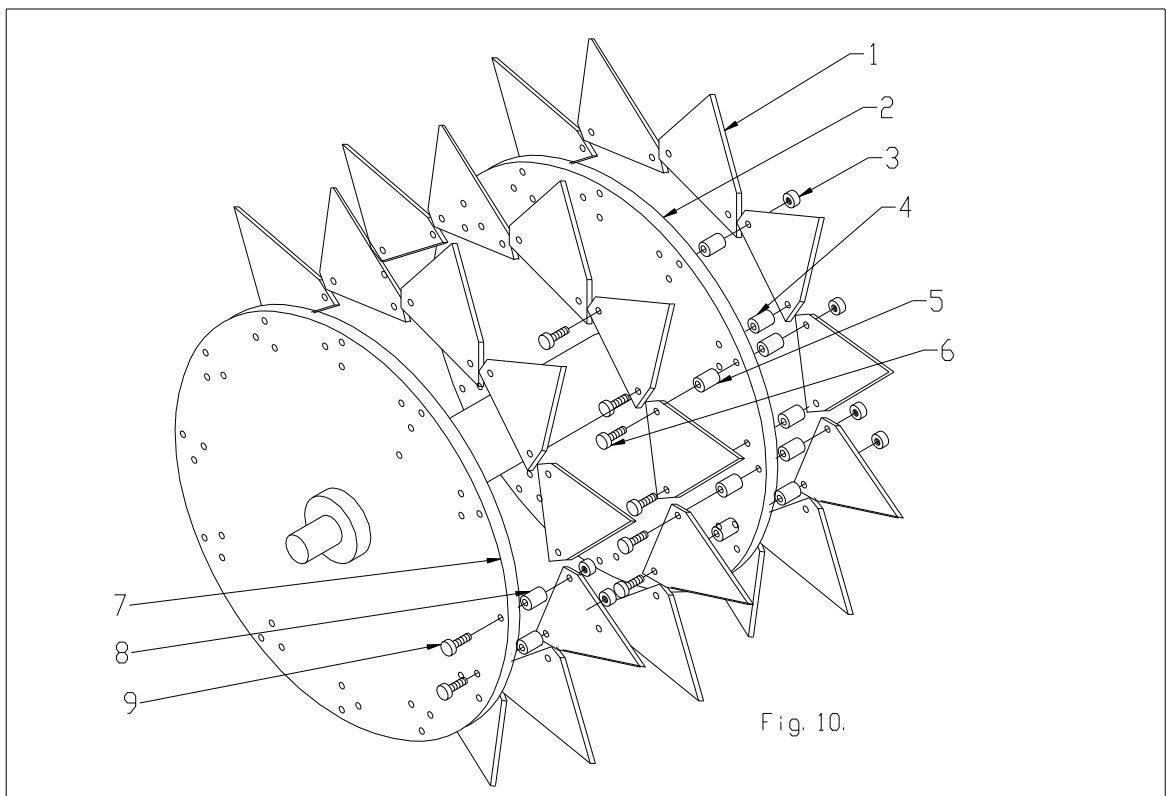
The fine slit knives fit on the same rotor. Distance bushes are used to offset the knives from the disks, see Fig.10. Each disk can take up to 12 fine slit knives per side. It is important to know that on both outer disks, we can not assemble fine slit knives at the outer side. The fine slit knife kit (# 213.170.008 for the 1700 and # 213.220.008 for the 2200) contains respectively: 264/ 360 fine slit knives (1), 528/ 720 distance bushes (4,5 & 8), 264/ 360 long bolts (6), 48/ 48 short bolts (9) and 312/ 408 nuts (3).

They should be assembled as drawn in Fig.10. As described previously, more options are possible. E.g. use 6 double row fine slit knives, or 12 at a single row per disk (no distance bushes needed).

@ If the customer often switches from one type of knife to the other, it is maybe worth buying another standard rotor and exchange rotors instead of knives.

@ Check the bolts and nuts regularly.

@ Exchange bent knives immediately.

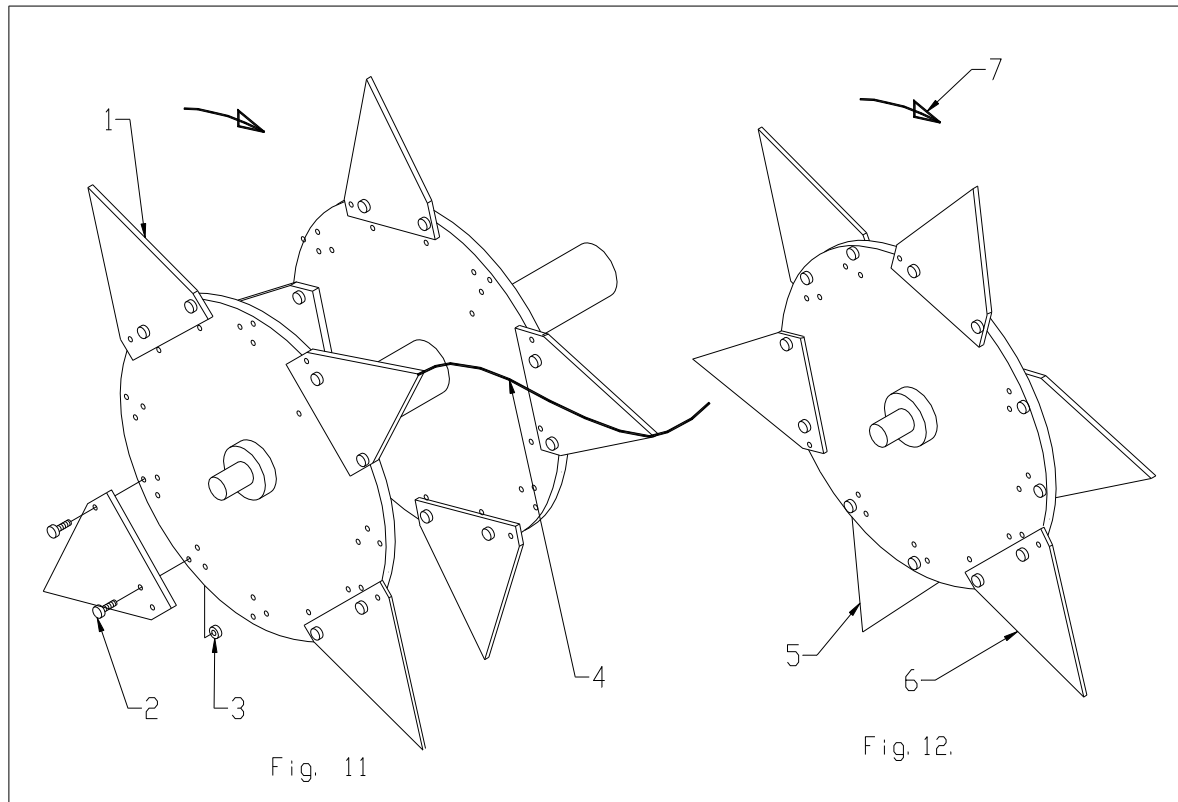


11.3 TRUCKSTER KNIFE KITS (See fig. 11 and 12)

Truckster slit knives fit to the Level-Spike 1700 / 2200 as well. The standard kit (# 213.170.004 for the 1700 and # 213.220.004 for the 2200) contains respectively : 48/ 64 truckster knives (1), 96/ 128 bolts (2) and 96/ 128 nuts (3). They should be assembled as drawn in Fig.11.

If you want to add more truckster knives, an additional truckster knife kit (# 213.170.006 for the 1700 and # 213.220.006 for the 2200) is available, which is half the size of standard kit above. This means that when added, we can increase the number of knives per disk from 4 to 6, as drawn in Fig. 12.

When 6 truckster knives are used per disk, it is important to mount them the same way as drawn in fig 12, three at one side and three at the other side of the disk.



11.4 HOLLOW TINE KIT (See fig.13)

A Hollow tine kit (# 213.170.014 for the 1700 and 213.220.014 for the 2200) is available for the standard rotor. The kit contains respectively: 72/ 96 x Hollow tine (2), 144/ 192 x nut (3) and 144/ 192 x bolt (4).

Assemble them as is drawn in Fig. 13. Divide them even around the disks. If you want to use 12 per disk, simply order another kit .

@ Don't use extra weight, the tines may collapse.

@ If the holes do not look well, reduce the working depth.

@ It is normal that they may fit a bit tight. Use a small (plastic) hammer.

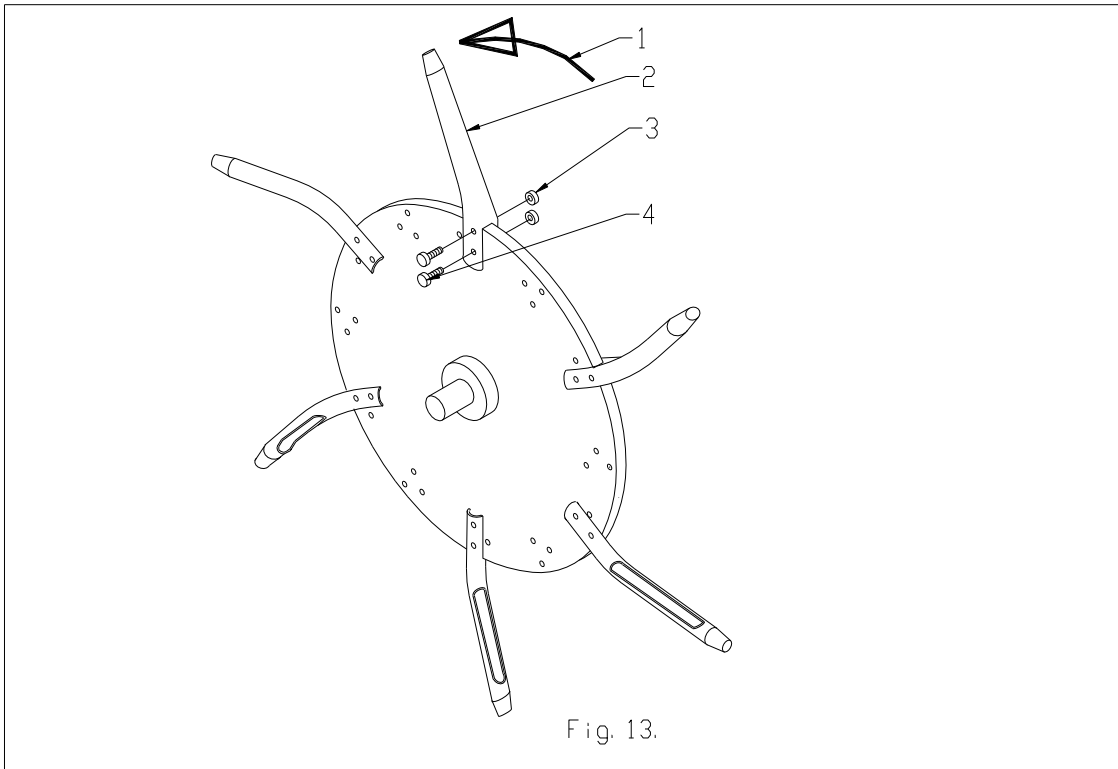


Fig. 13.

11.5 REAR ROLLER KIT, See fig.14.

A rear roller kit (# 213.170.002 for the 1700 and # 213.220.002 for the 2200) is available for both LEVEL –SPIKES. In Fig.14. the assembly of the rear roller is given, which is straight forward. The rear roller can float or set at a certain position. Please take notice of chapter 4.0, in which some notes are given, related to the use of the rear roller.

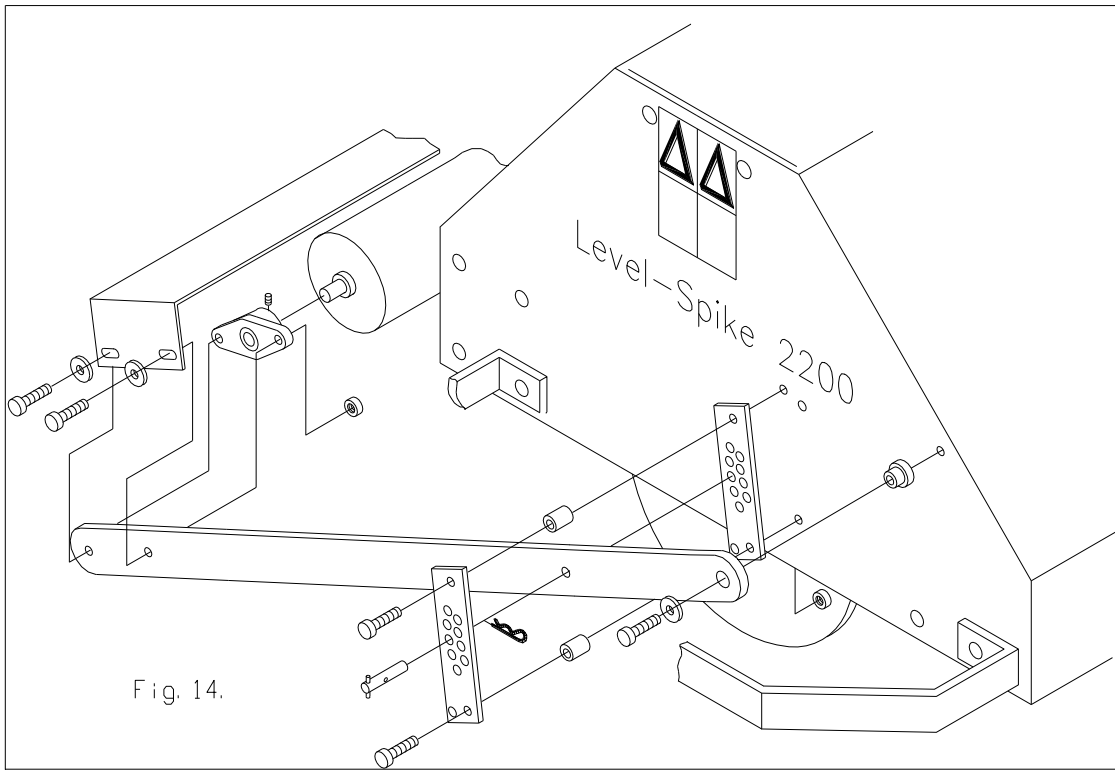


Fig. 14.

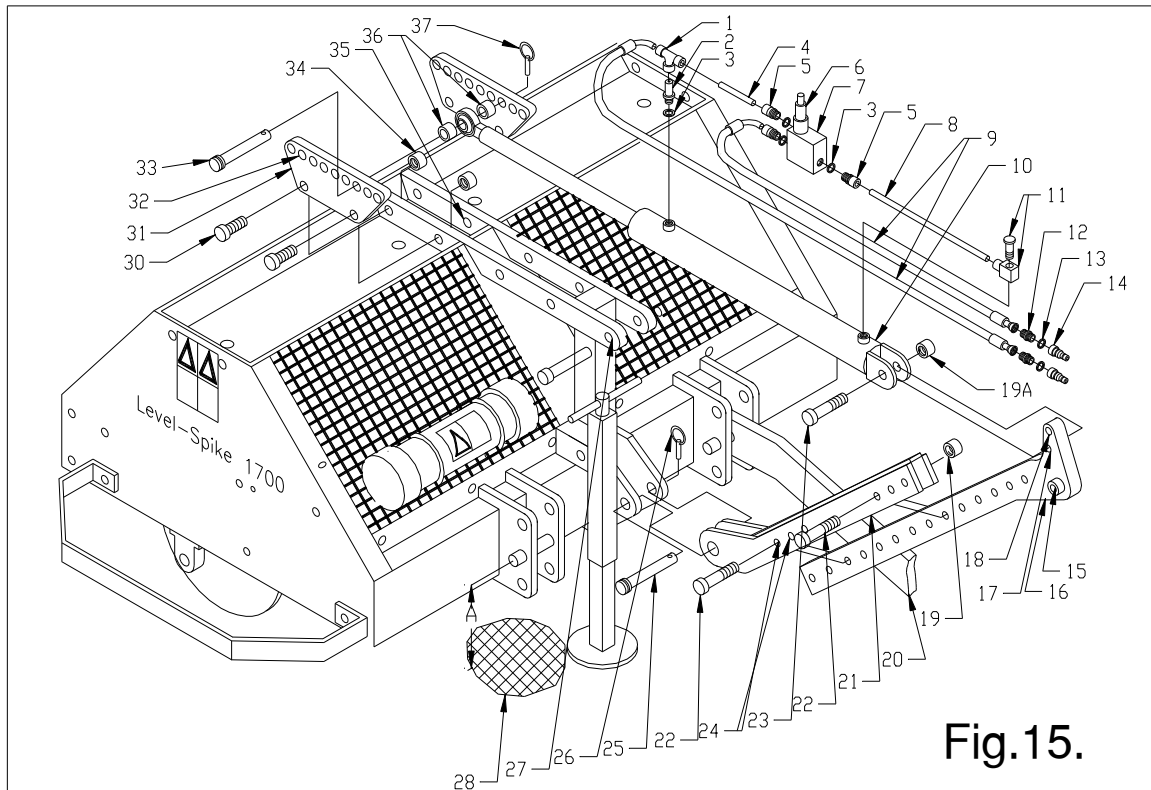


Fig.15.

11.6 WEIGHT TRANSFER KIT, See fig.15.

With the weight transfer kit, extra weight from the tractor can be transferred to the spiker for better penetration. The maximum allowable weight transfer may not exceed 2000 Kg., because the machine may get hurt or dangerous situations may occur.

A four wheel driven tractor is recommended when a weight transfer kit is used, since the weight on the rear wheels is reduced.

PREPARATIONS.

Assemble the components to the hydraulic cylinder, see Fig. 15. The flow reducer 2 is screwed in the hydraulic cylinder 10. Use copper washer 3. Fit all three connectors 5 to the pressure relieve valve 7, using washers 3. Slide the tubes 4/8 fully into the connectors 5, T connector 1 and screw able connector 11. Mount everything onto the cylinder ports. When everything fits, tighten all connectors, keeping the valve 7 vertical up. Next hoses 9 can be fitted to the connectors 1 and 5. At the other end of the hose a threaded nipple 12 fits, on which a quick Fit connector 14 can be mounted, using a copper washer 13 to seal. When everything is tight, the hydraulic cylinder assembly is ready to use.

Fit the symmetric plates 31 with bolts 30 and nuts 34 to the standard holes 35 of the machine, as is shown in fig. 15.

Remove the topline pin 27, in order to create some more space and to prevent the pin from damaging the beam 21.

Mount the machine to the tractor, using the bottom link arms 20 only. When connected, remove the jack (and fit in upside down to the machine) and lower the machine till size A = approximately 300 mm (12").

NEXT, SECURE THE MACHINE IN THE CENTER OF THE TRACTOR WITH THE STABILISATORS OF THE TRACTOR. This is very important. Assemble the two plates 21 with pin 25 to the machine. Secure it with lynch pin 26. Fit beam 16 with hole 15 to the top link connection of the

tractor. Slide beam 16 between the two plates 21 and check whether a hole 24 lines up. If yes fit BOTH bolts 22 and tighten them with nut 19. If not, lower or raise the machine a little till the first hole matches.

When BOTH bolts 22 are secured, lower the 3-point activating lever inside the tractor to the lowest position. The machine fixed to the tractor at the correct position.

The bottom end of the hydraulic cylinder can be mounted to beam 15, using as a start hole 17. Use a bolt 23 and nut 19A. Do NOT tighten the nut tight. At the rod side the hydraulic cylinder can be connected to one of the holes 32 of plate 31. Use pin 33 with two distance bushes 36 at each side of the rod end. Basically the unit is ready for use, BUT READ FIRST the important notes here under.

IMPORTANT NOTES.

- Be very careful the first time of use. Check whether the hydraulic cylinder does not hit the machine and/or the central beam 15/22 gets stuck.
- If the side stabilization of the bottom links is not set tight and in the center, serious damage may occur.
- Choose the correct hole 32. The starting point is that the machine has to be horizontal when the hydraulic cylinder is fully out. Do not overturn the machine any further. Damage may occur, specially when a rear roller is fitted. Check this in the field, when the machine is pushed in the ground.
- When the hydraulic cylinder is fully in, the machine is raised from the ground.
- Check the clearances of the hydraulic cylinder carefully when fully out, carefully. If not enough clearance is available (specially with small tractors), the hydraulic cylinder bottom end may be moved up towards hole 18. If still not enough space is available, drop the starting height A from 300 to 250mm(10")
- Height A from 300 to 250mm (10").
- When a rear roller is fitted, it should be in the free float position all the time Never secure the rear roller for a certain working depth.
- Disconnecting the weight transfer kit goes the other way round.
- If next time another tractor is used, the procedure should be started again. If not, the standard set main secure beam can stay at the same length.

SAFETY ITEMS.

- **Never crawl under the machine.**
- Be careful in assembling the different items. **Do not stand between the machine and tractor.**
- Since the machine tips forwards, **sharp knives/ tines are accessible from the rear**. So for that reason, **the weight transfer has to be removed and exchanged for a normal toplink**, after the job is done. Only when a rear roller is assembled, the machine is protected well enough from the rear.
- The pressure setting of valve 7 has to be carefully set, so **that the tractor's rear wheels are NOT lifted from the ground**. If not done, dangerous situations may occur. This setting, via screwing bolt 6 in or out, has to be repeated when another tractor is used.
- Be aware of **high oil pressure**. Do not touch any leakages by hand. Also be aware of pressure build up during work in the hydraulic cylinder.
- **NEVER touch the 3- point activating lever inside the tractor**. It should stay in the lowest position ALL the time. Serious damage to tractor and machine may occur when the lever is moved.
- **Maximum oil pressure** allowed on the system is **180 bar (2500psi)**