



INSTRUCTION MANUAL AND SAFETY MEASURES

GRASSLAND HARROW



NO HYDRAULIC OIL IN THE CYLINDERS (see 7.1)



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1. INTRODUCTION

This instruction manual is intended for people who work with the machine or who perform daily maintenance on the machine.

It must be read carefully before performing work with or on the machine for the first time.

This instruction manual describes how to use the Zocon grassland harrow, which safety measures to take and how to service and transport the machine.

This instruction manual may include components that are optional extras.

Any deviations between the text and/or diagrams in this instruction manual and your machine may, therefore, result from a difference in design. They may also stem from changes as a result of continuous development and innovation.



NOTE

Not observing the following instructions may result in a dangerous situation and the manufacturer's warranty may become invalid.

Explanation of the warning symbols

- Read the instruction manual before using the machine.



- Caution. Rotating parts.



2. CE DECLARATION

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Zonderland Constructie B.V. declares that the machine:

| Description of the machine | |
|----------------------------|-------------------------|
| Standard function: | GRASSLAND HARROW |
| Type: | W5-3 to W8-4 |
| Serial number: | ... |

Declares that the machine is in accordance with Machinery Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 amending Directive 95/16/EC (Official Journal of the EU, L 157/24 of 9/6/2006).

The person responsible for compiling the technical information is the head of the Research and Development department at Zonderland Constructie B.V.

This declaration only applies to the machine as sold in the market and does not concern components and/or treatments that are added at a later date.

3. WARRANTY

The manufacturer guarantees that the delivered machine meets the usual requirements and standards applicable to the machine and that the machine is free of faults. This warranty is valid for a period of twelve months after delivery. The warranty only concerns the components to be replaced.

This warranty is not valid if a fault occurs as a result of improper use.

Repairs may only be performed after approval from the manufacturer. Repairs that are performed before approval has been given by the manufacturer are at the owner's own expense and no claim can be made against the manufacturer for such repairs.

4. GENERAL INFORMATION

General information concerning the Zocon grassland harrow is given below.

4.1 USE

The Zocon grassland harrow is intended for aerating turf, levelling unevenness, such as molehills, and breaking up and distributing manure.

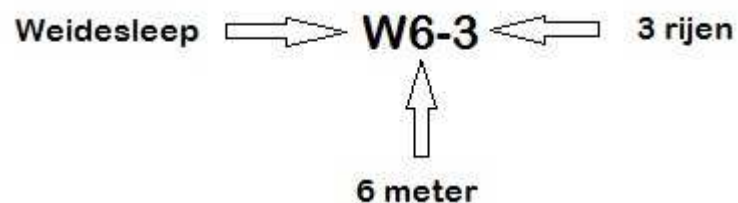
The grassland harrow can also be used to prepare seedbeds. In that case, the grassland harrow may only be used to lightly break up the surface of the seedbed and not to move soil.

4.2 EXPLANATION OF THE TYPE PLATE

The grassland harrow's type plate is located on the linkage.

The grassland harrow's type number starts with a "W" followed by the width of the grassland harrow, a dash and the number of rows of stars of the grassland harrow's mat.

Example:



4.3 AVAILABLE TYPES

The following Zocon grassland harrows are available:

| Type | Width | Number of rows of stars |
|------|----------|-------------------------|
| W5-3 | 5 metres | 3 |
| W6-3 | 6 metres | 3 |
| W8-3 | 8 metres | 3 |
| W5-4 | 5 metres | 4 |
| W6-4 | 6 metres | 4 |
| W8-4 | 8 metres | 4 |

5. SAFETY MEASURES



NO HYDRAULIC OIL IN THE CYLINDERS (see 7.1)



- Only use the machine for the intended purpose.
- Operate the machine safely.
- Make sure the warning symbols remain legible. Replace any missing or damaged symbols.
- Remain out of the reach of rotating parts.
- Make sure nobody is located within the machine's operating range.
- Before using the machine, check the nuts and bolts and if necessary, tighten them.
- Before using the machine, check the operation of the locking hooks.
- Before using the machine, check the hydraulic circuit for leaks.

6. TECHNICAL INFORMATION

6.1 CONSTRUCTION

The construction of the Zocon grassland harrow consists of a frame made from angle bars. These angle bars ensure that unevenness, such as a molehill, is levelled. The grassland harrow's net is made from high-quality cast iron stars that are joined together by welded steel rings. The net forms a single unit and is referred to as "the mat" further in this instruction manual. The mat aerates the turf.

The 5-metre wide, 6-metre wide and 8-metre wide Zocon grassland harrows consist of four construction parts: the middle frame, the right-hand wing, the left-hand wing and the connecting linkage.

The left-hand and right-hand wings are connected to the middle frame by hinges. Two hydraulic hinges allow the grassland harrow to be folded up for safe transport (within the maximum permitted width and height).

The connecting linkage is located at the front of the grassland harrow, so that the grassland harrow can be connected to a tractor's three-point hoisting mechanism. The connecting linkage is bolted to the middle frame.

6.2 TECHNICAL SPECIFICATIONS

| Zocon Grassland Harrow type | W5-3 | W6-3 | W8-3 | W5-4 | W6-4 | W8-4 |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <i>Working width (m)</i> | <i>5.10</i> | <i>6.00</i> | <i>8.10</i> | <i>5.10</i> | <i>6.00</i> | <i>8.10</i> |
| <i>Transport width (m)</i> | <i>2.31</i> | <i>2.31</i> | <i>2.31</i> | <i>2.31</i> | <i>2.31</i> | <i>2.31</i> |
| <i>Weight (kg)</i> | <i>555</i> | <i>635</i> | <i>775</i> | <i>635</i> | <i>715</i> | <i>855</i> |
| <i>Number of rows of stars</i> | <i>3</i> | <i>3</i> | <i>3</i> | <i>4</i> | <i>4</i> | <i>4</i> |
| <i>Number of tubes</i> | <i>4</i> | <i>6</i> | <i>8</i> | <i>4</i> | <i>6</i> | <i>8</i> |

7. USING THE ZOCON GRASSLAND HARROW

When using the Zocon grassland harrow, the information given in this chapter must be observed in order to ensure safe working conditions.

7.1 PREPARATION WORK

Always carefully check the Zocon grassland harrow for faults before connecting it. A number of important points of consideration are given below:

- On delivery, there is **no** oil in the hydraulic circuit! **The double-working cylinders must first be filled by keeping the control handle in both positions until the pressure relief valve of the tractor's hydraulic pump is activated. Only then may the grassland harrow be unfolded. Otherwise, there is a risk of injury and a risk of damage to the frame of the wings.**
- Check the nuts and bolts and if necessary, tighten them.
- Check whether all the assembly pins are securely locked.
- Make sure the locking hooks work correctly.
- Check the hydraulic circuit for leaks and other faults.
- Check the mat for broken (loose) parts and other faults.
- Check the construction for faults.

The grassland harrow may only be connected if you are sure it has no faults.

7.2 CONNECTING TO A TRACTOR

Carry out the following to connect the Zocon grassland harrow to a tractor:

- Drive the tractor so that it is just in front of the grassland harrow.
- Make sure the hydraulic valves to be used are not pressurized.
- Turn off the tractor and remove the key from the ignition.
- While the grassland harrow is folded up, connect it to the tractor's three-point hoisting mechanism and secure the attachment pins with reliable circlips.
- Adjust the top rod so that the top rod pin is in the middle of the hole when the grassland harrow is flat on the ground.
- Connect the hydraulic hoses to the tractor.
- Lead the unlocking cord to the cabin and make sure it cannot get stuck behind any components.

7.3 UNLOCKING AND LOCKING THE WINGS

The Zocon grassland harrow has a mechanical lock on the hydraulic cylinders. This lock ensures that the grassland harrow's wings cannot unexpectedly unfold if the driver does something wrong or if there is a fault with the hydraulic system.

Thanks to this mechanical lock, the Zocon grassland harrow meets EU Directive 2006/42/EC.

Carry out the following to unfold the wings:

- Fully lower the grassland harrow to the ground.
- Retract the cylinders so that the locking hooks are no longer pressurized.
- From the tractor, pull the unlocking cord so that the unlocking hooks open. Make sure the hooks remain open.
- Once the locking hooks are open far enough, the cylinders can be extended so that the wings can unfold.
- The unlocking cord can be released now so that the hooks close again.

Carry out the following to fold up and lock the wings:

- Retract the cylinders until the wings have been fully folded up (the unlocking cord does not have to be pulled).
- Carefully extend the cylinders until they are blocked by the locking hooks. The locking hooks are now pressurized and can no longer unexpectedly open without the cylinders being retracted.

7.4 ADJUSTING THE ZOCON GRASSLAND HARROW

To ensure the grassland harrow works correctly, it must be placed flat on the turf and be able to move with any small slopes.

For this to happen, it is important that:

- When the grassland harrow is in the operating position and the surface is flat, the top rod pin is inserted halfway into the hole.
- The hydraulic cylinders are fully extended and the pins are inserted halfway into the holes.
- The tractor's hydraulic valves are set to the float setting.
- The tractor's three-point hoisting mechanism can move freely up and down.

If, despite observing the points given above, the desired result is not achieved, the grassland harrow's aggressiveness can be adjusted as follows.

Turning the mat over

The stars in the mat are different on either side. One side has points and the other side has a flat triangle. By turning the mat over, the aggressiveness and the operation of the grassland harrow can be adjusted as required.



Fitting optional sliding feet

Extra sliding feet can be bolted to the front of the grassland harrow. This reduces the grassland harrow's aggressiveness.



The table below gives the standard number of sliding feet and the maximum number of sliding feet for each type of grassland harrow.

| Width of the grassland harrow | 8 metres | 6 metres | 5 metres |
|--|----------|----------|----------|
| <i>Standard number of sliding feet</i> | 4 | 4 | 4 |
| <i>Maximum number of sliding feet</i> | 9 | 7 | 5 |

7.5 WHEN IN USE

During use, the grassland harrow must lie flat on the ground and be fully unfolded. If the grassland harrow is correctly adjusted, it will follow any slight slopes of the ground. Depending on the type of soil and the state of the vegetation, it is recommended to work at a speed of 6 to 10 km/h. If the grassland harrow has been correctly adjusted, it should not be a problem to corner while dragging the mat. Therefore, the grassland harrow does not have to be raised at the headland.

The following is not permitted:

- It is not permitted to drive in reverse with the grassland harrow in the working position (unfolded and on the ground).
- It is not permitted to raise and transport the grassland harrow while it is unfolded. This can cause serious damage to the grassland harrow. It may also result in an extremely dangerous situation.
- It is not permitted to transport the grassland harrow unless it is locked in the transport position
- It is not permitted to unfold or fold up the grassland harrow while it is in a raised position.

7.6 TRANSPORT

The following steps must be carried out to safely transport the grassland harrow after use:

- Check the construction and the mat for faults.
- Check the locking hooks for faults.
- Fold up the wings.
- Check the locking mechanism.
- Raise the grassland harrow. Make sure there is sufficient ground clearance.

Maximum permitted speed during transport:

- On tarmacked roads : 20 km/h
- On other hard road surfaces : 6-10 km/h
- On country/sand tracks : 5 km/h

8. MAINTENANCE

The following maintenance work must be performed each time after use:

- Thoroughly clean the grassland harrow.
- Lubricate the machine with a rust-preventing agent.
- Lubricate the grease nipples on the hydraulic cylinders.
- Check all the bolted connections and retighten any that are loose.
- Check the operation of the mechanical locking mechanism.

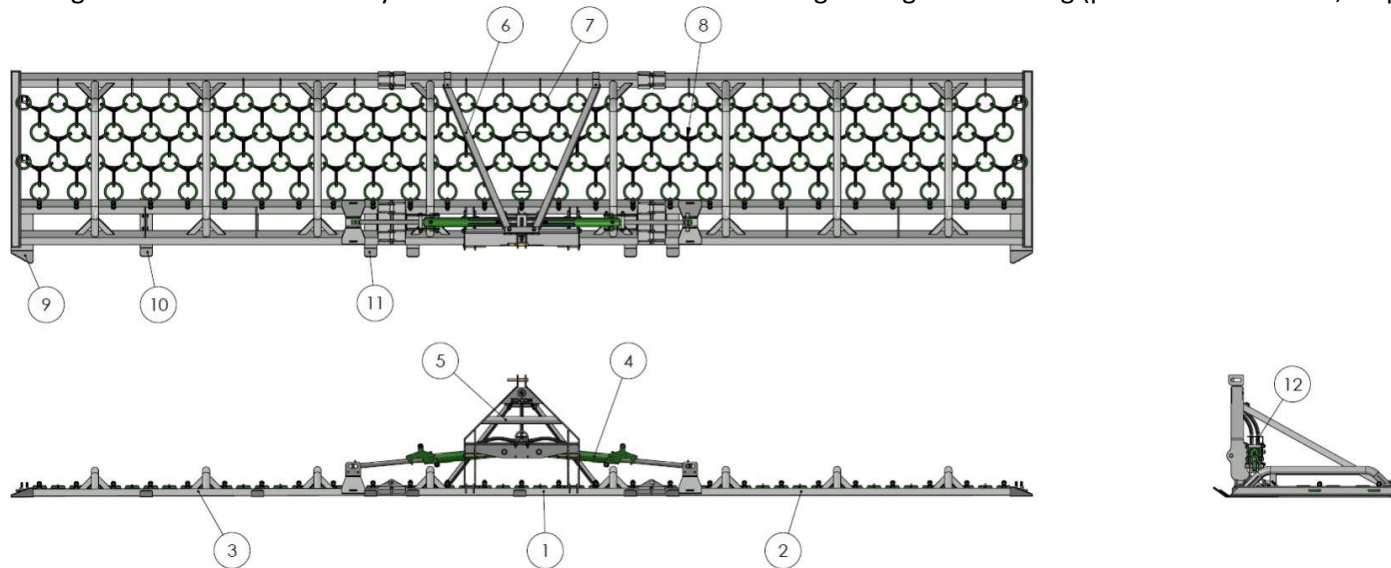
Mind your own safety when performing maintenance and/or repairs. Make sure:

- The tractor is turned off (if the grassland harrow has been connected to a tractor).
- The tractor's handbrake has been applied (if the grassland harrow has been connected to a tractor).
- The grassland harrow is stable (if the grassland harrow has not been connected to a tractor).

9. TECHNICAL DIAGRAMS

9.1 LAYOUT DRAWING

A layout drawing of the 8-metre Zocon grassland harrow is given below. The 5-meter and 6-meter Zocon grassland harrows have the same construction as the 8-meter grassland harrow. The only difference is that the left-hand wing and right-hand wing (part number 2 and 3, respectively) are shorter.



| Nr. | Beschreibung |
|-----|--------------------|
| 1 | Middle frame |
| 2 | Left-hand wing |
| 3 | Right-hand wing |
| 4 | Hydraulic cylinder |
| 5 | Connecting linkage |
| 6 | Pull rod |

| Nr. | Beschreibung |
|-----|----------------------------------|
| 7 | Ring of the grassland harrow mat |
| 8 | Star of the grassland harrow mat |
| 9 | End sliding foot |
| 10 | Optional sliding foot |
| 11 | Standard sliding foot |
| 12 | Hydraulic hose bracket |

9.2 HYDRAULIC DIAGRAM

| Nr | Beschreibung |
|----|-------------------------------------|
| 1 | Cylinder |
| 2 | Straight screw coupling 12L M18x1.5 |
| 3 | Hydraulic hose 5/16 (long) |
| 4 | T-coupling 12L |
| 5 | Bulkhead fitting 12L |
| 6 | Hydraulic hose 5/16L (to tractor) |
| 7 | Insert nipple 1/2 M18x1.5-12L |
| 8 | Hydraulic hose 5/16 (short) |

