

## KRM360a/KRM360c

### Rotator



KRM360a/KRM360c





# English

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## 1. To the user

### 1.1 Introduction

This manual gives information about the commencement of operation, use and maintenance of your newly purchased WIFO rotator. Also included in this manual are a number of safety instructions to create a safe working environment.

WIFO-Anema B.V. continuously aims to improve its products. WIFO-Anema B.V. reserves the right to introduce any changes and improvements deemed necessary without prior notice.

Please read the manual thoroughly and observe the safety procedures before putting the unit into operation. Contact your dealer for any further questions or concerns you may have.

We hope you will enjoy working with your WIFO rotator.



**PLEASE NOTE:**

***Carefully read this manual before you put the machine into operation and act upon all directions that are given. This is to guarantee its safe, trouble-free operation.***


Keep this manual in a safe place for future reference!


WIFO-Anema B.V.

**Dealer:**

## 1.2 Safety precautions and warnings

Please read this manual before you put the machine into operation for the first time, and observe the safety instructions at all times. The most important instructions are marked with a symbol.

	<p><i>This symbol is used for all important safety instructions throughout this manual. Carefully observe the instructions and be very cautious.</i></p>
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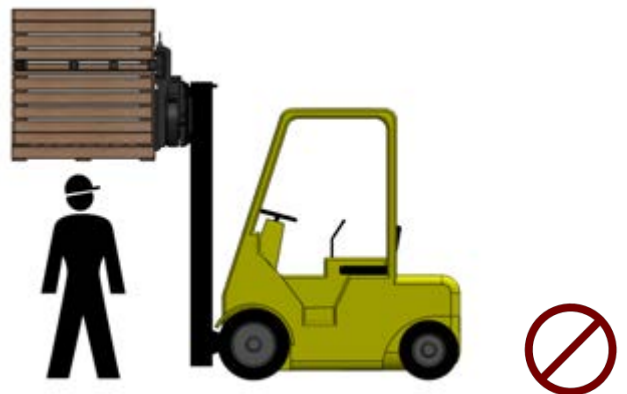
	<p><i>This symbol is used for all important actions that should not be carried out under any circumstances. Carefully observe these prohibitions.</i></p>
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Any person in charge of the commencement of operation, the operation itself or the maintenance of the machine is urged to carefully read and observe the following instructions.

### 1.2.1 Safety precautions



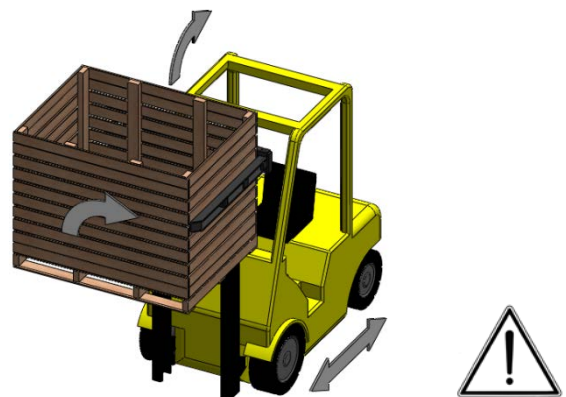
*Do not allow any person to ride on the forks.*




*Do not allow any person to stand under the load, and stay out of the working area of the rotator.*




*Centre the load;  
Place the forks as widely as possible;  
Position the third fork against the side of the box.*



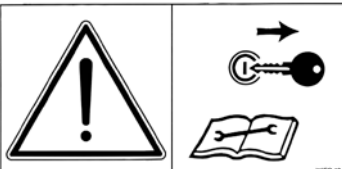
*Restrict driving with the load in elevated position;  
Do not tilt the load during transport;  
Slightly tilt the forklift mast backwards during transport.*

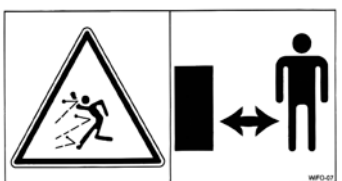
	<p><i>Operate the rotator from the driver's seat of the forklift only.</i></p>
	<p><i>For tilting work, use only durable boxes with flooring or grooves.</i></p>
	<p><i>Make sure the hydraulic hoses and any power cables do not get jammed and that the box rotator is able to move freely.</i></p>
	<p><i>Park the forklift truck with the rotator in the lowest position only. Make sure that unexpected movements are ruled out if the forklift truck is not being used. Place the rotator on its back on a flat, stable surface after it has been removed from the forklift truck for storage.</i></p>

### 1.2.2 Safety stickers and warning signs

	<p><i>A safe working environment also requires personnel to be well-informed about the various safety stickers on the machine. Be aware of the hazards they warn you to look out for.</i></p> <p><i>Replace any loose, illegible or missing stickers.</i></p>
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Several safety stickers have been put onto the machine. The meaning of the stickers on the machine is as follows:

	<p><b><u>NB:</u></b>  <i>Please read the instructions from the manual prior to any maintenance to the machine!</i>  <i>Turn of the engine and remove the key from the ignition for the time maintenance on the machine is carried out!</i></p>	<p>1</p>
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	<p><b><u>Danger:</u></b>  <i>Always keep a safe distance from the machine!</i></p>	<p>2</p>
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### 1.2.3 Placement of the safety stickers on the machine

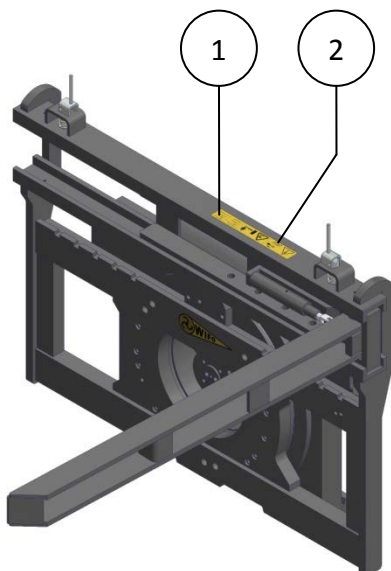


Figure 1.2.1-Position safety stickers for KRM360a en KRM360c

### 1.3 Purpose of use

The WIFO rotator is exclusively used for transporting and sideways tilting boxes with flooring or grooves, provided that the overall weight of the box including its load does not exceed the carrying capacity of the rotator. The maximum carrying capacity for the KRM360a is 2500kg and for the KRM360c 3800kg.

The rotator must be attached to a FEM II (KRM360a) or FEM III (KRM360c) fork carrier of a forklift truck or forklift mast.



*The overall weight of the box rotator including its load may not exceed the capacity of the forklift truck.  
(See the name plate on the forklift truck)*


**Do not use the rotator for carrying people under any circumstances!**



## 1.4 Liability

Any person working with or on the machine must have read this manual. The machine is to be used for its intended purpose only. Included in the intended purpose are, among other things:

1. Work must be carried out in accordance with the directions and within the functional restrictions (e.g. maximum hydraulic working pressure) as outlined in the regulations. Use only sound and appropriate tools.
2. Electric/electronic equipment and accessories (e.g. cables) must be treated in accordance with the general accepted policy for using non-waterproof portable electric and electronic equipment, such as:
  - a) Storing and keeping in a clean, dry environment away from rodents and the like; and
  - b) Protecting the equipment against severe, uncushioned shocks and water (precipitation).
3. Use only original or compatible spare parts. Such parts must be assembled as directed (e.g. by observing the recommended tightening moments). Spare parts (as well as lubricants) are considered compatible only if explicitly approved by WIFO or in the event that the customer is able to prove they possess the required properties for the purpose(s) they are used.
4. Use only lubricants that meet the specifications as described in the directions.
5. Always observe the local regulations in terms of accident prevention, safety, traffic and transport.
6. Only trained personnel with knowledge of the possible hazards have permission to work with/on the machine.
7. WIFO-Anema B.V. will assume no liability in any shape or form for losses or damage caused following modifications to the machine, which have not been explicitly approved by WIFO.

	<p><b><i>Noncompliance with the rules and directions from this manual will be considered as serious negligence, for the consequences of which WIFO-Anema B.V. accepts no liability whatsoever. In such cases, the user will bear the full risk of his actions.</i></b></p>
	<p><b><i>WIFO-Anema B.V. is continuously working on the improvement of its products. For that reason, WIFO-Anema B.V. reserves the right to introduce any changes and improvements deemed necessary without prior notice. However, it does not imply an obligation to make any such changes or improvements to machines bought by customers in the past.</i></b></p>

## 1.5 Warranty

WIFO-Anema B.V. guarantees the soundness of its products in terms of materials used and/or structural defects. However, in any event this warranty is limited to the free-of-charge replacement or repairs of the defect product, or part thereof. WIFO-Anema B.V. assumes no liability for any loss or damage arising from faulty deliveries and/or the breakdown of purchased goods before the warranty period has expired. **The warranty period for this product is twelve months.**

## 2. Technical data

### 2.1 General technical data

Model	KRM360a	KRM360c
Max. carrying capacity	2500 kg	3800 kg
Weight	425 kg	530 kg
Max. working pressure	15Mpa (250 bar)	15Mpa (250 bar)
Center of gravity	145 mm	155 mm
Height foldaway third fork <sup>1</sup>	700 mm	800 mm
Frontal extension length	145 mm	155 mm
Height of the fork carrier	407 mm (FEM II)	508 mm (FEM III)
Rotation angle	360°	360°
Fork carrier width	1200 mm	1200 mm
Total width	1290 mm	1290 mm
Foldaway third fork <sup>2</sup>	530 – 930 mm	530 – 930 mm

Table 2.1.1-Variou models of the WIFO rotator

<sup>1</sup> Calculated from the bottom of the fork carriage of the rotator to the top of the foldaway third fork

<sup>2</sup> The foldaway third fork is adjustable in 5 positions over the total width, in steps of 100mm. This has been calculated from the inside of the foldaway third fork to the center of the slewing ring

#### Options:

- Hydraulic connection (swiveling) on the fork carrier. One double acting connection or two double acting connections possible.
- Automatic zero position setting (horizontal).

*After operating the switch for the zero position setting, the rotator will slow down when it's almost in horizontal position. After it has reached the exact horizontal position (0°) it will stop. The rotator remains in this position for 3 seconds. Within these 3 seconds the operator needs to stop the rotation function, and the rotator keeps in this position. A new box can be picked up.*

## 2.2 KRM360a en KRM360c

### 2.2.1 Parts list

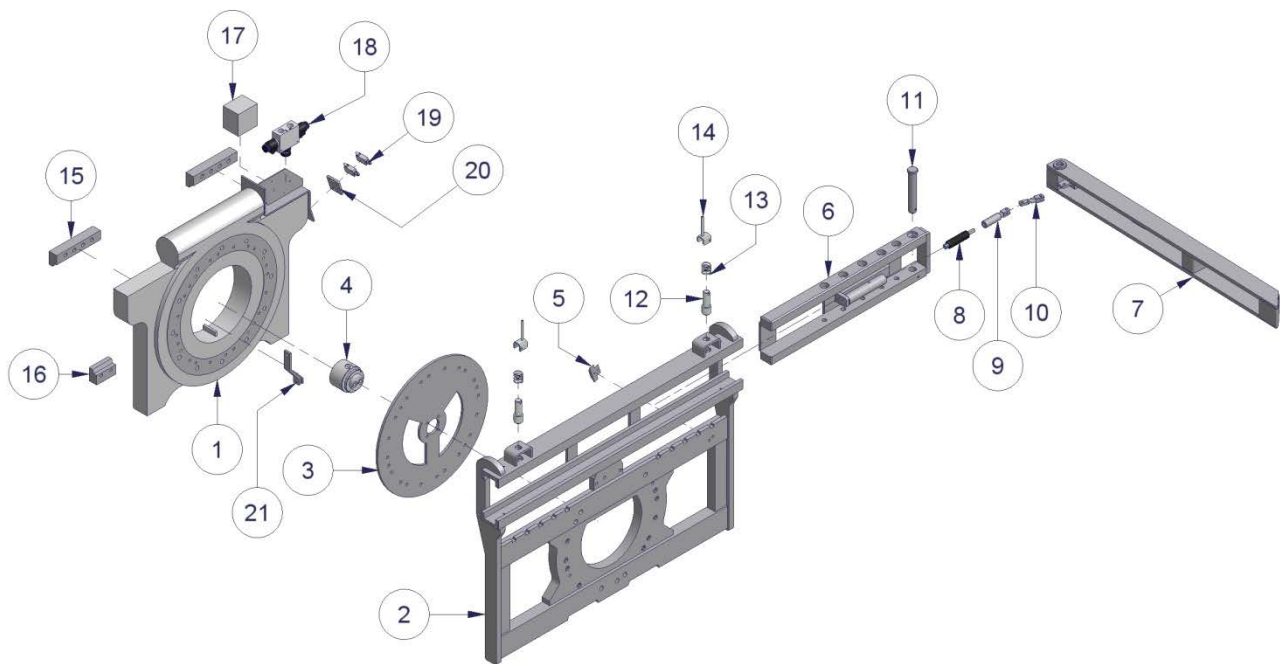


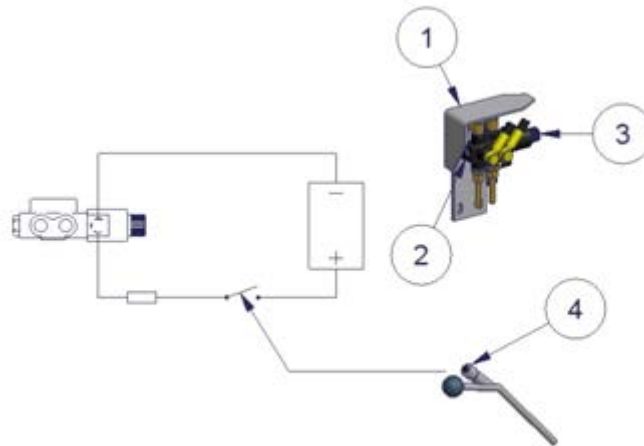
Figure 2.2.1-Parts drawing for KRM360a en KRM360c

Nummer	Beschrijving	Nummer	Beschrijving
1	Slewing ring	13	Spring
2	Fork carrier	14	Handle locking pin
3	Round plate washer	15	Mounting strip
4	Hydraulic swivel joint	16	Clamping strip
5	Wedge 0° position	17	Connectionbox 0° position
6	Foldaway fork guiding	18	Manifold 0° position
7	Foldaway fork	19	Switches 0° positie
8	Gas spring	20	Adjustment plate 0° position
9	Guiding rond	21	Mounting plate hydraulic swivel joint
10	Rod		
11	Pin foldaway fork		
12	Locking pin		

Table 2.2.1-Parts list for KRM360a and KRM360c

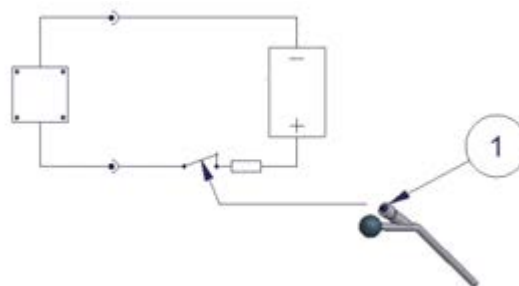
## 2.2.2 Provisions for connecting KRM360a-KRM360c

Model with electro-hydraulic valve:



Number	Description
1	Attachement electro-hydraulically controlled valve
2	Electro-hydraulic valve
3	Coil of the electro-hydraulic valve
4	Switch on the forklift truck handle

Model with automatic zero position setting:



Number	Description
1	NC switch on the forklift truck handle

### 2.2.3 Commencement of operation KRM360a-KRM360c

1. Remove the **clamping strips (16)**.
2. Remove the forks from the forklift truck.
3. Make sure the fork carrier is straight and clean.
4. Place the rotator onto the fork carrier of the forklift truck.
5. Make sure the locking cam slots into the recess in the centre of the fork carrier. If no recess is available:
  - a) Grind such a recess, or
  - b) Grind the locking cam from the box rotator and attach a sound locking cam on the spot of an existing recess in the fork carrier. In doing so, make sure the rotator sits secure in the centre in front of the fork carrier, so it is unable to slide sideways
6. Attach the **clamping strips (16)** using each two bolts M16x60 and secure the bolts tight!
7. Check to make sure the hydraulic hoses are clean before connecting them to the rapid-action couplings to prevent any debris from entering the hydraulics of the machine.
8. Depending on the model, the following hydraulic hoses are connected.
  - a) **Electrically controlled reversing valve:**

Connect the hydraulic supply/discharge hoses to the dual-action connection on the fork carrier. Mount the **switch (4)**, see chapter 2.2.2, supplied in such a location that the lifting equipment operator will be able to turn it on and off from his control post, without the risk of mixing it up with any other controls. For a safe working environment, avoid situations such as inadvertently starting the machine or not being able to control it. Keep an eye on the correct voltage of the lifting device and the valve. The voltage is shown on the coil. Connect a 2-core cable as per the electric diagram. Include a warning light, fuse and/or plug socket in the circuit, if so required.
  - b) **Four-hose connection:**

Connect the two pairs of hydraulic supply/discharge hoses to the dual-action connection on the fork carrier.
  - c) **Zero position setting (horizontal)**

Mount the **NC switch (1)**, see chapter 2.2.2, on a place so the driver can operate it from his position and can't confuse it with other controls. Place the bracket with the electric box on a solid position on the fork carrier. Connect the plug of the rotator to the socket.
9. Remove the check nuts in the lower plate of the fork carrier of the rotator. Suspend the forks to the fork carrier and attach the check nuts.
10. Adjust the third fork, depending on the width of the boxes to be rotated.
11. Secure the third fork using the **handle (14)** for the locking pin.
12. Subsequently check the hydraulic hoses and electric cables can move freely and check that the system is not leaking oil.
13. Check the correct operation of the rotator by controlling the hydraulic functions.

**The WIFO box rotator is now ready to be used.**

## 2.3 Changing position of the third fork

The KRM360a and KRM360c rotators are equipped with a foldaway third fork, which can be placed on both sides of the fork carrier. By changing position follow the next instructions:

1. Make sure the fork carrier is in horizontal position
2. Release the handle of the locking pin and put the third fork in the most extended position, and lock this again with the locking pin.
3. Turn the rotator 90° into vertical position, with the third fork pointing down. Make sure the third fork doesn't hit the ground.
4. Lower the rotator until the bottom of the third fork hits the ground.
5. Release the locking pin of the third fork again, and raise the rotator gently upwards till the third fork has been removed from the fork carrier.
6. Turn the rotator 180°.
7. Position the forklift as tight as possible above the third fork.
8. Lower the rotator gently so the third fork will slide in the fork carrier again. Lock this in the right position with the locking pin.
9. Lift the rotator from the ground till it can rotate again.

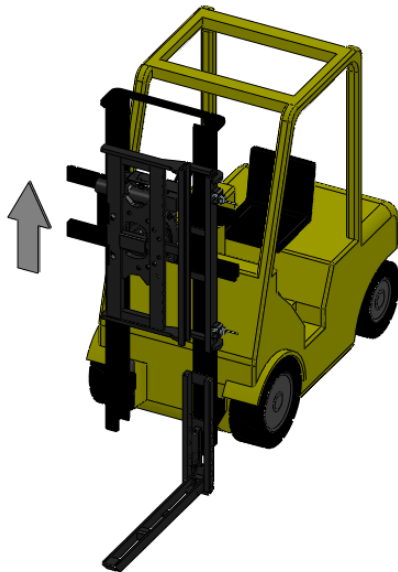


Figure 2.3.1-Lifting of the fork carrier

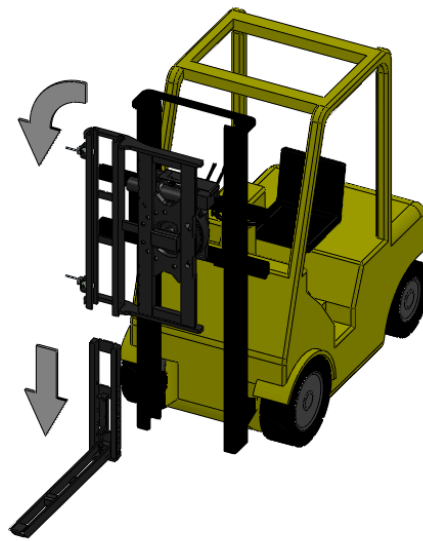



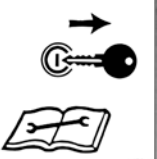
Figure 2.3.2-Rotating the fork carrier and position it on the third fork

## 2.4 Spare parts

Rotator model	Description	Part no.
All	Gas spring folding fork	4290029
	Sealing kit hydromotor	-

Table 2.4.1-Spare parts WIFO rotators

### 3. Faults and maintenance

 	<p><b><u>NB:</u></b> <i>Please read the instructions from the manual prior to any maintenance to the machine!</i> <i>Turn off the engine and remove the key from the ignition for the time maintenance on the machine is carried out!</i></p>
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Make sure the rotator is always in the lowest position during maintenance or repairs to the machine. Extra measures can be taken, e.g. putting the locking pin behind the rotating cylinder and/or disconnecting the hydraulic hoses.

#### 3.1 Regular inspection

- Inspect the complete hydraulic system for leaks.
- Inspect for wear and cracks.
- Inspect the clamping strips on the fork carrier.
- Inspect the mounting of the forks on the fork carrier.

#### 3.2 Periodic maintenance and lubrication

After the First 8 working hours:

- Check the connections and turnbuckles of the hydraulic hoses.
- Check the bolts of the **clamping strips (16)** (140Nm)

Interval depending on operating environment 200-1000 hour:

1. Remove dirt and soiled lubricant adhering to the outside of the attachment by using a pressure washer. Do not point the water jet directly at the sealing elements.
2. Leave the attachment to dry in the open air or speed up the procedure by using compressed air.
3. Inspect the attachment for leaks in hydraulic cylinders, valves and the various other hydraulic connections.
4. Inspect the load arms, forks and the main frame for deformation and cracks.
5. Inspect all fastening bolts, if necessary by using a torque-wrench to check tightness.
6. Apply fresh lubricant specified for this purpose to all parts requiring lubrication.

Lubricate the worm wheel (A) and ball bearing (B) through the specified lubrication points. Rotate the rotator slowly during the lubrication process to divide the lubrication over the entire bearing. See also Figure 3.2.1.



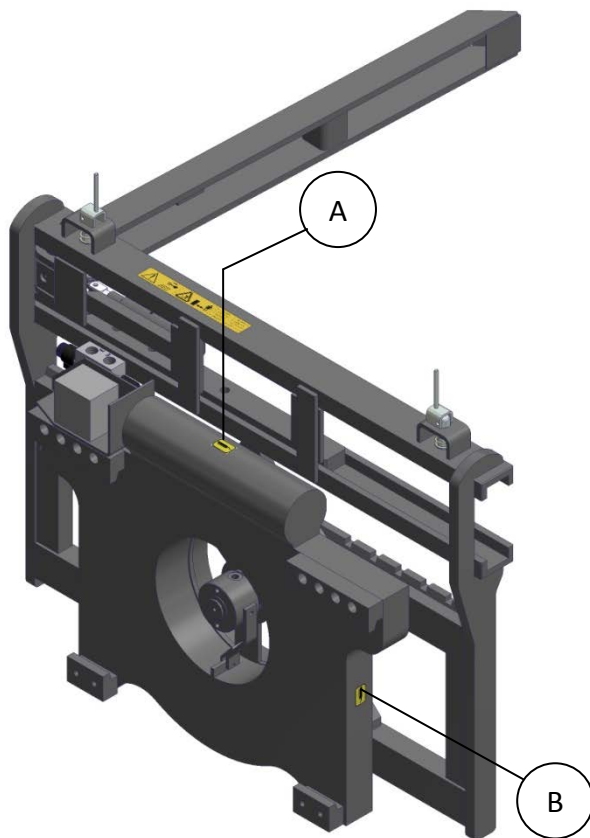
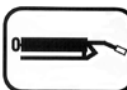


Figure 3.2.1-Placement lubrication points KRM360a en KRM360c


**Lubrication worm gear (A):**

Under normal working conditions, it is recommended to apply fresh lubricant every 1000 hours of operation.

	<p><i>This sticker shows the position of a grease nipple on the machine. Lubricate the machine after every 100 working hours. Turn the rotator slowly and controlled during lubrication. Recommended lubricant is sodium-soap gearbox grease with good high pressure- and high temperature properties such as AVIA Lithoplex 1-2 EP (-15°C till 160°C)</i></p>
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**Lubrication ball bearing (B):**

Under normal working conditions, it is recommended to apply fresh lubricant every 1000 hours of operation.

	<p><i>This sticker shows the position of a grease nipple on the machine. Lubricate the machine after every 100 working hours. Turn the rotator slowly and controlled during lubrication. Recommended lubricant is a lithium-saponified grease for ball and roller bearings: e.g. Shell Alvania R3.</i></p>
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***Regularly check the hydraulic section for any leaks. Never try and search for leaks or stop a leak by hand. Liquid under high pressure can easily penetrate skin and clothing, and may cause serious injuries. Replace any damaged hydraulic hoses to prevent them from breaking and any accidents as a result.***

***Regularly check the oil level of the hydraulic system of your forklift truck/tractor.***

### 3.3 Troubleshooting

Rotator model	Problem	Solution
All with automatic zero position setting.	The rotator isn't exactly in horizontal position after operating the switch, or doesn't stop at all.	The <b>adjustment plate (20)</b> for the automatic zero position needs to be adjusted. Release the two socket screws and move the <b>switches (19)</b> forward till they hit the <b>wedges (5)</b> of the 0° position. Tight the two socket screws again.

Table 3.3.1-Troubleshooting




*Always use original WIFO parts for replacement in order to comply with the warranty terms and conditions.*



*Please contact your dealer for any further concerns you may have. He will be pleased to assist.*

### 3.4 Work to be carried out by a competent mechanic

#### 3.4.1 Adjusting the stop time of the automatic zero position



*It is recommended that the following acts are carried out by an expert.*

*WIFO-Anema B.V. can not take liability for any negative consequences by changing the time limits that are preset in the factory*

The preset stop time for the automatic zero position is **3 seconds** by using a time relays. It is possible to change this values. If so, you need to do this on the time relays.

Follow the next instructions for changing the stop time:

1. Stop the motor of the forklift and remove the keys.
2. Remove the lid of the **connection box (16)** for the 0° position by loosening the four screws.
3. Find the time relays as shown in figure 3.3.1.
4. Make a choice for the correct time setting by tightening the central scroll wheel, and after that the upper scroll wheel. The time range can be set by the center wheel and can be adjusted in smaller steps using the upper wheel. See table 3.1.1. for all possible settings.
5. The lid of the connection box can be closed after the correct time setting using the four screws.
6. Check the correct operation of the rotator by controlling the automatic zero position.

Timerange	Changing range					
	<b>1</b>	<b>0.8</b>	<b>0.6</b>	<b>0.4</b>	<b>0.2</b>	<b>0.05</b>
<b>1s</b>	1s	800ms	600ms	400ms	200ms	50ms
<b>10s</b>	10s	8s	6s	4s	2s	500ms
<b>1min</b>	1min	48s	36s	24s	12s	<u>3s</u>
<b>10min</b>	10min	8min	6min	4min	2min	30s
<b>1h</b>	1h	48min	36min	24min	12min	3min
<b>10h</b>	10h	8h	6h	4h	2h	30min
<b>100h</b>	100h	80h	60h	40h	20h	5h

Table 3.4.1-Adjustmentfield time relays



Figure 3.4.1-Timerealays







**EG-VERKLARING VAN OVEREENSTEMMING VOOR MACHINES**  
**EC-DECLARATION OF CONFORMITY FOR MACHINERY**  
**EG-MASCHINENÜBEREINSTIMMUNGSERKLÄRUNG**  
**DÉCLARATION DE CONFORMITÉ "CE" POUR MACHINES**

Fabrikant/Manufacturer/Fabrikant/Fabricant:

**WIFO-Anema B.V.**

Adres/Address/Adresse/Adresse:

**Hegebeintumerdyk 37**  
**9172 GP Ferwert**  
**The Netherlands**

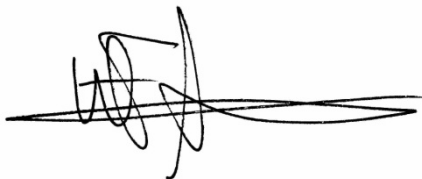
Verklaart hiermede dat /Herewith declares that/Erklärt hiermit, daß/Déclare ci-après que

Serienummer/Serial number/Serienummer/Numéro de série:

Uitvoering/Model/Ausführung/Modèle:

- Voldoet aan de bepalingen van de Machinerichtlijn (Richtlijn 2006/42/EG, zoals laatstelijk gewijzigd) en de nationale wetgeving ter uitvoering van deze richtlijn;
- Is in conformity with the provisions of the Machine Directive (Directive 2006/43/EC, as amended) and with national implementing legislation;
- Konform ist mit den einschlägigen Bestimmungen der EG-Maschinerichtlinie (EG-Richtlinie 2006/42/EG), inklusive deren Änderungen, sowie mit dem entsprechenden Rechtserlaß zur Umsetzung der Richtlinie in nationales Recht;
- Est conforme aux dispositions de la Directive "Machines" (Directive 2006/42/EC telle que dernièrement modifiée) et la législation nationale adoptée en application de ladite directive.

Ferwert, January 2015



Wytze Anema  
(Director)