

**Niko**  
*more than solutions*

**Rapid**

# Operating instructions



## Walk-behind tractor RoboFlail Vario 25

Read through the operating instructions  
before commissioning !!

Operating Instructions Version 1.21 (Mar. 2021)

Device no.: \_\_\_\_\_

Engine no.: \_\_\_\_\_

Pump no.: \_\_\_\_\_

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## 1. Foreword

Dear Customer,

We thank you for your trust, which you have shown us by purchasing a NIKO product.

Together with our cooperation partner Rapid Technic GmbH, we have made every effort to provide you with a powerful and reliable product.

We ask you to read these operating instructions carefully before operating the machine and to observe the instructions. The operating instructions explain the operation in detail and give you valuable information on commissioning, maintenance and care.

You are sure that warranty claims cannot be accepted for damages resulting from operating errors or improper use.

### **Technical improvements:**

We strive to continuously improve NIKO products. Therefore, we reserve the right to make any improvements or changes we deem necessary to our equipment without prior notice, but without committing ourselves to transferring such improvements or changes to machines already sold.

We would be happy to answer any further questions you may have and wish you a lot of fun with your new NIKO product.

Best regards,



NIKO Maschinen- & Fahrzeugbau GmbH  
Dieter Serr, Managing Director

## 1.1 General warranty terms

All RoboFlail devices that are delivered by Rapid Technic have a guarantee for material defects and processing errors within the first 12 months after delivery of the device to the original purchaser.

Therefore, NIKO provides a **12-month warranty** if **the devices are not used for more than 300 working hours a year** and if the following conditions are met:

The warranty begins on the date of purchase.

All spare parts supplied by Rapid Technic have a guarantee for material defects or processing errors within the first 12 months after delivery to the original purchaser.

This warranty does not apply if parts of the goods have been overused improperly or negligently, the machine has been independently converted or modified or if genuine NIKO spare parts have not been used during installation. Also, all claims for compensation for damages caused by objects (e.g. stones, iron, material other than vegetation), or defects due to lack of maintenance, use of incorrect lubricants, or prolonged use or missed maintenance.

The warranty service is provided exclusively by authorised workshops.

**Warranty claims must be asserted at the factory within 30 days of the occurrence of the damage at the latest.** Indicate date of purchase and machine number using our warranty application forms.

Repairs for which the warranty is to be provided may only be carried out by the authorised workshop after consultation with the company Rapid Technic or company Niko, please inform your dealer.

The guarantee on hoses is limited to 12 months and excludes hoses damaged by external/exterior damage.

Machines must be repaired immediately after a fault has occurred. If you continue working with the machine after an fault has occurred, this can lead to even more defective parts and damage to the machine and have an impact on the safety of people and the machine, for which Niko GmbH accepts no responsibility.

Rapid Technic reserves the right to either repair or replace a defective part. In the case of a warranty, Rapid Technic will only bear the costs for the defective part, but not the resulting costs such as travel costs of a technician, transport & recovery costs, loss of wages, periods out of operation, environmental damage, etc.

Transport damage is not a factory fault and therefore does not fall under the manufacturer's warranty obligation.

Rubber tracks are wearing parts and are not covered by the warranty conditions.

If you wish to submit a warranty claim, it should be sent directly to Rapid Technic GmbH. After the warranty application has been received and checked, the affected machine part can be requested from you for inspection by Rapid Technic or the supplier.

The submission of an application is not a guarantee for a replacement or repair. This can only be decided upon after examination of the application and inspection of the defective part by the company Rapid Technic or by the supplier and their warranty conditions.

Any decision made by Rapid Technic regarding warranty is final.

All repairs or service work must be carried out in accordance with the operating and maintenance instructions. If repairs occur that are not described in the manual, contact Rapid Technic.

In case of delayed interventions or incorrect operation, the company Rapid Technic does not assume any responsibility.

In addition, Rapid Technic does not assume any warranty services if untrained or unauthorised personnel cause damage to the machine.

Any error must be reported to an authorised RoboFlail dealer as soon as it occurs. If the machine is used after a fault has occurred, further components can be damaged, for which Rapid Technic does not assume any liability.

### **Please note!**



The warranty protection expires as soon as non-genuine components are installed or used. Non-genuine parts can seriously affect both the safety of the machine and the operator.

Niko GmbH accepts no liability for any resulting machine failures or personal injury caused by non-genuine parts.

## **1.2 Liability:**

Niko GmbH and Rapid Technic GmbH do not accept any liability in the event of accidents in which persons or material damage have occurred, which have been caused by the following circumstances:

- failure to comply with the standards described in the operating and maintenance instructions.
- behaviour prohibited by law and the operating and maintenance instructions.
- if self-mounted components that have not been approved by Niko GmbH and Rapid Technic lead to an accident.
- in the event of exceptional events (natural disasters), even when operating the machine correctly.
- If a technical defect leads to an accident, the owner must prove that the part was defective before the accident.

### 1.3 Information about the device:

The rating plate is located on the radiator (top). To do this, the hood must be opened.



#### Important:

When ordering spare parts or if you have any questions about the unit, please note down the unit type and the manufacturer's number as well as the operating hours.



## 1.3 Information on installed components

### Engine data

The data of your 3TNV76 engine is located on the top of the engine.



### Pump data

For your pump data, see the pump that is in front of the gearbox located "below"



### Attention:

Provide this information with each parts order to avoid delivery errors.

## 1.5 Operational hour counter (MOTO TIMER)

The operational hour counter installed on the Robo Vario25 gives you information about the machine's running time.

The operational hour counter helps you to observe the maintenance intervals and can give you information about operating times for rental equipment.



### **Activation for new devices:**

To activate, the button on the front panel must be pressed for at least 6 seconds until 0000.0 appears on the display.

The counter starts to count 7 seconds after a steady vibration.

The operational hour counter Rattle then runs after this time.

### **Function:**

- display of the total operating hours, not resettable.
- Display range: 0.1 – 99.9999 h
- Resolution: 1/10 h=6 min
- Event counter: Shows how many times the counter has been activated. To do this, press and hold the button in the operating hours mode for approximately 6 seconds.
- RPM mode: By briefly pressing the button, the counter switches to RPM mode. This is only used for filtering interference vibrations and has no function for the user.

## **2. Area of application of the machine:**

The RoboFlail is an equipment designed for professional personnel and intended primarily for tillage, cutting natural materials such as branches, undergrowth and grass. Any other use is improper and the manufacturer excludes any liability for possible damage to persons, property or the machine that may result from it. The equipment is suitable for machine cutting at a speed of 4 to 5 km/h. This depends on the soil conditions under which the work is carried out and on the type and condition of the material (length, wet or dry, density, etc.). The RoboFlail was developed for use in the care of the slopes (steep slopes). The machine is normally used during the day; if in exceptional cases it is necessary to use it at night or in conditions with limited visibility, it must be used in conjunction with an auxiliary lighting system. Operate in daylight or in good artificial lighting, which ensures a minimum visibility of 100 m.

This equipment may only be used for the usual agricultural, forestry and municipal cutting operations as well as for extensive landscape maintenance.

Any use beyond this is not intended and the manufacturer is not liable for any damage resulting from it. The intended use also includes compliance with the safety, assembly, disassembly, commissioning, operation and maintenance conditions prescribed by manufacturers and distributors!

The operator of the RoboFlail models must have attended a driver training course from Rapid Technic or a dealer. If the future driver of the RoboFlail has not done so, all claims will become invalid .

## 2.1 Categorically avoid the following Types of use:

In any case, the following applications must be avoided under all circumstances:

Use of the machine by unauthorised or untrained personnel or by persons under 18 years of age.

Use of the machine to lift and move various objects.

- The machine should not be used on loose stones, glass, metal pieces or other surfaces contaminated with foreign bodies that could be thrown into the air by the blades/knives of the mowing units or damage the mowing units.
- Switching on the machine if the physical or chemical properties are classified as dangerous (e.g. highly flammable, explosive, toxic substances, etc.)



### **Hazard warning:**

If the machine is used incorrectly, there is a risk of tipping over or failing, which can result in a risk of injury or death for the operator.

## 2.2 Operation

### Passenger transport, Passenger, Operating personnel:

Do not carry people on board.

### Driving mode:

The speed level must always be adjusted to the ambient conditions and the attachments. When driving round bends with trailed or mounted equipments, take into consideration the wide protrusion and the dynamic forces of the equipment.

### Attachments

Do not turn equipment/attachment on in elevated vegetation (soil, grass, etc.). Only switch the attachment on outside of the mowing material to ensure a free start of the mulcher. Only secure the devices with the prescribed devices.

Do not operate the track unless all guards are in place and in the protective position.



**Only Rapid Technic/NIKO attachments may be used, NIKO does not assume any liability for third-party installations.**

### Remote control

The RoboFlail control is designed in such a way that the control is clear when you are standing behind the machine. With the control lever right/left, the RoboFlail moves to the right/left. Please remember that when you stand in front of the RoboFlail, the control is reversed (right and left are reversed)!

### Operator workstations

The operator's workstation of the RoboFlail is operated exclusively via the remote control.

Please observe the information on the working and danger area described in section 9.2!

**Before commissioning, ensure that the machine is in a safe position and that eye contact with the machine is ensured at all times.**

## Danger:



Do not use drugs or alcohol before or during operation of the machine. The use of alcohol or drugs may impair your ability to concentrate and coordinate, which may affect the safe use of the device. When taking medication, the authorisation to operate the device must be clarified with the doctor.

## 3.0. Safety information

### 3.1. General safety information

The following information applies for your safety. Follow all the instructions and always keep these documents in direct access for all operators! If you do not understand any information contained in this safety data sheet or the product-specific assembly or operating instructions, please contact your seller or contact Rapid Technic directly!

### 3.2 Warning and information signs

The warning and information signs attached to the device provide important information for safe operation. Make sure that the signs are not removed and that they are always easy to read. If necessary, signs must be replaced!

**The attention is for your safety!**

	<p>Read the operating instructions and warnings. Read and observe the operating instructions and warnings before operating the machine. The operating instructions explain the operation in detail and provide valuable information for handling, maintenance and care.</p>
	<p>Before cleaning, maintenance and repair work, switch off the engine.</p>
	<p>Maintain sufficient distance during operation to the mulching blade.</p>

	<p>Do not touch machine parts unless they have come to a complete standstill.</p>
	<p>Danger from moving parts when engine is running keep a safe distance.</p>
	<p>Never open or remove protective devices while the engine is running.</p>
	<p>Before parking, secure the machine with a chock to prevent unintentional rolling away.</p>
	<p>Keep enough distance from hot surfaces.</p>

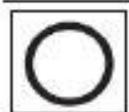
	Measures to avoid danger
	Passenger transport prohibited
	Wear head protection
	Wear ear protection
	Wear safety shoes.
	Wear protective gloves
	Wear tight-fitting clothing
	Wear face protection



**Parking brake**



**On/Start**



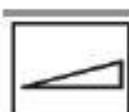
**Off/Stop**



**Risk of falling**



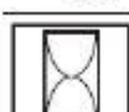
**Fast**



**Infinitely adjustable**



**Pinch point**



**Hours counter**



**Discharge side  
Danger to people present  
Objects thrown Around.**



**Gearbox**



**Rotating blades**



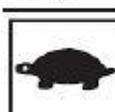
**Spring tension of  
V-Belt tension roller**



**Oil**



**Danger due to  
flying objects**



**Slow**



**Mower blades**



**Mower blades  
Switching on**



**Mower blades  
Switching off**



**CE symbol**

## 4.0 General information on maintenance and care:

To avoid machine damage or life-threatening injury when servicing the machine, the following points must be observed:

- All work steps for the maintenance of the machine must be carried out in the specific order.
- First, secure the area for the maintenance work over a wide area.
- Switch off all power sources and secure the power sources against unintended switching back on.
- Depressurise all pressure units.
- Use only the specified operating materials.
- Use only genuine spare parts, which are listed in our spare parts lists.

**Many incidents of damage and accidents are caused by maintenance errors, such as:**

- Lack of oil, grease and frost protection in the device
- Lack of cleaning
- Emergency stop, function stop not checked daily
- Wear of the hydraulic system (damaged hoses, loose fittings, etc.)
- Carry out the maintenance work precisely for your own safety.
- Never delay repair work.
- Only transfer the repair work to specialised or authorised personnel.
- Always check all safety standards, even if you know all the elements and manoeuvres very well.

- Before starting work, check that all movements, the stop and the protective elements work and are not impaired in their function.
- Keep hands, feet, clothes, jewellery and long hair away from all moving parts to prevent them from being seized.
- Never leave a running machine unattended. Always switch off the blades of the mowing units, stop the RoboFlail engine.
- It is easy to lose control on slopes, resulting in accidents caused by tipping over which can cause serious injury or death. Operation on slopes requires additional attention!!
- Watch out for traffic when working near roads or on at road junctions. Stop the attachment before crossing roads or pavements.
- **ATTENTION:** If you bump against an object or if an abnormal vibration occurs, stop the machine and inspect it. Perform repairs before operating the machine.
- If you encounter a foreign object, stop and inspect the machine. If necessary, perform a repair before continuing.
- When using, especially in harsh weather conditions such as strong wind, carefully select your location to avoid exposure to fumes, dust or cut grass.
- Do not use the machine when it is hidden (hills, buildings, high grass, etc.). Complete visual contact with the device must always be ensured.

## **4.1 Running-in and maintenance of the machine in the first 50 hours**

Every machine that leaves the Niko GmbH plant is checked again in a categorical manner before it is delivered. Similar to other motorised vehicles, the RoboFlail must be used carefully during the first 50 hours to ensure a good running-in of the various components.

If the machine is subjected to excessive work load during the first phase of use, its maximum performance may be impaired at an early stage and may therefore reduce or impair its later functionality.

Please note the following points:

- After starting, run the engine at low engine speed for approximately 5 minutes
- Avoid fully breaking the power limit in the first 50 hours
- Also avoid sudden acceleration of the machine and abrupt deceleration of the machine.

In addition, after the first 50 hours of operation, perform the following maintenance operations:

- Change filter (engine)
- Change primary fuel filter
- Change engine oil
- Check all hoses and their connections and tighten if necessary
- Check rubber tracks several times in the first few hours and tighten
- Check screw connections and tighten if necessary

For further maintenance intervals, please refer to the attached interval table!!

## 4.2 Maintenance intervals

X Control   ✦ Exchange   ■ consult your authorised Yanmar Industrial Engine dealer								
System	Control points	Daily	Regular maintenance interval					
			Every 50 hours	Every 250 hours	Every 500 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours
Cooling system	Check and top up engine coolant	X						
	Check and clean radiator fins		X					
	Check and adjust fan drive belt		X 1 <sup>st</sup> time	X 2 <sup>nd</sup> time and thereafter				
	Drain cooling system, flush and fill with new coolant					✦ or every 1 year (the previous value applies)		
Cylinder head	Adjust intake/exhaust valve clearance					■		
Electrical components	Check the display	X						
	Check the battery		X					
	Electro-magnetic clutch			X				
	Check gap, adjust if necessary							
Engine oil	Check the engine oil level	X						
	Drain and fill engine oil		✦ 1 <sup>st</sup> time	✦ 2 <sup>nd</sup> time and thereafter				
	Replace the engine oil filter			✦ 2 <sup>nd</sup> time and thereafter				
Guarantee of the exhaust gas control	Check the crankcase ventilation							
Fuel	Check and top up the fuel tank level	X						
	Drain fuel filter/water separator		X					
	Check fuel filter/water separator	X						
	Clean fuel filter/water separator					X		
	Replace fuel filter					✦		
Hoses	Replace fuel system and cooling system hoses							■ or every 2 years
Suction and outlet	Clean or replace the air filter element	X		X and thereafter				
Complete engine	Daily visual inspection	X						
Tracks	Check track tension and tighten if necessary	X						
	Fully release the track and check that the track tensioner is working					X or annually		
	Visual check for leaks	X						
	Check connections for strength		X					
	Check tension of the V-belt		X					
	Check hydraulic oil level	X						
	Change hydraulic oil + hydraulic oil filter					X		
Clean/replace	Hydraulic high pressure filter		X	✦ Or annually				



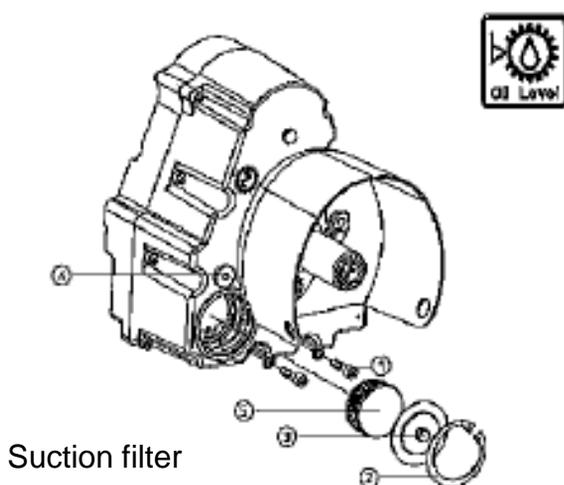
### Attention:

When replacing the oil filters, the oil should be checked for wear. If you notice any abrasion in the oil, you must first find the cause and then correct the damage before you can put the machine back into service.

## 4.2 Maintenance intervals

### Gearbox

Interval	Maintenance work	To be executed by
1st every 500 hours/ or 1x annually	Change oil & clean suction filter	Professional



Suction filter

### Other maintenance checks

Interval	Maintenance work	To be executed by
Weekly	Support screw Wheel motor	Is the wheel motor supporting bolt in contact with the wheel motor? Is the lock nut secured? See chapter: 4.16



#### Attention:

When replacing the oil filters, the oil should be checked for wear. If you notice any abrasion in the oil, you must first find the cause and then correct the damage before you can put the machine back into service.

## 4.3 Maintenance



### Attention:

The maintenance operations must only be carried out by qualified personnel. Always put on protective equipment before working on the machine.



Use eye protection



Use hearing protection



Use gloves



Use foot protection



Use protective helmet

## Pre-requisites

In order to achieve a maximum service life of all components of the machine, it is necessary that the maintenance intervals are strictly adhered to by the persons responsible for the machine.

As the machine usually comes into contact with water, sand, soil, etc., regular lubrication of certain components is required. This is necessary not only for a long service life of the RoboFlail, but also to minimise its operating costs.

## 4.4 Engine oil

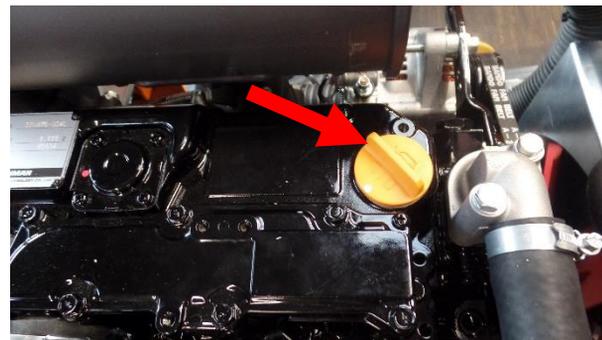
The choice of the right engine oil is a decisive factor in the service life of your device.

Therefore, only use the lubricants approved by Niko GmbH or by the manufacturer of the affected component.

(refer to the engine oil selection according to the attached table in section 4.5)

The main measures relating to the engine oil are:

- Daily level check
  - Regular oil change
- (see maintenance interval – Table 4.2)



## 4.5 Recommended oils and lubricants

	Lubricant
Engine	Agrifarm Stou SAE10W30MC
Hydraulic oil	Agrifarm Stou SAE10W30MC
Coolant	Ethylene glycol -35°C
Lubrication points	Multi-purpose grease
Gearbox	ATF Dexron II D



**Attention:**

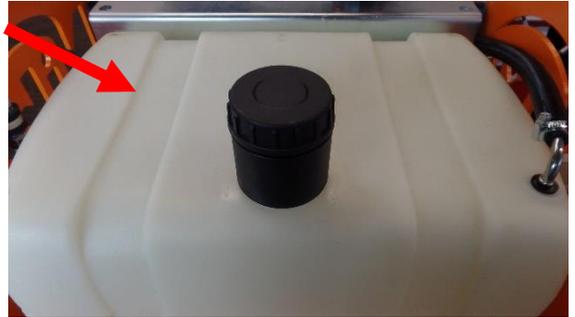
The warranty will be invalidated if incorrect oil types are filled in or used!!

## 4.6 Fuel

Use only fuels according to the specification EN590.

Make sure the machine is always refuelled with the appropriate fuel.

Other fuels with different specifications can damage the engine or reduce performance.



### **Attention:**

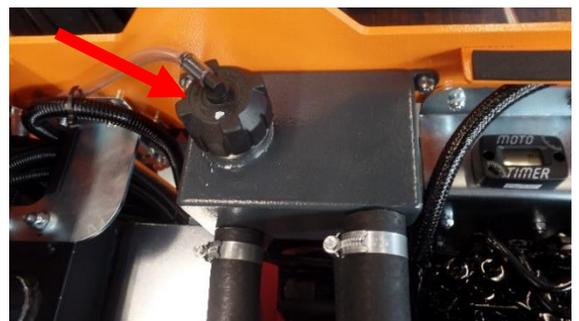


Fuel and its fuel vapours are extremely flammable/and explosive. Fire or explosion can cause serious burns or death. When adding fuel, stop the engine and allow to cool down for at least 2 minutes before removing the fuel cap. Only fill the fuel outdoors or in a well-ventilated area. Do not overfill the fuel tank. To allow space for the fuel to expand, do not fill beyond the bottom edge of the fuel tank neck. Keep fuel away from sparks, naked flames, permanent flames, heat sources and other ignition sources. Fuel lines, tank, covers and their connections must be regularly inspected for cracks and leaks and replaced if necessary. If fuel is spilled, wait for the vapours to evaporate before starting the engine.

## 4.7 Coolant

Check the coolant level in the radiator daily before starting the machine and top up if necessary.

An incorrect level can cause irreparable damage to the engine.



### **Attention:**

Pressurised tank!! Do not open the lid when the engine is warm!!

## 4.8 Hydraulic circuit

The following maintenance procedures should be carried out regularly.

Please also observe the regular maintenance intervals to be performed according to the table in section 4.2

- Daily checking of the oil level in the tank at operating temperature.
- Regular replacement of the oil filter cartridge (see maintenance table in section 4.2, if the filter is clogged)
- Regular replacement of the complete hydraulic oil (see maintenance table in section 4.2)



Always check the condition of all hydraulic lines and O-rings for leaks. For this purpose, a cardboard box can be placed underneath to detect any leaks. If leaks occur, replace the component to be replaced if it is defective or damaged.

### **Attention:**



Always take care when servicing the hydraulic system, as the oil may be very hot immediately after work is carried out! The pressure in the circuit is high, not only while working with the device, but also after the work is complete. Protect hands and body from high pressure fluids.

## 4.9 Air filter cartridge

The air filter consists of a main high capacity cartridge and a safety cartridge.

The main element can be blown out for cleaning with air, the safety cartridge must be replaced after contamination. Replace the cartridge after 6 to 8 cleanings of the main cartridge or after 12 months. When replacing the safety cartridge, the main cartridge must also be replaced.



Main cartridge

Safety cartridge

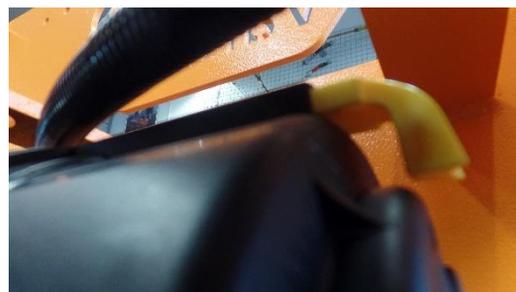


### Attention:

Do not remove the air filter until the machine has been stopped and the engine is off. Wear protective gloves when cleaning.

Remove cartridge:

Pull out the yellow tab and turn the lid 1/4 turn to the left. The lid can then be removed.



Pull the main cartridge out of the overall filter by turning it slightly.

Clean it with an air jet or replace it if necessary.



also pull out the safety cartridge by a slight twist and replace it each time, when the main cartridge is replaced.

Reinstall the filter elements by reversing the procedures described.



### **Attention:**

Do not wash out air elements with water. Do not use solvents for cleaning. The compressed air could damage the elements. Do not apply oil to the filter elements.

## **4.10 Cleaning the radiator**

It is quite normal that by mowing shredded material is attracted to radiator and thus the protective grilles are clogged.

The CleanFix fan control is pre-programmed so that the fan cleans itself every 15 minutes through a reverse function.

A manual reverse can be applied if necessary.



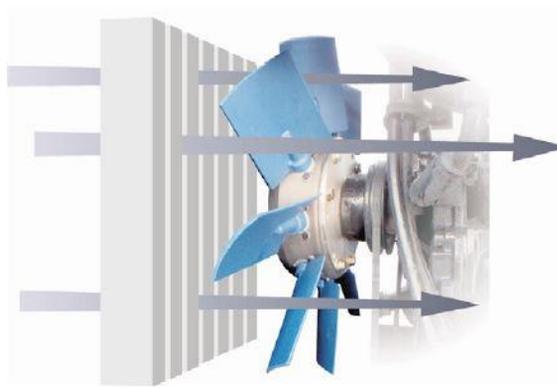
### **Warning notices:**

If the diesel engine exceeds the maximum permissible temperature, a signal sounds!!

## 4.11 CleanFix reversing fan control

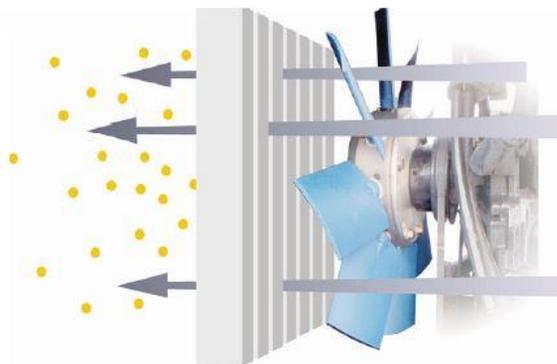
The blades of the CLEANFIX fans can be turned around their own axis – via the transverse position! A brilliantly simple idea, but the only one that guarantees that the blade profiles are always in the optimal position to create maximum airflow and pressure for efficient cooling and thorough cleaning.

**The air is directed through the radiator for cooling.**



When the control switch is actuated, the blades change their angles as shown in Figure 2 so that the air is directed back through the cooler, which removes dirt and dust particles through the fan reversal. The operating unit allows the operator to carry out additional cleaning cycles in very dirty and dusty environments.

**The air is reversed to clean the radiator.**

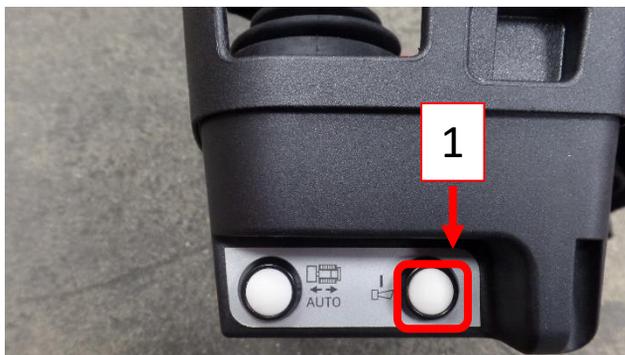


### **Procedure for manual control:**

Before reversing the blades, bring the engine to the minimum speed.  
Then enable the fan reverse function.

## 4.12 Manual operation - CleanFix

Depending on the degree of contamination of the radiator, the CleanFix reversing ventilation can also be operated manually via the switch (1) (at the touch of a button) on the transmitter if necessary (outside the set interval of 10 min.).



### **Procedure for manual control:**

Before reversing the blades, bring the engine to the minimum speed. Then enable the fan reverse function.

## 4.12 CleanFix reversing fan control

### 4 Settings (MINITIMER, MULTITIMER)

There are two variants of the compressor and valve control (MINITIMER and MULTITIMER). The MINITIMER control system controls a one-time cleaning cycle of the compressor and valve as soon as the push button is pressed. The MULTITIMER control allows for an additional automatic control of the cleaning cycles at regular intervals.

#### 4.1 Settings with MINITIMER control

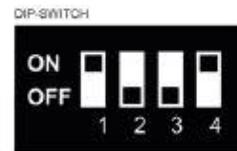
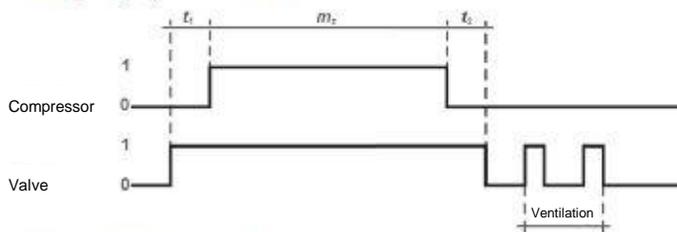
The MINITIMER electronics control the cleaning cycle of the compressor and valve.

##### 4.1.1 MINITIMER the default setting

The following times are preset in the delivery state:

##### CONTROL UNIT (with electric compressor):

Compressor ( $m_z$ ) approx. 20 s  
Valve ( $t_1+m_z+t_2$ ) 23 s



##### VALVE UNIT (without electric compressor):

Valve ( $v_2$ ) 10 s



##### 4.1.2 Activating intermediate cleaning

Each cleaning must be triggered manually via a switch (for example, the cab).

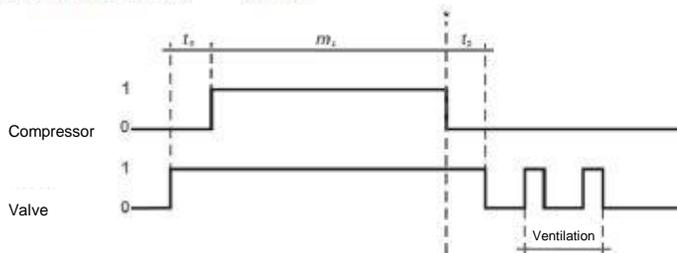
### 4.2 Settings with MULTITIMER control

The MULTITIMER electronics automatically control the cleaning cycles at regular intervals.

#### 4.2.1 Default settings for the MULTITIMER

##### CONTROL UNIT (with electric compressor) and E-box:

Compressor ( $m_z$ ) Compressor switches off when 8 bar is reached, or maximum after 30 s.  
Valve ( $t_1+m_z+t_2$ )  $t_1 = 1s$ ;  $t_2 = 2s$   
Cleaning interval 30 min.



Compressor shuts down when 8 bar is reached, or maximum after 30 s.

##### VALVE UNIT (without electric compressor):

Valve ( $v_2$ ) 10 s

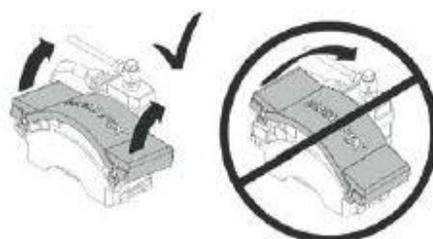
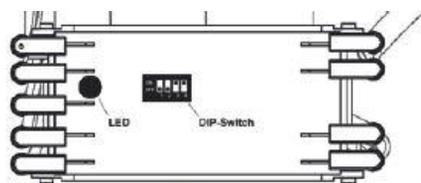


## 4.12 CleanFix reversing fan control

### 4.2.2 MULTITIMER – Interval time

The pause time between cleaning operations can be in the range of 5 min. (Minimum) to 90 minutes (maximum). In the delivery state, the pause time is 30 minutes. To change the pause time, the control unit cover must be removed.

The frequency of the cleaning cycles depends on the respective machine operation and can be set in 7 levels by moving the controllers on the dip switch.



Time	Pause [min]	Dip switch no. [1 2 3 ]
z1	5	1 0 0
z2	10	0 1 0
z3	15	1 1 0
z4	30	0 0 1
z5	45	1 0 1
z6	60	0 1 1
z7	90	1 1 1



#### Caution

Forcing the DIP switches causes permanent damage.



#### Note

When all dip switches nos. 1 – 4 are set to "off", the electronics perform a self-test. In this case, the compressor and valve are switched on at the same time for 1 second and then switched off for 1 second. This is repeated until the power supply is interrupted or a dip switch is switched to "on" and a pause duration is selected.

After the manual setting of the pause time, the cover of the electrical component must be closed again.

### 4.2.3 MULTITIMER - Intermediate cleaning

By briefly connecting the grey cable to ground (e.g. via a switch in the cab) an additional intermediate cleaning is carried out. Then the normal cleaning cycle begins again.

If the intermediate cleaning is not used, the grey cable must be insulated!

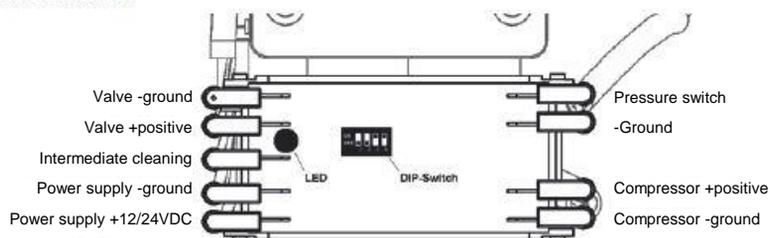
### 4.2.4 External compressed air system

The control unit can be used with a compressed air system. The compressor can be switched on and off at DIP switch no. 4. This means that if the control unit is used in conjunction with a compressed air system of the vehicle and only the valve is activated, dip switch no. 4 must be set to "off".

## 4.12 CleanFix reversing fan control

### 5 Fault rectification

The control unit monitors the circuit for electronic faults. In the event of a short circuit, the internal fuse switches off the control unit. After the fuse has cooled down, it can be switched on again. Temperatures above 70°C can also cause shutdown. In this case, it is necessary to find a cooler location for the control unit.



	LED	Causes
	Flashes 1x per s.	Normal condition
	OFF	Check operating voltage
	Flashes 1x per 12 s.	<b>Compressor error:</b>  If DIP switch number 4 is set to "on": <ul style="list-style-type: none"> <li>- Short circuit to ground</li> <li>- Overtemperature of the electronics reached</li> <li>- Cable break to the compressor</li> </ul>
	Flashes 2x per 12 s.	<b>Valve error:</b>  If DIP switch number 4 is set to "on": <ul style="list-style-type: none"> <li>- Short circuit to ground</li> <li>- Overtemperature of the electronics reached.</li> </ul> If DIP switch number 4 is set to "off": <ul style="list-style-type: none"> <li>- Cable break to valve</li> </ul>

## 4.13 Gearbox

### 8. Oil change

The oil should be changed after 500 operating hours, but at least once a year.

The oil change should be carried out in a warm state.

The correct filling quantity corresponds to an oil level in the middle of the oil sight glass when the gearbox is stationary and in the installation position.

### 9. Commissioning

Before commissioning, check that the gearbox has been correctly fastened and that the points described in the preceding sections are fulfilled.

If possible, the gearbox should run for a few hours without load. If there are no faults, the gearbox can gradually be driven to full load.

All connecting screws should be checked for tightness after a short run under load.

### 10. Maintenance

Regular checks must be carried out during operation, with particular attention to:

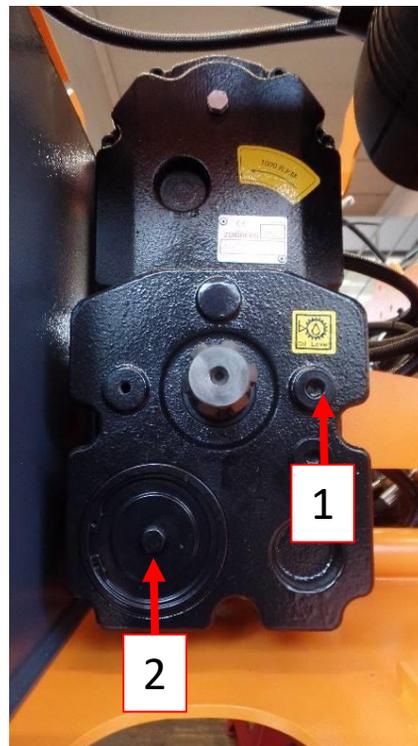
- Unusual noises
- Excessive temperatures
- Extraordinary wear and tear
- Leaks
- Loose fasteners
- The presence and correct functioning of the safety devices

Shaft seals are wearing parts and are therefore not covered by the warranty. They must be checked carefully and replaced if necessary. We recommend that you have the necessary repairs carried out on the gearbox at our premises. CZF is not liable for damage caused by improper repairs or the use of NON-genuine spare parts. For the gearbox, there is spare part drawing M71.116-01.002 and the associated spare parts list M71.116/2.

## 4.13 Gearbox

Gear oil level (1)

Suction filter (2)



Oil level (3)

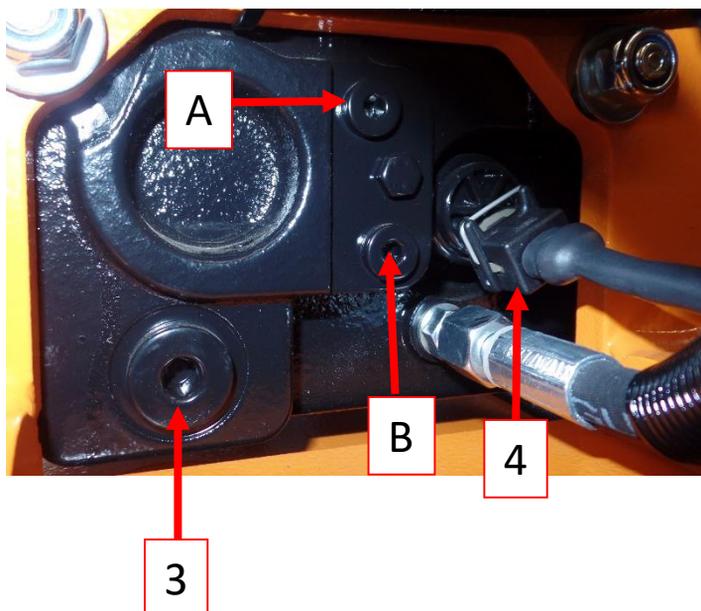
Solenoid valve (4)

Measuring clutch pressure (A)

M10x1

Measuring pump pressure (B)

M10x1 (approx. 24 bar)



## 4.14 Gearbox - Drive shaft

### Drive shaft/PTO shaft

(See also spare parts list):

Always ensure that the drive shaft is used in the correct length. The 4-axis adjustment can cause damage in the case of an incorrectly applied drive shaft.

Use the correct drive shaft according to the performance data of the devices!



#### ATTENTION:

Do not allow contact with the drive shaft and components of the machine. Installation and settings only when the engine is switched off!



#### ATTENTION:

All attachments must be equipped with overload protection.  
(Protection against gearbox overload)

## 4.14 Drive shaft

All rotating machine parts must be secured. The accident prevention guards of the tractor and implement must form a continuous protection system with the protective tubes of the drive shaft.

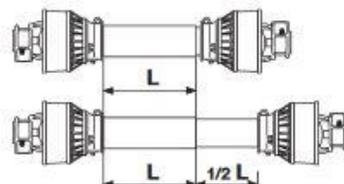
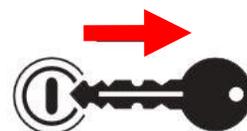
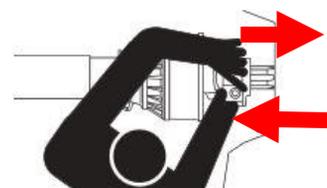
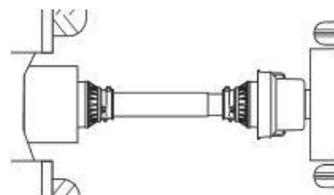
Before starting work, check that all accident prevention guards on the propeller shaft, tractor and implement are correctly installed and functioning. Replace damaged or missing parts with genuine parts before operating the drive shaft or retrofit according to regulations.

For your own safety, do not wear loose clothing, straps or other loose parts. There is an increased risk of accidents in the event of contact. Increased risk of accident.

Stop the engine, press the emergency stop button, remove the start key and wait until all rotating machine parts have stopped completely before approaching the implement or before carrying out any maintenance work.

To prevent injury or damage to the accident prevention caused by the drive shaft falling apart, it must only be handled horizontally.

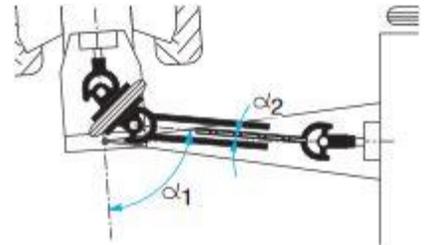
The handlebars must cover at least  $\frac{1}{2}$  of their length for standard conditions of use and at least  $\frac{1}{3}$  of their length for all conditions of use. The telescopic elements must cover sufficiently, even when the drive shaft is stationary, in order to prevent it from tilting.



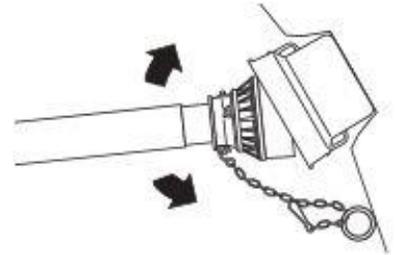
## 4.14 Drive shaft

### WIDE ANGLE CV JOINTS

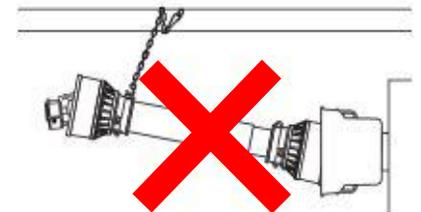
The use of the wide-angle cv joint should normally be in the stretched state or with small bending angles. For a short time (when steering is turned), larger bending angles are permitted, but depending on the type of wide-angle cv joint they must not exceed 50°, 70° or 80°.



Install the protective tube retaining tracks. Optimum operating conditions are available when the track is aligned radially with the drive shaft. When adjusting the track length, ensure that the angular position of the drive shaft is ensured in all working, transport and manoeuvring conditions. If the tracks are too long, there is a risk that they will wrap around the drive shaft.



Do not use the tracks to handle or hook the drive shaft after use. Rather, provide appropriate support.



Do not use the drive shaft as a support or step.



Friction clutches can reach very high temperatures during operation. Do not touch!

To avoid fire risks, keep combustible material away from the clutch and avoid prolonged periods of slippage.



The tractor symbol indicates the tractor side of the drive shaft. Always attach a possible overload clutch on the machine side.



### ATTENTION:

We recommend the use of a single-sided wide-angle drive shaft, to prevent gearbox damage.

## 4.14 Drive shaft

Adjust the drive shaft on the tracked vehicle and the equipment to be driven (See the operating instructions for the drive shaft).

When using machines and drive shafts, speed and performance in the machine manual must be strictly observed. Avoid overloading and engaging the PTO under load.

Under all conditions of use, the profile tubes must cover at least one third of their length.

Overload and overrunning clutch must always be installed on the device side.

Overload clutch with friction discs: In this case, if the clutch is used frequently and/or for a long time, there is a risk of burning the friction disc – the device and the gearbox are overloaded – please drive slowly. If the clutch responds too frequently, check the torque setting.

**Radial pin clutch:** Interruption of power transmission: If the set torque (rattling noise) is exceeded, immediately switch off the PTO and start it again slowly.

**Shear bolt clutch:** In case of overload, the shear bolt is destroyed and the flow of force is interrupted. Replace shear bolt.

**Overload clutch** have the task of protecting devices, gearbox and working tools against overload. If these are overloaded too much, there is a risk that the clutch will not process the excessive overload and damage the working tools or the gearbox.

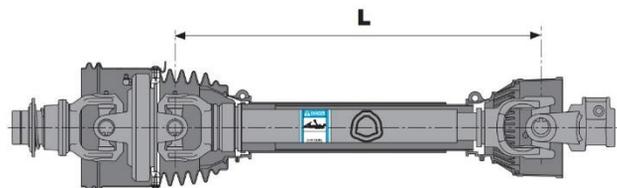
**Attention:** Do not drive too fast if the vegetation is too high or if a foreign body is encountered when working (stones, etc.).

**Freewheeling:** Prevents the power of rotating machine parts from affecting the tractor when it brakes or when the PTO is disengaged. Do not enter the machine area until the rotating parts have come to a halt.

**Locking unit clutch:** To protect against unnecessary wear and tear, must be immediately re-engaged by switching off the tractor PTO.

**At the end of the season, clean the drive shaft and lubricate it with high-quality grease.**

**Shorten the propeller shaft – only by a specialist workshop!!**



### **ATTENTION:**

We recommend the use of a single-sided wide-angle drive shaft, to prevent gearbox damage.

## 4.15 Replacing rubber tracks

A track change must be carried out if only a profile depth of  $> 10$  mm is available, the track has cuts, breaks or other damage.

To change the tracks, the machine must be raised and parked on a stable platform.

Use a **27 mm** ring spanner to loosen the nut on the grease nipple. If it has been loosened, grease will come out of the threaded hole. Continue to loosen until no more grease escapes and the nut is loose. It is not necessary to remove the nut completely.

Once the track has been loosened over the tension unit, using a suitable pry bar or lever arm, push the guide rollers toward the drive wheel until there is sufficient slack in the track to allow it to be removed.

Pull the drive wheel teeth out of the track guide. The track is heavier than it appears. Do not try to carry their weight and it is better to let them fall to the ground.

Place the new track to be installed on the guide rollers, then install the track drive wheel into the track guide. By placing the drive wheel on the drive motor (tool: breaker/rubber hammer)

re-tighten the 27 mm grease nipple, if necessary, replace the seal underneath and use the special grease gun supplied to pressurise the track tension cylinder. The pressure gauge on the grease gun must read 180 bar to ensure correct track tension.

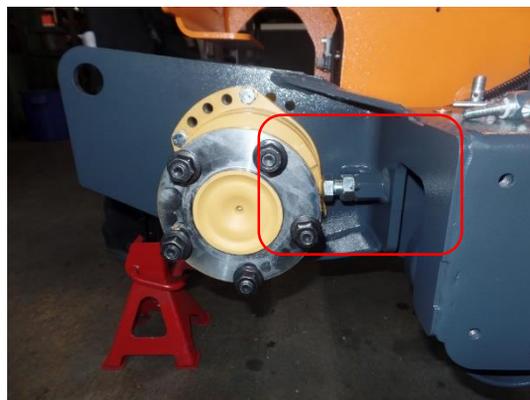


**ATTENTION:**  
Please note that you never put more than 180 bar of pressure on the cylinder (danger of bursting)!!

## 4.16 Support screw – Wheel motor

Regular testing of wheel motors – Support screw!

The screw must be against the Poclain motor and secured with the nut.



## 4.17 Battery charger

If the ambient temperature is below 10°C, the battery charger included in the Vario25 package must be connected to the battery to avoid possible discharge of the battery during long periods out of operation & exposure to low temperatures.



### **Attention:**

No guarantee is offered on batteries that were not connected to the supplied charger during long periods out of operation & exposure to low temperatures.

## 5.0 General tests before each working day

Before each working day with the RoboFlail Vario, a detailed visual inspection of the following described parts should be carried out to carry out repairs if any abnormalities occur.

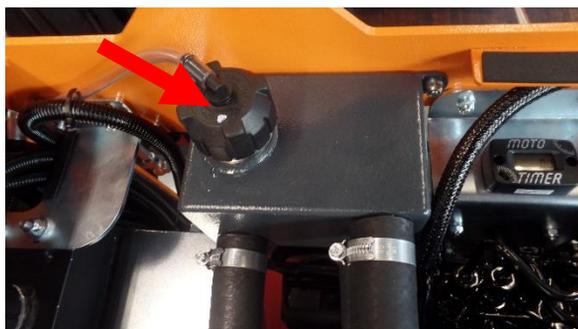
- Check the operation of the visual warning devices and their safety-related parts, such as: Emergency STOP button, sticker, brake, etc.
- Check protection/safety devices
- Check and clean the radiator
- Wear of the machine components
- Check for oil, fuel and coolant loss
- Check for loose bolts and nuts
- Check the air filter

### 5.1 Checking the coolant level

The coolant level can be visually checked by unscrewing the radiator cap and taking a visual check inside the radiator.

The optimum fill level should be approximately 2 cm below the radiator edge.

If the level is too low, add fluid to the cooling circuit until the ideal level is reached again. Then close the lid properly again.



#### **Hazard warning:**

A pressurised cooling system can cause severe burns. Do not remove the radiator cap unless the engine is cold or cold enough. Slowly loosen the cap to the first stop to release any pressure before removing it completely. The test must be performed with the engine stopped. Make sure that the RoboFlail Vario is placed on a flat surface.

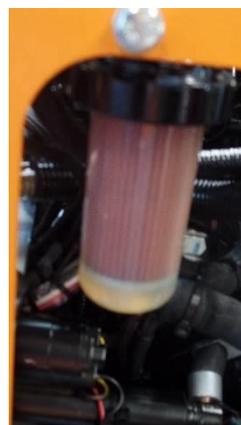
## 5.2 Fuel level and filter

The fuel level in the tank can be seen visually from the fill level. To refuel, loosen the fuel tank cap and refuel.

Do not fill the tank to the top edge, but allow some space for the fuel to expand. Then close the lid again.



Fuel filter position left-hand drive  
direction above oil dipstick



### Hazard warning:



ATTENTION fuel and fuel vapours are extremely flammable and explosive. Fire or explosion can cause serious burns or death. Keep fuel away from sparks, naked flames, permanent flames, heat sources and other ignition sources. Check fuel lines, tank, cap and connections regularly for cracks and leaks and replace if necessary. Before cleaning or replacing the fuel filter, drain the fuel tank or close the fuel tap. If fuel is spilled, wait for the vapours to evaporate before starting the engine.

## 5.3 Water separator

Water accumulates in the water separator tank, which must be drained from time to time. The frequency of this task depends primarily on the quality of the diesel fuel used. The water separator tank should be checked regularly and water drained if necessary.



Position: behind battery

Follow these steps:

- close the tap on the water separator.
- loosen the lower part of the tank by turning it
- Remove the container and empty it completely.
- Dispose of the removed fluid according to environmental regulations.



### Hazard warning:

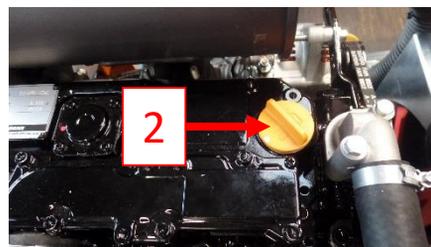
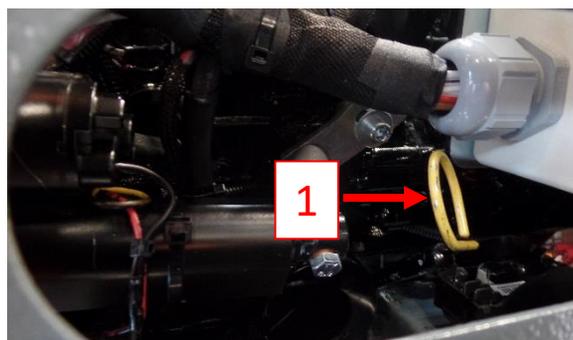
This operation must be carried out with the engine switched off. Keep away from sparks, naked flames, heat sources, and other ignition sources during the process. Wear protective clothing during this procedure.

## 5.4 Engine oil

The fill level of the engine oil is checked via the dipstick (1) and must be on the MAX. sign (marks).

The engine fill level must be checked while the machine is parked on a horizontal surface with the engine cold. If the engine oil fill level is within the MIN sign range, refill it by unscrewing the engine oil cap (2) and adding oil until the level returns to the MAX sign.

Wait a moment to check the level again using the dipstick.



### Warning notices:

The engine is very hot after the device is switched off. Do not test the engine oil until the engine has cooled down. Wear protective gloves when checking and refilling oil.

## 5.5 Test – Pressure – Track tension

For optimum maintenance of the track and to avoid pressure loss or the like, the test must be carried out regularly. As before, check the track tension after ten hours, then every 50 hours or as needed. Note that the rubber tracks must be checked and tightened several times during the first hours.



To check the track, place the sleeve coupling ③ of the grease gun on the flat grease nipple. The specified pressure should be 180 bar.

To re-tension the track

Close the screw ① and press the grease into the cylinder with 180 bar.

At 180 bar on the ② display, open the screw 1 again. The pressure in the system is released and you can remove the grease gun again. After clamping, it is necessary to check the track manually again (tight fit of the track), as there is the possibility of jamming the clamping device.



To relax, the grease nipple must be loosened until the necessary relaxation of the track becomes apparent.



### **Warning notices:**

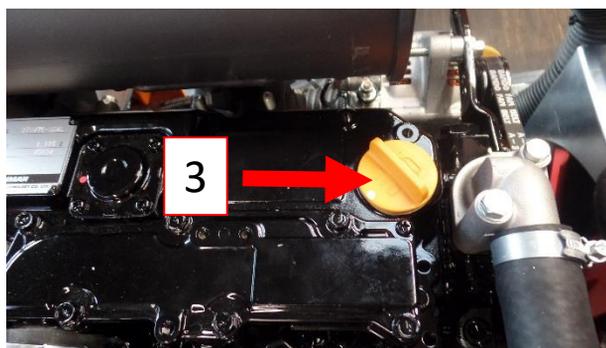
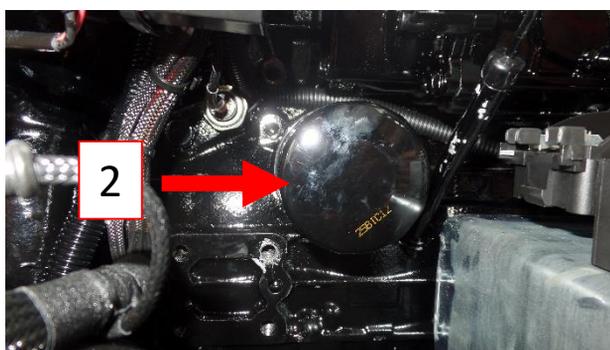
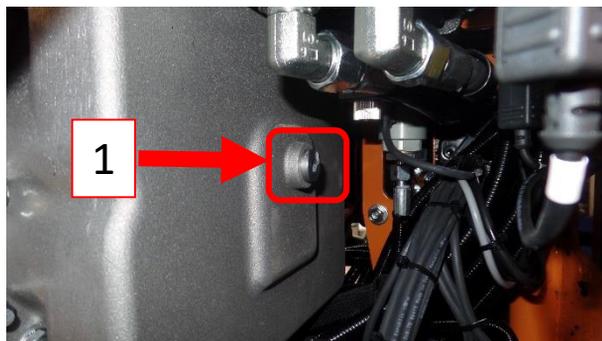
Please note: Never apply more than 180 bar of pressure to the cylinder.

**!!Danger of bursting!!!**

## 5.6 Changing engine oil + filter

To change the oil, proceed as follows:

- Place the RoboFlail Vario on a solid and level surface.
- Remove the drain plug on the engine (1) (underbody) and drain the oil into a suitable container.
- After all the oil has drained, replace the drain plug and tighten it to 21 Nm.
- Unscrew and remove the engine oil filter (2).
- Now take a new filter and rub its rubber seal with some oil before inserting it.
- Then remove the cap (3) of the oil filler neck and carefully fill approximately **4.5 litres** of combination oil Fuchs Agrifarm STOUE MC SAE 10W-30
- Then put the cap (3) of the filler neck back in.
- Now let the engine run for 5 minutes until the oil has spread in the circuit.
- Then check the oil level using the dipstick. If necessary, add oil.



### Warning notices:

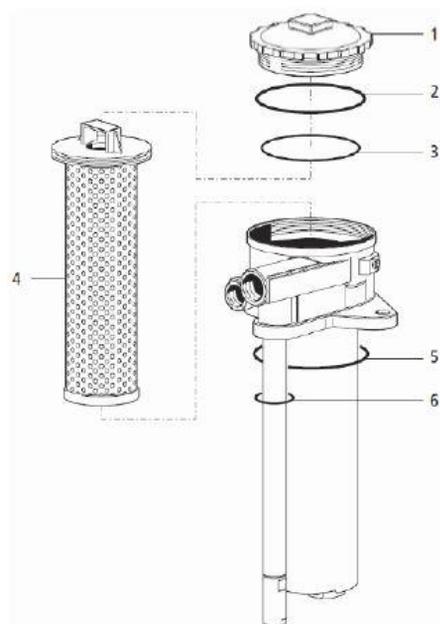
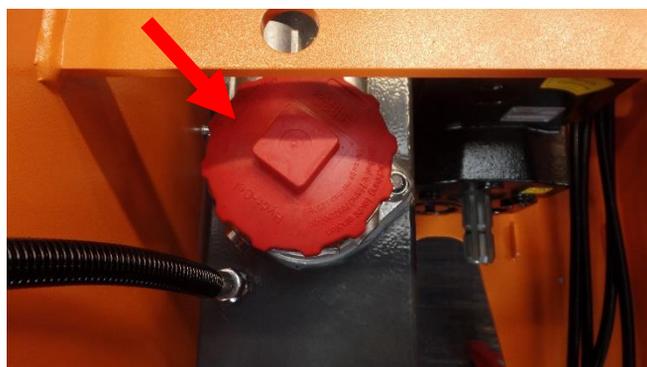


Do not change the oil immediately after using the device. Wait until the engine is lukewarm (40°C maximum). Oils and filters are considered hazardous waste and must be treated in accordance with the environmental standards.

## 5.7 Changing hydraulic filter

To change the hydraulic filter, proceed as follows:

- Unscrew the red cap on the hydraulic filter using a 32 mm open-ended spanner.
- Remove the inner filter element by pulling out the handle.
- The filter should be replaced before it is completely clogged.
- Then reinstall the new filter element.
- Close the black cap to a torque of 20 Nm.



### Warning notices:



Do not change the hydraulic filter immediately after using the device. Wait until the engine is lukewarm (40°C max). Oil contamination may occur during this process. If necessary, clean the dirty area immediately to avoid the risk of fire or slipping.

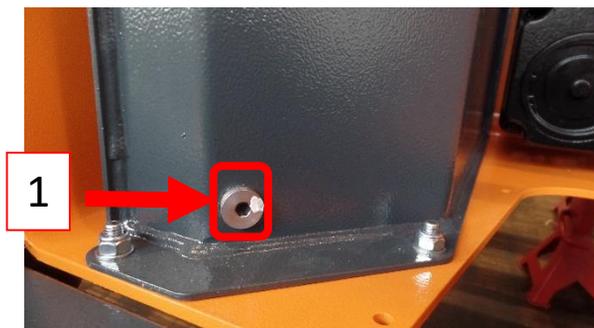
Hydraulic filters are considered hazardous waste and must be disposed of in accordance with environmental protection standards. Wear protective clothing.



## 5.8 Changing hydraulic oil

The hydraulic oil must be replaced at regular intervals to ensure permanent lubrication of the relevant components.

- The hydraulic oil is drained via a plug.
- Remove the plug (1) with an Allen key. Provide a suitable container for collecting the used oil (23 litres).
- When the oil has completely drained out, plug the tank again.
- The hydraulic oil is filled via the filler neck (2).
- Fill the system with the specified hydraulic oil back to its ideal level.



- Check the oil fill level via the level indicator (3) until the level is correct.
- Then close the filler neck again.
- Start the engine and wait for about 10 to 20 seconds.
- Stop the engine and repeat 3 times. Then check the level again via the oil level indicator (3) and top up if necessary if the oil level has fallen.
- Also, after the first 20 minutes of operation, check the oil level again after the oil has expanded by heating.
- Then check all the screw connections opened for these applications again.



### **Warning notices:**

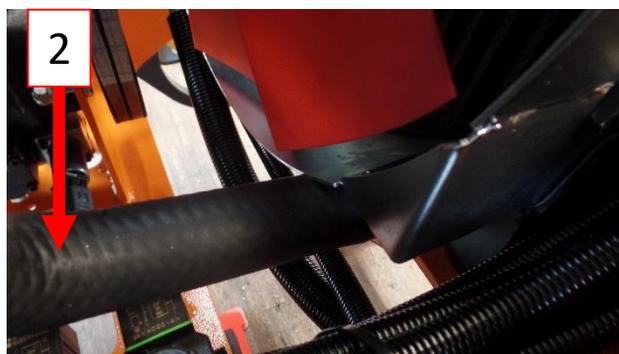
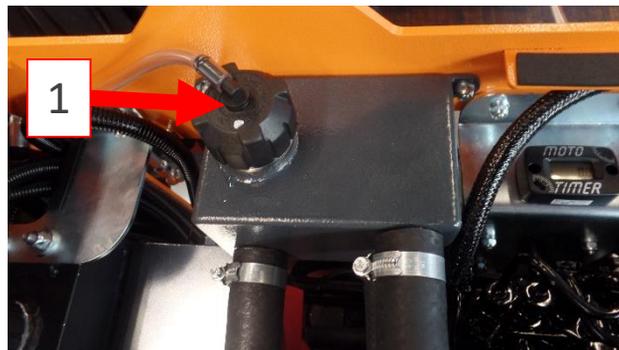


The use of an oil other than the one approved by Niko GmbH can lead to significant damage to the hydraulic system. The use of another oil or mixing of the manufacturer's approved oil (see table section 4.5) with other oils can also cause damage to the hydraulic system. Always keep in mind: If you use other oils that are not approved by the manufacturer, you jeopardise your warranty claim.

## 5.9 Changing coolant

When changing the coolant fluid proceed as follows:

- Place the machine on a firm, level surface. The machine should be in cold condition.
- Slowly loosen the lid of the radiator (1) to allow any residual pressure to escape.
- Remove the lower radiator hose (2) by unscrewing the pipe clamp with a suitable screwdriver. Collect the cooling fluid that is leaking with a suitable container.
- Then, lock the disconnected radiator hose properly again after the coolant has completely drained out.
- Refill the radiator to its ideal level via the radiator cap (1).
- The level should be 2 cm below the top edge of the radiator.
- Start the engine and let it run at idle speed for approximately 4 to 5 minutes and then turn it off again.
- Check the coolant level again and refill as needed.



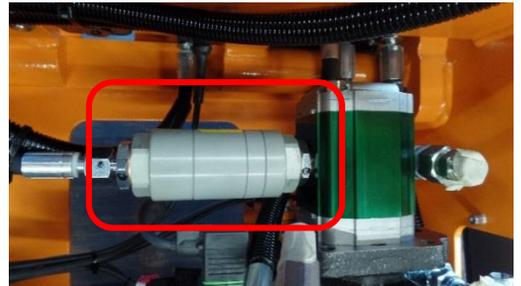
### Warning:



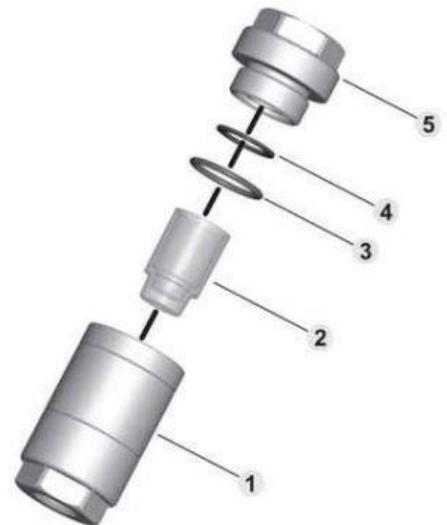
Hot coolant can cause burns. Therefore, only change the coolant when it is cold. Slowly loosen the cap to release residual pressure. Coolant is toxic and must not be simply thrown away or included with household waste. Your local council will provide information about where the nearest hazardous waste collection point is located.

## 5.10 High pressure filter HF70510040SB040GDB

When the number of operating hours specified in the system maintenance instructions is reached, or when a significant pressure drop occurs in the circuit, the cartridge must be replaced. Be aware that this process involves draining hydraulic oil and therefore requires suitable containers to collect the oil. Proceed as follows:



- A** Stop the system in the "Machine stopped" state.
- B** Secure all shut-off valves of the hydraulic circuit.
- C** Disconnect the lines of the circuit from the filter.
- D** Unscrew the cap with great care (no. 5).
- E** Remove the clogged filter cartridge (no. 2).
- F** Ensure that the O-ring (no. 3) and the seal (no. 4) are not damaged, otherwise replace them and install the new one correctly.
- G** In case of replacement, insert the new element or partially restored element after it has been immersed in cleaning fluids and then treated with compressed air.
- H** Screw on the cap and then tighten it to a torque of 130 Nm.
- I** Reconnect the lines.
- L** Turn on the circuit for a few minutes.
- M** Make sure there are no leaks.



- Item description
- 1 Filter body
  - 2 Filter element
  - 3 O-ring
  - 4 Gasket
  - 5 Cap

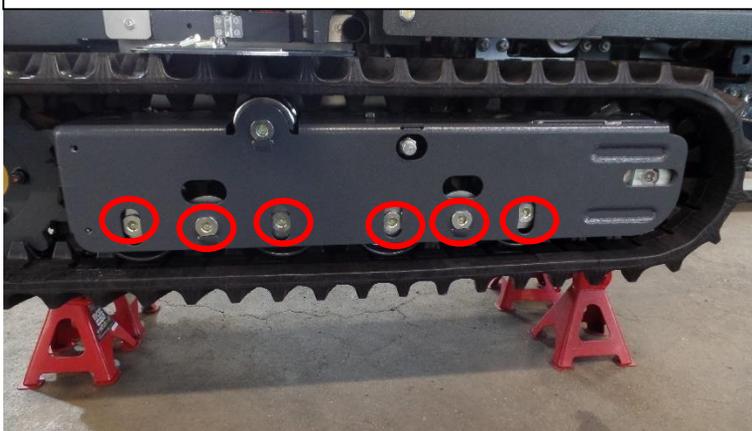
The built-in high-pressure filter should be regularly checked for contamination, cleaned or replaced.

**Also observe the specified maintenance intervals.**

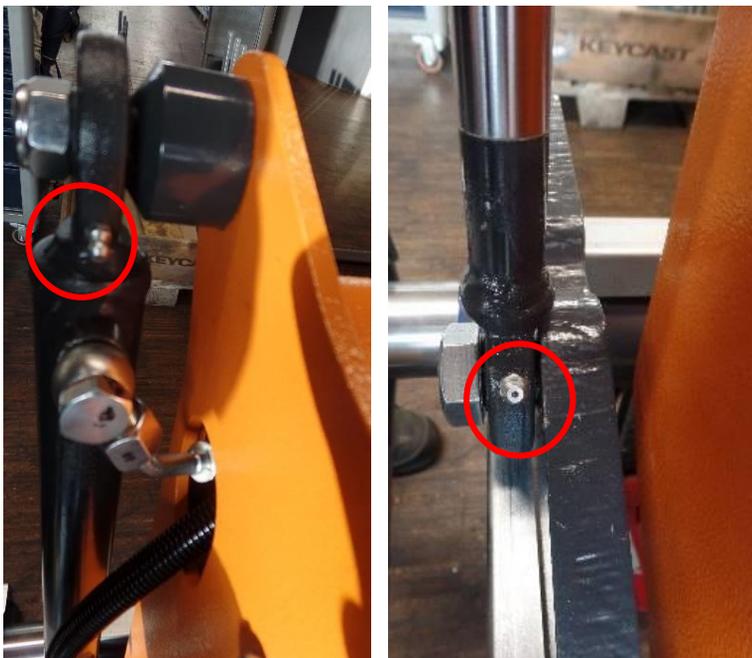
## 5.11 Lubrication points (grease gun)

All specified lubrication points must be lubricated regularly, see specification, with the enclosed grease gun:

### 1. Track chassis R/L **weekly**



### 3. Lifting cylinder R/L (up/down) **weekly**



## 5.11 Lubrication points (grease gun)

Swivel bearing R+L: lubricate 1x **monthly**



Lateral displacement lubrication only when the chassis is extended. Interval: **Annually**



## 5.12 Fan - Checking and adjusting V-belt

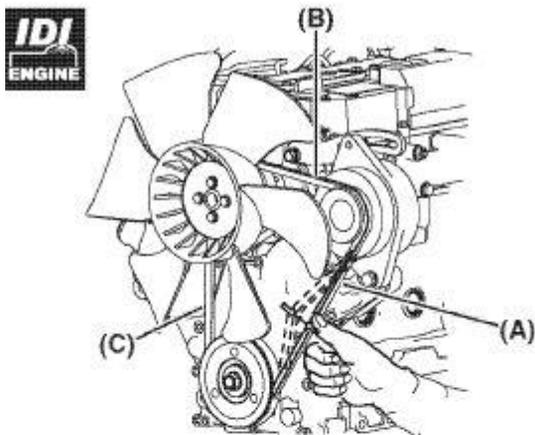
The V-belt will slip if it is not properly tensioned. This will prevent the alternator from generating enough current. The engine also overheats because the engine coolant pump pulley slips.

Check and adjust the V-belt tension (deflection) as follows:

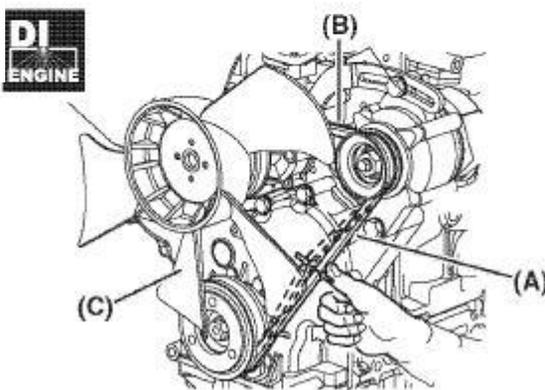
1. Using your thumb, push the V-belt in with a force of approximately 22 ft-lb (90 Nm, 10 kgf/m,) to check the deflection.

There are three points to check the V-belt tension (**Figure 4, (A) comma (B) and (C)**). The tension can be checked at the most accessible location.

The correct deflection of a run-in V-belt at each point is:



0000652A



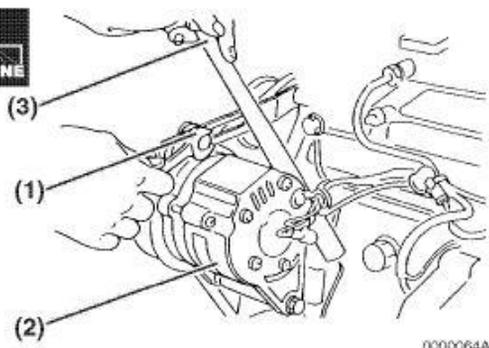
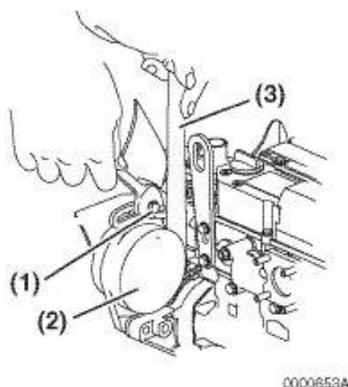
000063A

Tension of the inserted V-belt		
A	B	C
3/8 – 1/2 in. (10 – 14 mm)	1/4 - 3/8 in. (7 – 10 mm)	5/16 – 1/2 in. (9 – 13 mm)

Note: A "run-in V-belt" refers to a V-belt that has been used for 5 minutes or more in a running engine.

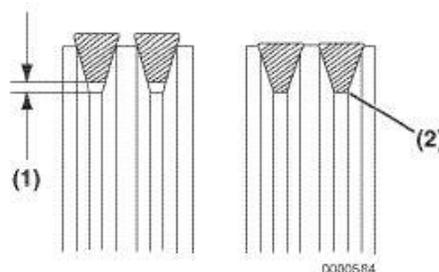
**Figure 4**

2. If necessary, adjust the V-belt tension. Loosen the adjusting screw (**Figure 5, (1)**) and move the alternator (**Figure 5, (2)**) with a pry bar (**Figure 5, (3)**) to tighten the V-belt to the desired tension. Then tighten the adjusting screw.



**Figure 5**

3. Tighten the V-belt to the correct tension. There must be a gap (**Figure 6, (1)**) between the V-belt and the bottom of the disc groove. If there is no gap (**Figure 6, (2)**) between the V-belt and the bottom of the disc groove, replace the V-belt.



**Figure 6**

4. Inspect the V-belt for cracks, oil, or wear. If any of these conditions exist, replace the V-belt.
5. Fit the new V-belt. See the table for correct tension.

Tension of the inserted V-belt		
A	B	C
5/16 – 7/6 in. (8 – 12 mm)	3/16 - 5/16 in. (5 – 8 mm)	1/4 – 7/16 in. (7 – 11 mm)

6. After adjusting, run the engine for 5 minutes or more. Recheck the tension using the V-belt entry.

Tension of the inserted V-belt		
A	B	C
3/8 – 1/2 in. (10 – 14 mm)	1/4 - 3/8 in. (7 – 10 mm)	5/16 – 1/2 in. (9 – 13 mm)

## 5.13 Checking, adjusting, replacing pump drive belts

### Instruction: V-Belt tension:

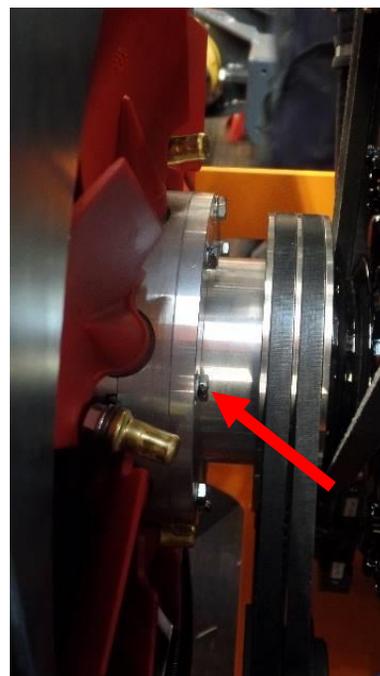
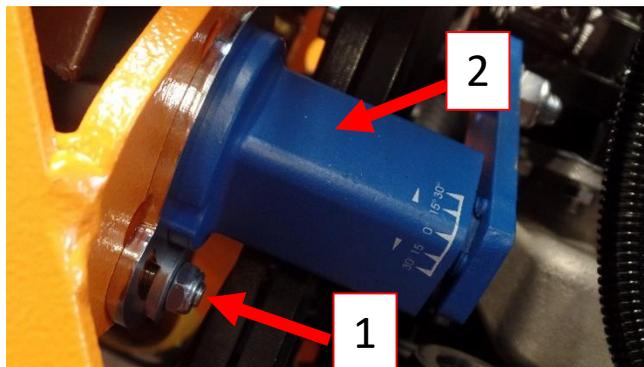
1. Undo screw (1)

2. Turn the square element (2) on the clamp clockwise with a 36-open-ended spanner until a value of 15° appears on the scale fitted!!

3. Then lock screw (1) again.

4. The V-belt should be able to be moved by pushing/pulling about 10-15 mm during the tension control.

5. To replace the belts, the 8 screws of the fan blade must be loosened.  
Tightening torque: 10 Nm



## 5.14 Cleaning

- During normal daily maintenance it is not allowed to perform high-pressure cleaning of the electrical parts with water (high-pressure cleaner), such as:
- Receiver and remote control
- Drive (engine)
- Fuse and relay box

## 6.0 Technical data - Characteristics

### Weight:

Total weight (with tracks) = 1090 kg

### Engine:

Brand: = Yanmar diesel engine can be swivelled automatically  
 Model: = 3TNV76  
 Number of cylinders: = 3  
 Max. power (kW/HP) = 18.3 kW/25 HP  
 Cooling = water-cooled  
 Displacement = 1116 cm<sup>3</sup>  
 Air filter = dry  
 Equipment: = Oil pump + Diesel pump  
 Monitoring: = Temperature & oil pressure  
 Fuel = diesel

### Dimensions approx.:

Length = 1.65 m  
 Width = 1.33 m – 1.77 m  
 Height = 1.00 m

### Operating noise:

Noise level = approx. 95 dBA

### Main machine:

Fuel tank = 30 litres,  
 Speed = 0-6km/h, VMAX continuously adjustable  
 Equipment drive = mechanically via PTO  
 750 PTO  
 Travel drive = hydrostatic via two pumps with two wheel motors  
 with accumulator brakes  
 (zero turning radius)  
 Drive = spring-loaded rubber wheel drive with hydraulic  
 track tension  
 Ground pressure N 0.143 kg/cm<sup>3</sup>  
 Control = remote control forward/reverse, right/  
 left, speed, differential speed right/left  
 (hill-top assist), engine start/stop, engine speed,  
 cruise control (only for export outside EU)

### Remote control:

Manufacturer	= NBB Germany
Frequency band	= 434.050 – 434.750 MHz
Transmit power	= 10 mW
Range	= max. 300 m
Gain	= approx. 1 dB
EIRP	= < 10 mW

### Electrical equipment

Voltage	= 12 V
Alternator	= 40 A
Battery	= 45 Ah

### Hydraulic system

Transmission	= axial piston pump
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### Tracks/Models

Rubber track 230x72x45	= approx. 50 kg
------------------------	-----------------

### Capacities - Liquids

Hydraulic oil	= 23 litres
Engine oil	= 4.5 litres
Fuel	= 30 Litres
Gearbox oil	= 2 litres

### Lubricants

Hydraulic oil	= Fuchs Agrifarm STOU MC SAE 10W30
Engine oil	= Fuchs Agrifarm STOU MC SAE 10W30
Gearbox oil	= ATF DEXRON II D

### Attachments

The attachments must be equipped with an overload clutch on the PTO shaft or the gearbox!  
The weight of the total of all mounted devices **must not exceed 350 kg.**

### RAPID – Adapter (accessories)

Weight	= 30 kg
Gear ratio	= 1:1.35
Gearbox oil	= HP90
Capacity	= 0.3 l

### **Pump performance**

Double axial piston pump	= 2x 11 cm <sup>3</sup>
Gear pump (control valves)	= 4 cm <sup>3</sup>

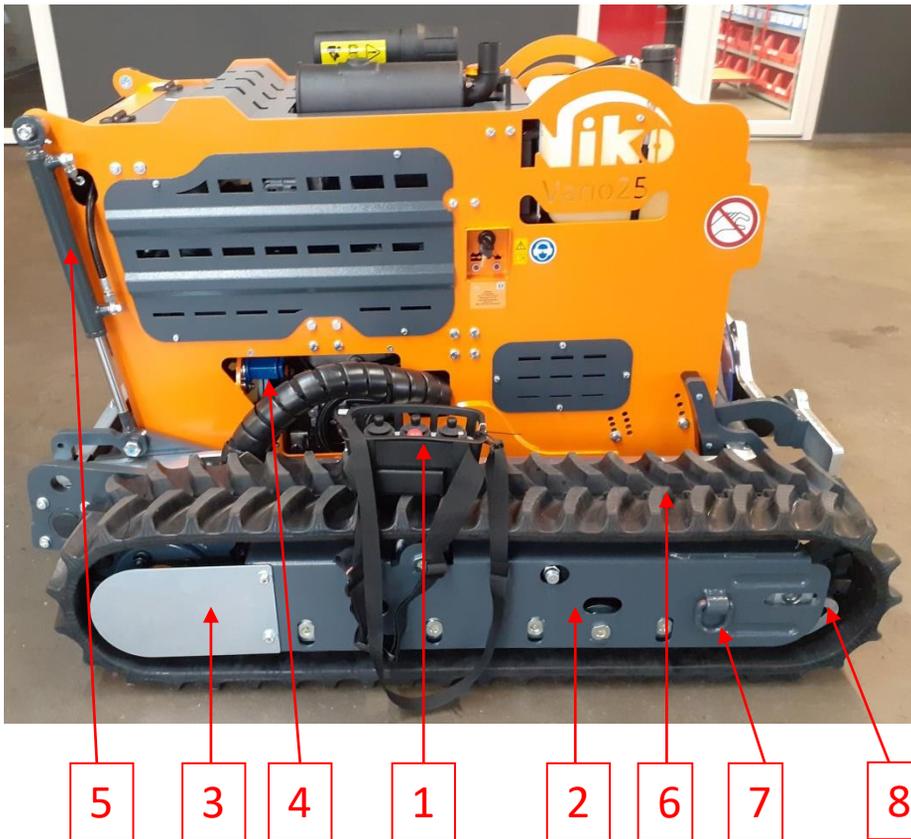
### **Pump capacity (special equipment)**

Working pump	= 14 cm <sup>3</sup>
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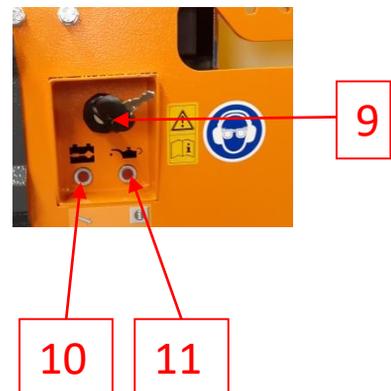
### **Gearbox**

Mechanical gearbox	= 750 rpm
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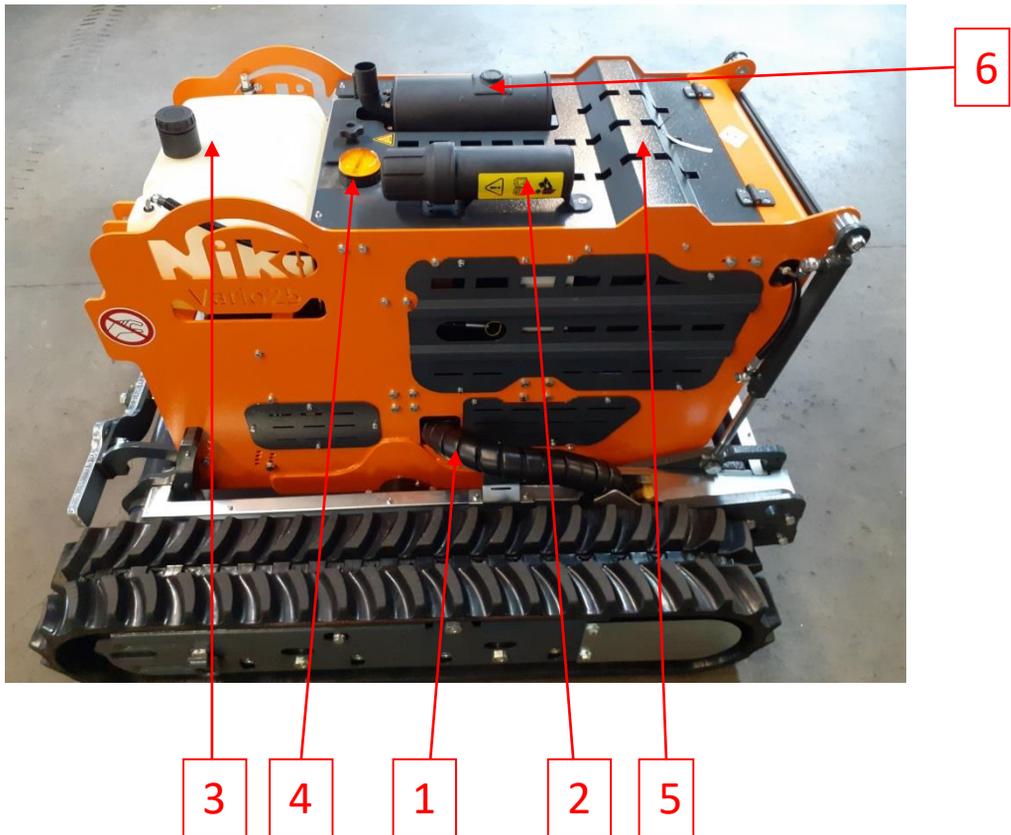
## 6.1 Structure of the machine



1. Hand-held transmitter radio remote control
2. Chassis
3. Track drive gear cover
4. V-Belt tensioner
5. Cylinder - Hydraulic lift
6. Rubber track KTL
7. Retaining eyes (transport)
8. Guide rollers incl. track shoe
9. Ignition key
10. Indicator light - Battery
11. Indicator light - Oil pressure

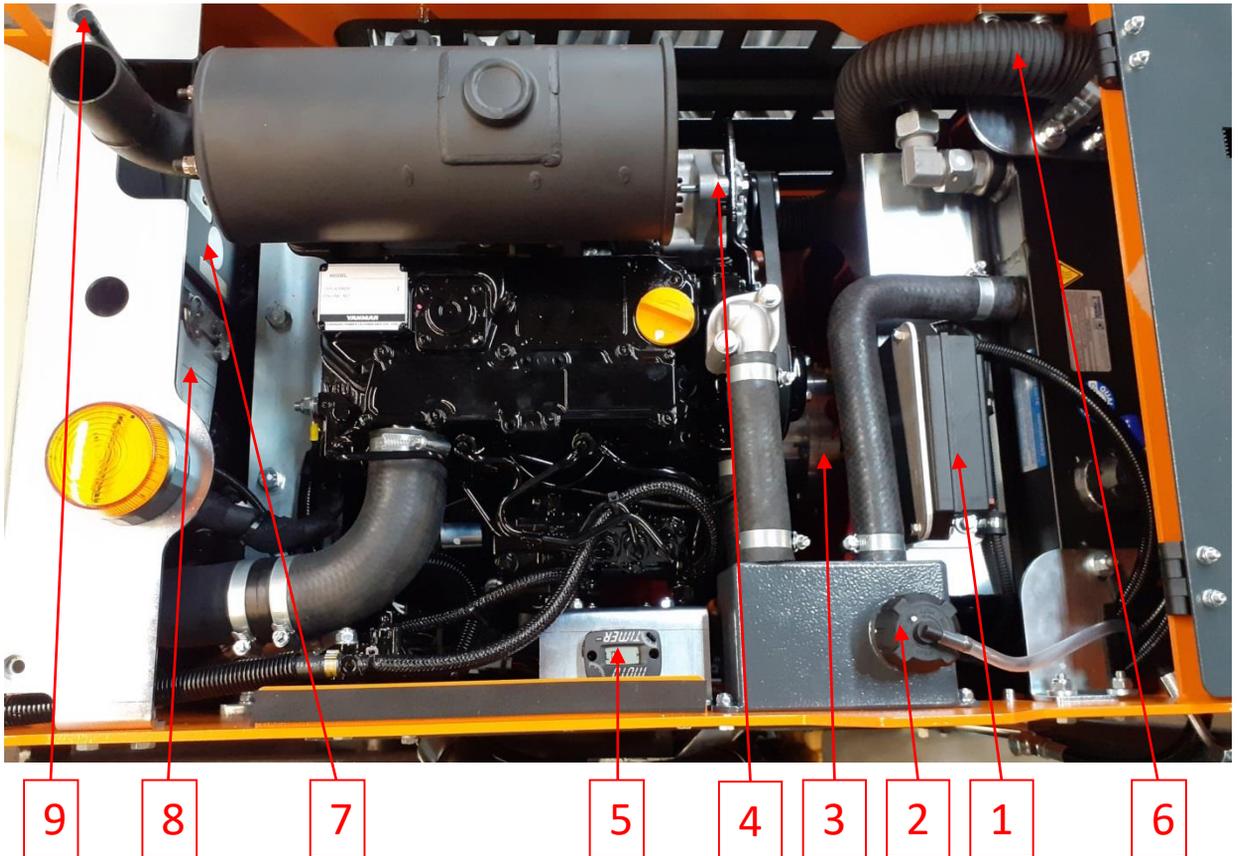


## 6.1 Structure of the machine



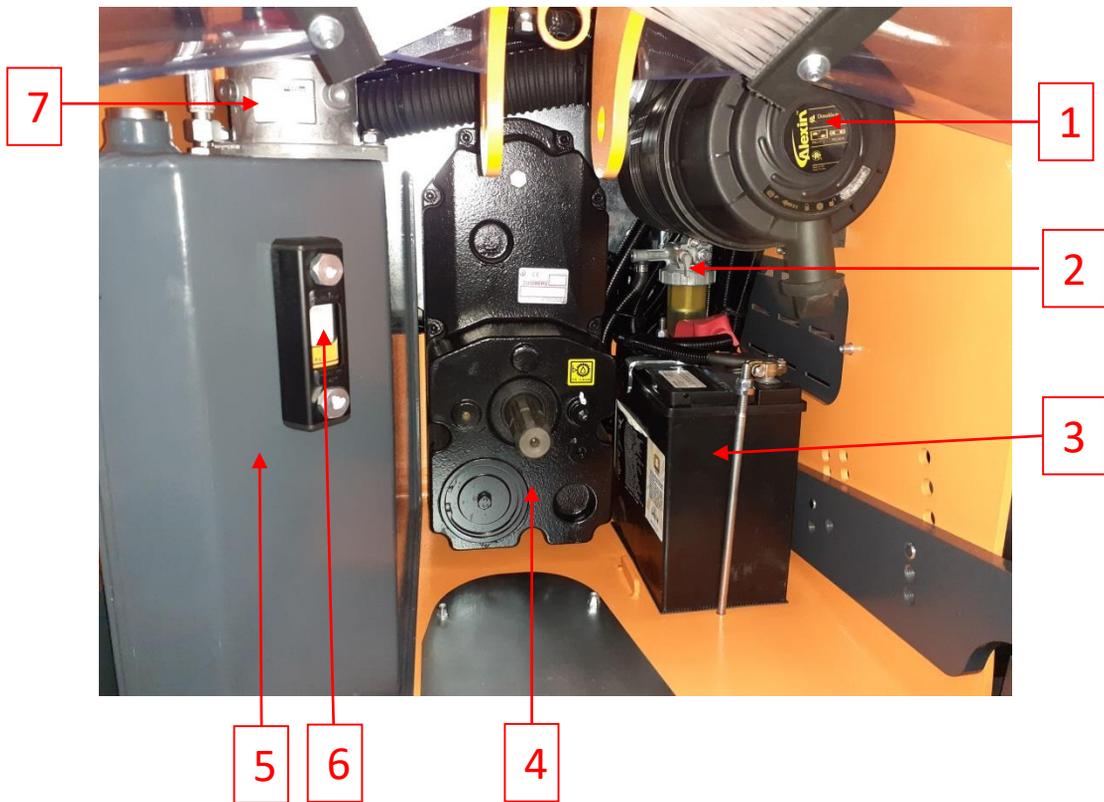
1. Hydraulic hoses/Drive motors
2. Document roll
3. Fuel tank
4. LED light
5. Hinged bonnet
6. Exhaust

## 6.1 Structure of the machine



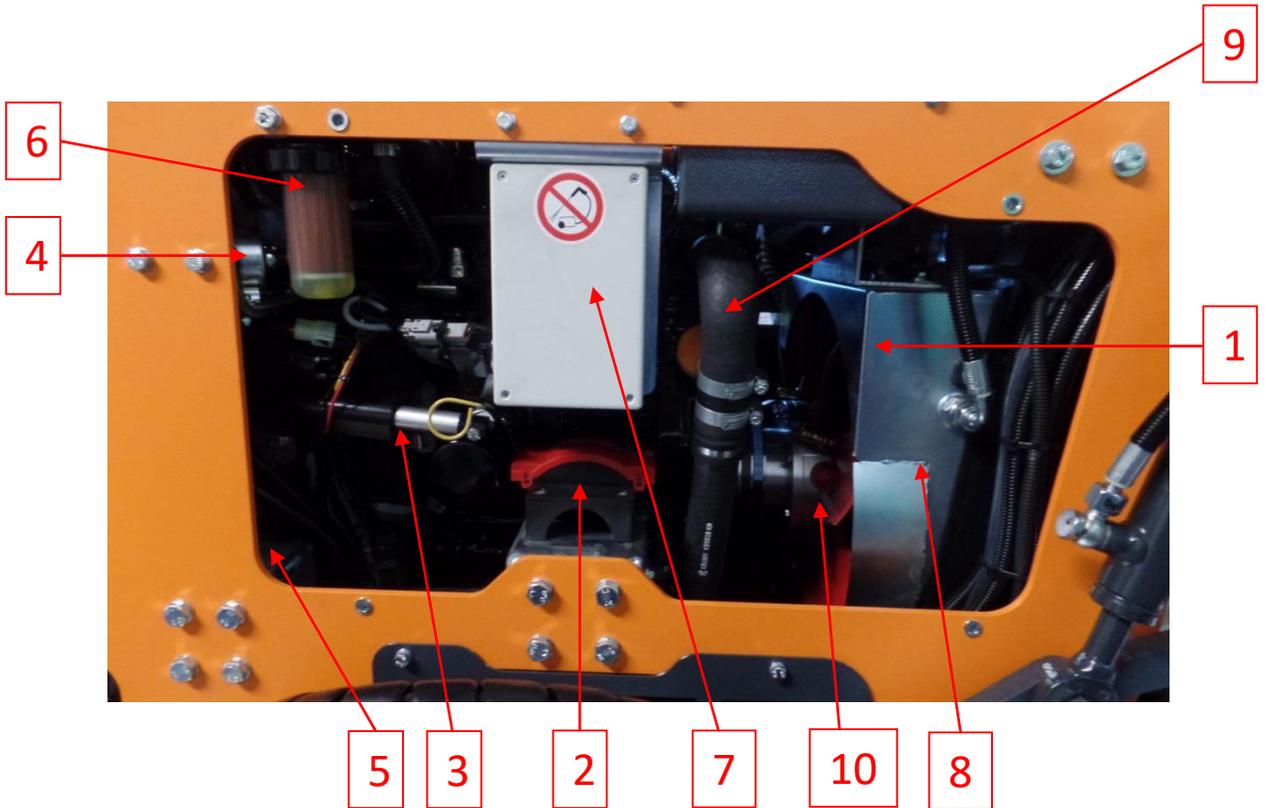
1. Battery charger (Battery hand-held transmitter)
2. Filling tank - Radiator
3. Cleanfix - Reversing fan
4. Alternator
5. Operational hour counter
6. Air filter – Intake hose
7. NBB receiver
8. NBB connector/wiring harness
9. Receiver antenna

## 6.1 Structure of the machine



1. Air filter
2. Water separator
3. Battery
4. Gearbox
5. Hydraulic Tank
6. Fill level indicator - Hydraulic tank

## 6.1 Structure of the machine

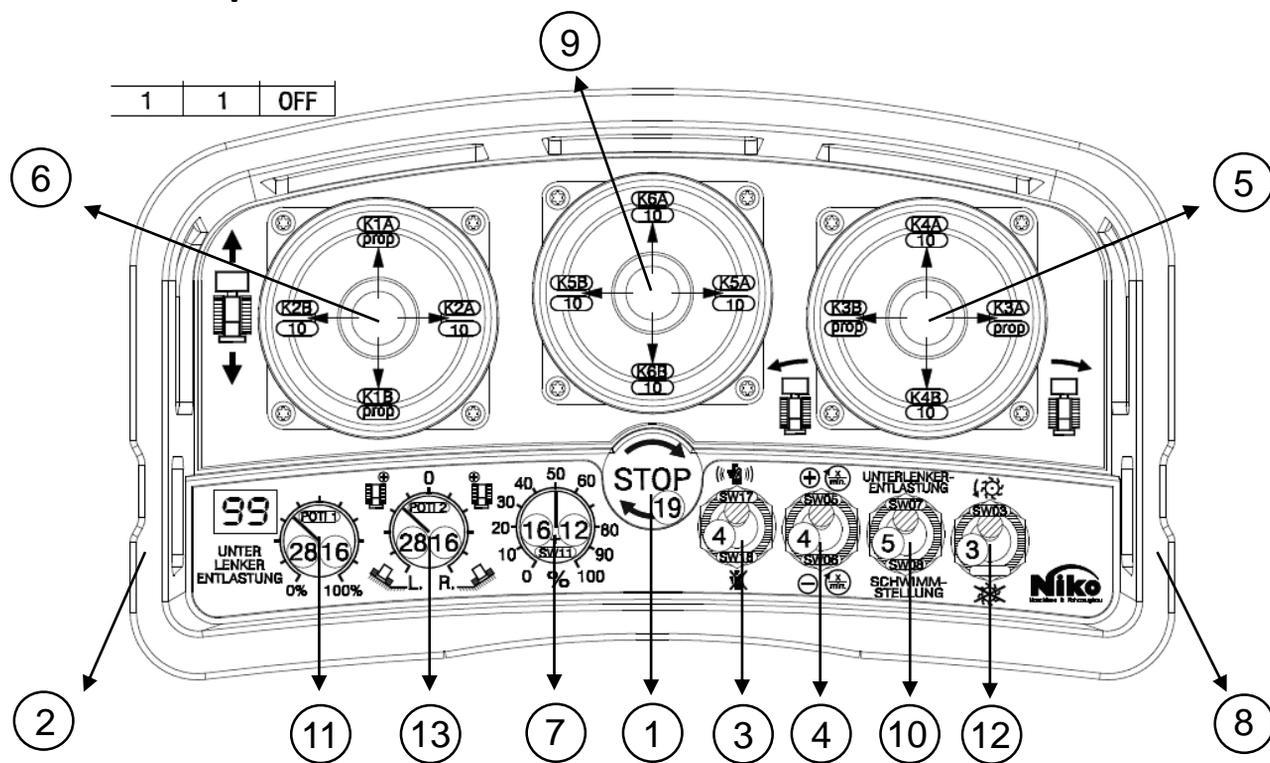


1. Air baffle
2. Cleanfix control unit (reversing fan)
3. Gas cylinder
4. Fuel diaphragm pump
5. Soft start - PTO
6. Fuel filter
7. Electrical unit
8. Radiator
9. Radiator hose
10. Cleanfix - Fan blade

## 6.2 Working with the machine

1. Be sure to wear the right work clothes. Wear approved safety shoes, no sandals or tennis shoes.
2. Check the blades of the mowing units. Bent blades, blades with cracks or other damage must be replaced with spare parts from the manufacturer.
3. Fill the tank outdoors. Clean up any spilled fuel.
4. Check that the oil level is within the acceptable limit.
5. Read the manufacturer's operating instructions and follow all engine and accessory instructions. These instructions are for your own safety and the safety of others.
6. Exhaust gases are dangerous. Therefore, start the engine outdoors.
7. Make sure that all safety devices are in place and correctly functioning.
8. This device may only be operated by people who have experience and routine with it and who have received training/instruction from Rapid Technic or its partners. Persons under 18 years of age are prohibited from using the RoboFlail.
9. Wet grass can be dangerous. Wait for the grass to dry.  
Caution: danger of slipping.
10. Instruct children and others to stay away from the area to be mowed.
11. Never work without good lighting conditions and poor visibility into mowing terrain.
12. Pick up any objects lying around from the ground and remove them from the surface to be mowed.
13. Look for obstacles and fixed objects. These can damage the machine or cause injury.
13. A hot engine, silencer, or exhaust can cause burns.  
Do not touch these parts.
14. Check that the installed safety devices are correctly functioning.
  - Emergency stop button on the machine
  - Stop button on the remote control

## 7.0 Description of the radio remote control



### Starting the RoboFlail Vario

1.) Pull the on/off switch on the machine while pressing the black safety button.

### Make sure that the emergency stop button is pulled!

2.) Release the stop button (no. 1) on the transmitter by turning it clockwise.

3.) Then press the Connect button (no. 2/on the side of the transmitter) for the tuning transmitter – receiver (if necessary, longer or more times).

4.) To start the engine, push the start switch (no. 3) up until the engine is running. Important!

If the starter motor is actuated once, its function is disabled.

For a second start attempt, first set the switch (no. 3) to the engine stop (down), then the starter can be operated again.

### Changing engine speed

Operate speed switch (no. 4), up (increase speed) or down (reduce speed)

### Driving

Right joystick (no. 5) for steering function, left/right

Left joystick (no. 6) for the driving function, forwards and backwards.

### Speed setting

You can use the potentiometer no. 7 to regulate the final speed of the machine.

## 7.0 Description of the radio remote control

### Hydraulic functions

Depending on the set mode (toggle switch no. 8 on the side of the transmitter), the assignments of the operating elements vary as follows:

	Mode 1 (toggle switch no. 8 in the centre)	Mode 2 (toggle switch no. 8 points forward)	MANUAL mode (toggle switch no. 8 points backwards)
Width adjustment	Left joystick (no. 6) right/left	Centre joystick (no. 9) right/left	Not applicable
Hydraulic lift	Right joystick (no. 5) up/down	Centre joystick (no. 9) up/down	Right joystick (no. 5) up/down
Additional clutch 1	Centre joystick (no. 9) up/down	Right joystick (no. 5) up/down	Centre joystick (no. 9) up/down
Additional clutch 2	Centre joystick (no. 9) right/left	Left joystick (no. 6) right/left	Left joystick (no. 6) right/left

### Lower link release/Float position

Hydraulic lift float position:

The hydraulic lift is released, the attachment rests on the ground and follows the contours of the ground when driving. To do this, move toggle switch no. 10 downwards to the "floating position"

Lower link release:

In the case of lower link release, only part of the weight of the attachment is transferred to the RoboFlail Vario. To do this, move toggle switch no. 10 upwards to "lower link release".

You can adjust the contact pressure of the attachment via the setting wheel no. 11.

### Power take-off:

The PTO is switched by means of the PTO switch (no. 12)

### Side slope function

You can assign different speeds to the tracks using the potentiometer no. 13.

### Switch off the machine

- 1.) Bring the track to a standstill (the brake is closed when stationary)
- 2.) Switch off attachment (12 points downwards)
- 3.) Reduce engine speed (4)
- 4.) Switch off the engine (3)
- 5.) Press stop (1)
- 6.) Switch off the transmitter
- 7.) Switch off the main switch on the device

Never leave the appliance unattended with the engine running!

Note: The controller must be kept horizontal. When held at a slant above 45°, the machine stops after a short horn signal and the mowing unit may shut down. After 5 seconds, the RoboFlail Vario is reactivated and it can be driven again. When the mowing unit is on, it must be turned off to reactivate the RoboFlail Vario.

**Please also read the operating instructions  
of the manufacturer of the radio remote control before commissioning!**

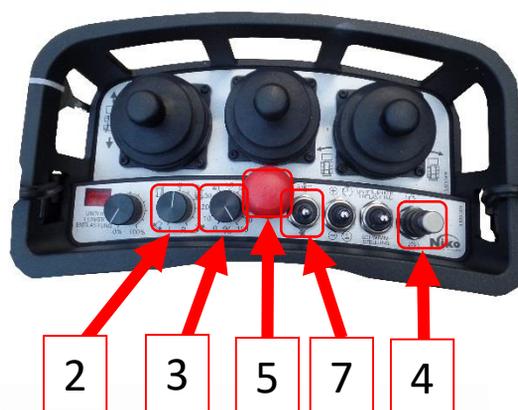
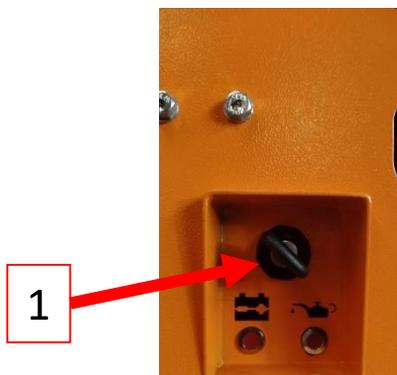
## Attention:



Before starting the engine, read the instructions thoroughly again and check your knowledge of the commands. From the time the engine is started, the operator is immediately responsible for any damage that may occur as a result of improper manoeuvres and non-compliance with safety and traffic laws.

## 7.1 Starting the engine

- 1.) Turn the ignition key to position 1 (fig. 1) ignition on!  
In winter months, 10 seconds of pre-heating by turning & holding the key in stop position
- 2.) **Before switching on the transmitter (remote control) the following settings on the remote control must be checked:**
  - Lateral tilt rotary knob (2) potentiometer set to 0
  - Speed potentiometer Rotary knob (3) set to 100%
  - PTO engagement Toggle switch (4) to OFF (centre position)
- 3.) Release the emergency stop button (5) on the transmitter (remote control) by turning the it clockwise
- 4.) Establish the radio link to the device, press the button (6) on the side (longer or more times if necessary)  
→A warning signal sounds!  
Tuning transmitter – Receiver
- 5.) Then push button (7) forward, to start the engine.



**ATTENTION:** Make sure that all other functions are turned off.

Device does not start when the PTO is engaged.

**Please also read the operating instructions of the manufacturer of the radio remote control before commissioning!**

## 7.1 Starting the engine

### **Important!**

If the starter motor is actuated once and the engine does not start, its function is disabled.

For a second start attempt, first set the switch to Engine Stop (2-3x tilting switch (7) backwards), then the starter motor can be operated again.

### **Attention:**



Avoid unnecessary damage! The starter motor can be affected if it is operated at a time for more than 15 seconds. If necessary, wait 1 to 2 minutes before attempting to start the machine again.

**Burned-out starters are not a guarantee!!**

### **Note:**

The controller must be kept horizontal. If the machine is held at a slanted angle above  $< 45^\circ$ , it will stop after a short horn signal, the mowing unit will shut down if necessary.

After 5 seconds, the RoboFlail Vario is reactivated and it can be driven again. To do this, repeat the boot process again.

!! If the mowing unit was switched on, it must be switched off before restarting the machine to restart the RoboFlail Vario.

### **Important:**

Never leave the appliance unattended with the engine running!

## 7.2 Forward and reverse movement

To operate the forward and reverse movement of the machine, use the left joystick on the remote control; push the lever forward to move the machine forward and pull the lever back to move the machine backwards. The joystick works proportionally, so the more the lever moves, the faster the machine moves. The maximum speed available depends on the throttle and potentiometer settings.



## 7.3 Changing direction R/L

The direction of the RoboFlail is controlled by moving the right joystick sideways; by pushing the lever to the right the machine steers to the right and by pushing the lever to the left the machine steers to the left.



### **Important:**

The control of the RoboFlail Vario is designed in such a way that the control is clear when you are standing behind the machine.

## 7.4 Changing speed

The engine speed can be manually adjusted by pressing the red-marked toggle switch. By pushing it upwards, the engine speed increases and by pushing it downwards it decreases.

Working speed always at full throttle.  
Corresponds to 3000 rpm on the diesel engine  
and 1000 rpm at the PTO.

### **Attention:**

When driving with the equipment switched off,  
the engine speed should be reduced.

### **Important:**

The driving characteristics change with  
reduced speed (more sensitive).  
The selected setting depends on  
numerous factors, but should always be in  
a range in which the operator  
has optimal control over the machine.

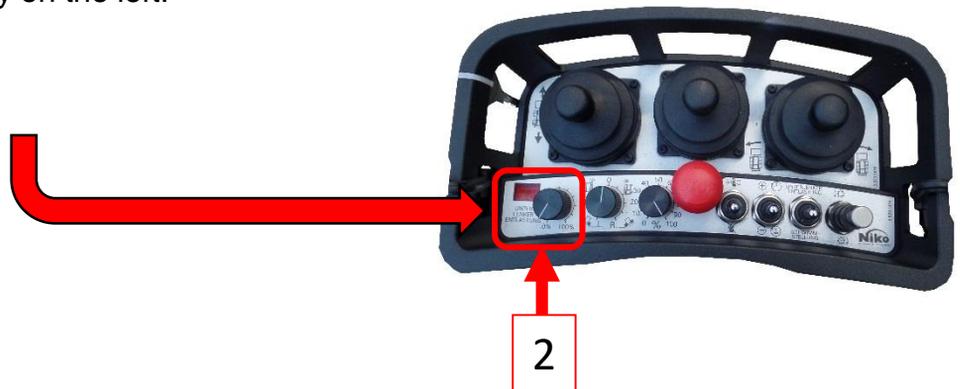


## 7.5 Float position/Lower link release

By tilting switch (1) backwards to the float position (hydraulic lift) the hydraulic lift is released, the attachment rest on the ground and follows the contours of the ground when driving.

By tilting switch (1) forward to position  
Only part of the weight of the attachment is transferred to the RoboFlail Vario.

You can adjust the contact pressure of the attachment via the rotary switch (2)!  
The contact pressure is shown in % on the digital display on the left.



If the "lower link release" position is selected, a hydraulic pre-pressure can be selected using the potentiometer (2) lower link release.  
The floating position of the attachment remains, but part of the weight of the attachment is transferred to the RoboFlail.  
This is especially advantageous for steep slopes, since the attachment can thus pull the RoboFlail down less.

## 7.6 PTO

Lifting the "extended" toggle switch while pushing it forward or rearward will engage the PTO.

Tilt forward, direction of rotation:  
forwards.

Tilt backwards, direction of rotation:  
reverse.

Toggle lever in centre position: PTO disengaged



## 7.7 Fine adjustment - Changing direction

The rotary switch to the left of the emergency stop button can be used to change the direction, i.e. the control of the direction of travel to the right and left, more sensitive (<50%) or more aggressive (>50%) can be set. At a setting of 100%, the device reacts very quickly or aggressively when the direction changes, and more sensitively when the setting is less than 50%.



## 7.8 Side slope function

Using the side slope potentiometer, you can assign different speeds to the tracks and thus influence the machine to move forward in a straight line. Depending on the position of the rotary potentiometer, a track becomes slower or faster. This means that a default setting can be made for lateral diagonal travel.



## 7.9 Cruise control - Function

→Function within the EU not allowed, therefore blocked

The cruise control function can be set using the button (1). When driving in a straight line for a long time the manually set speed, which is regulated by the hand lever, can be activated as a constant speed.

By pressing button (1) again the cruise control/speed limiter function is deactivated again.

The cruise control function is also overridden when the speed control lever is operated



## 7.10 CleanFix manual activation

The CleanFix can be manually operated while the device is running by means of the button (6), which you use for establishing the radio link to the equipment when you start-up.

→ Manually switch on CLEAN FIX



## 7.11 Occupancy - FREE

Additional functions such as for example additional lightings can be controlled via the button (2) with the lighting mounted on the RoboFlail Vario.

The function is not yet in use when delivered from the factory.

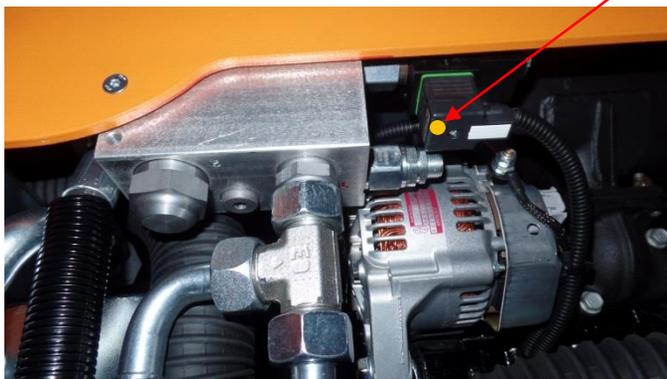


## Special equipment - Working pump

### 7.11 Switching on working pump

You can use the button (2) to select the working pump installed on this equipment by operating/pressing the switch ON/OFF.

A lit diode on the valve connector of the flow divider indicates that the working pump is ON.



## 7.12 General information on operating the width adjustment

The width adjustment is controlled by tapping the joystick I in the respective stored mode

### Joysticks controlled.

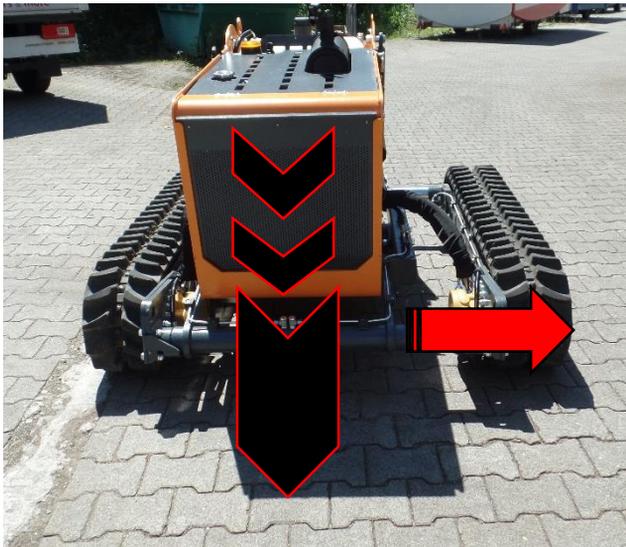
1x tap extend

2x tap retract

**Important:** The width adjustment can only be activated when the device is moving!! This feature is disabled while the device is stationary.

Setting of the width (intermediate range - MIN/MAX) is maintained while driving by stopping the equipment (device is stationary).

Joystick for forward/reverse travel in centre position.



### **Important:**

**Width adjustment can only be controlled when the equipment is moving!**

### **Adjust individual width**

When the respective chassis is extending or retracted by tapping it, it moves outward to the maximum stop. To set an intermediate width, the device must be stopped. The width extended at that time is not maintained until the equipment is stopped.



## 7.13 Driving & hydraulic functions (hand-held transmitter) The mode switch

Depending on the set mode (toggle switch (8) on the side of the transmitter), the assignments of the operating elements vary.

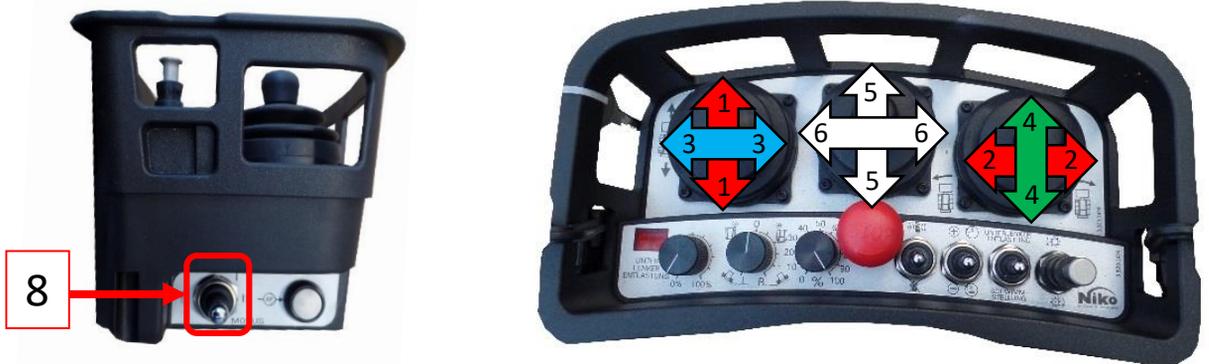


	Function		No.
	Drive forward – reverse	Actuation	1
	Drive right – left	Actuation	2
	Width adjustment <b>extend</b>  <b>Function only activated when the device is moving!!!</b>	<u>Extend right-hand side of the chassis as far as it will go</u> 1x tap the lever to the right  <u>Extend left-hand side of the chassis as far as it will go</u> 1x tap the lever to the left  For individual width adjustment please read <b>Chapter 7.12</b>	3
	Width adjustment <b>retract</b>  <b>Function only activated when the device is moving!!!</b>	<u>Retract right-hand of the chassis as far as it will go</u> 2x tap the lever to the right  <u>Retract left-hand of the chassis as far as it will go</u> 2x tap the lever to the left  For individual width adjustment please read <b>Chapter 7.12</b>	3
	Hydraulic lift	Tilt the lever forward/backward Lower front → hydraulic lift Raise rear → hydraulic lift	4
	Auxiliary – Hydraulic clutch 1	Actuation	5
	Auxiliary – Hydraulic clutch 2	Actuation	6

### 7.14 Mode 1 Toggle switch (8) position in centre.

Via mode 1, the control functions for the device can be controlled as follows. Auxiliary clutch (5+6) via the central joystick. The width adjustment is located on the left joystick. Raise & lower the hydraulic lift on the right joystick.

## Joystick – Assignment in mode 1



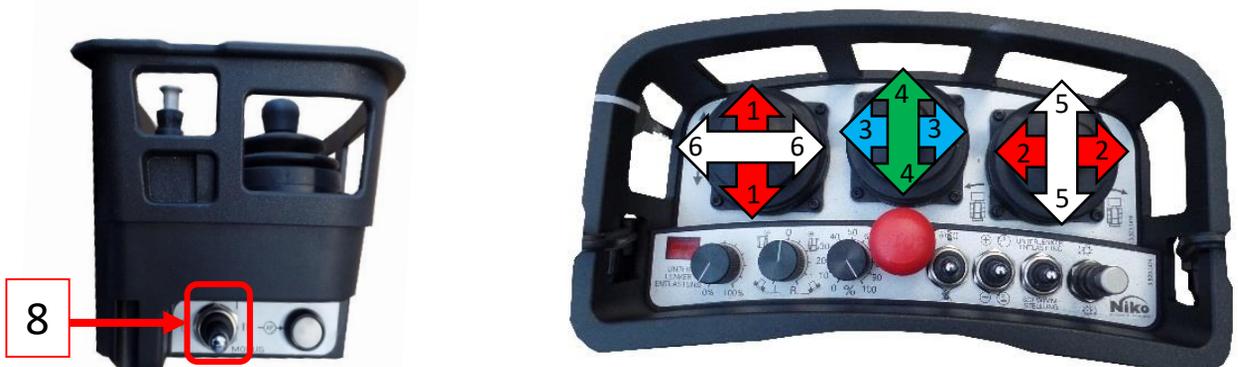
### 7.15 Mode 2 Toggle switch (8) position forward.

Mode 2 – Default setting

Mode 2 is used to control the control functions of the hydraulic lift (4) & the control of the width adjustment (3) via the central control lever.

The auxiliary clutch (5+6) are controlled via the left and right-hand joysticks.

## Joystick – Assignment in mode 2

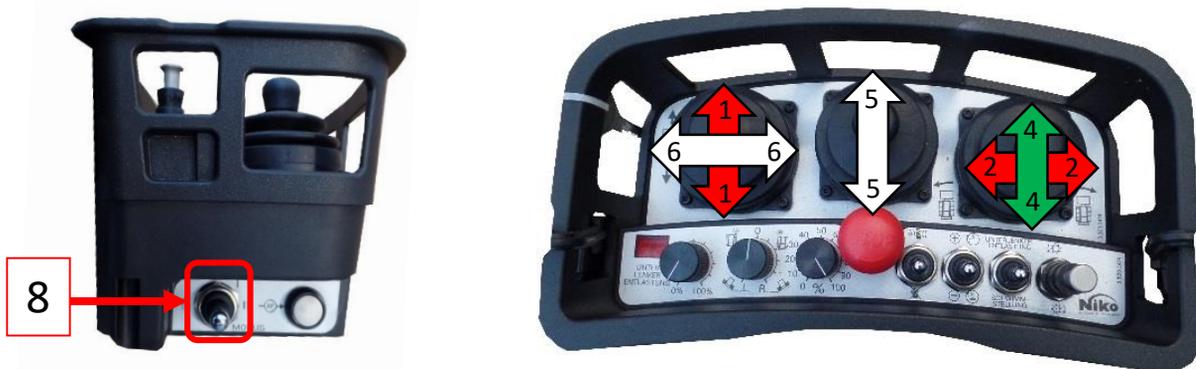


## 7.16 Manual mode Toggle switch (8) rear position

The MANUAL mode is used to place the hydraulic lift assignment (4) on the right joystick. The auxiliary clutch (6) is located on the left-hand joystick, the auxiliary clutch (5) is located on the centre joystick.

In MANUAL mode, the control of the width adjustment is omitted.

### Joystick – Assignment in MANUAL mode



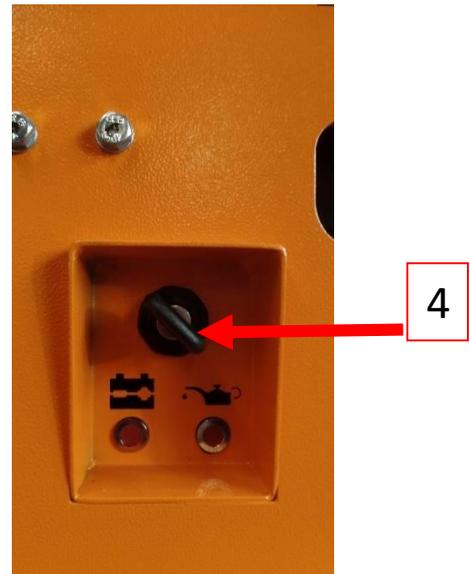
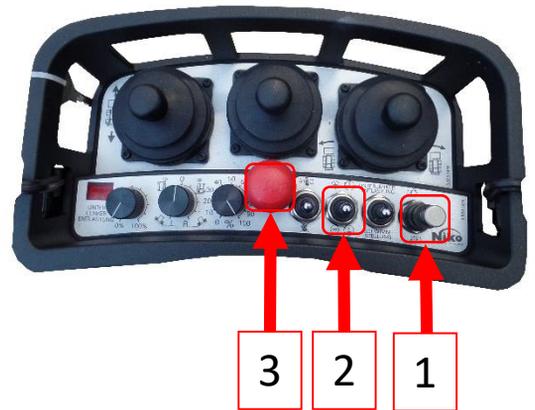
## 7.17 Shutting down the engine

Before the engine is switched off, all machine movements must be stopped. Switch (1) (mowing unit) in "off" position (switch position in centre position) and engine speed switch (2) must be reduced to minimum value.

Allow the machine to run at this level for approximately one minute to stabilise the pressures and temperatures.

The machine is then switched off by pressing the emergency STOP BUTTON, switch (3), which stops the engine.

If the engine has been stopped, the process is completed by additional turning of key (4) on the RoboFail.



### **Important:**

Also refer to the enclosed operating instructions of the radio remote control manufacturer.

## 8.0 Troubleshooting

A large part of the functional defects can be attributed to improper use of the machine. The following table lists malfunctions and the actions that can be taken to prevent them.

Important note:

If you have any problems or doubts, always contact our sales representative Rapid Technic or your RoboFlail dealer. In this case, please note down your equipment type, serial number and operating hours of your equipment.

If the error you are having is not shown in the table below, contact Rapid Technic or your RoboFlail dealer for the necessary repair.

# Technical Support

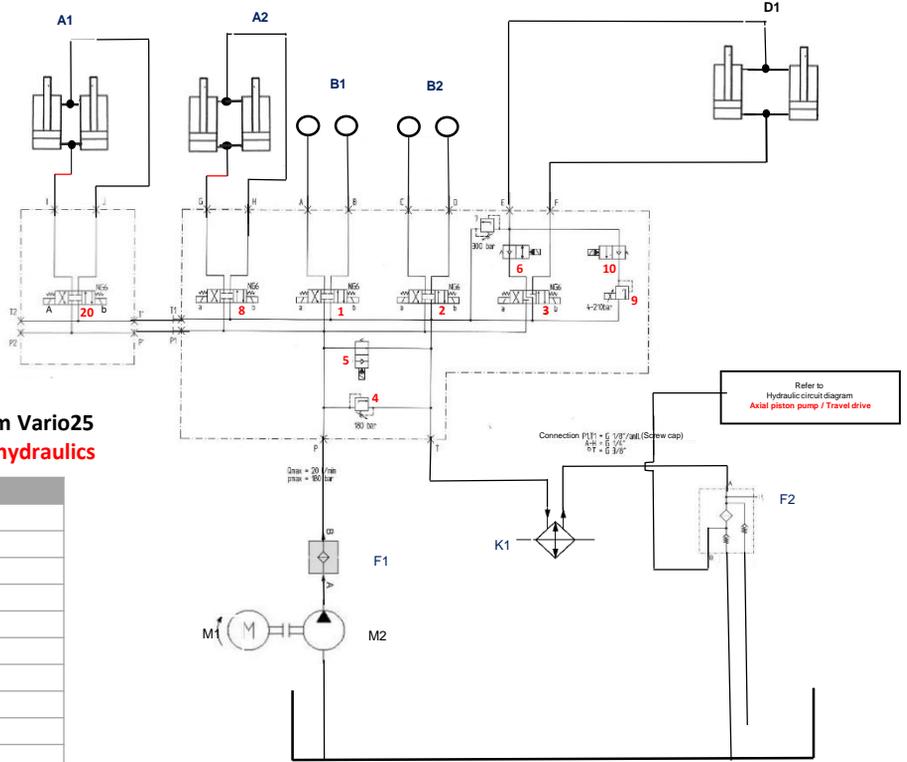
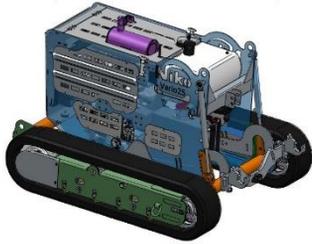
Rapid Technic GmbH  
Industriepark 7  
D-74706 Osterburken

Phone: +49 6291 415 9590  
Email: [info@rapid-technic.de](mailto:info@rapid-technic.de)  
Website: [www.rapid-technic.de](http://www.rapid-technic.de)

## 8.1 Diesel engine

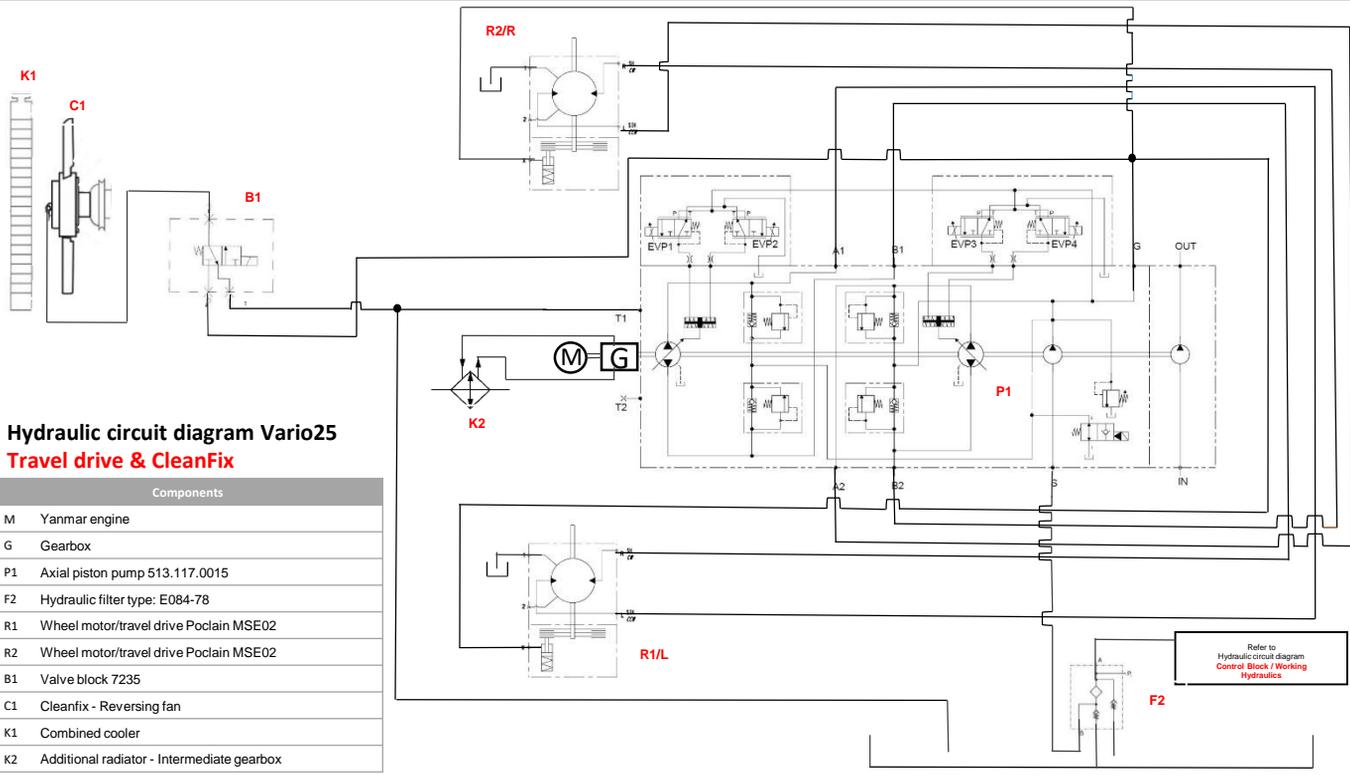
The visual signal of the low oil pressure stays on even when the engine is running at high speed.	<ul style="list-style-type: none"> <li>- Low oil level in the oil pan</li> <li>- The oil is unsuitable for the season</li> <li>- Oil filter clogged</li> </ul>	<ul style="list-style-type: none"> <li>- Restore the level</li> <li>- Replace the oil</li> <li>- Replace the filter</li> </ul>
Fluid leaks from radiator cap breather tube	<ul style="list-style-type: none"> <li>- Low fluid level, fluid leakage</li> <li>- The radiator is clogged</li> <li>- Fan belt</li> </ul>	<ul style="list-style-type: none"> <li>- Add fluid, repair</li> <li>- Clean the radiator</li> <li>- Check belt tension</li> </ul>
Engine does not start	<ul style="list-style-type: none"> <li>- voltage on the battery too low</li> </ul>	<ul style="list-style-type: none"> <li>- Check the battery voltage.</li> </ul>
Engine shuts off when working.	<ul style="list-style-type: none"> <li>- Check fuel level (tank empty)</li> <li>- Primary fuel filter clogged</li> <li>- Faulty fuel pump</li> </ul>	<ul style="list-style-type: none"> <li>- Add fuel</li> <li>- Replace the primary fuel filter.</li> <li>- Replace the fuel pump</li> </ul>
The pump makes a strange noise.	<ul style="list-style-type: none"> <li>- no oil in the tank</li> <li>- Defective pump</li> <li>- The hydraulic oil is not suitable for this temperature</li> </ul>	<ul style="list-style-type: none"> <li>- Restore the oil level</li> <li>- Repair or replace</li> <li>- Replace</li> </ul>

## 8.2 Hydraulic diagrams



**Hydraulic circuit diagram Vario25**  
**Control block/Working hydraulics**

Components	
A1	2x cylinder width adjustment, chassis FR-L
A2	2x cylinder width adjustment, chassis FR-R
B1	Auxiliary clutch Gr.1
B2	Auxiliary clutch Gr.1
D1	2x Cylinder hydraulic lift (raise/lower)
F1	High pressure filter (IKRAN) 60MU
F2	1x Hydraulic filter type E084-78
M1	Yanmar engine
M2	Gear pump 4.3ccm
K1	Combined cooler



**Hydraulic circuit diagram Vario25**  
**Travel drive & CleanFix**

Components	
M	Yanmar engine
G	Gearbox
P1	Axial piston pump 513.117.0015
F2	Hydraulic filter type: E084-78
R1	Wheel motor/travel drive Poclain MSE02
R2	Wheel motor/travel drive Poclain MSE02
B1	Valve block 7235
C1	Cleanfix - Reversing fan
K1	Combined cooler
K2	Additional radiator - Intermediate gearbox

## 8.3 Electrical circuit diagram NBB

1 - 2

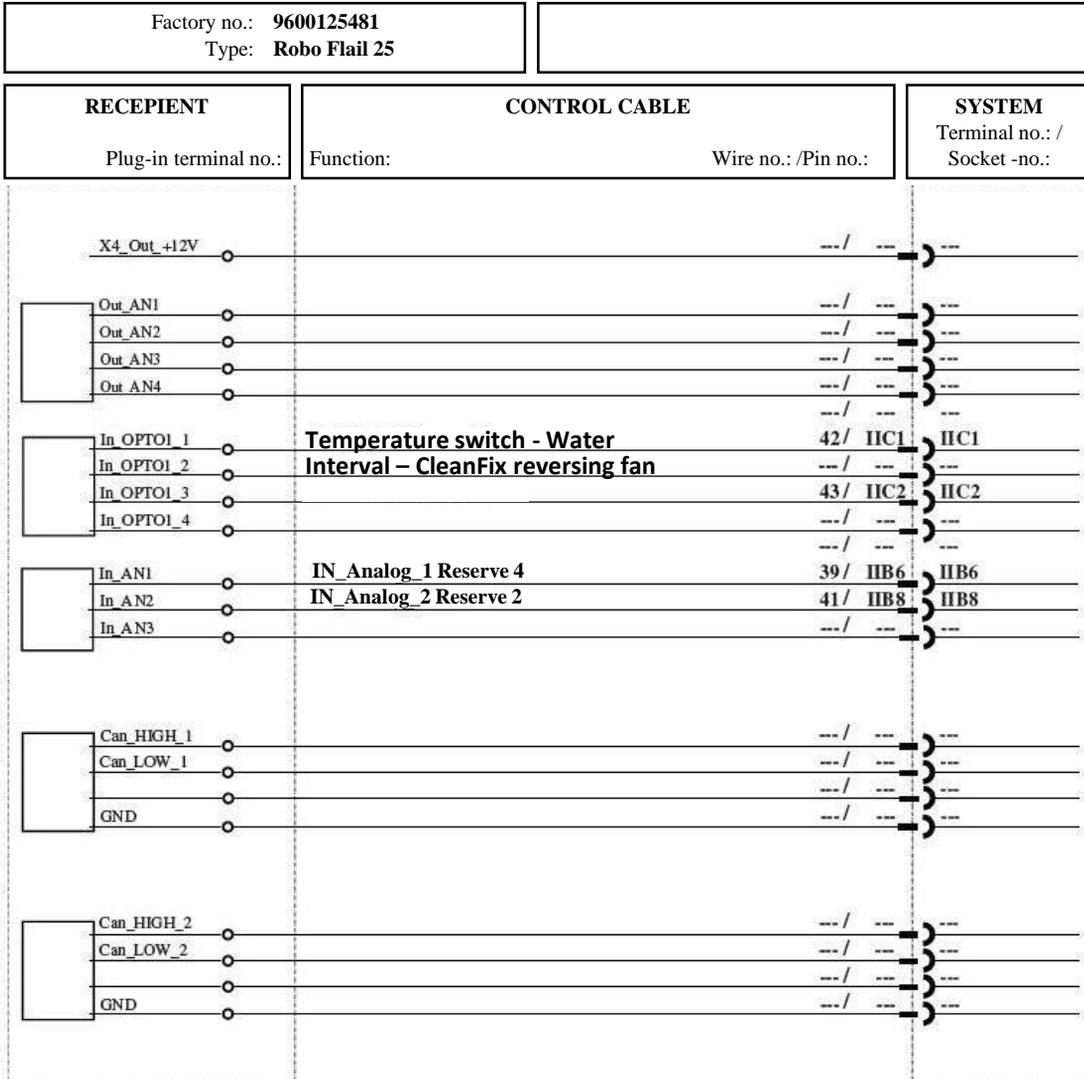
### RECEIVER Compact V-D-S CONNECTION DIAGRAM

Factory no.: <b>9600125481</b>	Cable length: <b>Internal</b>
Type: <b>Robo Flail 25</b>	Harness no.: <b>3.400.7000</b> (50 x 0.75mm <sup>2</sup> )
Circuit diagram no.:	System connector no.:
Manufacturer: <b>Niko GmbH</b>	Insert no.:
Date: <b>07/10/2020</b>	Mounting housing no.: <b>3.300.2004</b> (32p/50p)
Processed: <b>O. Vetter</b>	Insert no.: <b>STV1421</b> (25p.; St) x 2
	Connector no.:
	Insert no.:



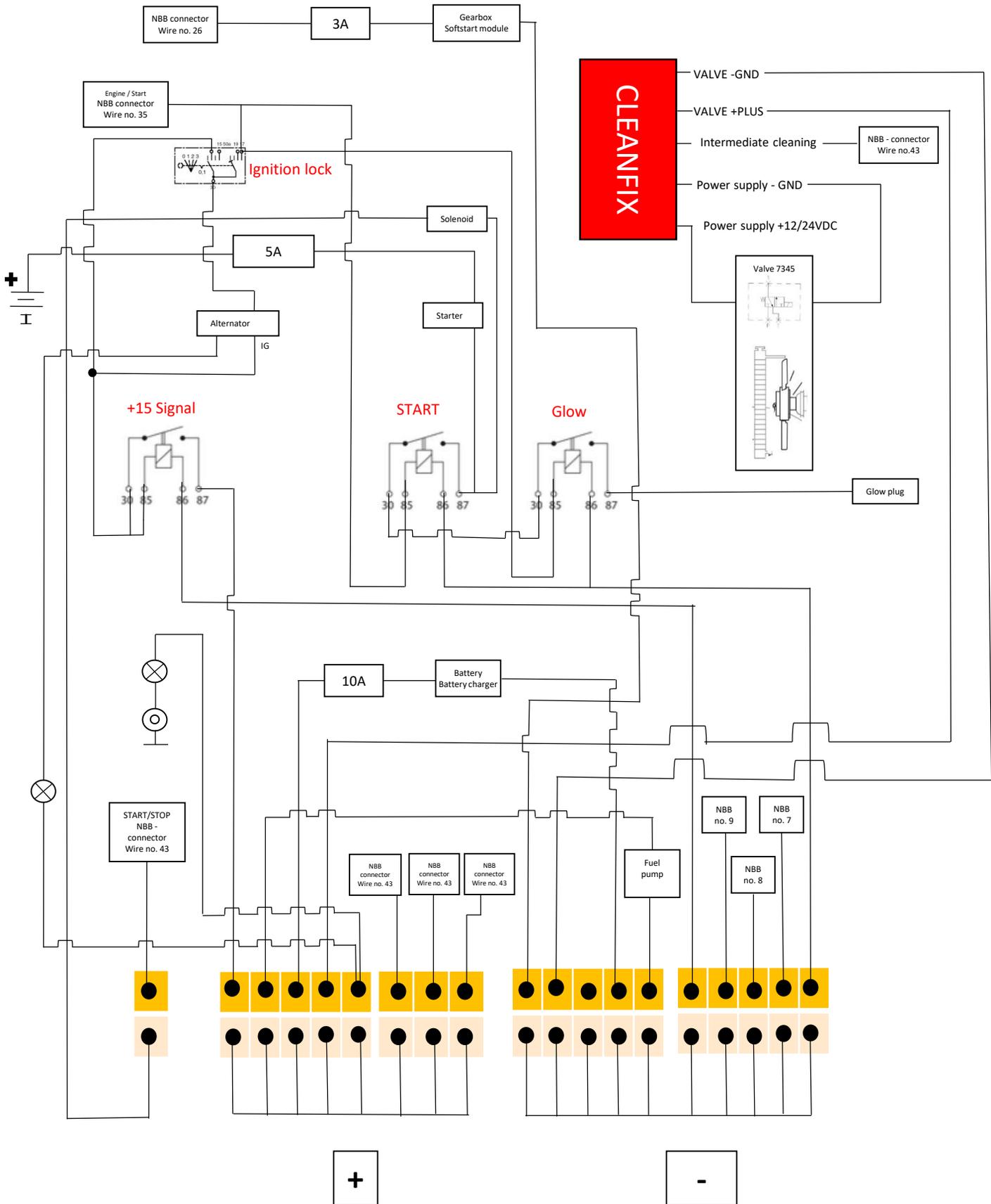
RECEIPT	CONTROL CABLE	SYSTEM	Connection
Plug-in terminal no.:	Function:	Terminal no. / Socket no.:	Control valve block
	Supply 12 V/DC	1 / IA1	
	Supply 0 V/DC	9 / IA9	
		8 / IA8	
		7 / IA7	
IN_Not-Stop	Supply line +/LED	2 / IA2	IA2
OUT_Not-Stop	GROUND/LED	10 / IB2	IB2
IN_POT1	Supply line 12 V/DC	3 / IA3	IA3
Out1 /	Drive left FORWARD (480 – 740 mA, PWM 120Hz)*	11 / IB3	IB3
Out2 /	Back left BACKWARD (480 – 740 mA, PWM 120Hz)*	12 / IB4	IB4
Out3 /	Drive right FORWARD (480 – 740 mA, PWM 120Hz)*	13 / IB5	IB5
Out4 /	Drive right BACKWARD (480 – 740 mA, PWM 120Hz)*	14 / IB6	IB6
Out5 /	(internal use)	-- / --	--
Out 6 / Pot1+SW07	Lower link release(PWM)****	15 / IB7	IB7
Out 7 / SW07	Lower link release 2 (on/off)****	16 / IB8	IB8
Out 8 /	****	17 / IC1	IC1
Out 9 / Modus 1-E6A	Auxiliary clutch Gr.1	18 / IC2	IC2
Out 10 / Modus 1-E6B	Auxiliary clutch GR.1	19 / IC3	IC3
Out 11 / Modus 1-E6A	LIFT attachment (sw)****	20 / IC4	IC4
Out 12 / Modus 1-E6B	LOWER attachment (sw)****	21 / IC5	IC5
Out 13 / Modus 1-E3A 1z	Right chassis wide (sw)****/****	22 / IC6	IC6
Out 14 / Modus 1-E3A 2z	Right chassis narrow (sw)****/****	23 / IC7	IC7
Out 15 / SW15	Working pump ON ( set/reset ) FREE	24 / IC8	IC8
Out 16 / SW05	Throttle "+" (momentary)	25 / IC9	IC9
IN_POT2	Supply line 12 V/DC	4 / IA4	IA4
Out 17 / SW04	Left mowing unit ON* (on/OFF, only after engine start)	26 / IIA1	IIA1
Out 18 / SW03	Brake (Zero position driving functions) *	27 / IIA2	IIA2
Out 20 /	Attachment floating position (on/off)	28 / IIA3	IIA3
Out 21 / SW07	Lower link release (on/off)****	29 / IIA4	IIA4
Out 22 / Modus 1-E 5A	Auxiliary clutch Gr.1	30 / IIA5	IIA5
Out 23 / Modus 1-E 5B	Auxiliary clutch Gr.1	31 / IIA6	IIA6
Out 24 / SW06	Throttle "- " (momentary)	32 / IIA7	IIA7
Out 25 /	12V relays (THROTTLE +/THROTTLE -)	33 / IIA8	IIA8
Out 26 / SW24	On/Horn (active after 30 seconds after the transmitter is switched off)**	34 / IIA9	IIA9
Out 27 / SW17	Engine START (momentary, mowing unit OFF, only once, then stop again)*	35 / IIB2	IIB2
Out 28 / SW18	Engine stop (NC)	36 / IIB3	IIB3
Out 31 / Modus 1-E 3B 2z	Left chassis narrow ****/****	37 / IIB4	IIB4
Out 32 / Modus 1-E 3B 1z	Left chassis wide ****/****	38 / IIB5	IIB5
LSS1	Out_12 V/DC	44 / IIC3	IIC3
		-- / --	--
		-- / --	--
		-- / --	--

## 8.3 Electrical circuit diagram NBB



- \* *When the tilt switch on the transmitter is activated, the functions are switched off, the switch-off time can be set on the PC tool.*
- \*\* *When the tilt switch on the transmitter is activated, the horn is active, activation time can be set on the PC tool.*
- \*\*\* *By joystick K2A/B and switch SW0 (manual).*
- \*\*\*\* *Output OUT8 ("valve 9") becomes active with OUT6, OUT7, OUT9, OUT10, OUT11, OUT12, OUT13, OUT14, OUT21, OUT22, OUT23, OUT31, OUT32*
- \*\*\*\*\* *Deflect joystick 1x -> the chassis becomes wider; deflect joystick 2x -> the chassis becomes narrower (standard parameter 10 S) the function is activated when the driving function (K1) is active.*

## 8.4 Electrical circuit diagram NIKO & NBB





Relay THROTTLE+/THROTTLE-

## 9.0 Guiding and manoeuvring the machine

### Attention:



Before operating the machine, make sure that you are perfectly familiar with function, commands and associated safety standards. The operator must be in the vicinity of the machine. Before moving the RoboFlail Vario, make sure that no one is within the operating radius of the machine (100 m) and that the operating range is free of dangerous obstacles.

Prior to any operation of the mowing unit, complete inspection and maintenance is required to ensure that the mowing unit is in good and safe condition.

Damaged and/or defective parts must be repaired and/or replaced immediately. Replace worn, defective, and missing parts immediately. Check that all bolts and fittings on the attachment are tight. Also check the cutting blades and blade bolts for tightness and wear. Never stand below the machine in the direct direction of fall!!!

Do not change the direction while moving the RoboFlail Vario over curbs, stones, or surfaces with large elevation differences. In these cases, always move the machine at a right angle to the obstacles.



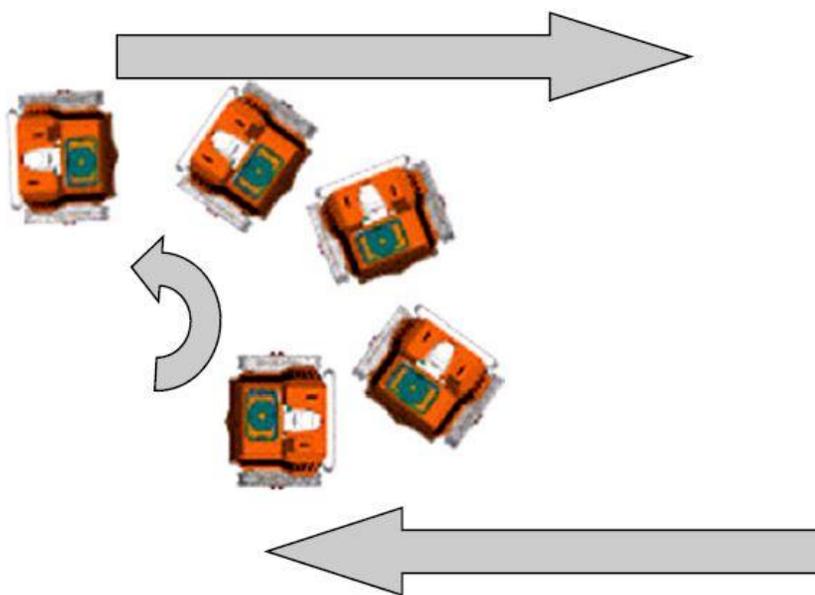
Do not move along the edge of a slope or uneven surface while one rubber track is in horizontal position and the other is tilted or partially raised. →If the machine is at an angle of more than 10°! Always drive the machine so that both tracks move on the same horizontal surface to avoid the risk of track damage.



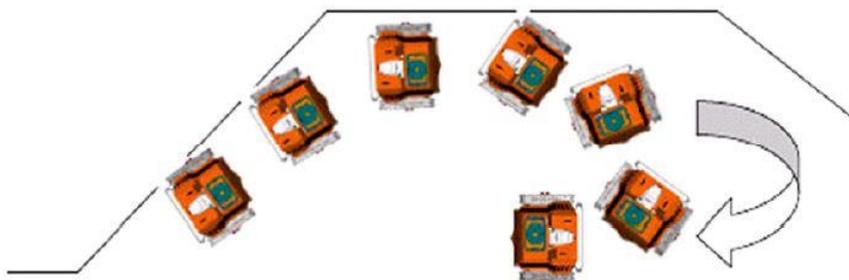
## 9.1 Driving on a slope

- Drive carefully
- Drive slowly
- Always drive up and down diagonally down the slope, if this is not possible, drive backwards up the slope, so you use the maximum climbing possibility.
- When turning on a slope, the rear must always be at the top of the slope.
- Drive as constantly as possible and only change the direction if necessary.
- Use the cruise control on large surfaces (Outside the EU only) and the side slope function.
- Look out for stones, debris and tree stumps.

### Turning up on a slope



### Turning down on a slope

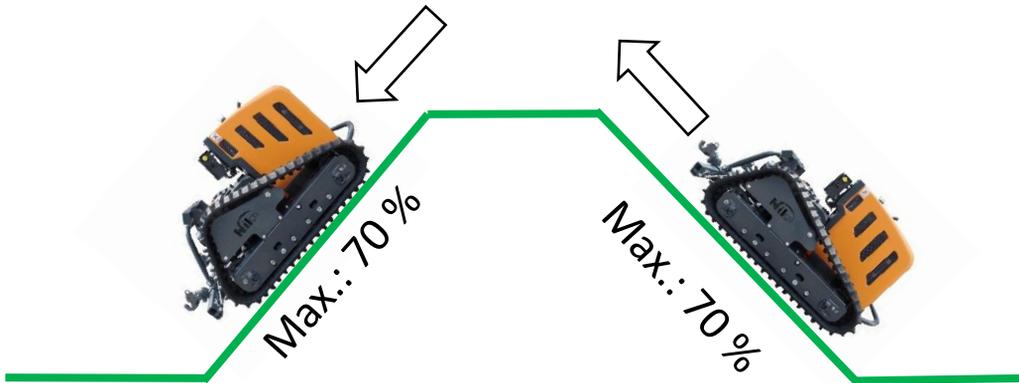




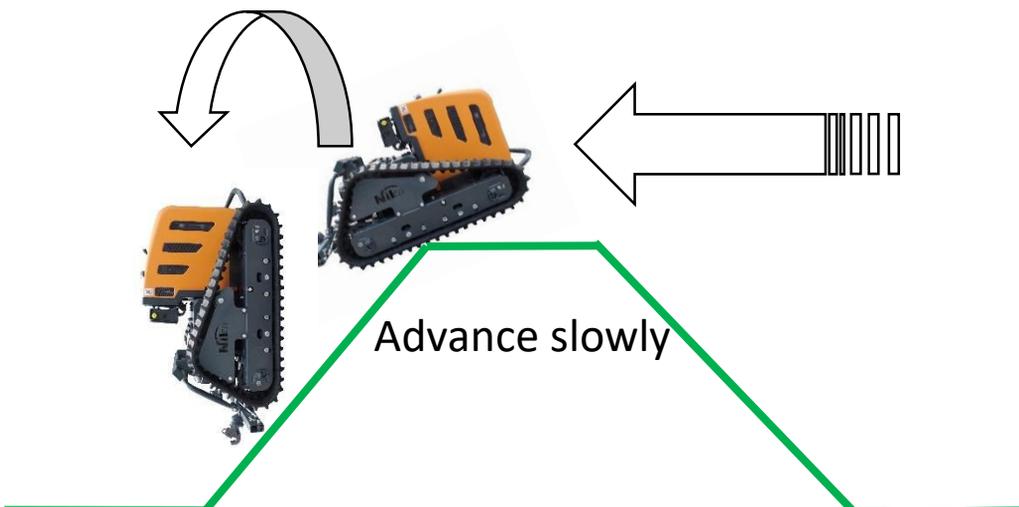
### Attention!

The equipment is designed for a maximum gradient of 70%.  
Drive up a slope 70-100% in a reverse direction, drive up a slope > 100% in a diagonal reverse direction.  
Extreme caution should be exercised when driving over hilltops!  
Only drive at walking speed and never stand below the equipment on steep slopes and hilltops!

### Driving over hilltops



### Driving over hilltops



## 9.2 Working and danger zone

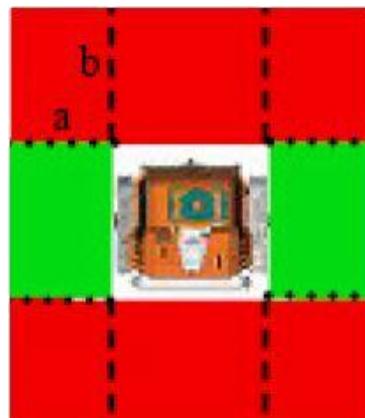
Please keep the following safety distances:

b= 20 m

a= 10 m (only when the mowing unit is running)

Green area: When the blades are at a standstill you can approach the stationary machine in this area safely.

Red zone: **Danger zone!** Never step in this area closer when the engine is running than 20 m!



## 10.0 Transport (loading and unloading)

The RoboFlail is transported to its place of operation by a truck or trailer.

Make sure that the means of transport you are using has sufficient load capacity.

For driving onto a trailer or commercial vehicle, we recommend the use of drive-on ramps. Before driving on the ramps, make sure that they are aligned with the tracks and that a lateral slip can be prevented.

**To avoid machine damage or life-threatening injury when transporting the machine, it is essential to observe the following points:**

Transport work may only be carried out by persons qualified for this purpose, observing the safety instructions.

The machine must only be lifted at the provided stops. Only the load holders and harnesses specified here may be used for transporting the machine. Never stand under a suspended load!



### **Attention!**

Due to its purpose-oriented, constructive design and application, not all possible hazards can be eliminated. The operator must ensure that these residual risks are handled responsibly!

## 10.1 Storage

If the RoboFlail is not used, the equipment must be stored in a safe place. It is recommended that the mowing unit be kept fully lowered to the ground.

Proper preparation and storage of RoboFlail at the end of the season is of the utmost importance in maintaining its appearance and ensuring years of reliable operation. The following storage procedures are recommended:

- Carefully remove any type of contamination from the RoboFlail Vario to prevent damage from rotting grass and standing water. Lubricate all grease points of the RoboFlail.
- Tighten all screws and bolts.
- Check the RoboFlail for worn or damaged parts. Immediately perform any pending repairs and replacement of components so that the unit is ready for use at the beginning of next season.
- If necessary, use a sealing spray to prevent rust and preserve the appearance of the mower.
- Disconnect the battery when the machine is not used for an extended period of time.
- Do not leave the RoboFlail outdoors unprotected. (Cover etc.)

## 10.2 Use of an additional battery

If it is necessary to start the engine using an additional battery, proceed as follows:



### Attention:

**Powerpack/starting aids must not be used!!**

Risk of overvoltage!!

Avoid damage! The electrical charge of the auxiliary battery can damage the electronic components.

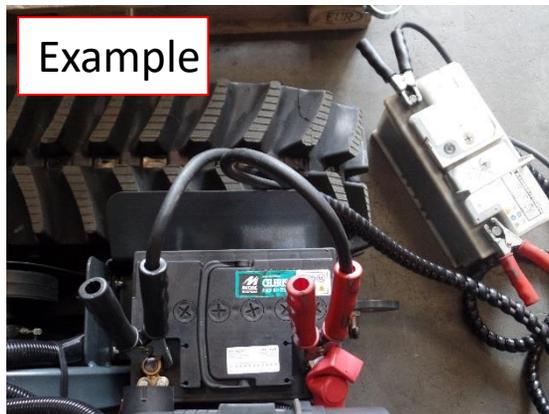
1 – A battery is installed on the RoboFlail Vario25. This is located in the front of the equipment.

2 - Connect the positive (+) auxiliary cable to the auxiliary battery and the other end to one of the two batteries on the RoboFlail Vario.

3 - Connect the negative (-) auxiliary cable to the auxiliary battery and the other end to the ground of the battery.

Start the engine and run the machine at 1000 rpm for a few minutes.

Carefully disconnect the auxiliary cables in the exact reverse order: First the negative cable and then the positive cable.



### Danger:

Never check the battery voltage by placing a piece of metal over the terminals. Use a voltmeter.

Always remove the grounded battery terminal (-) first and replace it last. The sulphuric acid in battery electrolytes is toxic. It is strong enough to sever the skin, eat holes in clothing and cause blindness when it splashes into the eyes. The terminals and connectors and associated accessories of batteries contain lead and lead compounds and these compounds are known to cause cancer and genetic damage. Wash your hands after handling.



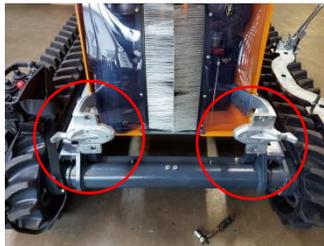
## 10.3 RAPID ADAPTER

Additional tool for mounting single-axle attachments of all kinds

### Installation:



Loosen **original holder** by opening the side screw connection on the frame.  
→ Remove the original holder by pulling it out.



Fix the **rapid adapter** to the equipment using the screw holes on the side.  
(Original holder holes)



Fix **KAT.1 holder** via 4 bolts and nuts



Fix Rapid adapter  
→ Remove KAT.1 holder

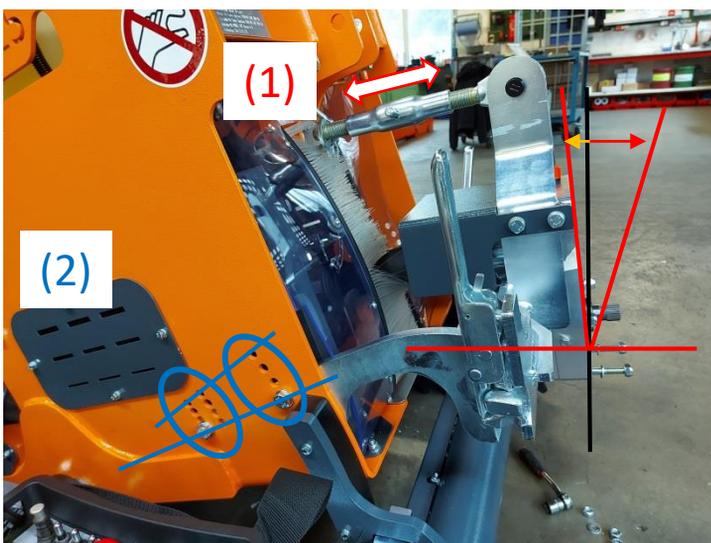


Hook in the Rapid holder & fold up the locking lever



Secure the clamp lock & the drive shaft safety track to the frame and hook the drive shaft to the gearbox

### Possible applications:



The inclination of the holder can be adjusted or set via the clamp lock (1).

The height of the adapter system can be adjusted using the side mounting screws (2).



#### Attention!

Attachments must be adjusted beforehand to the desired working height (2) and aligned horizontally via the clamp lock (1) to the carrier truck.

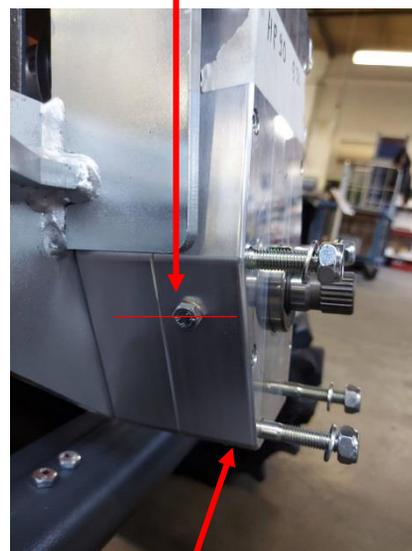
## 10.3 RAPID ADAPTER Gearbox service intervals

The gearbox oil of the Rapid adapter should be changed 1x annually or as necessary and checked for abrasion. Provide a suitable container for this. By loosening the sealing cap (1) below the gearbox, the oil can be drained from underneath the gearbox. After draining the oil, screw the sealing cap (1) back in firmly. Now open the side cap (2) of the gearbox and fill up approx. 0.3 litres of gearbox oil via the filler neck (3) above.

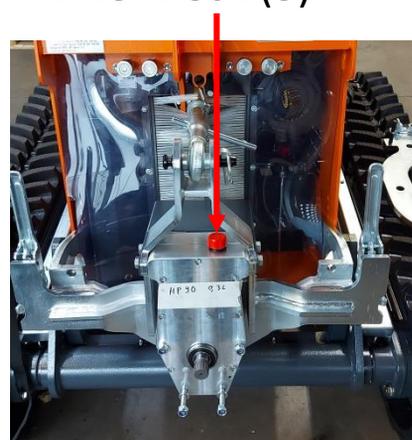
The filling level is reached as soon as oil escapes from the level cap (2).

Now close the side level cap (2) and the screw cap of the filler neck (3) correctly after the oil change.

Level cap (2)



Sealing cap (1)



Filler neck (3)

### Maintenance interval

Change the gearbox oil	1x annually
Type of gearbox oil	HP90
Filling capacity	0.3 litre

## **10.4 Disposal**

In case of free delivery free of charge return of equipment by Rapid Technic company.

## **10.5 Fire**

In the event of a fire, use a CO<sub>2</sub> fire extinguisher in accordance with the applicable standards.

In the event of a fire, keep sufficient distance from the object to be extinguished. If necessary, contact the fire department to extinguish the fire.

## 11.0 EC Declaration of Conformity

### EC Declaration of Conformity

According to the Annex of the EC Machinery Directive (2006/42/EC)

The Manufacturer:

**NIKO GmbH**  
**Maschinen- & Fahrzeugbau**  
**Im Mühlgut 1a**  
**77815 Bühl, Weitenung; Germany**

Hereby declares that the machine described below:

**RoboFlail Vario25 tracked vehicle**

Meets the safety and health requirements of the following EC directives:

**EC Machinery Directive 2006/42/EC and EMC Directive**

*Harmonised standards applied:*

DIN EN ISO 12100 Part 1 Part 2	Safety of machines: Basic terminology, Methodology technical principles
DIN EN 294	Safety distances against reaching danger points of the upper limbs
DIN EN 349	Minimum distances to avoid crushing of body parts
DIN EN 13850	Safety of machines; Emergency stop device
DIN EN 60204-1	Safety of machines; Electrical equipment of machines, General requirements
DIN EN 141211 DIN EN 982	Risk assessment Hydraulics

**Design changes that have an effect on the technical data specified in the operating instructions and the intended use, i.e. substantially alter the machine, invalidate this declaration of conformity!**

Bühl, 09/12/2020



Serr Dieter, Managing Director