RAMMAX

company of the Ammann Group

Articulated roller

Operating and Maintenance Instructions

RW 3005 /S/SP/SPT

valid as of machine number: 4836249
Technical modifications regarded

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Germany

YOUNGMAN RICHARDSON & CO. LTD.

Practically-oriented development and design and many years of experience in the construction of vibratory trench rollers are your guarantee of a machine complying with the highest standard of quality and reliability. This operating and maintenance manual encompasses:

- Safety regulations
- A machine description
- Operating instructions
- Maintenance instructions
- Troubleshooting table

Use of this operating manual will

- simplify the process of familiarization with your machine.
- prevent malfunctions due to operating errors.

Correct observation of the operating instructions will

- increase reliability in on-site operation,
- enhance the service life of the machine,
- reduce repair costs and downtimes.

Rammax GmbH accepts no liability for machine function

- in the event of incorrect handling or operation not in compliance with the prescribed mode of operation and procedures,
- where the machine is used for purposes other than its designated use (see designated purpose, section 3.1) or for fields of application other than those listed (Section 2.1).

No warranty claims may be asserted in the case of

- Operating errors • Insufficient maintenance and/or • Use of incorrect fuels and operating materials

Remark :

- These instructions were written for the use of machine operators and maintenance staff on the building site.
- The operating and maintenance instructions must always be kept within easy reach of the machine
- Machine operation is only admissible after proper instruction and in observance of this manual.
- The safety regulations outlined on pages 13 - 20, Section 3.0must be observed under all circumstances.The directives of the German Civil Engineering Professional Association „Safety Regulations for the operation of road rollers and compaction machinery” and the valid accident prevention regulations must be observed.

For your own safety, and in order not to impair the functional characteristics of the machine, exclusively Rammax spare parts must be used (Section 2.2 Modifications to the machine).
The catalogue of spare parts and the operating instructions are also available in all languages from your Rammax dealer on specification of the machine number.
The warranty and liability conditions contained in the General Terms and Conditions of Rammax are not extended or replaced by the information contained above or below.

Rammax GmbH Metzingen

Foreword:

On transfer of the machine, please complete:

.....
Machine model (Fig. 3)

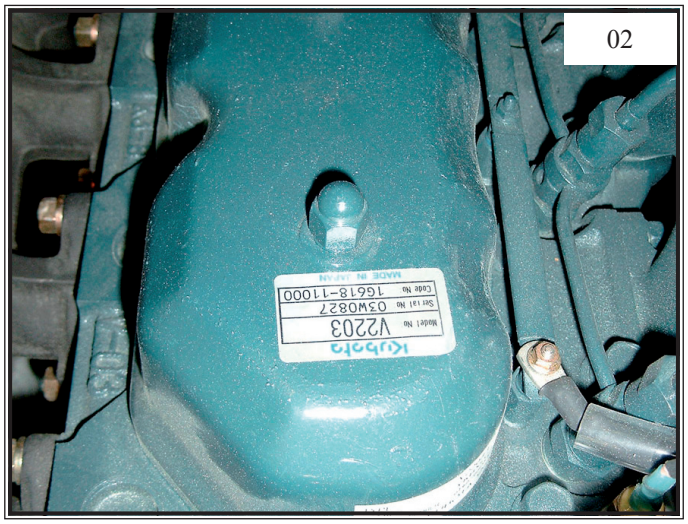
.....
Serial number (Fig. 1)

.....
Engine type

.....
Engine number (Fig. 2)

Attention:

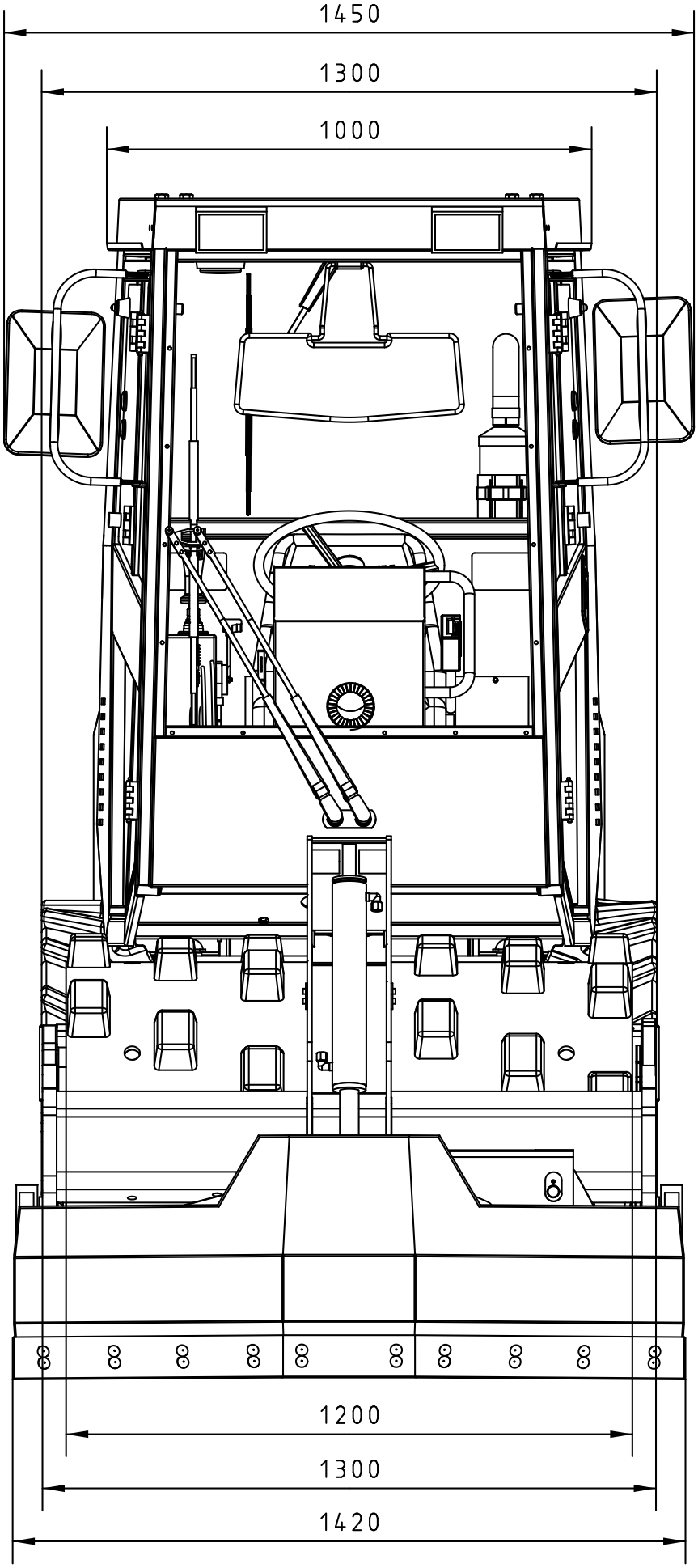
On machine acceptance, you will receive instruction in the operation and maintenance of the machine by one of our staff or by an authorized dealer. It is vital that you pay particular attention to the instructions relating to safety aspects and hazards which can arise at the machine.



Remark :

In case, the engine code is non-readable anymore due to damage or dirt, there is still the possibility to read it on the engine block. You can find the position of the stamped in engine code in the Kubota-operation manual.

Contents:


1450
1300
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1200
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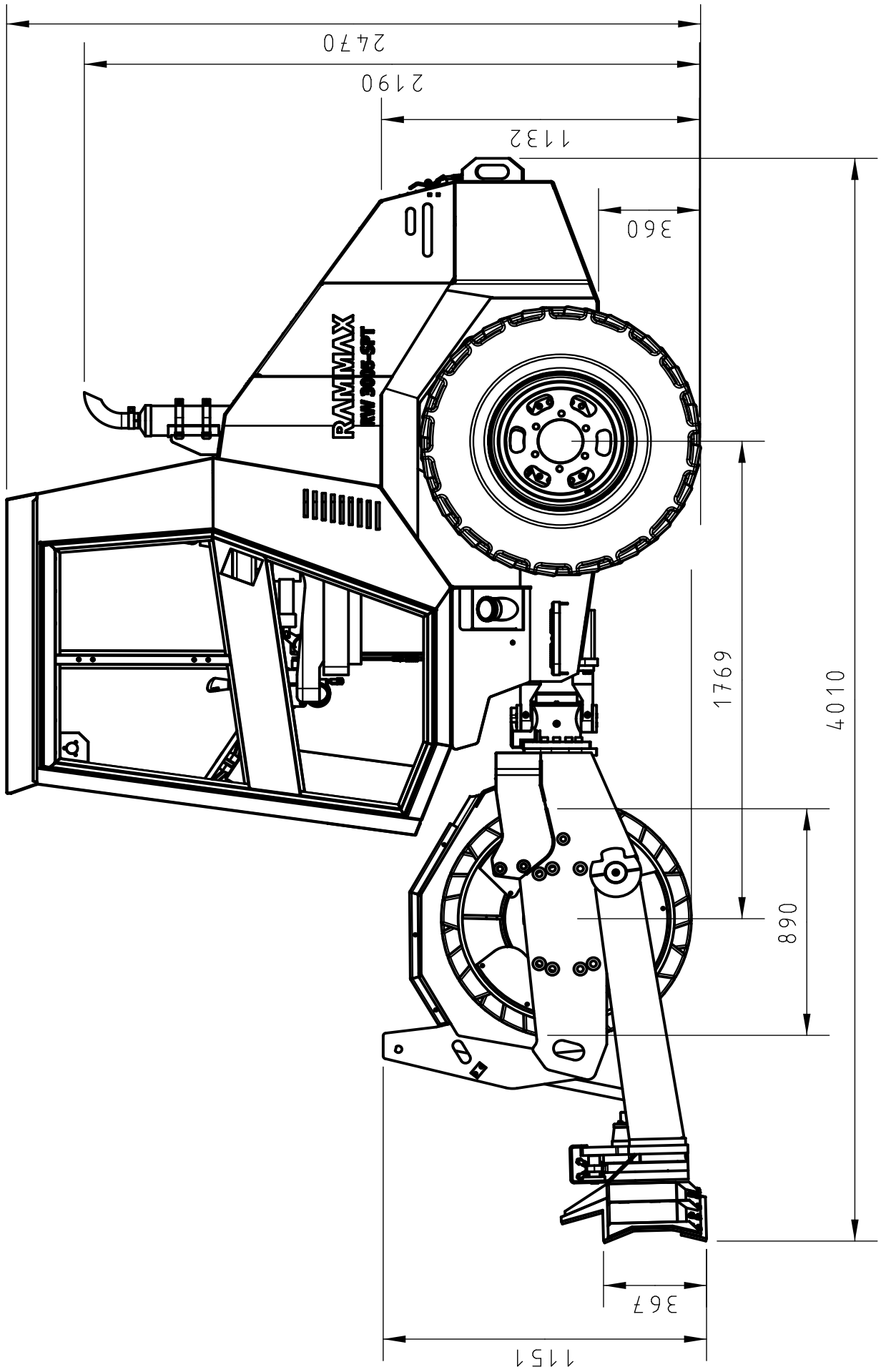
1420


2470
2190
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360
RAMMAX
RW 3085-SFT
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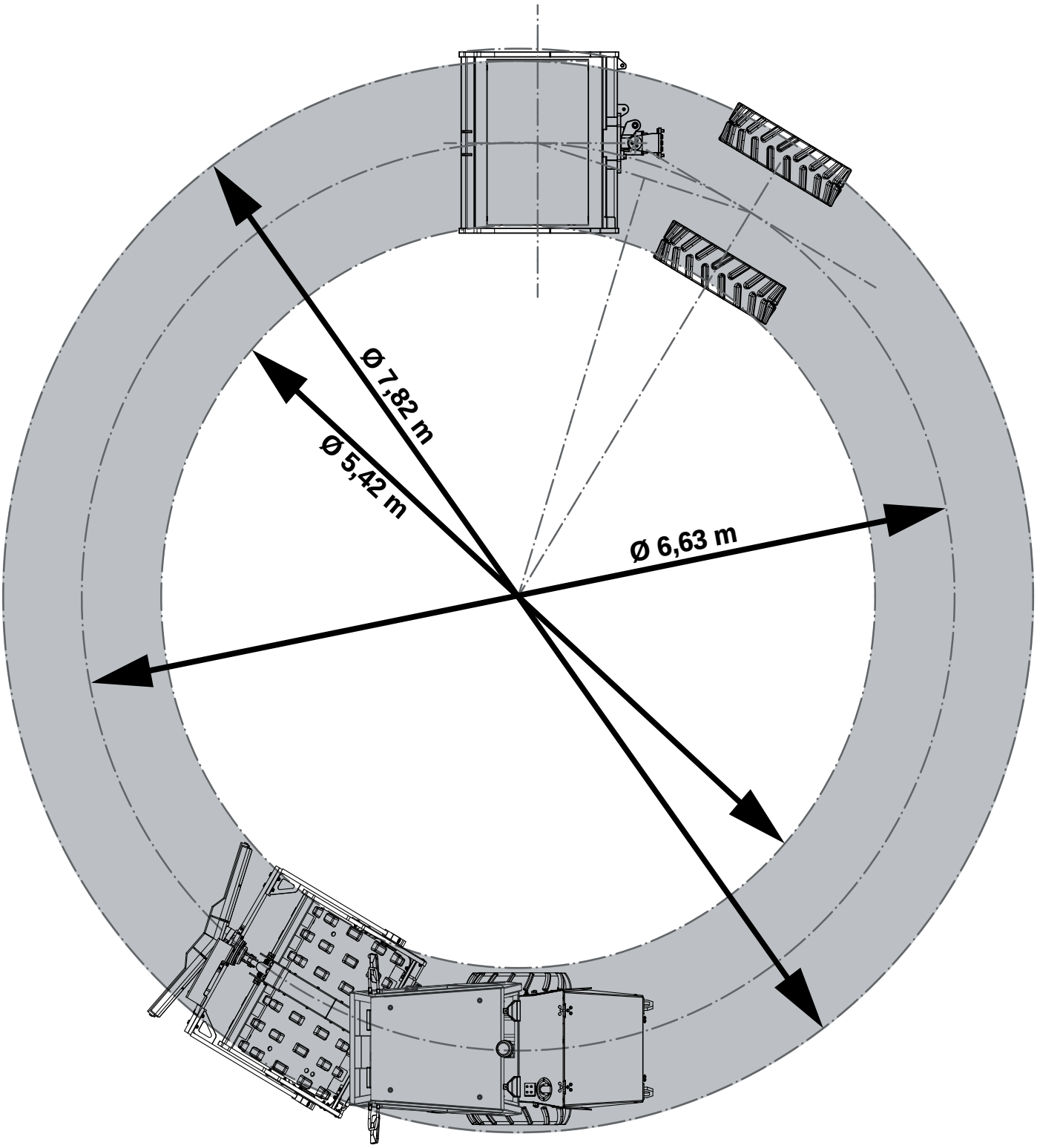
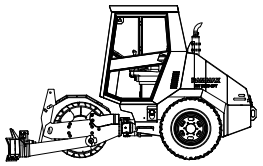
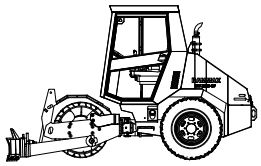
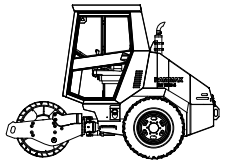
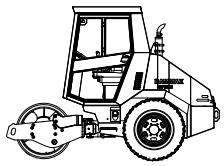
4010
890
367
1151


Ø 7,82 m
Ø 5,42 m
Ø 6,63 m

1.1 Main dimensions			RW 3005 SPT	*RW 3005 SP*	RW 3005 S	RW 3005
Dimensions:						
Working width:		mm	1200 (1420)		1200	1200
Overall width:		mm	1450		1450	1450
Overall length:		mm	4010		3500	3500
Overall height:		mm	2470		2470	2470
Axle base:		mm	1769		1769	1769
Drum diameter:		mm	890		890	890
Weight:						
Operational weight:		kg	3400		3150	3150
Front axe load:		kg	1900		1650	1650
Rear axe load:		kg	1500		1500	1500
Static linear load:		kg/cm	15,8		13,3	13,3
Dynamic linear load:		kg/cm	70,8		70,8 / 24,2	70,8 / 24,2
Drive system/power unit:						
Engine/Typ:			Kubota V2203 M		Kubota V2203 M	Kubota V2203 M
Output:		kW/HP	36,4 / 49,5		36,4 / 49,5	36,4 / 49,5
at rpm:			3000		3000	3000
Number cylinder/cooling:			4 / watercooled		4 / watercooled	4 / watercooled
Drive mode:			hydrostatic		hydrostatic	hydrostatic
Vibration system :						
Centrifugal force:	Vibration forward:	kN	85		85	85
	Vibration reverse:	kN				29
Amplitude:	Vibration forward:	mm	1,8		1,8	1,6
	Vibration reverse:	mm				0,9
Frequenzy:	Vibration forward:	Hz	34		34	34
	Vibration reverse:	Hz				

1.1 Main dimensions			RW 3005 SPT	*RW 3005 SP*	RW 3005 S	RW 3005
Filling quantities/tank capacities:						
Fuel:		l	64		64	64
Hydraulic oil:		l	140		140	140
Driving characteristics:						
Speed (continously variable):		km/h	0-7		0-7	0-7
Steering:			Articulation		Articulation	Articulation
Steering angle:		+/-°	30		30	30
Hill climbing ability w/wo vibration:		%	55		55	45
Turn radius:	interior:	m	5,42		5,42	5,42
	exterior:	m	7,82		7,82	7,82

1.2 Noise and vibration specifications

The noise and vibration specifications listed below in accordance with the EC Machine Directive in the draft (92/68/EEC) were determined under operating conditions typical for the machinery in question with vibration over a specified travel surface.

In operational application, deviating values may result depending on the prevailing operating conditions.

Noise specification

The noise emission specification stipulated in accordance with Annex 1, Section 1.7.4.f of the EC Machine Directive is as follows

- Sound pressure level at the operator position: LpA = 88 dB(A)

- Sound power level: LWA = 109 dB(A)

These noise emission values were determined in accordance with ISO 6081 for the sound pressure level (LpA) and ISO 3744, DIN 45635, for the sound power level (LWA).

Vibration specification

The vibration specifications stipulated in accordance with Annex 1, Section 2.2 / 3.6.3. a of the EC Machine Directive are as follows:

Frequency evaluated vibration acceleration aw in m/s^2					
Seat			Chassis		
a_{wx}	a_{wy}	a_{wz}	a_{wx}	a_{wy}	a_{wz}
0,17	0,03	0,4	0,14	0,04	0,97

Subject to modifications

Rammax RW 3005

2.0 Description

Many years of experience, continuous further development and the latest technological innovations in the construction of vibratory trench rollers have culminated in one of the highest-performance machines of the RW 3005 series. All the models of the RW 3005 series are characterized by a high degree of operating convenience, a hard-wearing compact design and outstanding reliability in operation. The RAMMAX RW 3005 is a self-propelling, centre-pivot steered vibratory roller which can be optionally equipped with a sheeps foot facing or a pusher blade. The RW 3005 can also be equipped with a tilt device which permits an even subsoil to be created with the pusher blade even on inclined surfaces.
The drums and wheels are equipped with the patented Poclain „Twin-Lock-System". The traction drive is activated by a pedal.
This drive system permits an outstanding climbing ability (depending on soil conditions 55%)

2.1 Fields of application:

The single drum roller RW 3005 was developed especially for compaction work. Due to adjustable compaction parameters the machine is able to work in different working areas. Due to It ranges from Canalisation and pipeline construction, constructions of roadbeds, car parks and dumpsites up to backfillings.

2.2 Modifications to the machine:

For reasons of safety, users are prohibited from making their own modifications or conversions to the machine. This machine must only be equipped using original spare parts designed for use with the machine and in compliance with the requirements of the manufacturer. The installation or utilization of special equipment or special parts can impair driving safety.
The manufacturer is exonerated of any liability for damage caused as a result of the use of non-original parts or special equipment.

RAMMAX

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Safety regulations

3.1 Use in accordance with the designated purpose:

Vibratory roller RW 3005 is constructed in accordance with the state of the art and with accepted rules of operating safety. However, its use can still give rise to hazardous situations which constitute a danger to life and limb for the operator or for third parties or which can lead to impairment of the machine or damage to other property if:

- it is used for any other than its designated purpose
- it is modified or conversion work carried out by unqualified persons
- the safety remarks are not observed
- it is not operated or maintained by suitably qualified personnel.

The RW 3005 must only be operated when in a technically flawless condition and in accordance with its designated purpose with sufficient awareness of safety aspects and potential hazards and in strict observance of the operating instructions. In particular malfunctions which could detract from the safety of the equipment must be remedied without delay. When operating the roller, adherence to the valid accident prevention regulations and the generally accepted rules of safety, as well as country-specific regulations is assumed.

The point „Fields of application" (Section 2.1) outlines the designated purpose for which the RW 3005 is exclusively intended. Any other or further reaching use is deemed to be not in accordance with the designated purpose. The manufacturer/supplier accepts no liability for any damage arising as a result of such incorrect use. All risk arising rests solely with the user.

3.2 Machine operation:

Only suitably qualified and designated persons who have received the appropriate training, and who are over 18 may drive and operate the machine. Fields of responsibility during operation must be clearly defined and adhered to.

All persons entrusted with operation, maintenance or repair of the machine must read and adhere to the safety regulations. Where appropriate, this must be confirmed by the user's company by means of a signature by the person or persons concerned.
Persons acting under the influence of drugs, medicines or alcohol may not operate, maintain or repair the machine.
Maintenance and repair call for special knowledge and may only be performed by suitably trained and qualified personnel.

3.3 Safety remarks in the operating and maintenance instructions:

Danger
This warning sign is an indication of possible danger of personal injury.

Attention:
This warning sign is an indication of possible impairment to the machine or parts of the equipment.

Remark :
These parts of the instructions provide technical information intended to ensure optimum economy and efficient use of the machine.

3.4 Safety signs applied to the machine:

Keep all safety plates and labels in good legible order and ensure their observance.
Damaged and illegible safety plates and labels must be renewed without delay.
Spares of all plates and labels are available, see the spare parts list

3.5 Loading the machine for transport:

- Only use stable loading ramps with sufficient load-bearing capacity. The ramp incline must not be any steeper than the specified climbing ability (see Specifications) of the machine.
- Safeguard the machine against tilting or slipping.
- Safeguard the machine on transport vehicles against rolling, slipping and tipping over.
- When suspended, the machine may only be permitted a minimal rocking motion.

The following situations represent a danger to life and limb:

- Walking or standing under suspended loads.
- Remaining within the driving area of the machine while it is being guided into position and loaded.

3.6 Towing the machine:

Always use a tow rod for all towing operations !
The maximum towing speed of 1 kph must not be exceeded. Never tow the machine further than 200 mm.
When mechanically releasing the disk brake, safeguard the machine against unintentional rolling away.

3.7 Checking the rollover bar (ROPS)

The machine frame must not be damaged, distorted or demonstrate any cracks in the area of the ROPS roof fixture. Neither must the ROPS roof itself demonstrate any hairline cracks, rusting or open breakages.
Marked vibrations or rattling of the ROPS roof is an indication of inadequate fixture. All screw connections must be tightened in accordance with the stipulated values (note tightening torque levels). All fastening screws must be free of damage, bends or deformations.
No supplementary parts may be welded or screwed on without the agreement of the manufacturer, as this can impair the strength and represent a safety hazard for the machine operator. The drilling of holes or flame cutting of recesses are not admissible in the area of the ROPS roof, as these can also impair strength.

3.8 Starting the machine:

3.8.1 Before starting

- Familiarize yourself with the equipment, the operating and control elements and the functional characteristics of the machine in the respective field of application.
- Use personal safety gear (safety helmet, safety shoes, ear protection etc.).

Before starting, check whether

- there are persons or impediments located next to or under the machine
- the machine is free of oily and flammable materials
- all handles, steps and platforms are free of grease, oil, fuels, dirt, snow and ice
- the machine demonstrates any obvious defects
- all protective gear is firmly in place
- brakes, steering and operating elements are working
- the driver‘s seat is correctly set

Never start the machine if any instruments, pilot lamps or control organs are defective.
Do not tie any loose objects onto the machine.

When climbing onto the machine, only use the provided stairs, steps and handles.

Danger

- In the case ofmachines wih ROPS roof (rollover bar), safety belts musst allways be worn !

3.8.2 Starting:

Only ever start up and operate the machine from the driver‘s seat.
For starting, all operating levers must be in the „Neutral position”
After starting, check all display and operating elements.

3.8.3 Jump starting with jump leads:

Attention:

The machine is equipped with a 12-Volt system!

Connect the plus to the plus terminal and the minus to the minus terminal (earth cable). Connect the earth cable last and disconnect first! Incorrect connection will result in serious damage to the machine‘s electrical system.

3.9 Driving the machine:

3.9.1 Persons in the hazard area

Each time before starting work, also after interruptions, check whether there are persons or obstacles positioned in the hazard area, particularly when reversing.

If required, give a warning signal. Stop work immediately if persons fail to leave the hazard area despite warning.

Danger

When the engine is running, never enter the articulation range of the machine. Danger of crushing!

3.9.2 Driving:

- In emergency situations and in case of danger, stop the machine immediately. Only resume operation when the danger which caused the stop has been remedied.
- The machine may not be used to transport persons.
- In case of unusual noises and generation of smoke, ascertain the cause and have the problem remedied.
- The machine may only be operated from the driver‘s seat.
- Do not adjust the driver‘s seat while driving
- During driving operation, do not climb onto or off the machine.

If the machine has touched a live electrical cable :

- Do not leave the driver‘s seat
- Warn bystanders against approaching or touching the machine.
- If possible, travel out of the danger area
- Arrange for the current to be disconnected

3.9.3 Negotiating uphill and downhill slopes:

- Do not drive up or down slopes steeper than the maximum climbing ability of the machine.
- On slopes, always drive directly upwards or downwards and proceed with caution. Before approaching select a lower gear.
- Damp and loose substrates substantially reduce the machine‘s grip on sloping surfaces and inclines. Increased risk of accidents!

3.9.4 Driving in traffic:

- Adjust your speed to the work conditions.
- Always give way to loaded transport vehicles.
- Keep your distance from edges and embankments.

3.9.5 Checking the effects of vibration:

During compaction work with vibration, check the effect on adjacent buildings and buried pipelines (gas, water, sewage, electrical). If necessary, compaction work may have to be discontinued.
Never use vibration on hard substrates (concrete or frozen earth), as this will damage the bearings!

3.9.6 Parking the machine:

Wherever possible, park the machine on a firm, even surface.

- Straighten up the articulated joint in order to simplify mounting and descending.
- Switch off the engine and pull out the ignition key.
- Move the shift lever to neutral.

Parked machines which could represent an obstruction must be safeguarded by clearly identifiable measures.

Never jump off the machine, but use the provided handles, steps and stairs.

3.9.7 Parking on slopes and inclines:

Safeguard the machine against rolling away. To do this use metal chocks in front of and behind the facings.

3.9.8 Starting in enclosed areas:

Exhaust fumes are lethal !
When starting the engine in enclosed areas, ensure that sufficient ventilation is provided.

3.10 Refuelling:

- Never breathe in fuel fumes.
- Only refuel when the engine is switched off.
- Never refuel in enclosed areas.
- No naked flames, no smoking.
- Do not spill fuel, mop up any splashes of fuel, do not allow to seep into the ground.

3.11 Maintenance work:

- Maintenance work may only be performed by suitably qualified and trained personnel.
- Keep unauthorized persons away from the machine.
- Never carry out maintenance work on a driving machine or with the engine running.
- Park the machine on a firm, even surface.
- Take the key out of the ignition.
- Safeguard the articulated joint with the transport safeguard.

3.11.1 Work on the hydraulic line:

Before performing any work on hydraulic systems, they must be depressurized. Hydraulic oil emerging under pressure can penetrate the skin and cause serious injury. In case of injury due to oil emerging at high pressure, immediately consult a doctor as serious infections can result.
When performing setting work at the hydraulic system, do not tread in front of or behind the facings.
Do not adjust the pressure relief valve.
Drain off the hydraulic oil at operating temperature – danger of scalding!
Collect up emerging hydraulic oil and dispose of in an environmentally responsible manner.
Never attempt to start the engine when the hydraulic oil has been drained.
After the completion of all work (with the system still depressurized!), check the seal of all connections and screw joints.

3.11.2 Exchanging hydraulic hose lines:

Hose lines must never be swapped or exchanged.
Subject hydraulic hose lines to regular visual inspections.

The immediate exchange of hydraulic hose lines is essential in the following cases :

- Damage of the outer ply through to the inlay (e.g. abrasion, cuts)
- Brittleness of the outer ply (crack formation in the hose material).
- Deformation in pressureless or pressurized condition which does not correspond with the original shape of the hydraulic hose line.
- Deformation on bending, e.g. crushing points, kinks, separation of plies, formation of blisters.
- Leaks.
- Incorrectly executed installation.
- Migration of the hydraulic hose from the fitting.
- Corrosion of the fitting which impairs functional characteristics and strength.
- Damage or deformation of the fitting which impairs functional characteristics, strength or the hose to hose connection

Only original RAMMAX spare hydraulic hose lines offer the security of using the correct hose type (pressure stage) in the right situation.

3.11.3 Work at the engine:

Drain off the engine oil at operating temperature – Danger of scalding!
Wipe away any spilt oil, collect emerging oil and dispose of in an environmentally responsible manner.
Keep used filters and other oil-soiled materials in a separate, specially marked container and dispose of in an environmentally responsible manner.

3.11.4 Work on the electrical system:

- Before performing work on the electrical system, disconnect the battery and cover with isolating material.
- Do not use fuses with a higher amperage or repair fuses. Fire hazard!

3.11.5 Work on the battery:

- When carrying out work at the battery, never smoke or expose to a naked flame.
- Do not allow acid to contact hands or clothing. In case of injury due to acid spillage, rinse with clear water and consult a doctor.
- Never place any tools on the battery.
- Dispose of old batteries in compliance with regulations.

3.11.6 Work at the fuel system:

No naked flames, no smoking, do not spill fuel.
Collect emerging fuel, do not allow to seep into the ground and dispose of in an environmentally friendly manner.

3.11.7 Cleaning work:

- Never carry out cleaning work with the engine running.
- Never use petrol or other easily flammable materials for cleaning.
- When cleaning using a steam jet cleaning device, cover all electrical parts and the insulating materialor do not expose to direct water or steam jet.
- Do not hold the cleaning jet in the sound absorber.

3.11.8 After completing maintenance work:

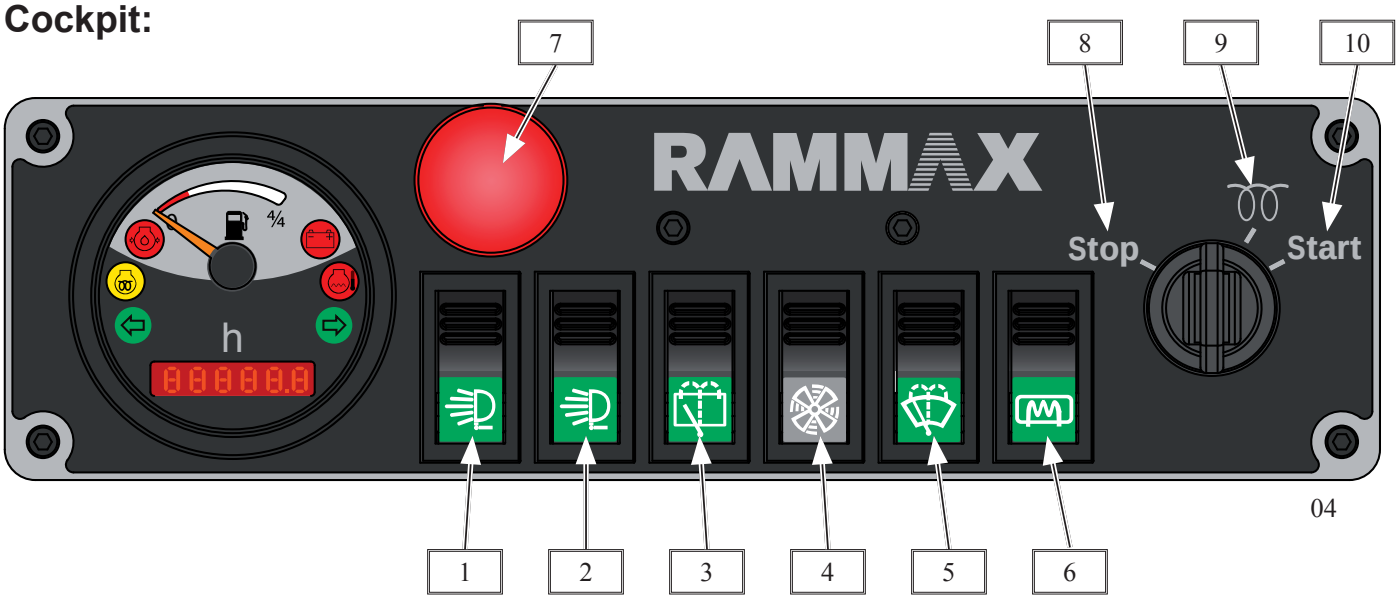
- All protective devices must be replaced after cleaning and maintenance work.
- Carry out performance checks.

3.12 Repairs:

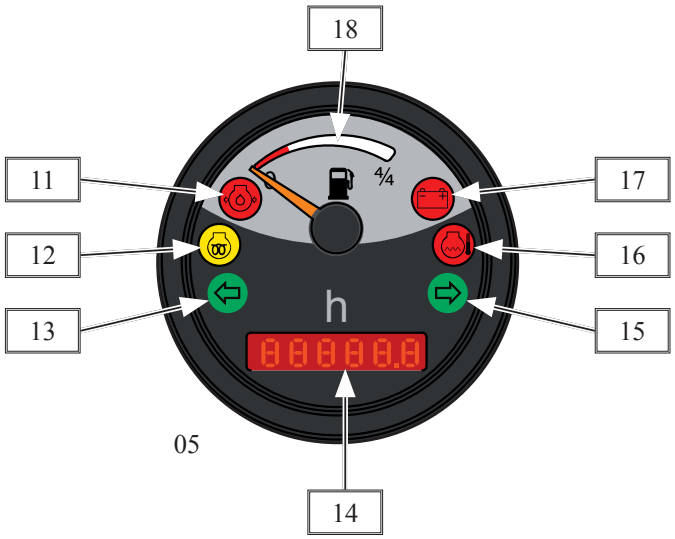
If the machine is defective, hang a warning sign on the machine. Repairs may only be performed by qualified and specially commissioned personnel. Exhaust gas is lethal! When starting the engine in enclosed areas, ensure that sufficient ventilation is provided!

4.0 Display and operating elements

Cockpit:

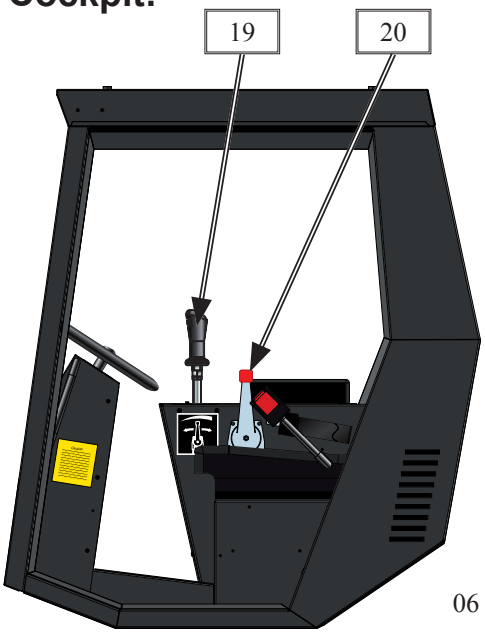


1 :	Front headlamps
2 :	Rear headlamps
3 :	Front windscreen wiper system
4 :	Fan
5 :	Rear windscreen wiper system
6 :	Rear window defroster
7 :	Emergency stop
8 :	Ignition/Engine stop
9 :	Ignition run/Preheating
10 :	Engine run



11 :	Oil pressure gauge lamp
12 :	Preheating display
13 :	Not occupied
14 :	Hours run counter
15 :	Not occupied
16 :	Oil temperature
17 :	Charge pilot lamp
18 :	Fuel display

Cockpit:



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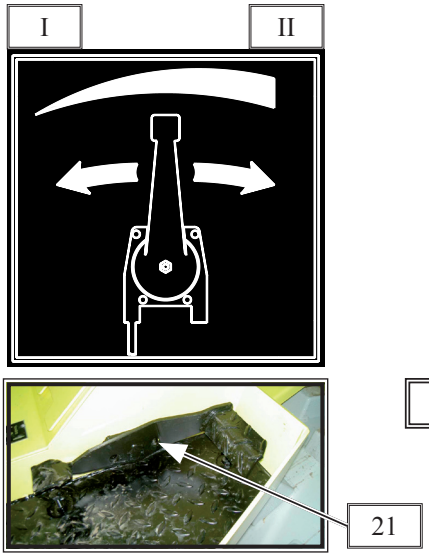

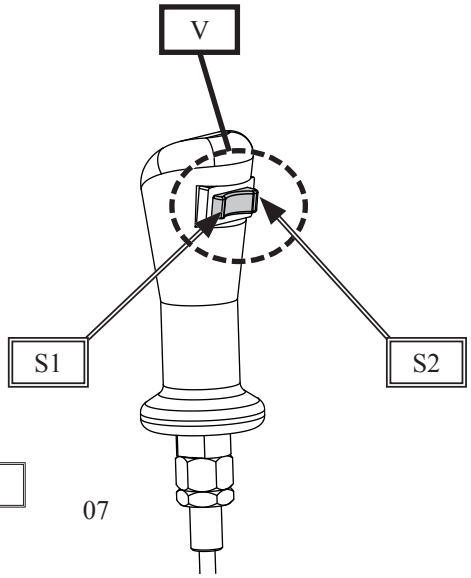

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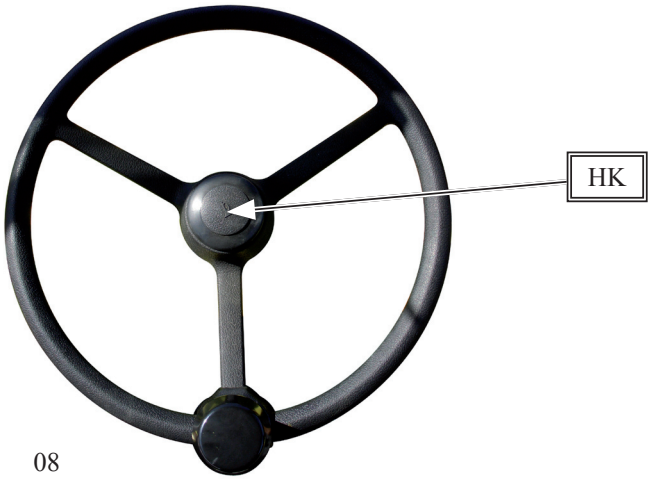
19 :	RW 3005 SP/SPT: Lift and tilt lever
	RW 3005/S: Drive lever
20 :	Speed adjustment lever
21 :	RW 3005 SP/SPT: Drive pedal

V :	Switch vibration forward/backward
S1 :	Position 1: Vibration forward
S2 :	Position 2: Vibration backward



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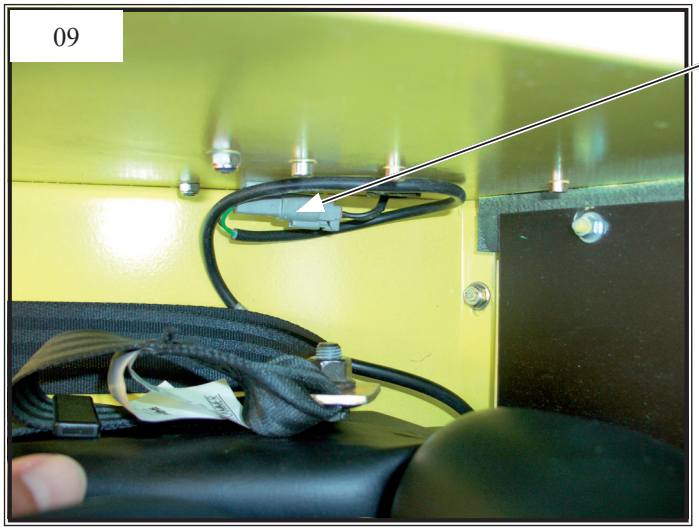
HK :	Horn button



SA :	Seat switch

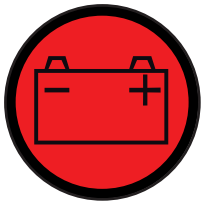
Remark :

The machine is locked by a seat switch „SA". You can start the engine
without sitting on the driver's seat, but you can't drive it.
To move the Single drum roller you have to take a seat.

In case the machine won't move, try to adjust the seat suspension to „soft".
(See 6.0 adjusting the driver's seat)

4.1 Description of the display and operating elements

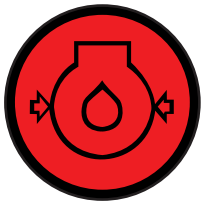
LK: Charge pilot lamp



Lights up:
- When the ignition is switched on
- In case of charging faults in operation, ascertain cause

Goes out:
- After starting the engine.

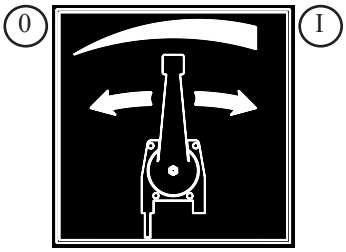
ÖK : Oil pressure gauge lamp



Lights up:
- When the ignition is switched on
- On a drop of oil pressure in operation,

Goes out:
- After starting the engine.

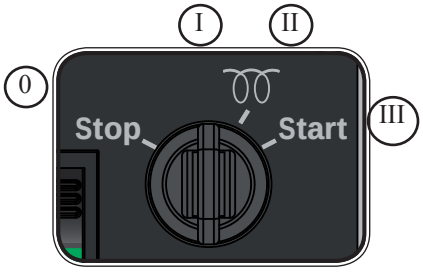
GH : Speed adjustment lever



Position " 0 „:
- Switches off the engine

Position " I „ :
- Starts the engine
- Operating position for drive and vibration

Z : Ignition switch



Position " 0 „ :
- Inserting and removing the key.

Position " I „ :
- Ignition on, charge pilot lamp „LK" and oil pressure gauge lamp „ÖK" light up.

Position " II „ :
- Turn the ignition key further against spring pressure towards position II, Preheating display lights up and audio-warning starts.

Position " III „ :
- Turn the ignition key further towards position III after audio-warning ends: Engine starts up. After engine start, release key. Pilot lamps go out.

Remark :

The ignition switch has a start repeat disable function. To restart the engine, first turn the key to the „0" position. Continue to start without interruption for max. 15 to 20 seconds, with pauses of appr. one minute between. If the engine fails to start within this time, ascertain the cause of the fault and remedy.

SZ : Hours-run counter

The hours-run counter counts the operating hours with the engine running.
The indication of operating hours run provides a guideline for maintenance.

HK : Horn button

Push button to sound the horn

5.0 Control System

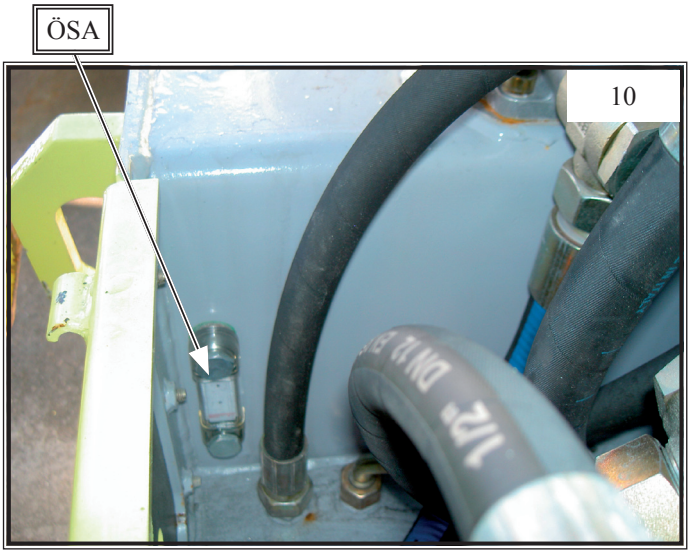
5.1 Pre-commissioning checks:

Before commissioning every day or prior to an extended work period, carry out the checks listed below.

Danger Observe the safety stipulations in section 3.0 of these operating and maintenance instructions.

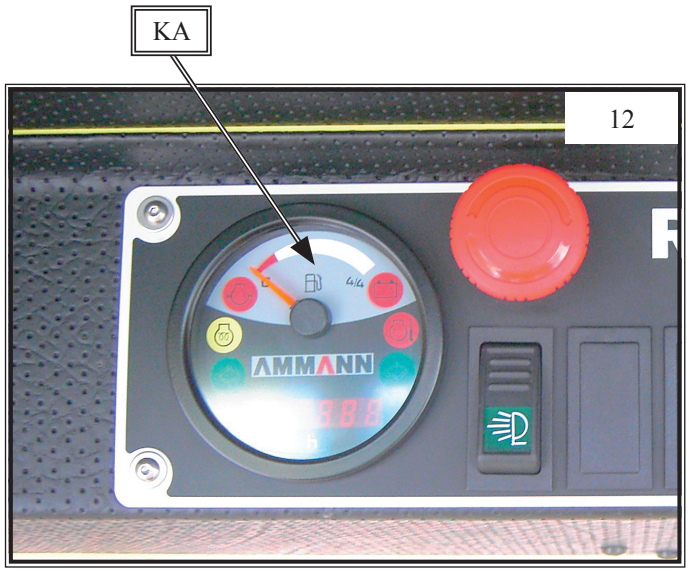
Set the machine down on an even, load-bearing surface.

1. Check:
   - All screw joints for a firm fit
   - Fuel tank and lines for leaks
   - Machine and engine for damage
   - Function of the travel pedal
   - Steering function
   - Hydraulic system for leaks

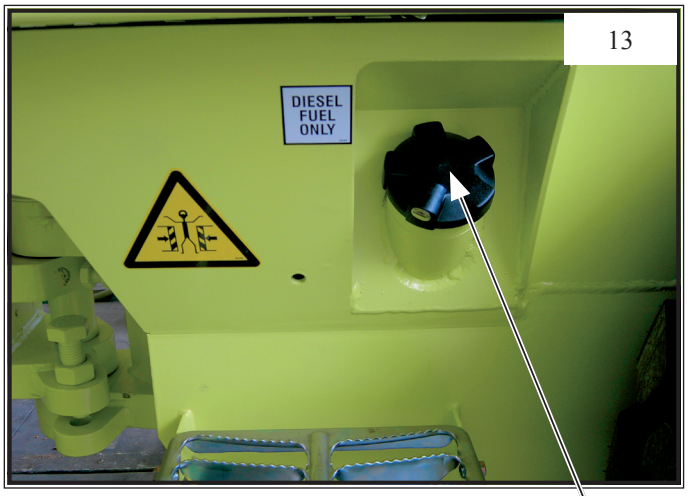


Check hydraulic oil level and top up if necessary

Check soiling of the air filter

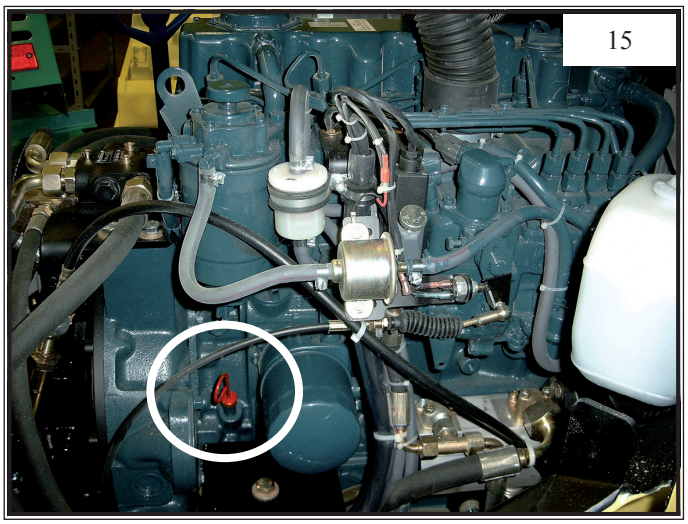


Check fuel level and top up if necessary



Filling opening for diesel fuel

Check air pressure in rubber tyres (3,5 bar)



Check engine oil level

Remark :

The following tests and inspections are described in the section „10.0 Maintenance”:

- Engine oil level
- Hydraulic oil level
- Fuel supply

5.2 Commissioning

Attention:

Desist from any method of operation which could pose a safety hazard or impair the static stability of the machine. Never travel on sloping surfaces transversely, but always directly upwards or downwards. The machine may only be started from the driver‘s seat. When leaving the driver‘s seat, the machine must always be safeguarded against unintentional rolling away or unauthorized use.

Danger

Before driving, check whether persons are located in the driving area. It is prohibited for persons to remain in the articulation area of the roller when the engine is running. Damp and loose substrates substantially reduce the machine‘s grip on sloping surface and inclines. When driving up slopes and inclines, the speed must be adjusted in line with the terrain. The properties of the soil and the effects of weather can impair the climbing ability of the machine. Never attempt to negotiate slopes which are steeper than the machine‘s climbing ability. Always give way to loaded transport vehicles.

5.3 Start procedure :

Attention:

Should you not yet have familiarized yourself with the operating and display elements of this machine,it is essential for you to read through the precending section „Operating and display elements“ and to become familiar with its contents. All display and operating elements are discribed here in detail.

When operating this machine, the safety remarks and the respective safety regulations described in section 3.0 must be observed without fail.

Danger

In machines with roll-over bar or ROPS roof,allways wear a seat belt!
The machine may only be operated from the driver‘s seat when wearing a seat belt. (Fig. 20)

5.4 Starting the engine :

Attention: The starter shouldn´t be operated under no circumstances when the engine is on! Non-observance might occur serious damages at the starter and the starter ring gear.

Remark : Before starting work, allow the engine to warm up briefly in idle operation.

1. Move the gas lever to position II „Start“ (pic. 6, page 22).
2. Turn the vibration switch „VS” to the central position (page 22, pic. 7)
3. Turn the ignition switch „Z” to the „I” position (page 21, pic. 4). **Oil pressure gauge lamp** „ ÖK „, **charge pilot lamp** „ LK „ and the preheating display light up

When starting the engine, the start instructions of the engine manufacturer must be observed.

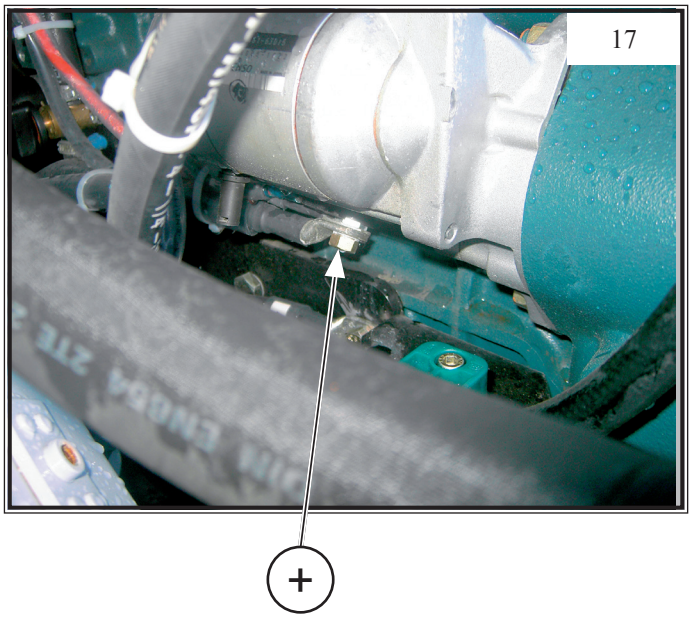
- Turn the ignition switch to the „II” position. The engine starts.
- Immediately let go of the ignition key once the engine is running. Immediately let go of the ignition key once the engine is running..

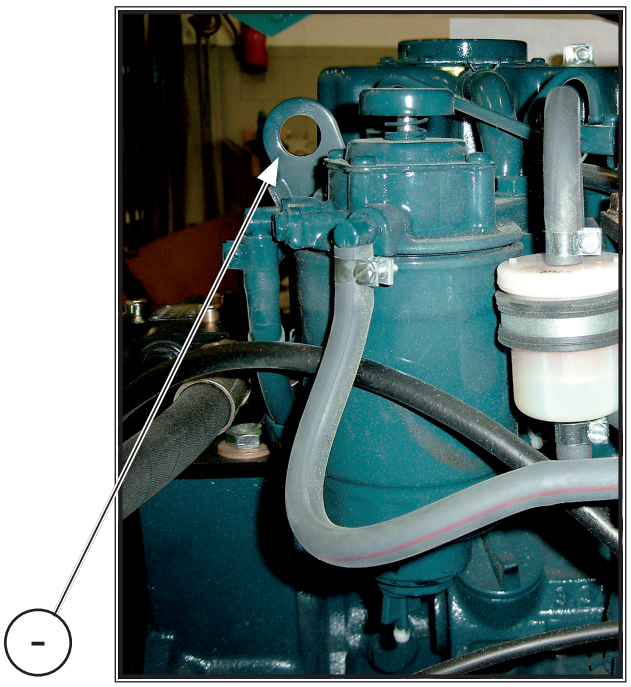
5.5 Starting with jump leads :

Attention: When starting with jump leads, always ensure that the plus pole is connected first then the minus pole (earth cable).

When the engine has started, first disconnected the minus pole and then the plus pole. Failure to comply with this instruction can result in serious damage to the electrical equipment of the machine.

- The RW 3005 is equipped with a 12V system
- Give a jump start at the starter of the engine. (Pic. 17)





5.6.1 Driving with hand lever (RW 3005 /S)

Remark : Engine start is only possible with hand lever in central position

The machine will be started by using the hand lever. If the hand lever is pushed backwards, the machine will drive backwards. If the hand lever is pushed forwards, the machine will drive forwards. The speed is coninously adjustable depending on the lever movement. (Fig. 18)

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5.6.2 Driving with foot pedal (RW 3005 SP/SPT)

The machine will be started by using the foot pedal. If the pedal is pushed backwards, the machine will drive backwards. If the pedal is pushed forwards, the machine will drive forwards. The speed is coninously adjustable depending on the pedal movement. (Fig. 18)

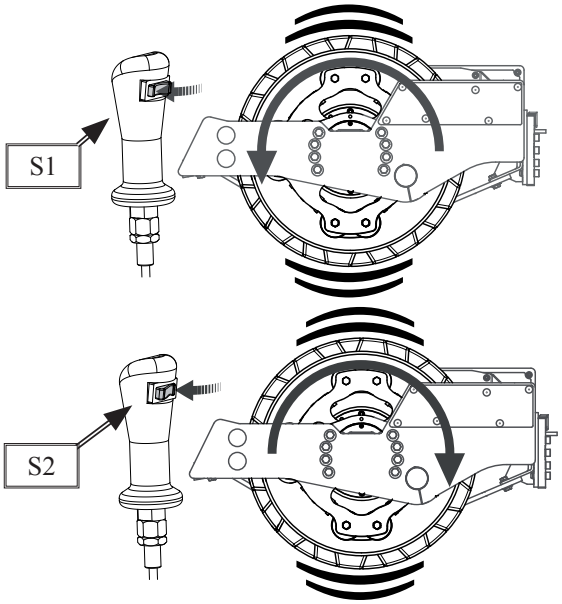

18

5.7 Vibration:

Danger During compaction work near buildings or structures, check the effects on neighbouring structures and if necessary discontinue the work.

Remark :

Important : • All compaction work may only be performed at maxi mum engine speed!



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The vibration of the machine is activated by the 3-position-switch of the driving lever. By turning the switch to the right, seen from the driver‘s seat, the vibration forward is activated (position 1). By turning it to the left, the vibration backward is activated (position 2). The middle position of the switch is for de-activating the vibration

5.8 Switching off the machine

Attention: Before switching off the engine, align the machine straight in order to permit simpler mounting and descent.
After switching off the machine, pull out the ignition key.
When switching off the machine on slopes, always safeguard using chocks.

1. Move the gas lever to the „Stop” position. (pic. 6, page 22)
2. Before switching off, allow the engine to run for a brief period at idle speed to equalize the temperature.
3. Switch the ignition key to the „0” position. (Engine - Stop) (pic. 4, page 21)

6.0 Setting the driver‘s seat :

Danger It is strictly prohibited to set the driver‘s seat while driving. Danger of accidents! In the case of machines with roll-over bar or ROPS roof, always wear your seat belt bevor starting the machine.

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Operation: How to adjust the driver’s seat,you can read in the Grammer operation manual in the annex.

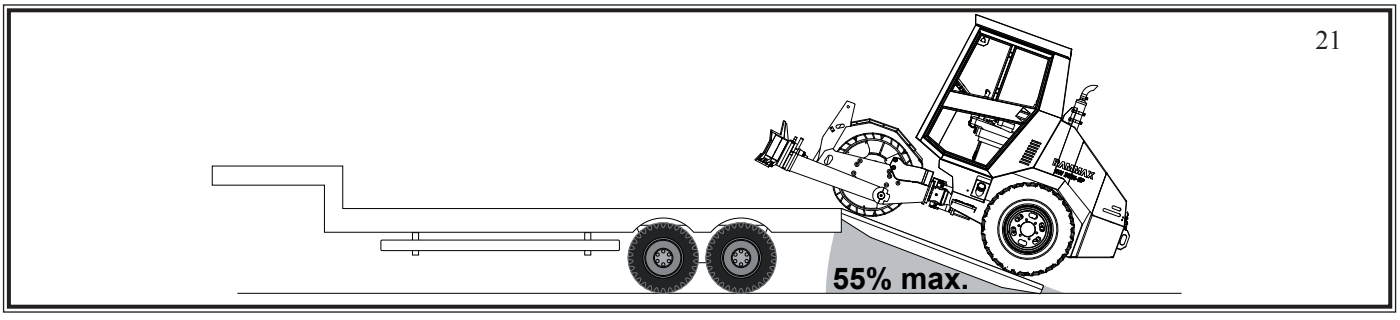
Remark : Underneath the driver’s seat is a limit switch, which is actuated by the weight of the machine operator. The adjusting lever VH2 for the seat springing must not be set too stiff, otherwise the limit switch is not actuated.

Result : **Machine cannot be started**

Remedy : **Choose a less stiff seat setting**

7.0 Loading and transport :

The roller can also be loaded by being driven up a suitable loading ramp.



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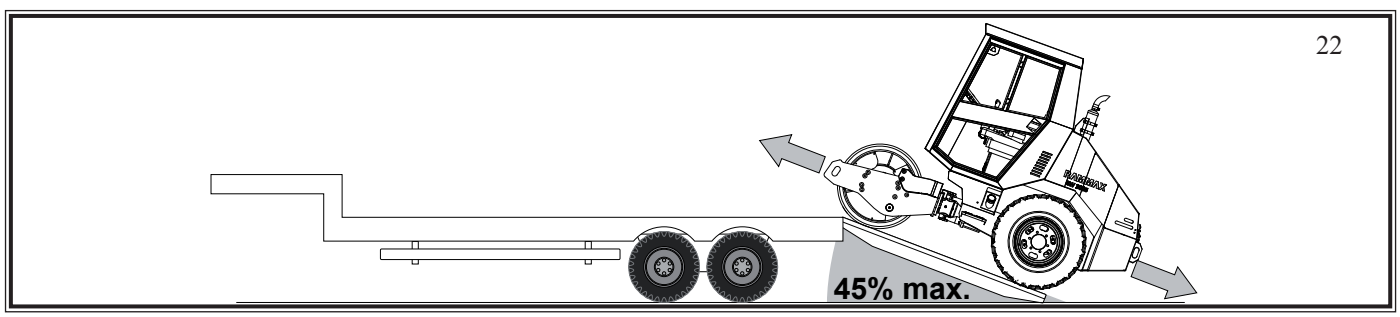
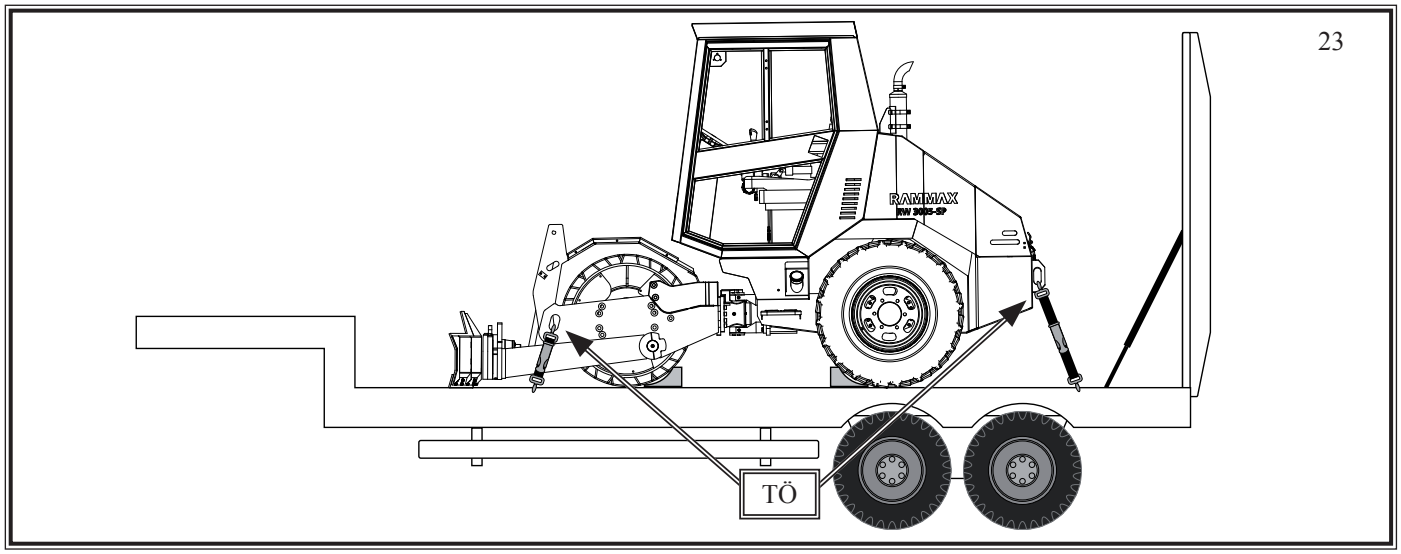
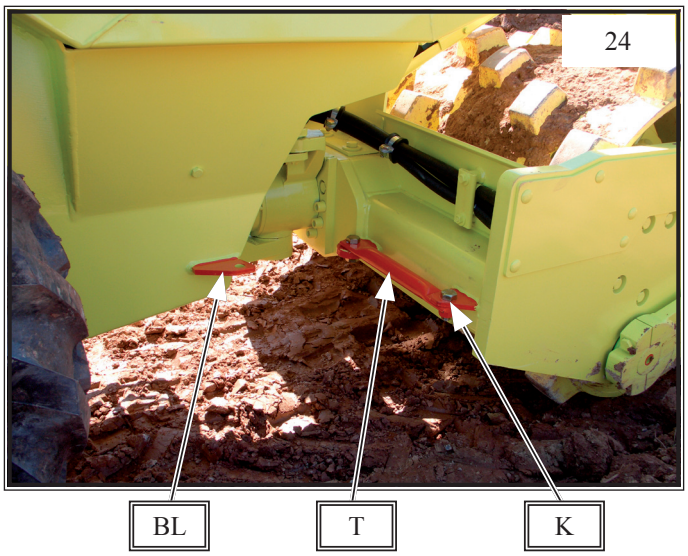


22

Only ramps wih sufficient loading capacity and static stability must be used which exclude any possibility of personal injury.
To lash the roller, always use shackles which are fastened to the transportation eye bolts „TÖ“ (at the front and back of the roller /Fig. 23).
The roller musst be lashed in such a way that it is secured against tipping over, slipping or rolling away, and that the roller does not pose a danger to person. Do not tread or stand under suspended loads.



Attention: **After transport, the transport safeguard musst be released again and fixed with the hex nut „K“ (wrench size 46)!**



After driving the machine onto a suitable transport medium, the hex bolt „K“ must be dismounted, the transport safeguard „T“ must be turned into the support „BL“ and safed with the hex bolt „K“. (Bild 24)

8.0 Maintenance

8.1 General remarks on maintenance and maintenance work :

Steps must be taken to ensure that all safety regulations are adhered to in the execution of maintenance work!

Careful machine maintenance guarantees far greater functional reliability and increases the life of all important components. The necessary input is minimal in relation to the faults and problems which can occur as a result of failure to perform maintenance work.

- The engine and machine must be thoroughly cleaned before performing any maintenance work.
- Maintenance work may only be performed when the engine is at a standstill.
- When working with the hydraulic system, this must first be depressurized.
- Before working on the electrical system, detach the battery, cover it and protect with insulating material.
- Check the electrical equipment of the machine at regular intervals. Defects such as loose connections or melted cables must be remedied immediately and replaced by new ones.
- Only carry out maintenance and repair work when the machine is positioned on an even surface capable of bea ring loads and safeguarded against rolling away.
- Adhere to the prescribed maintenance and inspection procedures in the operating instructions, including instructions in the exchange of parts. This work may only be performed by specialized personnel.
- Oil and fuels must not be permitted to seep into the ground or sewage system during maintenance work. These must be collected using suitable means and disposed of in an environmentally responsible manner.

Remarks on the hydraulic system:

Avoid dirt or other contaminants entering the hydraulic system. Even the smallest dirt particles in the hydraulic pipework can lead to tremendous impairment to hydraulic units and so to costly repairs.

- Should it be discovered during the daily check of the hydraulic oil level that the oil level is sinking, the complete hydraulic pipework must be checked immediately for leaks.
- Leaks must be repaired immediately. If necessary, inform the responsible after-sales service.
- If possible fill the hydraulic system with filling aggregate.
- Clean screw joints, the filling cap and its surroundings before removal to prevent the ingress of dirt particles.
- Do not leave the tank cap open unnecessarily to prevent foreign bodies entering the system.

8.2 Running in regulations :

Maintenance after 25 hours of operation:

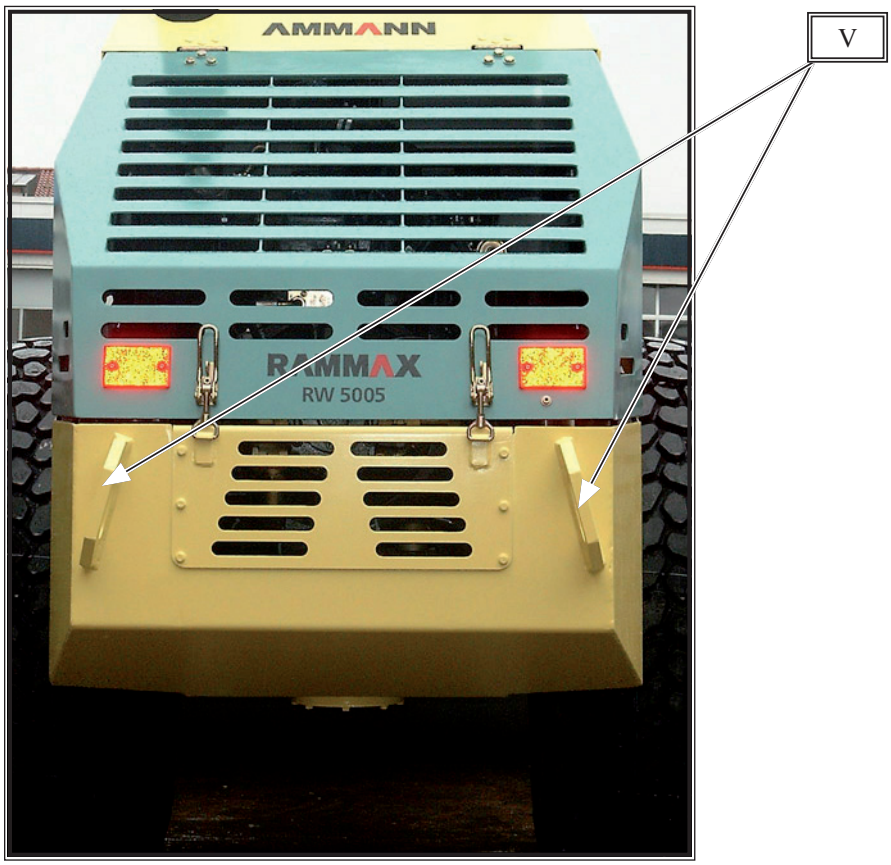
- Check all screw connections and tighten if necessary.
- Check hydraulic hoses and the complete hydraulic oil system for leaks.
- Exchange the fuel filter. (pic. 30, section 8.9))
- Engine : See maintenance instructions Kubota V2203!

8.3 Maintenance plan

No. :	Description :	Remarks :	Page :
Every day			
8.6	- Check the engine oil level	- Note gauge marking	35
8.7	- Check the machine for external damage - Check the hydraulic oil level	- Visual check - Oil viewing window	35
8.8	- Check the fuel supply	- Viewing window	36
8.17	- Check the cooling water level		41
8.12	- Check the air filter		38
8.18	- Check the tyre pressure		42
	- For diesel engine, see Kubota V2203 manual	(Annex)	
After 20 hours of operation			
	- Check all screws for firm fit	Tightening torque values	
5.1	- Grease all lubricating nipples		24
8.9	- Exchange fuel filters		36
	- For diesel engine, see Kubota V2203 manual	(Annex)	
After 75 hours of operation			
8.15	- Change extraction filter / line filter		40
8.10	- Service the battery	Grease poles	37
	- Note : Engine oil diesel engine (see Kubota V2203 manual)	(see Annex)	
Every 100 hours of operation			
8.12	- Clean air filter cartridge, exchange (if necessary earlier)		38
9.0	- Tighten screws on side elements and at the articulated joint.		43
Every 200 hours of operation			
8.11	- Check screws for firm fit	Tightening torque	41
8.9	- Exchange diesel filter		36
8.9	- Check all diesel fuel lines for leaks		36
Every 500 hours of operation			
8.15	- For diesel engine, see Kubota V2203 manual - Exchange line filter	(see Annex)	40
Every 1000 hours of operation			
8.14.2	- Exchange hydraulic oil (at least once a year)		40
8.9	- Exchange fuel filter		36
8.15	- Exchange extraction filter		40
As required			
8.16	- Readjust stripper		41
8.11	- Check screws for firm fit	Tightening torque values	41
	- Engine conservation	see Kubota V2203 manual (Annex)	

8.4 Lift / Lower motor hood

The engine hood of the RW 3005 is liftet an held in upper position with two gas pressure springs. To open the hood, the two clasps “V” have to be unlocked.



8.5 Repairs at the gas pressure springs.

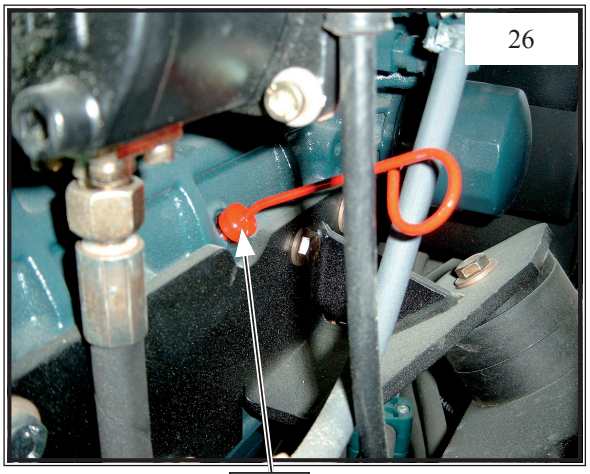
Attention: While repairing the gas pressure springs or exchanging them, the hood has to be safed by a support to protect it against falling down.

8.6 Check the oil level in the engine

Remark :

Set the machine on an even, load-bearing surface in such a way that it is horizontal.

- Pull out the oil dip stick „ÖMS“ and wipe off with a lint-free cloth (pic. 26).
- Insert the oil dip stick as far as it will go and pull out again.
- The oil level must be between the two markings.
- If the oil level lies below the bottom marking, top up with oil immediately.
  For suitable oil types, see the Kubota V2203 manual !

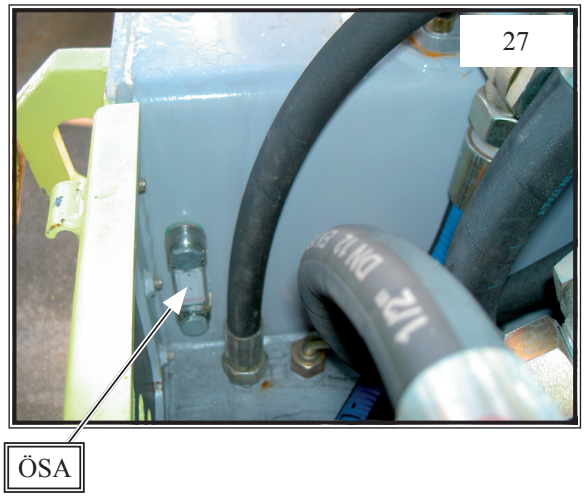


8.7 Checking the hydraulic oil level

Remark :

Set the machine on an even, load-bearing surface in such a way that it is horizontal

- Check the oil level in the oil viewing window „ÖSA” :
  The oil must come up at least to the middle of the view ing window ! (pic. 27)
- If necessary, top up with hydraulic oil.
  Recommended oil types : Mobil HPL 46,
  Texaco Rando HD-C.
  Corresponding oil types from other manufacturers can also be used.

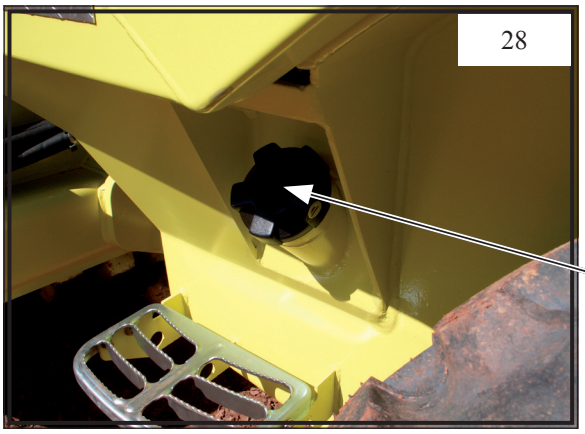


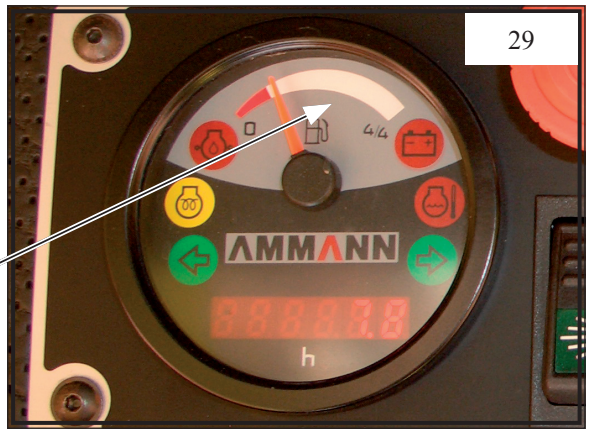
Remark :

If it is discovered during the daily oil level check that there is hydraulic oil missing, check all units, pipelines and houses immediately for leaks and top up missing hydraulic oil before starting work.

8.8 Checking / topping up the fuel supply:

Danger **Danger of fire !**
When working with the fuel system, no naked flames, no smoking. Do not refuel in enclosed areas. Do not breathe in fuel fumes.





Contaminated fuel can lead to the failure of or damage to the engine. If necessary, top up fuel through a sieve filter. Clean the area surrounding the filling hole and refuel. Fuel : see the operating manual of the Kubota V2203! (Annex)

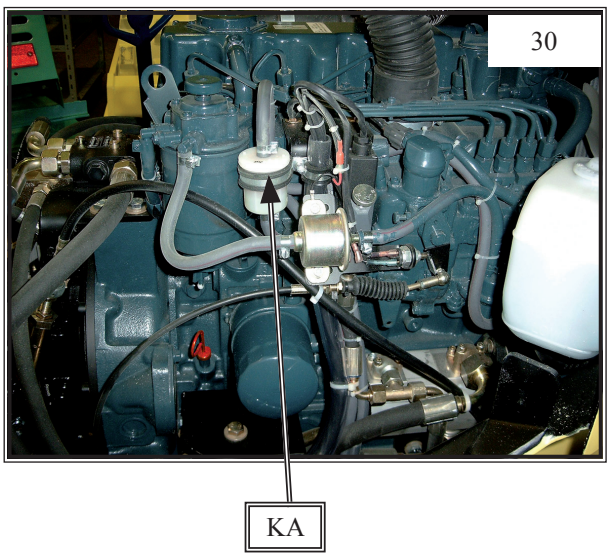
8.9 Exchanging the fuel filter

Attention:

- During work on the fuel system, no naked flame, no smoking.
- The fuel system is self-venting.
- Collect any emerging fuel and dispose of in an environmentally responsible manner using a fuel filter !

The diesel line filter „DF" must be changed at least once a year or every 200 hours (Bild 30).

Exchange the fuel filter :
- Unscrew hex bolt „ S „ at the filter support and take out the fuel filter „ DF „ (Fig. 30).
- Tear-off fuel hoses and put in new fuel filter „ DF „ Re place fuel hoses which are leaky or porous.
- Mount fuel filter „ DF „ in reverse order and check its density.



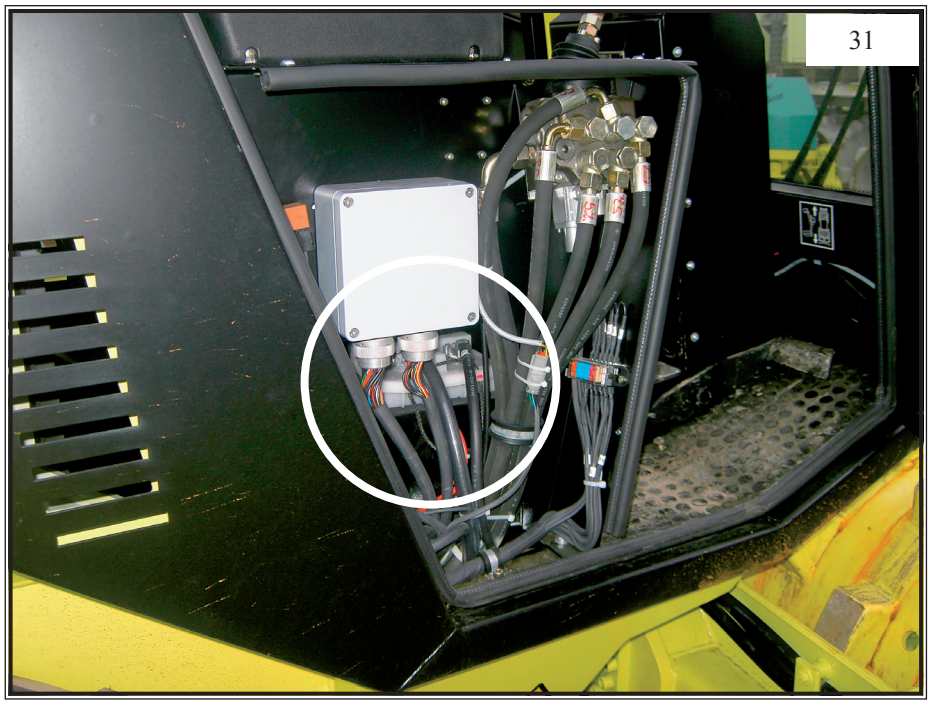
8.10 Battery:

Danger

- When working with the battery, no open flame, no smoking !
- Do not allow acid to come into contact with clothes or skin !
- Wear protective goggles !
- Do not lay any tools on the battery !

The battery “B” is located on the left side under the driver’s seat console, in a battery compartment (Fig. 31). It is very important to keep clean the battery and to carry out maintenance correctly in order to have a perfect function of this battery. If the machine is out of action for a longer period of time the battery has to be pinched off in order to prevent a deep discharge. Especially the terminals and clamps must be cleaned regularly and afterwards be greased thickly with an acidproof grease.

Attention: Dispose of old batteries correctly.



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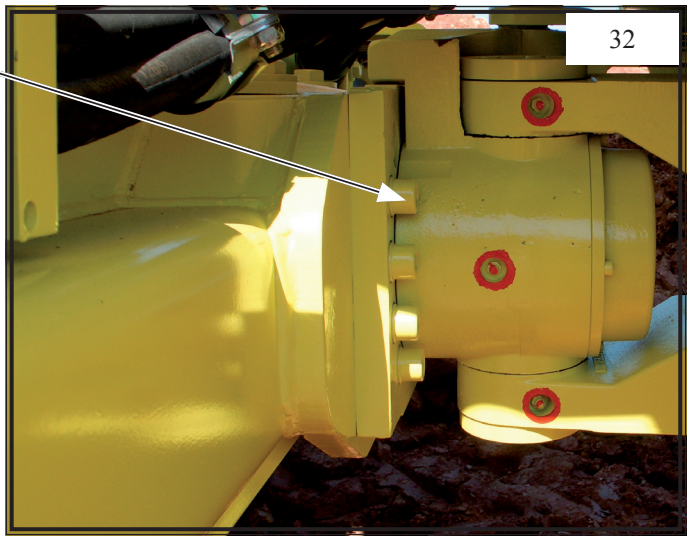
8.11 Tightening the screws :

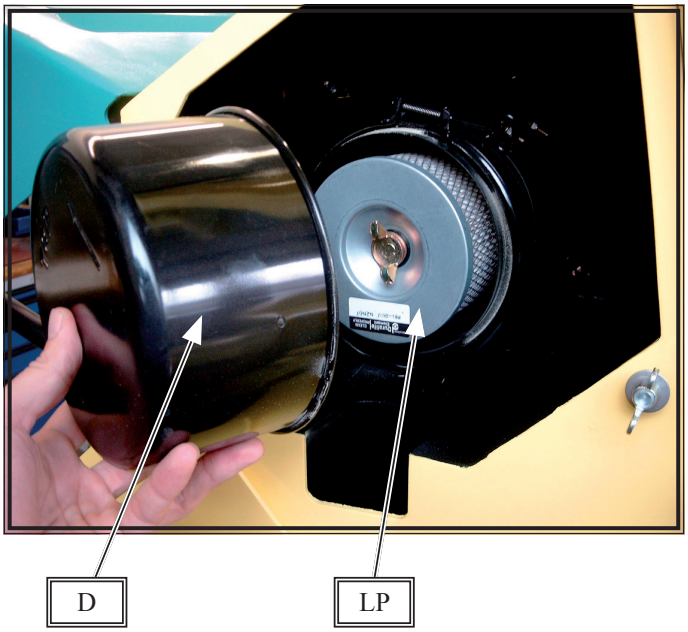
Hex bolt M 18 x 70 DIN 933-10.9 Tightening torque 412 Nm / 303 ft-lb



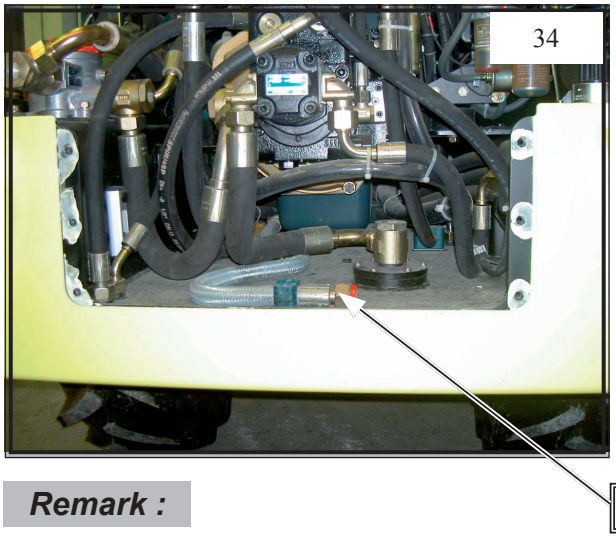
8.12 Cleaning/checking/exchanging/the air filter

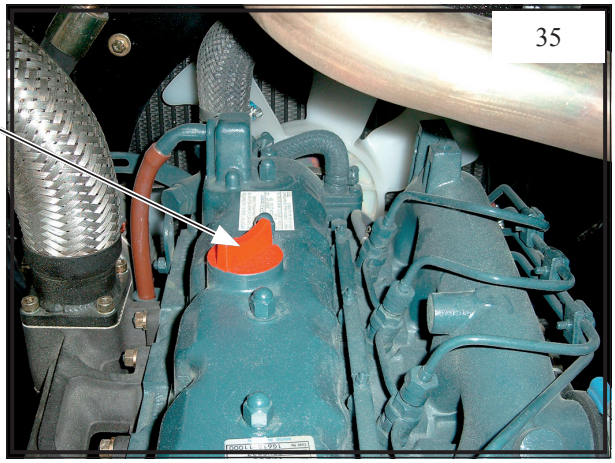
Exchange the air filter cartridge :

- Release the sealing cap „ D „ from the air filter housing and remove air filter cartridge „LP”.
- After inserting the cleaned or new filter cartridge, mount the L sealing cap „D”. (Bild 33)



8.13 Exchanging the engine oil :





Remark :

Only drain off the engine oil when the engine is warm. For exchange intervals for engine oil, see the Kubota V2203 manual (Annex)

Danger **Danger of scalding !**
When draining off hot engine oil, beware of scalding!

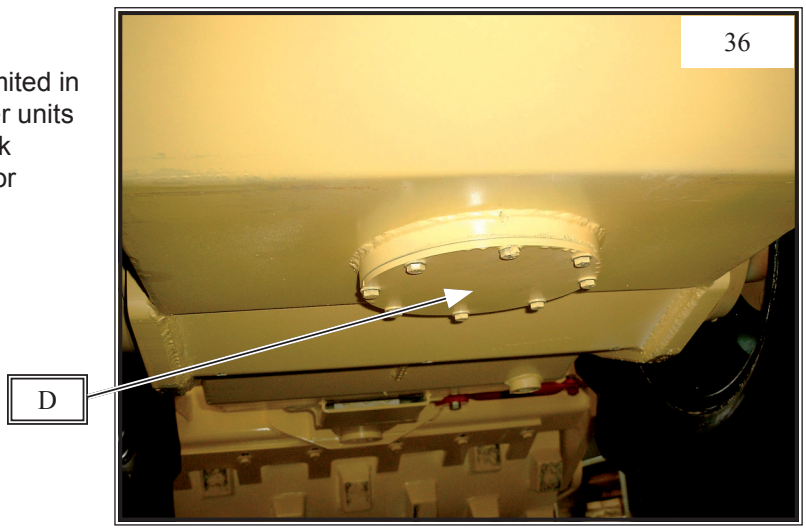
- Detach the oil drainage hose „AS" . (Fig. 34).
- Catch the oil in a suitable container and dispose of in an environmentally responsible manner.
- Exchange the oil filter (see Kubota V2203 manual)
- Mount the oil drainage hose and top up with new oil in the filling hole „E" (Fig. 35).

8.14 Exchanging the hydraulic oil:

Danger **Danger of scalding !**
When draining off hot hydraulic oil, beware of scalding !

8.14.1 Hydraulic system

All maintenance work at the hydraulic system is limited in the main to the filter and hydraulic oil tank. All other units require no maintenance. The hydraulic line network should, however, be checked at regular intervals for leaks. Do not spray hydraulic lines with paint.

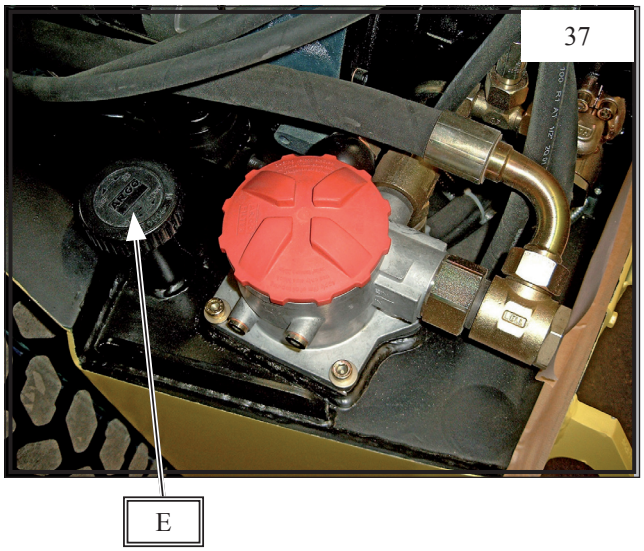


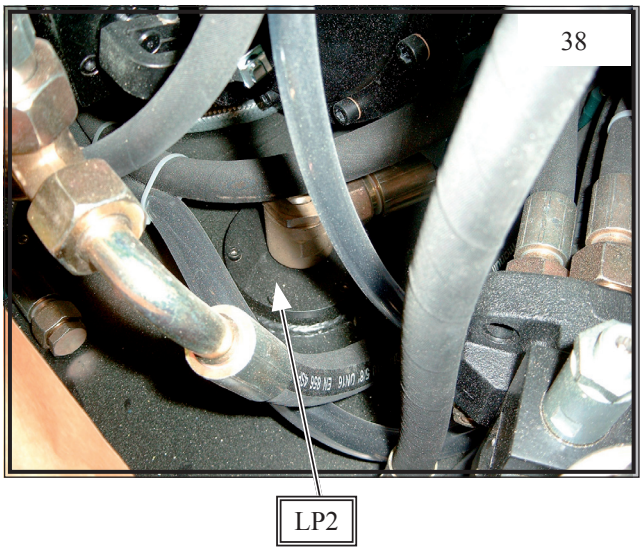
8.14.2 Hydraulic oil change

Attention: With the hydraulic oil drained off, never start the engine.
Never allow the pumps to run without oil

Remark : Work at hydraulic systems may only ever be performed by specially qualified staff with the relevant knowledge and experience in hydraulics. Drain off oil into a suitable container and dispose of the filter cartridge in an environmentally responsible manner.

Recommendation : Where major repairs must be carried out at the hydraulic pipeline net work, the hydraulic oil should also be exchanged.



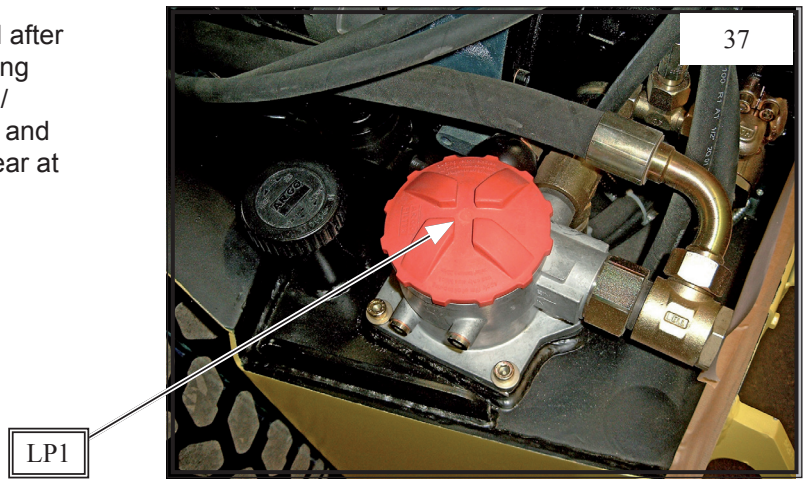


On the underneath of the oil tank, dismantle the sealing plug „VS" and drain the hydraulic oil into a suitable container ⇨ Detach the cleaning lid „D" and thoroughly wash out the oil tank (page 39 Fig. 36) ⇨ mount lid „D " with new seals ⇨ replace line filter „LP1" (Fig. 37) ⇨ replace extraction filter „LP2" as well (Fig. 38) ⇨ Fill hydraulic oil into the filling opening „E" underneath the driver's seat until the oil level becomes visible in the oil viewing window. (page 35 Fig. 27) ⇨ Start the engine and allow to run idle for a short period ⇨ Check the oil level again at the oil viewing window (Fig. 27), if necessary top up.. ⇨ Tank capacity appr. ca. 140 l
Recommended oil types : Mobil HLP 46, Texaco Rando HD-C.

Corresponding oil types from other manufacturers can also be used.

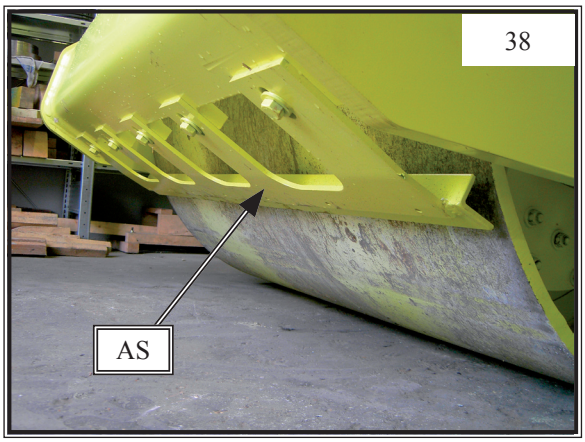
8.15 Extraction filter / Line filter:

The extraction filter „SGF" needs to be exchanged after every hydraulic oil change and every 1000 operating hours. (Fig. 38) Both the line filter cartridges (LP1 / LP2) must be exchanged after 75 operating hours and regularly every 500 operating hours, but once a year at least.(Fig. 37)



8.16 Adjusting the stripper

Remark : In case of stripper wear, the stripper must be readjusted or replaced.



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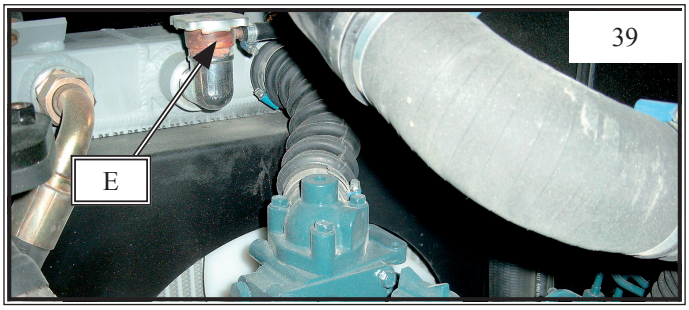
- Release all six screws at the scraper „ AS “ and push the scraper towards the drum.
- The distance between the stripper and the facing must be at least 2 mm at every point
- Tighten the screws again. (Fig. 38)

8.17 Radiator :

The radiator of the diesel engine must be filled at all times up to the lower edge of the filling nozzle. Ist das nicht der Fall, gießen Sie entsprechend Kühlwasser in den Ausgleichsbehälter „AGB“ (Bild 39). The rollers are supplied ex works with an anti-freeze agent for protection to as low as -25°. The radiator may only be operated with suitable anti-freeze in the cooling water.
Should it be necessary to let off the cooling water for repair works, we would ask you to proceed as follows:



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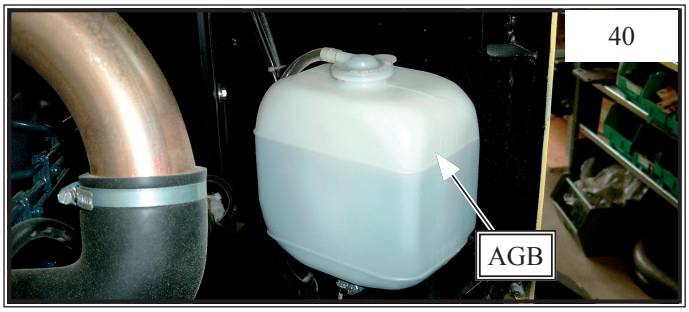
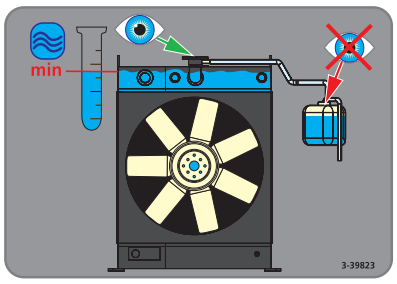
- Demount the back wheel on the right and the side cover on the right (page 41 Fig. 40)
- Loosen the cooling water hose “KWS” (Fig. 40) and coll ect the cooling liquid in a suitable bowl.
- Mount the cooling water hose and check if it is fitted correctly.



40

When you refill the cooling system please note that firstly the cooler will be refilled – however only up to the lower surface of the filler (Fig. 39) and the compensation box “AGB” (Fig. 40).
Start the engine in order to start the cooling circuit, then let warm up the machine. Then turn off the machine and let the motor cool down. Afterwards add cooling water into the filler „E“ until it is filled to the upper marking. Check the cooling at the filler, not at the compensation box. (see Pic. 40/1).



40/1

Danger Danger of scalding due to hot water or steam. Work at the radiator may only be performed when the machine has cooled down

Attention: Ensure safe, environmentally compatible disposal of fuels and operating media as well as exchange parts.

8.18 Changing the tyres

Danger When lifting loads, ensure that safety measures are adhered to.

Remark :

Use only car jacks with the adequate lifting capacity!!!

- always position the machine on a load-bearing., even surface..
- Apply the jack or other suitable hois ting device and slightly raise the machine.
- Release wheel nut „RM“ and remove the rubber wheel. (Fig 40)

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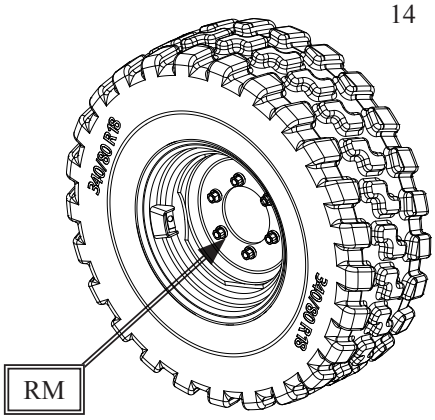

Attention:

Note the intrinsic weight of the tyre !

- Place the new wheel on the drive flange.
- Tighten the wheel nuts „RM” across corners.
- Tightening torque 150 Nm / 110 ft-lb
- After mounting the wheel, check the air pressure. (3.5 bar)

9.0 Tightening torque levels for screws with standard metric thread

Screw dimension	Tightening torque Nm		
	8.8	10.9	12.9
M 4	3	5	5
M 5	6	9	10
M 6	10	15	18
M 8	25	35	45
M10	50	75	83
M12	88	123	147
M14	137	196	235
M16	211	300	358
M18	290	412	490
M20	412	578	696
M22	560	785	942
M24	711	1000	1200
M27	1050	1480	1774
M30	1420	2010	2400

Screw dimension	Tightening torque ft-lb		
	8.8	10.9	12.9
M 4	2	3	4
M 5	4	7	7
M 6	7	11	13
M 8	18	26	33
M10	37	55	61
M12	65	91	108
M14	101	145	173
M16	156	221	264
M18	213	303	361
M20	304	426	513
M22	413	559	695
M24	524	798	885
M27	774	1092	1308
M30	1047	1482	1770

Strength classes for screws with untreated, unlubricated surface. The screw quality designation is indicated on the screw heads.

8.8 = 8G ; 10.9 = 10K ; 12.9 = 12K

The values result in 90% utilization of the screw yield strength, with a coefficient of abrasion of **μ ges. = 0,14**.

Adherence to the tightening torque levels is checked using a torque wrench. When using lubricant MoSo2, the specified tightening torque levels do not apply.

Remark : Self-locking nuts must be renewed after dismantling !

10.0 Troubleshooting table

Fault :	Possible cause :	Remedy :
Engine running, machine does not move !	Insufficient hydraulic oil in the tank.	• Check hydraulic oil level • Check the hydraulic system for leaks
Engine does not start up !	No contact for limit switch under driver‘s seat.	• Check seat setting Page 27 Section 6.0

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