

SHOCKWAVE

1.00 / 1.55 / 2.10

User Manual



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Foreword

We would like to start by congratulating you on purchasing an Imants machine. By opting for this machine, you have chosen a quality product. Your machine will bring you years of enjoyment if used properly.

This user manual is an important document for the proper use of the machine. You will find in it all the information required to use the machine safely and optimally.

We recommend that you read this manual thoroughly and that you study and follow all the instructions before starting up the machine. Illustrations in this manual may differ from the configuration of your machine; they are designed to be used as diagrams to explain a working principle.

Please contact your point of sale / dealer should there be any questions or ambiguities as regards this manual.

We update our manuals regularly. Your suggestions help us make our manuals even more user-friendly. You can e-mail your suggestions to info@imants.nl with 'manuals' as the subject line.

Imants BV accepts no liability for any direct or consequential damage resulting from the improper use of the machine.

Use this manual

1. Instructions used in this manual are always *printed in italic*.
2. In this guide, some sections of text requiring special attention are framed with a border.



Text bordered in red warns of dangerous situations which must be avoided at any cost.



Text bordered in orange cautions on some aspects which are not immediately dangerous, but should ideally be avoided.



Text bordered in blue provides additional information aimed at facilitating or improving the use of the machine.

3. Warning pictograms used in the manual but not present on the machine in the form of stickers.



Do not stay within the lift range of the three-point hitch when operating it. Danger of the whole body being crushed.

This danger can cause very serious injury or even death.

- It is forbidden to stay within the lift range of the three-point hitch when operating it.
- Operate the control handles for the three-point hitch only from the designated workplace and never when you are within the lift range between tractor and machine.



Do not go under the machine! Danger of the whole body being crushed if the machine comes down unexpectedly

This danger can cause very serious injury or even death.

- It is forbidden to go under the machine while it has not been brought back on the ground or while the lifted machine has not been secured against a sudden fall.



The maximum hydraulic system pressure should not exceed 200 bar

4. Operating pictograms used in the manual but not present on the machine in the form of stickers.

Hitch	Tractive power control 	Position control 	Downwards 	Upwards 	Working depth
PTO	PTO on 	PTO 1000 RPM 	PTO off 		
Tractor	Front wheel drive 	Direction of travel 	Engage gear 	Engine speed up 	Engine speed down
Hydraulics	Cylinder in floating position 	Cylinder in 	Cylinder out 	Pressure gauge 	
General	Off 	On 	Recycle 	Hook 	

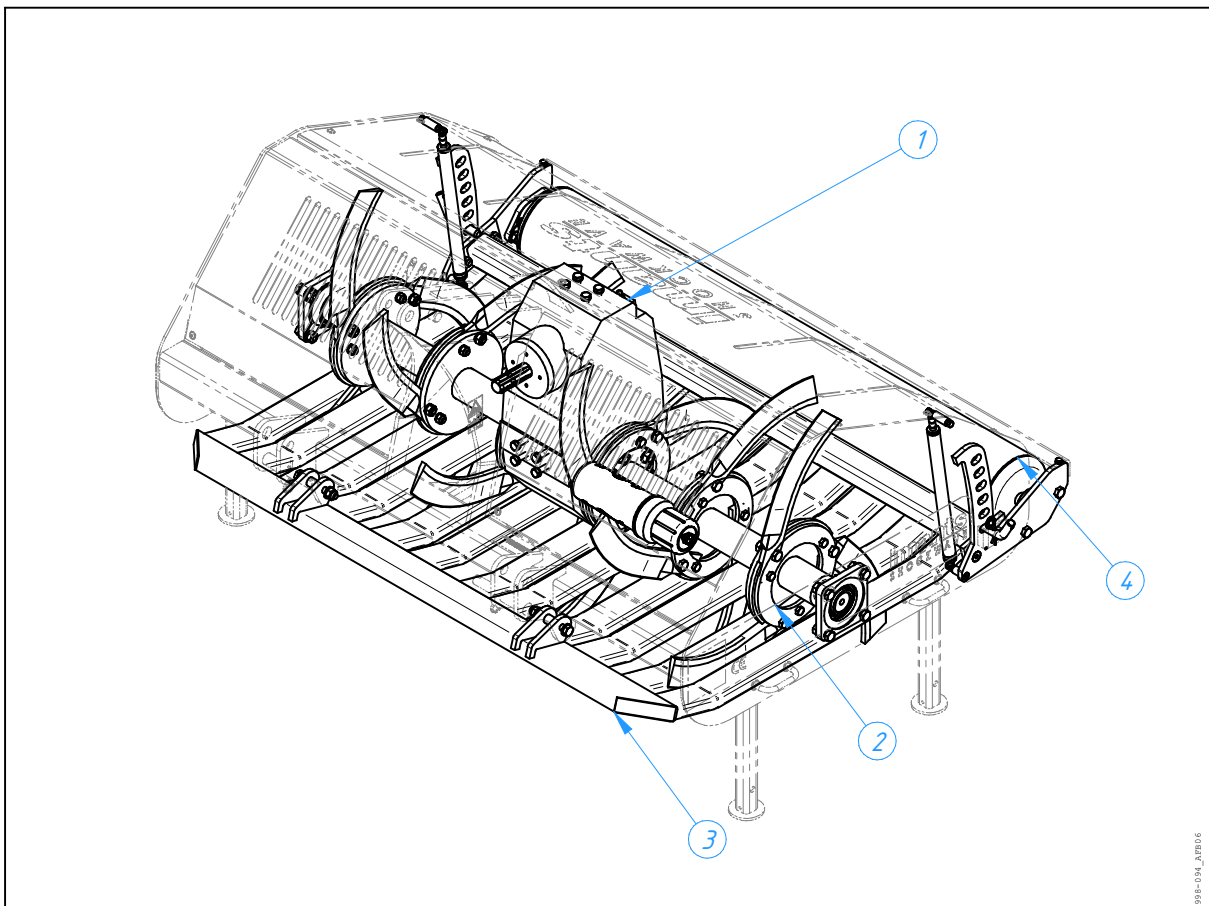
1 Introduction

The Imants Shockwave is designed for professional use on golf courses and sports fields. The Shockwave is a linear decompacter for fine turf.

A tractor provides the power needed to drive and tow the Shockwave. The mechanical power of the tractor is transferred to the gear box (1) of the machine via a PTO drive shaft and must reach a speed of 540 rpm. The gearbox drives two shafts (2). On these shafts cutting knives are mounted. A strong steel frame supports the gearbox and the two shafts. The working depth is adjustable by a set of slidebars (3). The surface is pressed again by a roller (4).

The machine is controlled by the driver of the tractor from the driver's seat.

The Shockwave is fitted with coupling points for a tractor with category I and II hitch.



2 General safety instructions

The user must hold a valid driving licence in order to operate the machine.

The user must have reached the minimum age of 16 years, unless the local law requires that the minimum age should be higher. The highest age limit shall prevail.



The user of the machine is responsible at all times for compliance with local safety regulations and guidelines.

The user must have read through the whole contents of this manual and must follow to the letter the instructions therein.

Keep this manual and that of the PTO drive shaft within reach.

Use the machine solely for the purpose it was intended for.



No one should be standing between the machine and the tractor while these are being coupled or uncoupled.



All safety devices are to be mounted on the machine and must function properly. Never remove or open a cover when machine is rotating.

Always follow the specifications and requirements set by the manufacturer of the tractor in relation to its use. Please refer to Tractor manual.

Always comply with the requirements regarding the minimum load of the front and rear axles, given by the tractor manufacturer.



Standing on or within the range of the machine during work is **prohibited**. This also includes transport.

The maximum load of the tractor tyres, given by the tyre manufacturer, should not be exceeded in the operation of the machine.

Warning labels should always be legible.

Modifications, additions or developments on or to the machine are not allowed without the written permission of Imants BV. This includes welding on load bearing parts. Without this written authorisation, Imants BV's responsibility for the CE marking will lapse and go over to the buyer.



Maintain the machine as indicated further in this manual. Only perform this work when the machine is at a complete stop. Remove the key from the ignition lock of the tractor.



Work under a lifted machine may only take place if the machine is properly supported.

For reasons of quality and safety, use original Imants parts exclusively.

3 Specifications

	SW1.00	SW 1.55	SW 2.10
Dimensions			
Working width [mm]	1000	1550	2100
Machine width [mm]	1200	1750	2250
Machine length [mm]	1350	1350	1350
Height (on legs) [mm]	1150	1150	1135
Distance centre of gravity [mm]	635	635	635
Machine weight			
Weight [kg]	475	580	630
Working speed			
Max. working speed [km/h]	1.5	1.5	1.5
Power			
Min. Power [kW/pk]	18 / 25	22 / 30	30 / 40
Max. power [kW/pk]	33 / 45	36 / 50	44 / 60
Working depth			
Max. workingdepth [mm]	250	250	250
PTO drive shaft			
Driving speed [min-1]	540	540	540
PTO drive shaft type	W2300	W2300	W2300
Torque limiter protection	K64/12R	K64/12R	K64/12R
Set torque [Nm]	850	850	850
Noise level			
Noise level [dB(A)]	< 80	< 80	< 80

4 Warning stickers



Read and observe the operating instructions and safety precautions before you operate the machine.



Risk of tractor and machine unexpectedly starting up and rolling off while carrying out work on the machine, such as installation, setup, troubleshooting, cleaning, maintenance and repairs.

This danger can cause very serious injury or even death.

- Before any intervention on the machine, secure the tractor and machine against accidental start-up and roll-off.
- Read the relevant sections in the user manual and follow the instructions.



Danger of hands or arms being pulled in or jammed by the moving parts of the power transmission

This danger can cause very severe injury possibly leading to the loss of body parts.

Never open or remove the protective devices while the tractor engine is running in connection with the PTO / hydraulic/electronic system.



Danger of fingers and hands sustaining cuts or being amputated. Keep away from accessible moving parts that are part of the work process!

This danger can cause very severe injury possibly leading to the loss of body parts.

- Never insert your hands or arms into the hazardous area while the tractor engine is running in connection with the PTO / hydraulic/electronic system.
- Wait until the moving parts of the machine have come to a complete halt before you reach into the hazardous area with your hand and/or arm.

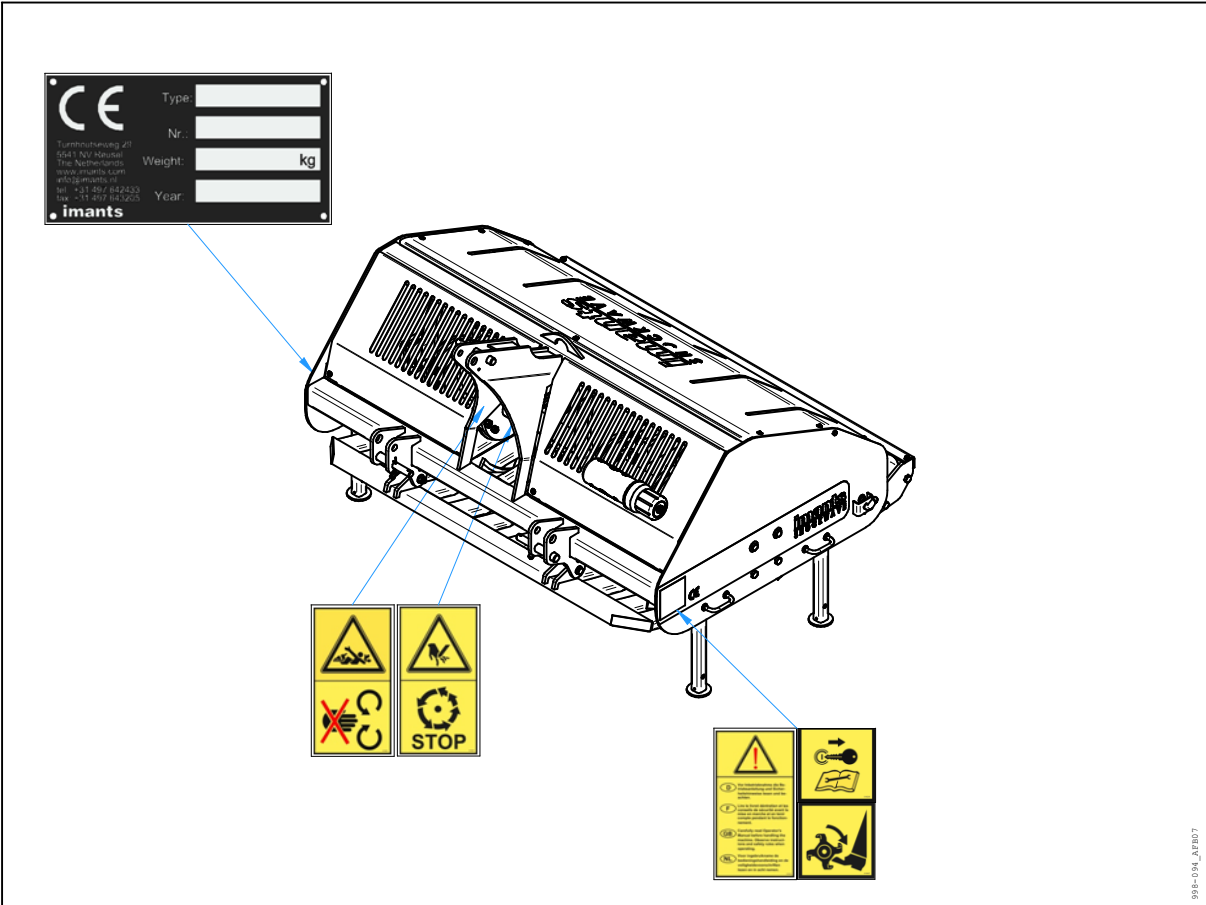


Danger of feet sustaining cuts or being amputated. Keep away from accessible moving parts that are part of the work process!

This danger can cause very severe injury possibly leading to the loss of body parts.

- Do not insert your feet into the hazardous area while the tractor engine is running in connection with the PTO drive shaft / hydraulic/electronic system.
- Wait until the moving parts of the machine have come to a complete halt before you insert your foot into the hazardous area.

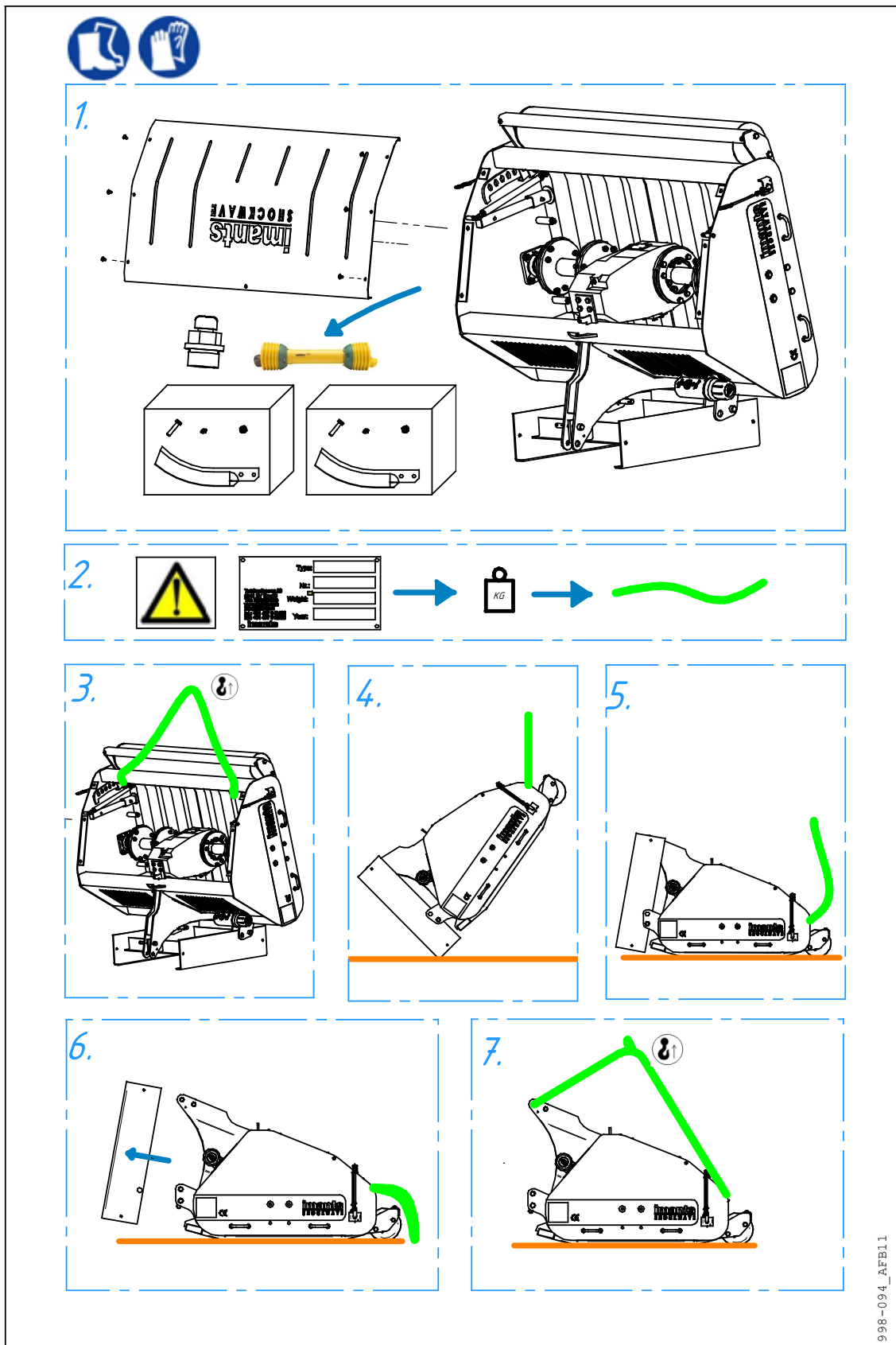
5 Location of the nameplate and warning stickers on the machine



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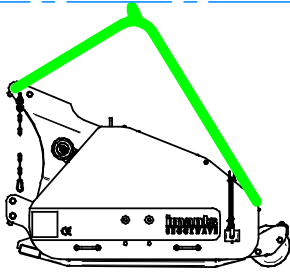
6 Machine operation

6.1 Unloading pallet/ assembly

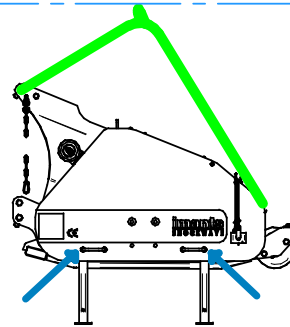




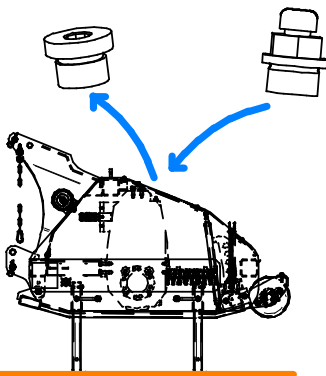
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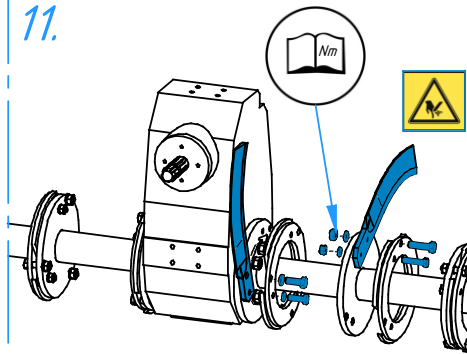
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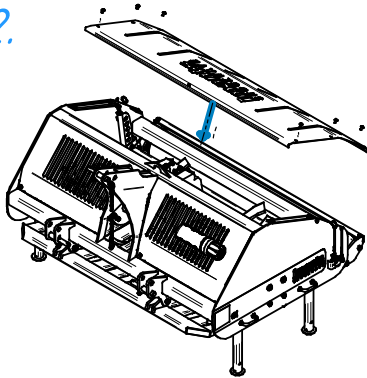
10.



11.



12.



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6.2 Loading and unloading

Crush hazard due to the accidental fall of a machine hanging from a hoisting system during loading and unloading

This danger can cause serious bodily injury or death.



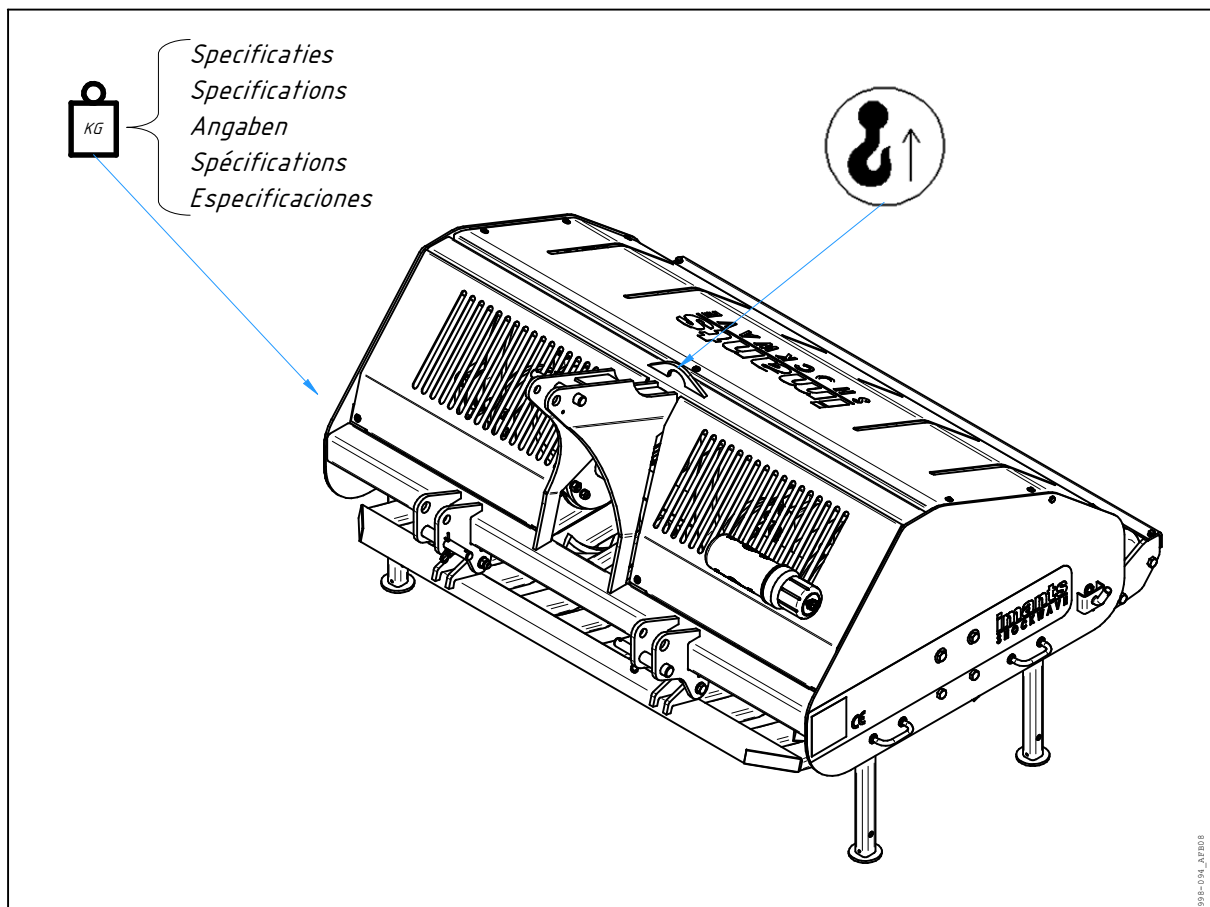
Never go under a hoisted machine

Use only approved lifting equipment (wire ropes, belts, chains, etc.) which:

- Have a permissible load that is greater than the weight of the machine;
- Do not show any defects

Only qualified personnel should hoist machines.

1. Only attach the lifting equipment to/on the marked anchorage points



6.3 Commissioning



- Before any intervention on the machine, secure the tractor and machine against accidental start-up and roll-off.
- Read the relevant sections in the user manual and follow the instructions.



1. *Couple the machine to the tractor (see Section on coupling and uncoupling)*



2. **Do not** connect the PTO drive shaft yet



3. *Carefully read the manufacturer's instructions for the PTO drive shaft*

4. *Shorten the PTO drive shaft*

5. *Connect the overload or freewheel clutch on the machine side*

6. *Connect the PTO shaft to the tractor*



If not shortened correctly, a PTO drive shaft can cause serious damage to the tractor and machine. This means that the CE-marking of the PTO drive shaft is no longer valid.

Connect the overload clutch in accordance with the requirements of the PTO drive shaft manufacturer.

Check whether the clearance around the PTO drive shaft is sufficient whatever the operating conditions. The PTO drive shaft will sustain damage if there is too little clearance.

Take into account the maximum drive capacity of your tractor for the gear box of your machine. Only this will prevent damage from overload. Please refer to the machine specifications.



The adjustment of the PTO drive shaft only applies to the current type of tractor. You may need to readjust the PTO drive shaft when you couple the machine to another tractor.

6.4 Coupling and uncoupling the machine

Coupling



1. Attach the balls over the top link and draw bar pins in the coupling points of the machine and secure using the linch pin.
2. Set the tractor lift arms at equal height.
3. Check that the PTO drive shaft slides in and out easily (lubricate!)
4. Steer people away from the danger area between the tractor and machine.
5. Drive the tractor towards the machine, leaving a space (approx. 25 cm) between the tractor and the machine.
6. Secure the tractor so that it won't start up or roll off unexpectedly.
7. Connect the PTO drive shaft and the power supply lines.
8. Reverse a little closer to the machine with the tractor so that the lower coupling points of the machine grab the draw bar hooks of the tractor.
9. Connect the top link to the top connection
10. Secure the lift arms of the tractor with the stabilizer bars.
11. Raise the machine so that it is in the transport position. **Be aware of the max. lifting height.**
12. Raise the four supporting legs up and lock them again with a linch pin.
13. Check whether the clearance around the PTO drive shaft is sufficient whatever the operating conditions. The PTO drive shaft will sustain damage if there is too little clearance.... Beware of the hitch bar!
14. By performing a visual inspection, check that the top link and draw bar hooks are properly locked before driving away.

Uncoupling



1. Lower the four supporting legs and lock them again with a linch pin.
2. Position the machine on a flat and firm surface.
3. Release the pressure from the hydraulic system.
4. Unlock and disconnect the top link from the tractor seat.
5. Unlock and disconnect the hook of the draw bar from the tractor seat.
6. Drive the tractor forward about 25 cm.
7. Secure the tractor and the machine so that they won't start up or roll off unexpectedly.
8. Disconnect the PTO drive shaft.
9. Place the PTO drive shaft in the appropriate chain.
10. Disconnect the power supply lines.

6.5 Transport

You must collect information on local road traffic regulations

This information may concern:

- The transport width
- Axle load
- Lighting
- Use of warning signs
- Etc.



Before you go on public roads check the following:

1. *The top link and draw bar pins are secured with a linch pin*
2. *The legs are raised and secured*
3. *The lighting works, is undamaged and easily visible*
4. *The braking system works*
5. *The power cables are connected properly*



Risk of getting jammed, cut or hit due to lack of stability and overturning

- Maintain a driving style allowing you to keep the tractor and the coupled machine under control at all times.
- Take into account your personal abilities, road conditions, traffic, your visibility, the weather and the driveability of the tractor and the influence of the coupled machine.
- Lock the draw bars of the tractor to prevent the towed machine from swinging.



Risk of getting jammed, cut, grabbed and hit as a result of the machine uncoupling accidentally

- It is forbidden to allow people onto the machine when driving and/or to step onto the machine.



20% of the unladen weight of the tractor must always rest on the front axle

6.6 Machine operation

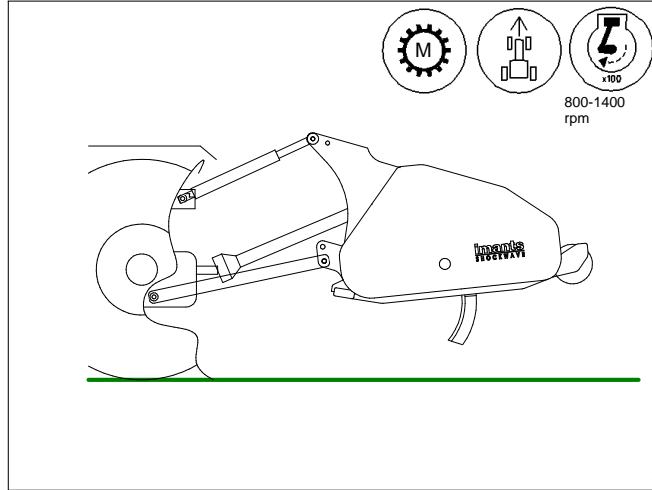
6.6.1 Start and stop

Start



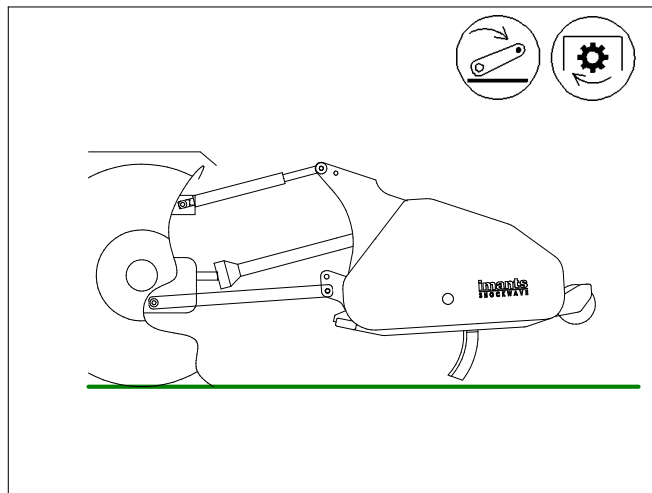
Standing on or within the range of the machine during work is prohibited.

The machine should be brought to a halt when someone is on, or within reach of the working machine.



Engage the PTO only if there is nobody in the danger area of the machine.

The machine should be brought to a halt when someone is on, or within reach of the working machine.

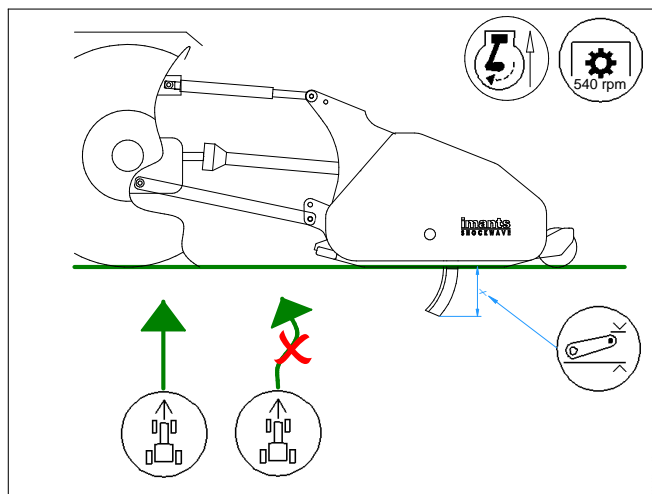


Working speed:

See specifications

Working speed depends on:

- Working depth
- Type of soil
- Soil condition (wet, dry)
- Compaction



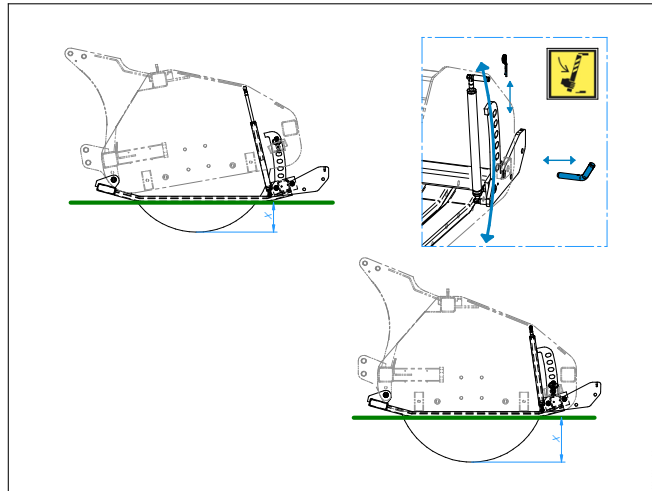
Adjust working depth



Damage to the turf:

- Knives bent
- Knives not aligned
- Not driving straight

Machine works best in moist soil.

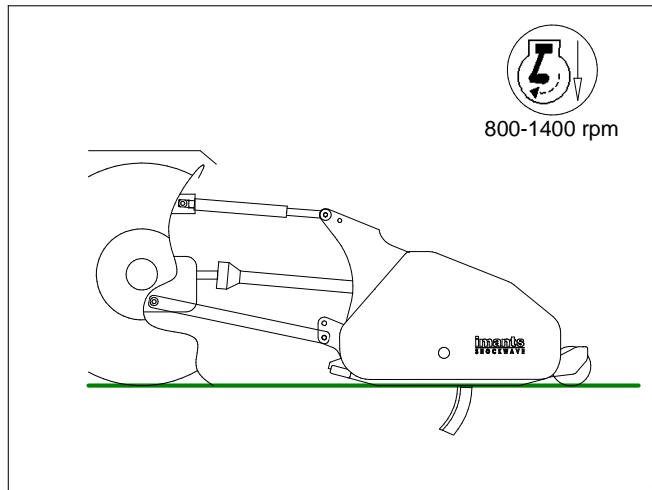


Stop



While working never push in the clutch pedal of the tractor, or let the tractor slip out of gear into neutral.

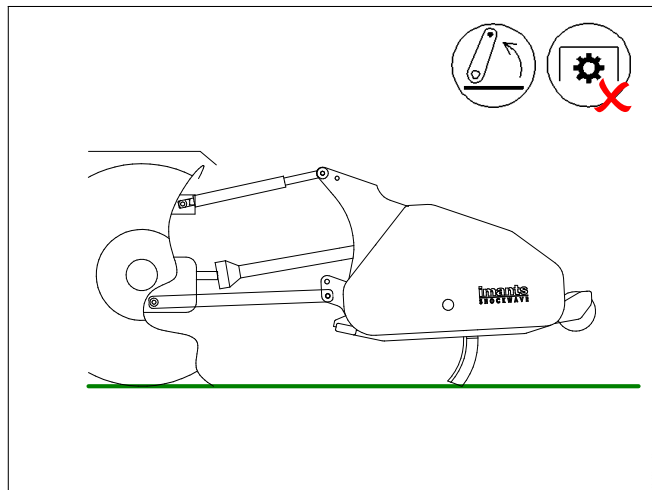
The machine can actually push the tractor forward, which can lead to dangerous situations.



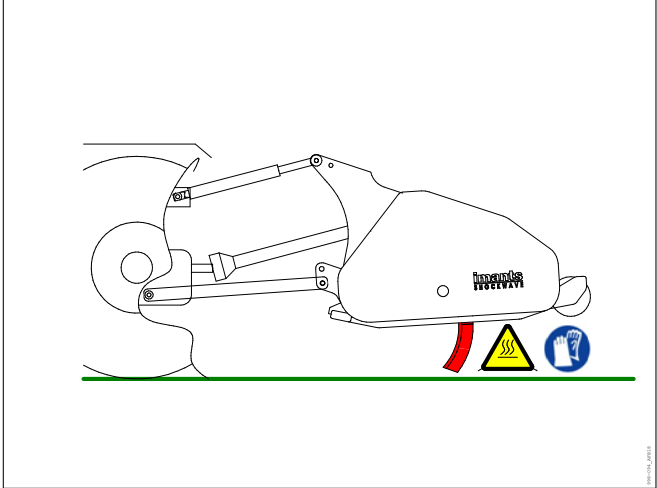
Take into account the permissible angle rotations of the rotating PTO drive shaft.

Turn off the PTO immediately if the lifted machine is running erratically.

See operating instructions for the PTO drive shaft.




**Due to friction with the soil,
knives become hot**



6.6.2 Machine blocked by obstructions

The machine may come to a halt if it encounters stones or other obstacles. To prevent damage to the transmission, the PTO drive shaft is fitted with an overload protection.



Removing the obstructions is not allowed

- When the machine is moving;
- As long as the tractor engine is running and the PTO is engaged;
- When the tractor is not secured against accidental roll off by means of the handbrake;
- The lifted machine is not clearly supported.

Torque limiter

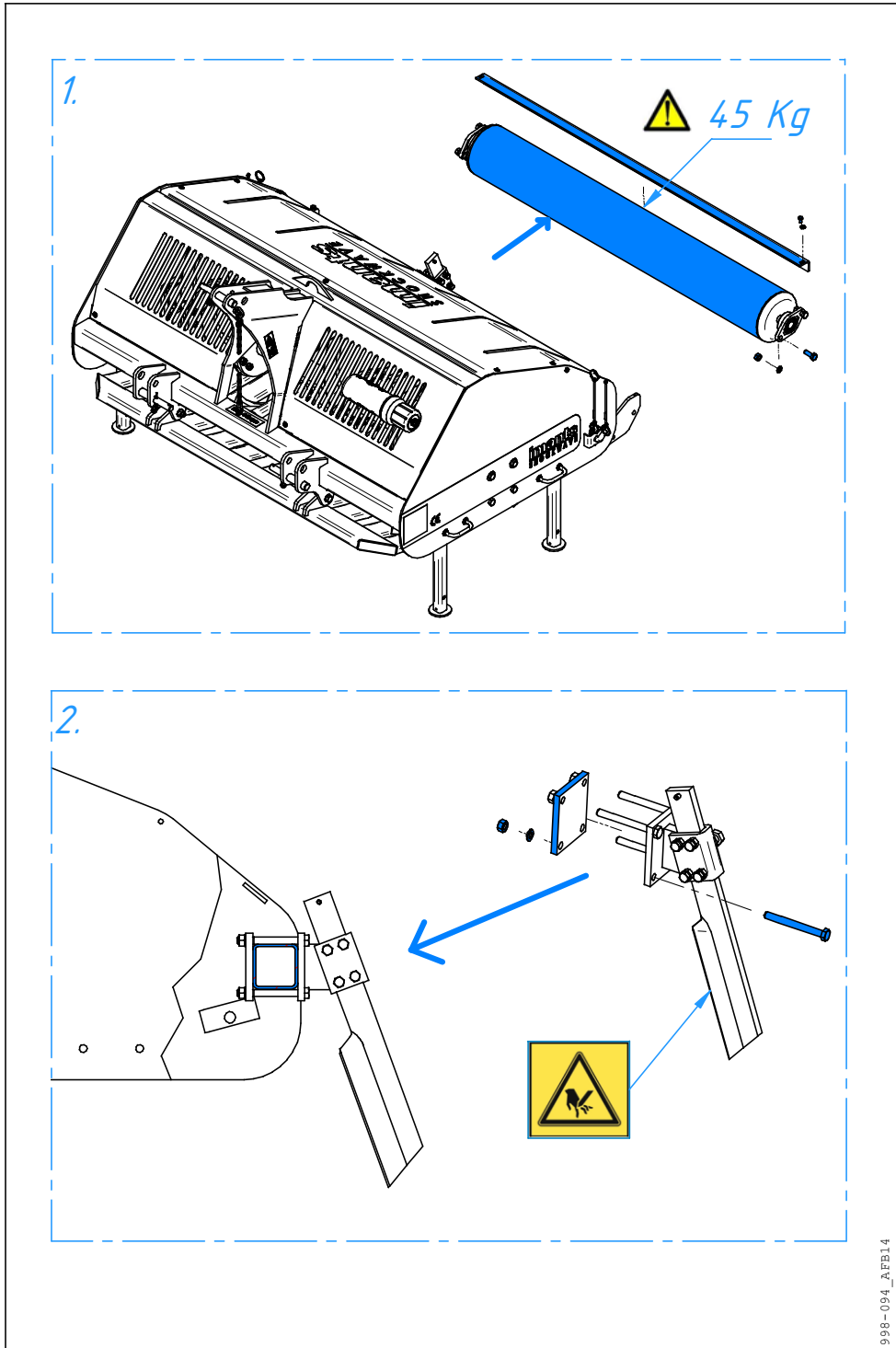
When the torque limiter is engaged, one hears a rattling noise.

1. *Immediately disengage the PTO drive shaft.*
2. *Fully raise the machine.*
3. *Place the support legs under the machine.*
4. *Place the machine on the ground and turn off the tractor engine.*
5. *Remove the obstacle from the ground or the machine.*
6. *Resume working.*

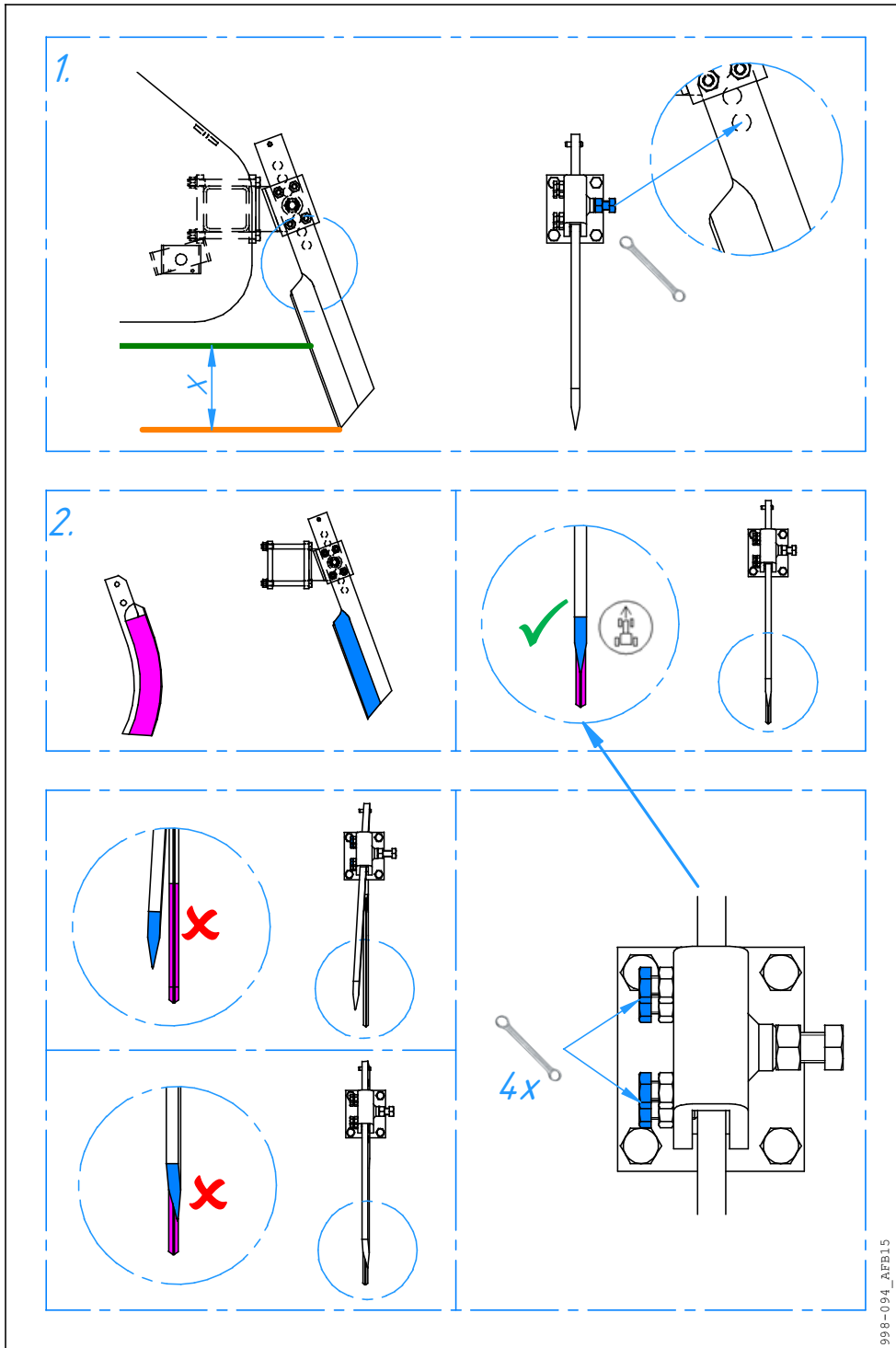


6.7 Coulter kit (option)

6.7.1 Assembly

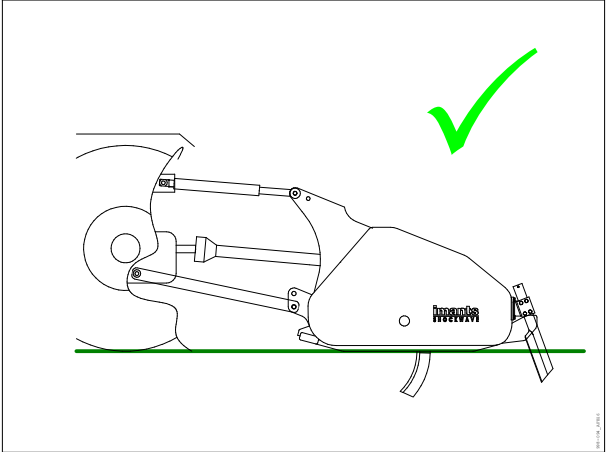
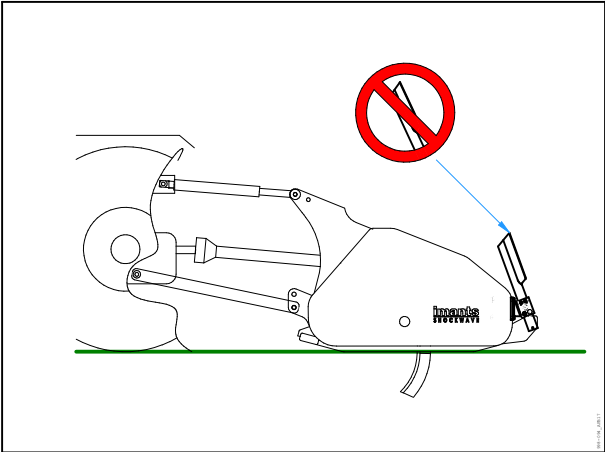


6.7.2 Adjustment




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6.7.3 Use



6.8 Maintenance

6.8.1 General maintenance and lubrication schedule

Item	Daily 	Maintenance interval in months - (hours)	
		1 – (100)	12 - (500)
Knives	●		
Cover	●		
PTO drive shaft protection	●		
Warning stickers	●		
Gaskets for leaks	●		
Skid	●		
Gear box oil level	●		
Change gear box oil ¹⁾			●
Check bleed nipple(s) ²⁾		●	
Lubricate PTO drive shaft		See PTO drive shaft manual	

¹⁾ The first change after 50 hours.

²⁾ In dusty conditions maintenance must take place at shorter intervals.



Pay additional attention to the PTO drive shaft:

- Keep the PTO drive shaft clean. Lubricate sliding parts so that the PTO drive shaft can slide in and out easily.



Avoid dangerous situations. Repair broken or worn parts before using the machine.

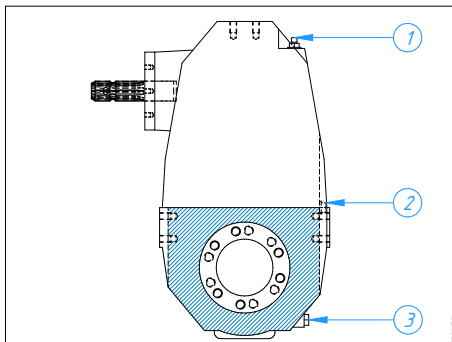
6.8.2 Gearbox

6.8.2.1 Check the oil



1. Set the gear box horizontally.
2. The oil level should come to the lower side of the level plug

- 1: Vent plug / filler plug
- 2: Level plug
- 3: Drain plug



6.8.2.2 Change oil



Draining the oil

1. Place a receiving pan under the gear box
2. Check that the vent plug is working
3. Open the drain plug

- 1: Vent plug / filler plug
- 2: Level plug
- 3: Drain plug



Dispose of the waste oil in an environmentally responsible manner. To do so, follow the statutory regulations in force where you are.

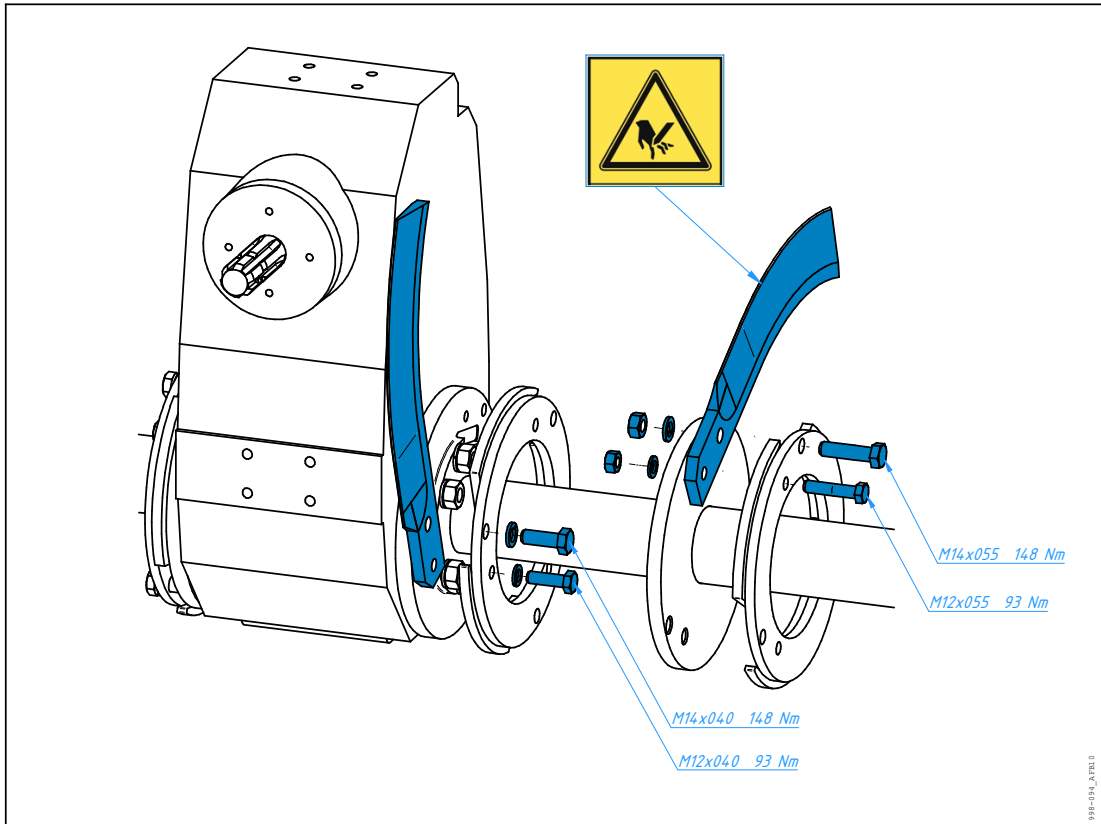
Filling up with oil



1. Turn back the drain plug and fill up with: *
2. Turn back the vent plug

* 3.50 L Mobilube HD-N 80W140

6.8.3 Replace knives



Dispose of the worn spade blades in an environmentally responsible manner. To do so, follow the statutory regulations in force where you are.



For reasons of quality and safety, use original Imants parts exclusively.

6.8.4 Cleaning



1. Check hydraulic hoses and electrical cables carefully.
2. Never treat hydraulic hoses and electric cables with gasoline, benzene, petroleum or mineral oils.
3. Lubricate the machine after cleaning. Especially after cleaning with a high-pressure cleaner/steamer or fat-soluble agents.
4. Observe the legal requirements for the use and disposal of cleaning agents.



When cleaning with a high-pressure cleaner, you must absolutely follow the instructions below:



1. Maximum pressure 100 bar
2. Maximum temperature 50° Celsius
3. Do not clean any electrical components
4. Never direct the flow of the high-pressure cleaner or steamer directly at the stickers, lubricating points and bearings.
5. Keep a minimum distance of 600 mm between the high-pressure cleaner/steamer and the machine.
6. Observe the safety regulations for the use of high-pressure cleaners.



Never clean a machine in operation. Risk of death or serious injury.

7 Dismantling

When dismantling the machine, the parts can be sorted as follows:

1. Metals
2. Plastics
3. Oils and greases



Dispose of the sorted materials in an environmentally responsible manner. To do so, follow the statutory regulations in force where you are.