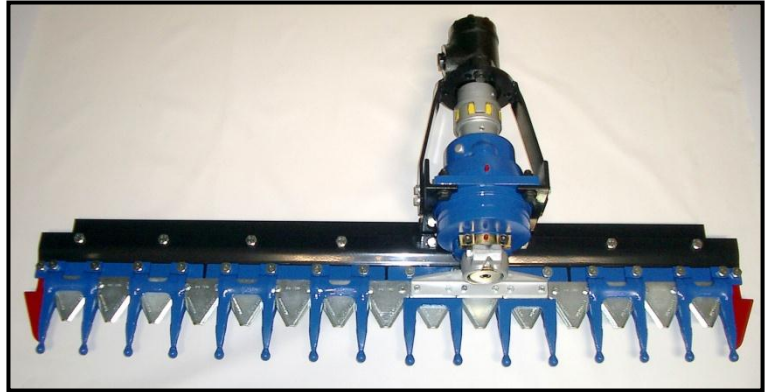


Operating instructions

Hedge trimmer HL 150 to 210

1 edition 2005



Introduction

Dear Customer

The construction of Spearhead HL hedge trimmers is based on 20 years of experience in cutting tool technology and the building of specialist machinery. They have been designed on the basis of the most recent technology and recognised technical safety provisions, standards and regulations.

Our aim is to provide products that do not cause damage or injury during transport, further processing or use.

These operating instructions include information and directions that are important and helpful in retaining the performance, reliability and value of your HL hedge trimmer. Please read these operating instructions carefully, paying particular attention to the directions on avoiding dangers.

You will also find included information on connections options, usage, care and maintenance, which will help prevent damage and injury.

We hope and trust that you will be completely satisfied with your new HL hedge trimmer.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'John Christensen', written in a cursive style.

John Christensen
Sales Director
Green-Tec A/S

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6	Ordering.....	Fejl! Bogmærke er ikke defineret.

1 Declaration of Conformity

EU Declaration of Conformity

According to the Machinery Directive 98/37/EC, Annex II A

We hereby declare that in terms of its design, method of construction and our execution thereof, the item of machinery described below complies with the basic health and safety regulations of the respective EU Directives.

This Declaration will become invalid if changes are made to the product that we have not approved.

Product designation: Hedge trimmer

Product type: HL 150; HL 180; HL 210

From product number: 000.460.080.200


Applicable
EU Directives Machinery Directive 98/37/EC, Annex II A

Applied harmonised
standards, in particular: DIN EN ISO 12100-1
DIN EN ISO 12100-2
DIN EN 294
DIN EN 982
DIN PR EN 745

Applied national standards
and technical specifications,
in particular: Accident Prevention Regulations

Date: 12.01.2005

Manufacturer – signature: Spearhead A/S

Position: 
Managing Director

2 General

2.1 Signs

Products are labelled with type signs.

Information required when making an enquiry or placing an order:

When ordering spare parts, please state product type, product number and year of production of the product for which the spare parts are intended.

NB! You need the prior approval of the manufacturer of your product, if you decide to use spare parts produced by another manufacturer. For safety reasons, you are only permitted to use original spare parts and accessories approved by the manufacturer. If you use other spare parts, the manufacturer of your product shall assume no liability for any consequential damage or injury.

2.2 Load capacity

For the hydraulic engines used, maximum constant pressure is as follows:

OMR 80 >>> 175 bar
 OMR 100 >>> 175 bar

2.3 Energy requirement

Drive type: hydraulic engine

Oil requirement:

OMR 80 >>> 15 up to max 30 l/min.
 OMR 100 >>> 20 up to max 40 l/min.

The maximum torque of the engine at constant pressure:

OMR 80 >>> 17 daNm
 OMR 100 >>> 23 daNm

Oil type: hydraulic oil in accordance with ISO VG 68 or ISO VG 46

Speed:
 200–400 rpm
 depending on the construction of the jib

Power consumption:
 The consumption of power depends on the product type and the connection of the complete equipment.

2.4 Connections

The manufacturer of your product can supply connections.

Please refer to the technical drawing and hydraulics diagram. This information appears in the operating instructions provided by the tool manufacturers in question.

2.5 Intended use

Your HL hedge trimmer is exclusively constructed for ordinary tasks related to agriculture, the preservation of rural amenities and other similar work. Maximum branch thickness: 4 cm.

Any other use is contrary to the intended use of this product. The manufacturer shall assume no liability for any consequential damage or injury; the risk rests with the user alone.

The intended use also includes compliance with the manufacturer's

stipulations regarding operational, maintenance and repair-related issues.

2.6 Technical data sheet

Basic vehicle:

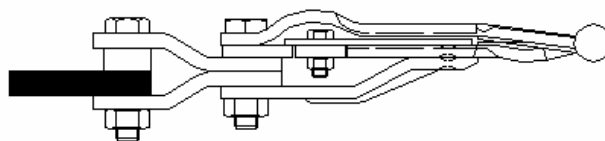
The tractor/vehicle used must be produced in accordance with the provisions and guidelines for CE marking and must have suitable mechanical and hydraulic capacity to accommodate the HL hedge trimmer.

Technical data charts for the tools:

	Hedge trimmer HL 150	Hedge trimmer HL 180
Working width	1.5 m	1.8 m
Branch thickness	Up to 40 mm	Up to 40 mm
Maximum working speed	5 km/h	5 km/h
Maximum speed of the tool	400 double strokes/min.	400 double strokes/min.
Dimensions Width/height/depth	1.5 x 0.2 x 0.6 m	1.8 x 0.2 x 0.6 m
Weight	60 kg	64 kg
Oil engine	OMR 80 or 100	OMR 80 or 100

	Hedge trimmer HL 210	
Working width	2.1 m	
Branch thickness	Up to 40 mm	
Maximum working speed	5 km/h	
Maximum speed of the tool	400 double strokes/min.	
Dimensions Width/height/depth	2.1 x 0.2 x 0.6 m	
Weight	68 kg	
Oil engine	OMR 80 or 100	

Design HL XXX:



Strong design with reinforcement strip

>>> **Your specialist in green areas** >>>

3 Safety

These operating instructions include basic directions which must be followed during assembly, operation and maintenance. It is therefore essential that these operating instructions are read carefully by the staff before they use the tool for the first time and subsequently remain available to staff if required.

Compliance is required not only in relation to the general directions listed under the main heading of **Safety** but also the special **safety directions** listed under other main headings.

The labelling of directions in the operating instructions:

If disregard of the safety directions in these operating instructions may result in danger, the directions are labelled with the general danger symbols in accordance with DIN 4844-W9:



Warning against the danger of crushing:



Warning against the danger of sharp elements:



If disregard of specific safety directions may result in personal injury or damage to the machinery and/or its performance, the word

WARNING

is added.

Directions are labelled as follows:

NB!

Directions that are put directly on the trimmer must be followed and kept in fully legible condition.

3.1 Staff qualifications and training

Only competent persons, instructed in the potential hazards of this machinery, should be permitted to use, maintain and repair your hedge trimmer. The person in charge must carefully manage the staff in terms of areas of responsibility, competence and supervision. If staff does not have the sufficient knowledge and know-how, they must be trained and instructed. In addition, it is the responsibility of the person in charge that the contents of these operating instructions are understood and implemented.

Repairs not described in these operating instructions must only be undertaken by staff at authorised specialist workshops.



3.2 The dangers of disregarding safety directions

Disregarding safety directions may result in personal injury and/or damage to the environment and the machinery.

Disregarding safety directions may mean that all claims for damages will lapse.

To be more specific, disregarding safety directions may lead to dangers, such as:

- Danger to human life and limb in unsafe working environments
- Defects in essential functions of the machinery
- Errors in the prescribed maintenance and repair methods
- Danger to human health as a consequence of mechanical and chemical impacts
- Danger to the environment as a consequence of a leak of hydraulic oil

WARNING

3.3 Being safety-conscious

It is essential to comply with the safety directions listed in these operating instructions, current national accident prevention regulations as well as any internal working, operational and safety directions.

The industrial safety and accident prevention regulations of the Danish Working Environment Service are binding.

In addition, the safety directions of the vehicle manufacturer must be observed.

Furthermore, the Highway Code applies if the hedge trimmer is used on public roads.

3.4 Safety directions for the person in charge/the user

- It is crucial that you familiarise yourself with all equipment, operating elements and their functions before you start

using the machinery. It is too late afterwards.

- The user should wear fairly fitted clothing. Avoid wearing loose-fitting clothes.
- Before using the trimmer, the user must check that the mechanical and hydraulic systems as well as the existing fuses are in full working order. It is also necessary to check that the hydraulic hoses are not caught or squeezed, as that can easily lead to damage.
- Place the support legs in the correct position during assembly and disassembly.
- Always position the counterweights provided on the special mounting points in accordance with the instructions.
- Never exceed the maximum values for axle load, overall weight and transport dimensions.
- Check and fit transport equipment, such as lighting, warning signs and devices as well as any protective devices.
- If the lighting on the vehicle fitted as standard is covered in the transport position, extra lighting must be fitted.
- Check your immediate vicinity before you use the trimmer for the first time and generally before every use (children/obstacles). Ensure that nothing obstructs your vision and you have a clear view.
- Nobody is permitted to sit on the trimmer during transport or operation.
- Before transport, the trimmer and the arm system at the front or rear of the vehicle must be folded for transport. Any support wheels must be raised.
- During transport, the operating elements of the trimmer in the vehicle must be secured against accidental activation; any extra drive unit must be disengaged.

- The driver must never leave the driver's seat while driving.
- The driver must adjust his or her speed according to road and traffic conditions. While driving in steep terrain and during transverse driving against hillsides, the driver must avoid making sudden turns.
- The driver must take into account the effect that the trimmer and the counterweights have on the roadholding qualities, steering power and braking capacity of the vehicle.
- The trimmer should only be used when all safety features are fitted and switched on.
- The driver must ensure that nobody is in the area in which he or she is working.
- The driver should only activate the arm system when there are no people or animals in its swing radius.
- Take extra care when working under high-voltage power lines. Keep at a safe distance to electrical high-voltage power lines.
- The parts that are hydraulically activated pose a risk of crushing and cutting.
- Before leaving the vehicle, the driver must lower the trimmer to the ground, remove the ignition key and secure the vehicle against accidental start and against rolling.
- After being stopped, the trimmer poses a risk as a consequence of the remaining rotating mass. During that period, nobody should come near the trimmer. Wait until the rotating mass has come to a complete stop.
- The hydraulic system may be pressurised.
- Pressurised liquids (hydraulic oil) may penetrate the skin and cause serious injury. Seek medical help immediately in the event of injury, as there is a danger of infection.
- Only connect the hydraulic hoses to the hydraulic system of the vehicle when it is de-pressurised.
- Check the hydraulic hoses regularly and replace them when damaged and/or old.
- The replacement hoses must fulfil the manufacturer's technical requirements.
- Any leak poses a threat to the environment and remedial action must be immediate.
- On account of the risk of injury, appropriate tools must be used when checking for leaks.
- The HL hedge trimmer must be equipped with pipe rupture protection for the event that, for instance, a hydraulic hose is suddenly torn off or ruptures. **Under no circumstances is pipe rupture protection to be disconnected.**

WARNING

3.5 Safety directions for maintenance, inspection and assembly tasks

The person in charge must ensure that all maintenance, inspection and assembly tasks are undertaken by authorised and well-qualified professionals who have the necessary knowledge after having read the operating instructions carefully.

All work on the trimmer must be carried out when the trimmer is stopped. The procedure for stopping the machinery – as described in the manufacturer's operating instructions – must be observed at all times.

The trimmer must be secured by suitable supports if it becomes necessary to undertake maintenance work on the machinery when raised.

When replacing tools that have blades, it is essential to check the hydraulics for

residual pressure. **Any residual pressure must be reduced to zero.**

Use always only suitable tools and wear gloves.

Dispose of oil and grease according to regulations.

Immediately after the work has been completed, the safety and protection devices must be refitted and reactivated.

Before using the trimmer again, the points in the section “Putting the trimmer into operation” from the manufacturer of the tractor/vehicle must be followed without fail.

WARNING

3.6 Conversion and production of spare parts

Converting or amending the trimmer is only permitted upon prior agreement with the manufacturer.

For safety reasons, you are only permitted to use original spare parts and accessories approved by the manufacturer. If you use other spare parts, the manufacturer of your product shall assume no liability for any consequential damage or injury.

WARNING

3.7 Inadmissible operation methods

The operational reliability of the machinery supplied can only be guaranteed if it is used according to the intended use as described in section 2.5 of the operating instructions entitled “Intended use”. The maximum values listed in the data sheets should – under no circumstances – be exceeded.

3.8 Warning signs on the hedge trimmer



Follow the operating instructions and **safety directions** before using the trimmer for the first time.



Do not ever open protective devices while the machinery is operating. **Be aware of the dangers posed by moving machinery and/or rotating parts.**



Stop the machinery before undertaking any assembly, maintenance and/or repair work and **remove the ignition key**. Wait until all parts have come to a complete stop. **Read the operating instructions.**



Be aware of the danger of getting trapped

Do not ever walk or reach into areas where you risk getting trapped or exposed to other dangers, while the tractor/vehicle is driving or being moved.

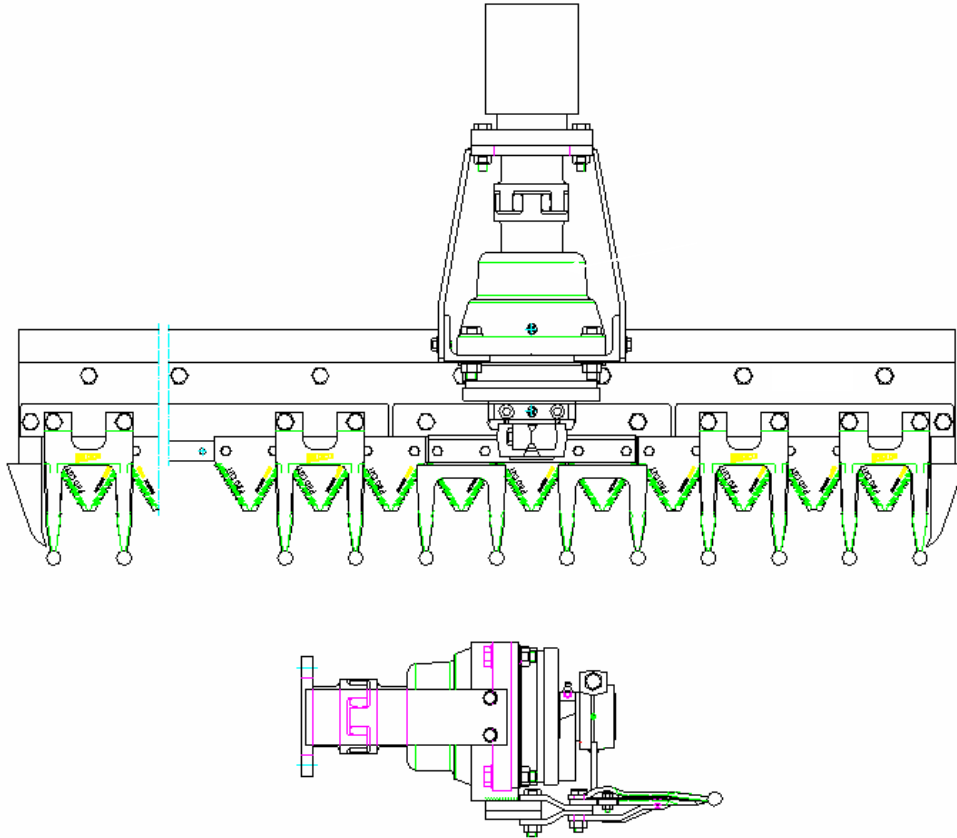


Be aware of the danger of crushing!



Be aware of the danger of sharp elements!

4 HL hedge trimmer: HL 150 to HL 210



4.1 Signs and labels



Type HL XXX: Cutter bar for hedge trimmer

Type Pro-Drive: Drive, cutting blade

NB!
The type sign has document value and must not be changed or made unrecognisable.



NB!
This label is supplied by the manufacturer of the HL hedge trimmer. You have a duty to put it on the trimmer in an eye-catching position after the assembly and painting have been completed.

4.2 Storage

It is important that the HL hedge trimmer is stored in a dry and clean place.

Close the connections of the hydraulic hoses with caps.

Danger of injury! When storing the HL hedge trimmer, also without the tractor/vehicle, it is essential to ensure that there is no risk of it overturning or falling down. Ensure that you have either a suitable place for putting down the trimmer or you have suitable supports for keeping it upright.

Never leave the hydraulic hoses on the floor. They pose a **risk of tripping!** Place all hydraulic hoses **over** the trimmer.

You should always clean the trimmer before storing it. Dirt attracts moisture and may therefore lead to increased rust formation.

If the trimmer is stored for a prolonged period, it should be cleaned and the knife drive and main bearing should be lubricated with grease in accordance with the lubrication instructions.

Any damage to the paintwork must be repaired.

4.3 Description of the HL hedge trimmer

In simple terms, the HL hedge trimmer consists of an indented fixed bar mounted with cutters. Within these cutters, you find the cutting blades, which are driven by the knife drive “Pro-Drive” (planet gear for the production of even strokes) and a hydraulic engine.

Mounting the trimmer on to the tractor/vehicle takes place via a

technically suitable mechanical and hydraulic connection (screw-on or plug-in quick disconnects). The manufacturer of the tractor/vehicle must ensure that the connection is constructed in accordance with the provisions for CE marking and that it is technically compatible.

The connection depends on the tractor/vehicle and the manufacturer.

The knife guard is fitted on the trimmer using tension springs.

4.4 Mounting

Establishment of a mechanical connection:

NB!

The establishment of and/or mounting work on the connection should only be undertaken when the knife guard is on.

When adapting the hedge trimmer to the tractor/vehicle, it is an advantage to use the profile bars and/or the Ripp bolts (please refer to the spare parts list, pos. 1, 26). These fixing devices facilitate a fast and problem-free replacement of defective parts whenever required.

4.5 Mounting on to tractor/vehicle

It is essential that you ensure that there are **no** people between the tractor/vehicle and the trimmer during the mounting process.

Furthermore, you need to ensure that the hydraulic hoses are not positioned between the tractor/vehicle and the trimmer in such a way that they could be squeezed or cut.

Place or hang the hydraulic hoses where directed by the manufacturer or where most suitable.

Please refer to the operating instructions for the arm system.

Switch off the engine and ensure that the hydraulic system is de-pressurised before you undertake any work on the vehicle or the HL hedge trimmer.

Remove the ignition key and secure the vehicle against accidental start and against rolling.

Do not ever walk or stand under a suspended load. Support and secure first the trimmer and/or the arm system.

The fixing on to the arm system will be described in the manufacturer's operating instructions relating to the arm system in question.

It is necessary to ensure that the hydraulic hoses are not positioned in such a way that they are squeezed or risk snapping, as it will damage the hoses. Check the run of the hoses to avoid the risk of damage.

Connect the two hydraulic hoses (from the hydraulic engine of the HL hedge trimmer to the tractor/vehicle) in accordance with the particular manufacturer's operating instructions.

The angle setting and/or the tilt of the hedge trimmer will be described in the manufacturer's operating instructions for the arm system.

During this operation, ensure that there are **no people within the swing radius or working area of the machinery.**

During mechanical setting: the engine must be switched off and the machinery

must be secured (de-pressurised hydraulic system) before it is safe to carry out any work on the machinery.

Setting: Follow the operating instructions for the arm system.

Warning: Be aware of the danger of sharp elements and of crushing

4.6 Putting the trimmer into operation

Read before you use the trimmer for the first time:

Any work on the machinery should only be undertaken when the engine is switched off and the hydraulic system is de-pressurised.

Remove the ignition key. Secure the vehicle against accidental start and against rolling. You may also want to support the trimmer.

Check that all connections are fixed/secured in accordance with the manufacturer's directions. The condition of all components must be as specified by the manufacturer.

Check that all mechanical and hydraulic parts, hydraulic hoses and transport equipment (such as lighting, warning signs and devices as well as protective devices) are fitted correctly.

Be aware that a support leg may need to be removed or fitted.

A functions check should only be conducted when **there are no people within the turning or swing radius of the machinery.**

Check the functions of the basic vehicle and the hedge trimmer.

Any checks carried out on the machinery should only be undertaken when the engine is switched off and the hydraulic system is de-pressurised. Remove the ignition key. Secure the vehicle against accidental start and against rolling. You may also want to support the trimmer.

Do not touch any of the moving parts of the machinery. Wait till all parts have come to a complete stop.

Warning! There may be residual pressure in the hydraulics.

Leaks pose a threat to the environment and remedial action must be immediate.

Check for leaks. Any leak must be repaired immediately.

All machinery-specific directions needed when putting the trimmer into operation will appear in the operating instructions from the manufacturers of the arm system/tractor/vehicle.

4.7 Transport

Manual transport of the HL hedge trimmer: only to be undertaken when the knife guard is fitted. Please ensure that the hydraulic connections of the oil engine are fitted with safety plugs and that loose hanging hydraulic hoses are secured and closed so that there is no risk of tripping or slipping in oil.

Transport to the location of assembly must be undertaken with a technically suitable transport vehicle or suitable hooking gear. It is possible to hook the trimmer on the bar or on the gear console.

The trimmer should only be transported when the knife guard is fitted and the hydraulic engine is fitted with safety plugs. To safeguard against accidental damage and to ease the loading and unloading, we

recommend transporting the trimmer on Euro or disposable pallets. The trimmer must be carefully secured with a rope so it will pose no danger to other traffic.

4.8 Transporting the trimmer

Check that the knife guard is fitted and if not, have it fitted. Follow the operating instructions from the relevant manufacturer for the correct setting of the arm system/tractor/vehicle for transporting the trimmer.

Warning! Any work on the machinery should only be undertaken when the engine is switched off and the hydraulic system is de-pressurised. Remove the ignition key. Secure the vehicle against accidental start and against rolling. You may also want to support the trimmer.

4.9 Working positions

Remove the knife guard and leave it in the tractor/vehicle. Further steps will appear in the operating instructions from the relevant manufacturer. At breaks, the trimmer must be placed on the ground.

Warning! At breaks, the knife guard must be fitted.

4.10 Disassembly

The location must be safe, firm and even. Further steps will appear in the operating instructions from the relevant manufacturer.

4.11 Maintenance and repair

Warning! Any work on the machinery should only be undertaken when the engine is switched off and the hydraulic system is de-pressurised. Remove the ignition key. Secure the vehicle against accidental start and against rolling. You may also want to support the trimmer.

Check regularly that nuts and bolts are tightened correctly (about every 50th hour of operation) – tighten the nuts and bolts if required.

Thread sizes, strength classes and torque levels will appear in section 5.6 “Torque levels” in section 5 “Spare parts list”.

Check cutters, blades, knife spine, guide plates and coupling star regularly for defects and/or wear and tear. Defective or worn parts produce an unclean cut and increase the power requirement of the machinery. Replace immediately damaged or worn parts with original spare parts.

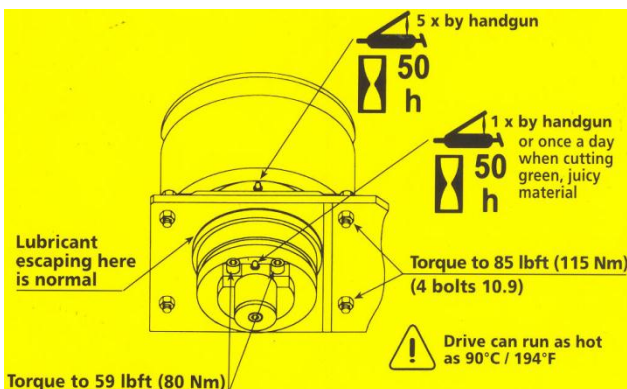
Spare parts numbers are listed in the attached spare parts list (section 5).

Check the hydraulic hoses regularly. Replace damaged and/or old hoses. The replacement hoses must fulfil the manufacturer’s technical requirements (please refer to the operating instructions for the arm system).

4.12 Lubrication

The hedge trimmer has two grease points: one on the cutting blade gear and one on the main bearing.

Lubrication instructions:



NB!

This label is supplied by the manufacturer of the HL hedge trimmer. You have a duty

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4.13 Defects, causes and corrective action

Defect	Cause	Corrective action
1. The cutting blade does not move	<ul style="list-style-type: none"> - Connections are not according to instructions - The pump has not started - Foreign object in the cutting system - Cutters, blades or cutter head defective - Hydraulic engine defective - Cutting blade gear defective 	<ul style="list-style-type: none"> - Check connections – retighten screwed connections - Start the pump - Remove foreign object - Replace defective parts - Contact specialist workshop - Replace defective parts
2. The cut is not clean	<ul style="list-style-type: none"> - Cutters, blades/cutting blade and guide plates worn - The speed of cutting blade drive incorrect 	<ul style="list-style-type: none"> - Replace defective parts - Contact specialist workshop
3. The cutting blade drive does not pull through	<ul style="list-style-type: none"> - Oil quantity/pressure set incorrectly 	<ul style="list-style-type: none"> - Contact specialist workshop
4. Extreme oscillations/vibrations in the trimmer	<ul style="list-style-type: none"> - Coupling star defective - Too high speed of the hydraulic engine/cutting blade drive 	<ul style="list-style-type: none"> - Replace defective part - Contact specialist workshop

4.14 Hydraulics diagram

Please refer to the hydraulics diagram in the operating instructions from the relevant manufacturer of arm system/tractor/vehicle.

5 Spare parts list

Need spare parts? Contact your local Spearhead dealer

When ordering spare parts, please state type designation, product number and year of production of the product for which the spare parts are intended.

NB!

You need the prior approval of the manufacturer of your product if you decide to use spare parts produced by another manufacturer. For safety reasons, you are only permitted to use original spare parts and accessories approved by the manufacturer. If you use other spare parts, the manufacturer of your product shall assume no liability for any consequential damage or injury.

5.1 Manufacturer's address

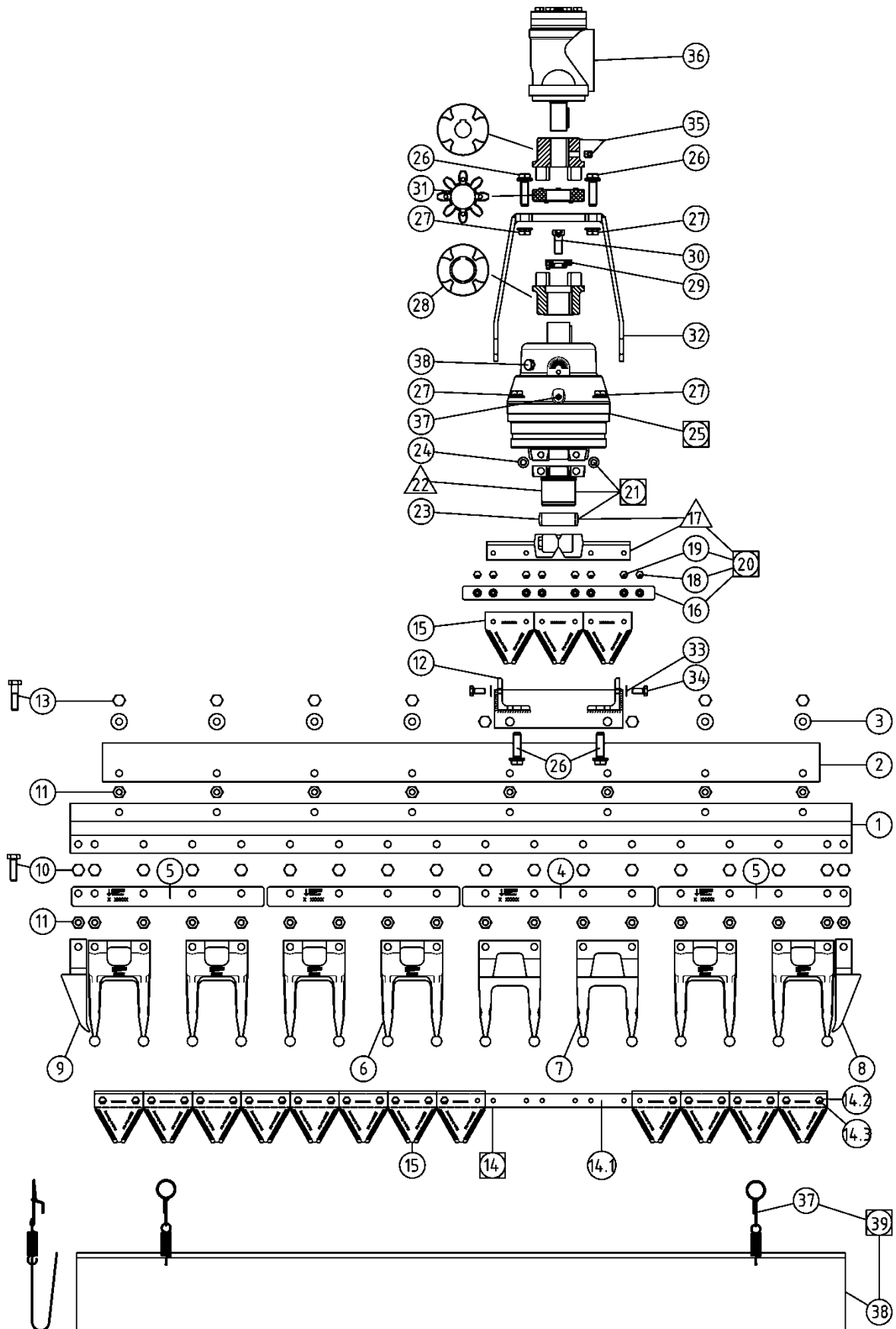
Spearhead A/S

Merkurvej 25
DK-6000 Kolding
Denmark

Tel. +45 75 55 36 44
Fax +45 75 55 42 43

Website: www.spearhead.dk
E-mail: spearhead@spearhead.dk

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5.2 Deservedeleliste LI 150

Pos.	Art.-Nr. / part nu.:	Stück / pcs.:	Benennung:	name:
1	01828	2	Profilschiene	profile bar
2	01834	1	Verstärkungsleiste	reinforcement strip
3	01064	8	Distanzhülse	spacer tube
4	10726	3	Führungsplatte (1 Fuß ; 4-Loch)	spacerbar (1 foot ; 4-holes)
5	01060	2	Führungsplatte außen (1 Fuß ; 5-Loch)	outer spacerbar (1 foot ; 5-holes)
6	10631	8	Doppelfinger 17mm mit Abweiserkugel	guard 17mm with keep-off rail ball
7	14502	2	Führungsdoppelfinger 17mm mit Abweiserkugeln	leader-guard 17mm with keep-off balls
8	01048	1	Schutzfinger rechts	protection guard right
9	01049	1	Schutzfinger links	protection guard left
10	13014	22	Sechskantschraube M10 x 35	hexagon head screw M10 x 35
11	10047	32	Sechskantmutter M10	nut M10
12	12588	1	Getriebekonsole (Typ. S)	gearbox console (type: S)
13	10076	10	Sechskantschraube M10 x 40	hexagon head screw M10 x 40
14	15077	1	Mähmesser 1,5m (inkl. Pos. 15 / 16 / 18 / 19)	knife 5 foot (incl. Pos. 15 / 16 / 18 / 19)
14.1	12087	1	Messerrücken 1.5m	knife back (5 foot)
14.2	10931	30	Zahnschraube M6 x 16	teeth bolt M6 x 16
14.3	13961	30	Flanschmutter M6	flange nut M6
15	10991	19	Messerklinge PRO-CUT fein -CC-	knife section pro-cut fine -CC-
16	10926	1	Messerverbindung	knife connector
17	Δ	1	Messerkopf Pro-Drive (nur komplett erhältlich - Pos. 20)	knifehead pro-drive (only complete obtainable - Pos. 20)
18	10067	2	Sechskantschraube M6 x 18	hexagon head screw M6 x 18
19	01086	6	Sechskantschraube M6 x 22	hexagon head screw M6 x 22
20	11371	1	Messerkopf Pro-Drive kpl. (inkl. Pos. 16 / 17 / 18 / 19 / 23)	knifehead pro-drive cpl. (incl. Pos. 16 / 17 / 18 / 19 / 23)
21	12766	1	Kopflager 17mm kpl. (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. (incl. Pos. 22 / 23 / 24)
22	14739	1	Kopflager 17mm (nur komplett erhältlich - Pos. 21)	head connector 17mm cpl. - maintenance-free (incl. Pos. 22 / 23 / 24)
23	12543	1	Spannhülse POM	head connector 17mm (only complete obtainable - Pos. 21)
24	10099	2	Zylinderschraube M10 x 35	adapter POM
25	12480	1	Pro-Drive 85Hs G	bolt M10 x 35
26	01087	6	Verbuss Ripp Schraube M12 x 40	pro-drive 85Hs G
27	01088	6	Verbuss Ripp Mutter M12	ripp bolt M12 x 40
28	14671	1	Kupplungsklaue F38 D=35mm	ripp nut M12
29	12601	1	Spannscheibe komplett	claw coupling F38 D=35mm
30	10230	1	Zylinderschraube M12 x 30	tension washer complete
31	12603	1	Kupplungsstern F38	bolt M 12 x 30
32	12586	1	Motorhalterung	coupling star F38
33	01066	4	Scheibe für M8	motorholder
34	01089	4	Sechskantschraube M8 x 16	washer with external chamfer for M8
35	12610	1	Kupplungsklaue F38 D=25mm	hexagon head screw M8 x 16
36	12442	1	Hydraulikmotor EPM / OMR 50ccm	claw coupling F38 D=25mm
	12443	1	Hydraulikmotor EPM / OMR 80ccm	hydromotor EPM / OMR 50ccm
	12444	1	Hydraulikmotor EPM / OMR 100ccm	hydromotor EPM / OMR 80ccm
37	01923	2	Messerschutz Haltefeder	hydromotor EPM / OMR 100ccm
38	01925	1	Messerschutz 1.5m	knife protector retention clip
39	01930	1	Messerschutz 1.5m kpl. (inkl. Pos. 37 / 38)	knife protector 5 foot
				knife protector 5 foot cpl. (incl. Pos. 37 / 38)

5.2

Pos.	Art.-Nr.: / part nu.:	Stück / pcs.:	Benennung:	name:
1	01829	2	Profilschiene	profile bar
2	01835	1	Verstärkungsleiste	reinforcement strip
3	01064	10	Distanzhülse	spacer tube
4	10726	4	Führungsplatte (1 Fuß; 4-Loch)	spacerbar (1 foot; 4-holes)
5	01060	2	Führungsplatte außen (1 Fuß; 5-Loch)	outer spacerbar (1 foot; 5-holes)
6	10631	10	Doppelfinger 17mm mit Abweiserkugel	guard 17mm with keep-off rail ball
7	14502	2	Führungsdoppelfinger 17mm mit Abweiserkugel	leader-guard 17mm with keep-off balls
8	01048	1	Schutzfinger rechts	protection guard right
9	01049	1	Schutzfinger links	protection guard left
10	13014	26	Sechskantschraube M10 x 35	hexagon head screw M10 x 35
11	10047	38	Sechskantmutter M10	nut M10
12	12588	1	Getriebekonsole (Typ: S)	gearbox console (type: S)
13	10076	12	Sechskantschraube M10 x 40	hexagon head screw M10 x 40
14	15078	1	Mähmesser 1,8m (inkl. Pos. 15 / 16 / 18 / 19)	knife 6 foot (incl. Pos. 15 / 16 / 18 / 19)
14.1	12088	1	Messerrücken 1,8m	knife back (6 foot)
14.2	10931	38	Zahnschraube M6 x 16	teeth bolt M6 x 16
14.3	13961	38	Flanschmutter M6	flange nut M6
15	10991	23	Messerklinge PRO-CUT fein -CC-	knife section pro-cut fine -CC-
16	10926	1	Messerverbindung	knife connector
17	Δ	1	Messerkopf Pro-Drive (nur komplett erhältlich - Pos. 20)	knifehead pro-drive (only complete obtainable - Pos. 20)
18	10067	2	Sechskantschraube M6 x 18	hexagon head screw M6 x 18
19	01086	6	Sechskantschraube M6 x 22	hexagon head screw M6 x 22
20	11371	1	Messerkopf Pro-Drive kpl. (inkl. Pos. 16 / 17 / 18 / 19 / 23)	knifehead pro-drive cpl. (incl. Pos. 16 / 17 / 18 / 19 / 23)
21	12766	1	Kopflager 17mm kpl. (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. (incl. Pos. 22 / 23 / 24)
21	14739	1	Kopflager 17mm kpl. - wartungsfrei (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. - maintenance-free (incl. Pos. 22 / 23 / 24)
22	Δ	1	Kopflager 17mm (nur komplett erhältlich - Pos. 21)	head connector 17mm (only complete obtainable - Pos. 21)
23	12543	1	Spannhülse POM	adapter POM
24	10099	2	Zylinderschraube M10 x 35	bolt M10 x 35
25	12480	1	Pro-Drive 85Hs G	pro-drive 85Hs G
26	01087	6	Verbuss Ripp Schraube M12 x 40	ripp bolt M12 x 40
27	01088	6	Verbuss Ripp Mutter M12	ripp nut M12
28	14671	1	Kupplungsklaue F38 D=35mm	claw coupling F38 D=35mm
29	12601	1	Spannscheibe komplett	tension washer complete
30	10230	1	Zylinderschraube M12 x 30	bolt M 12 x 30
31	12603	1	Kupplungsstern F38	coupling star F38
32	12586	1	Motorhalterung	motorholder
33	01066	4	Scheibe für M8	washer with external chamfer for M8
34	01089	4	Sechskantschraube M8 x 16	hexagon head screw M8 x 16
35	12610	1	Kupplungsklaue F38 D=25mm	claw coupling F38 D=25mm
36	12442	1	Hydraulikmotor EPM / OMR 50ccm	hydromotor EPM / OMR 50ccm
36	12443	1	Hydraulikmotor EPM / OMR 80ccm	hydromotor EPM / OMR 80ccm
36	12444	1	Hydraulikmotor EPM / OMR 100ccm	hydromotor EPM / OMR 100ccm
37	01923	2	Messerschutz Haltefeder	knife protector retention clip
38	01926	1	Messerschutz 1,8m	knife protector 6 foot
39	01931	1	Messerschutz 1,8m kpl. (inkl. Pos. 37 / 38)	knife protector 6 foot cpl. (incl. Pos. 37 / 38)

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5.1 Reserveliste LI 310

Pos.	Art.-Nr.: / part nu.:	Stück / pcs.:	Benennung:	name:
1	01830	2	Profilschiene	profile bar
2	01836	1	Verstärkungsleiste	reinforcement strip
3	01064	12	Distanzhülse	spacer tube
4	10726	5	Führungplatte (1 Fuß; 4-Loch)	spacerbar (1 foot; 4-holes)
5	01060	2	Führungplatte außen (1 Fuß; 5-Loch)	outer spacerbar (1 foot; 5-holes)
6	10631	12	Doppelfinger 17mm mit Abweiserkugel	guard 17mm with keep-off rail ball
7	14502	2	Führungsdoppelfinger 17mm mit Abweiserkugeln	leader-guard 17mm with keep-off balls
8	01048	1	Schutzfinger rechts	protection guard right
9	01049	1	Schutzfinger links	protection guard left
10	13014	30	Sechskantschraube M10 x 35	hexagon head screw M10 x 35
11	10047	44	Sechskantmutter M10	nut M10
12	12588	1	Getriebekonsolle (1yp: S)	gearbox console (type: S)
13	10076	14	Sechskantschraube M10 x 40	hexagon head screw M10 x 40
14	15079	1	Mähmesser 2,1m (inkl. Pos. 15 / 16 / 18 / 19)	knife 7 foot (incl. Pos. 15 / 16 / 18 / 19)
14.1	12089	1	Messerrücken 2,1m	knife back (7 foot)
14.2	10931	46	Zahnschraube M6 x 16	teeth bolt M6 x 16
14.3	13961	46	Flanschmutter M6	flange nut M6
15	10991	27	Messerklinge PRO-CUTT fein -CC-	knife section pro-cut fine -CC-
16	10926	1	Messerverbindung	knife connector
17	Δ	1	Messerkopf Pro-Drive (nur komplett erhältlich - Pos. 20)	knifehead pro-drive (only complete obtainable - Pos. 20)
18	10067	2	Sechskantschraube M6 x 18	hexagon head screw M6 x 18
19	01086	6	Sechskantschraube M6 x 22	hexagon head screw M6 x 22
20	11371	1	Messerkopf Pro-Drive kpl. (inkl. Pos. 16 / 17 / 18 / 19 / 23)	knifehead pro-drive cpl. (incl. Pos. 16 / 17 / 18 / 19 / 23)
21	12766	1	Kopflager 17mm kpl. (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. (incl. Pos. 22 / 23 / 24)
			Kopflager 17mm kpl. - wartungsfrei (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. - maintenance-free (incl. Pos. 22 / 23 / 24)
22	Δ	1	Kopflager 17mm (nur komplett erhältlich - Pos. 21)	head connector 17mm (only complete obtainable - Pos. 21)
23	12543	1	Spannhülse POM	adapter POM
24	10099	2	Zylinderschraube M10 x 35	bolt M10 x 35
25	12480	1	Pro-Drive 85Hs G	pro-drive 85Hs G
26	01087	6	Verbuss Ripp Schraube M12 x 40	ripp bolt M12 x 40
27	01088	6	Verbuss Ripp Mutter M12	ripp nut M12
28	14671	1	Kupplungsklaue F38 D=35mm	claw coupling F38 D=35mm
29	12601	1	Spannscheibe komplett	tension washer complete
30	10230	1	Zylinderschraube M12 x 30	bolt M 12 x 30
31	12603	1	Kupplungsstern F38	coupling star F38
32	12586	1	Motorhalterung	motorholder
33	01066	4	Scheibe für M8	washer with external chamfer for M8
34	01089	4	Sechskantschraube M8 x 16	hexagon head screw M8 x 16
35	12610	1	Kupplungsklaue F38 D=25mm	claw coupling F38 D=25mm
			Hydraulikmotor EPM / OMR 50ccm	hydromotor EPM / OMR 50ccm
36	12443	1	Hydraulikmotor EPM / OMR 80ccm	hydromotor EPM / OMR 80ccm
			Hydraulikmotor EPM / OMR 100ccm	hydromotor EPM / OMR 100ccm
			12444	Hydraulikmotor EPM / OMR 100ccm
37	01923	2	Messerschutz Haltefeder	knife protector retention clip
38	01927	1	Messerschutz 2,1m	knife protector 7 foot
39	01932	1	Messerschutz 2,1m kpl. (inkl. Pos. 37 / 38)	knife protector 7 foot cpl. (incl. Pos. 37 / 38)

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<p>Benennung: Mähmesser 1,5m Kommatahert-ipl.-19 Klingen knife 5 foot communal cutterbar opl. - 19 sections</p>						
<p>Zug.-Nr.: 15077</p>						
<p>TERM CODE: 15077</p>						
<p>Blatt: -</p>						
<p>Bl: -</p>						
<p>Blattzahl: 0</p>						
<p>Terminale: 5877 Mähmesser Kommatahert-ipl./Sackyl/Minne - 19/20/21</p>						

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<p>Art.-Nr.: 15078</p>		<p>Mat.: --</p>		<p>Mat.: --</p>
<p>Benennung: Mähmesser 1,8m</p> <p>NAME: Kommunalität-werk-23-Klingen</p>		<p>knive 6 foot</p> <p>communal cutter-bar - 23 sections</p>		
<p>Zug.-Nr.: 15078</p> <p>TERM CODE: 15078</p>		<p>Blatt</p> <p>Bl</p>		
<p>Darlehene: 678 Mähmesser Kommunalität-werk-23-Klingen Menge: 11111111</p>				

7	Sechskantschraube M6x22	hexagon head screw M6x22
6	Sechskantschraube M6x18	hexagon head screw M6x18
5	Messerverbindung	knife connector
4	Flanschmutter M6	hexagon flange nut M6
3	Zahnschraube M6x16	teeth bolt M6x16
2	Messerklinge PRO CUT fein	knife section pro cut fine CC
1	Messerrücken 1.8m	knife back 6 foot
Pos. Stück	Art.-Nr.	name
pcs.	part no.	
2	3	4

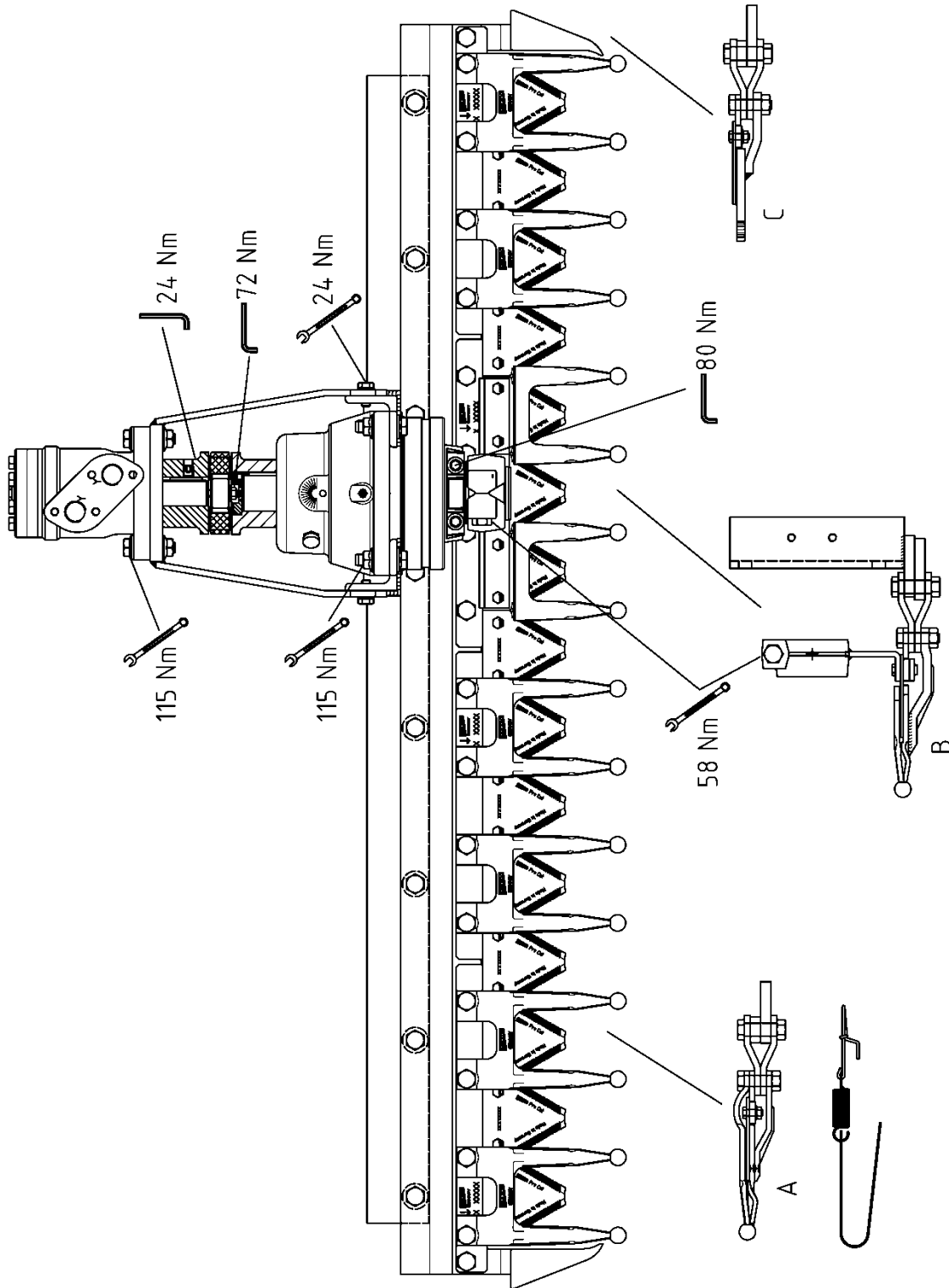
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7	01086	Sechskantschraube M6x22	hexagon head screw M6x22
6	10067	Sechskantschraube M6x18	hexagon head screw M6x18
5	10926	Messerverbindung	knife connector
4	13961	Flanschnutter M6	hexagon flange nut M6
3	10931	Zahnschraube M6x16	teeth bolt M6x16
2	10991	Messerklinge PRO CUT fein	knife section pro cut fine CC
1	12089	Messerrücken 2.1m	knife back 7 foot
Pos. Stück	Art.-Nr.	Bezeichnung	name
pcs.	part no.		
1	2	3	4

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Art.-Nr.: 15079	Mat.: -	Benennung: Mähmesser 2.1m Kommunaldienstwerktyp: 21 Klingen knife 7 foot communal cutterbar.cpl - 21 sections			
Zug.-Nr.: 15079	TERM CODE: 15079	Blatt: -	Blatt: -	Blatt: -	Blatt: -
Dateiname: 15079 Mähmesser Kommunaldienstwerktyp.21.Kling Menge: - 1012/2004					

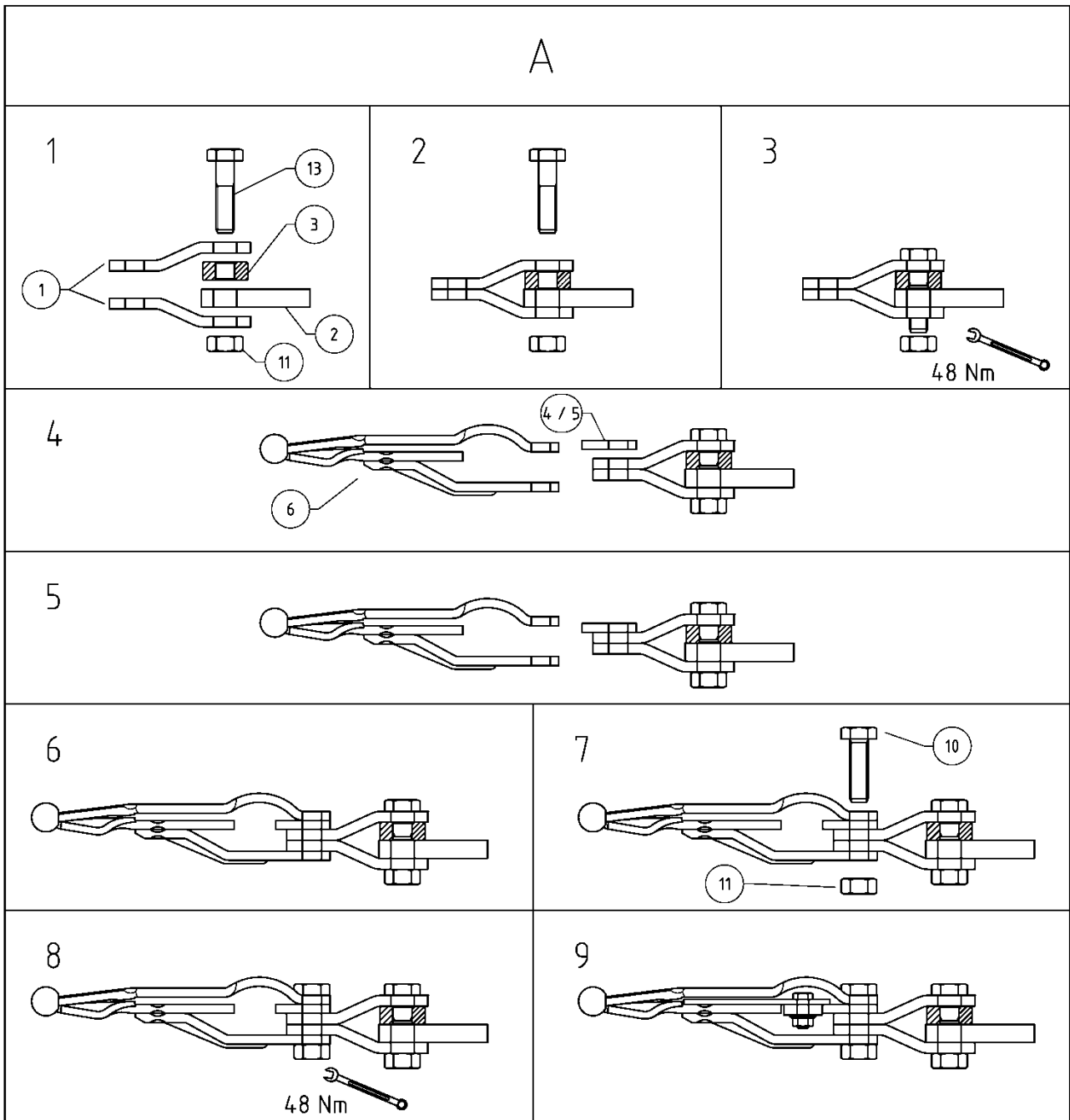
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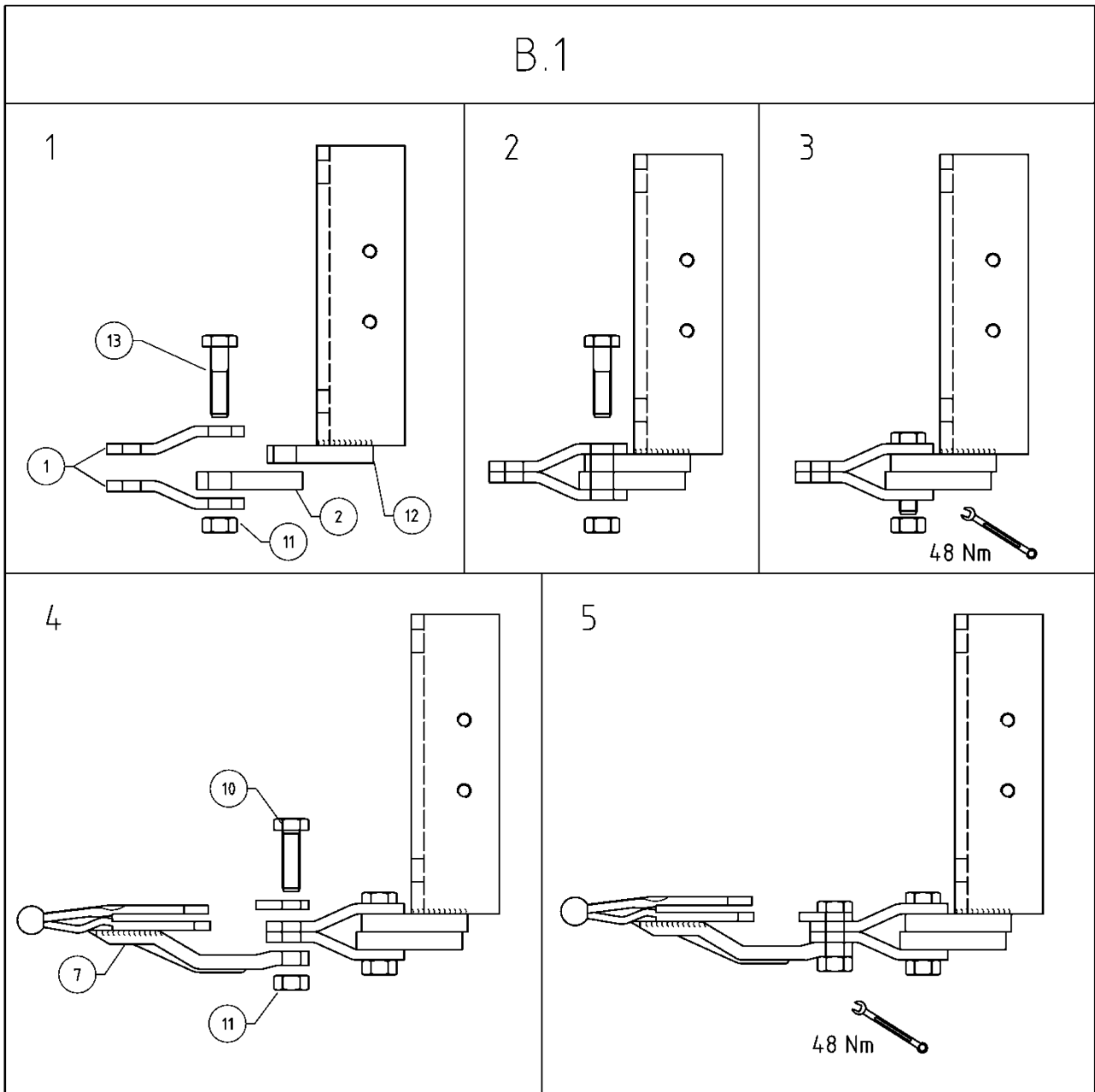
5.6 Tilspændingsmomenter



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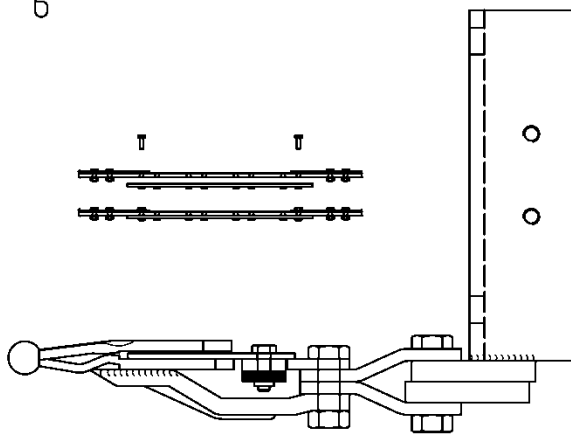
5.7 Assemble / Disassemble



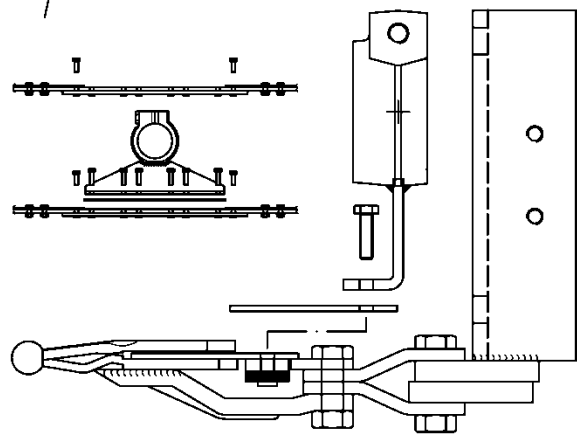


B.2

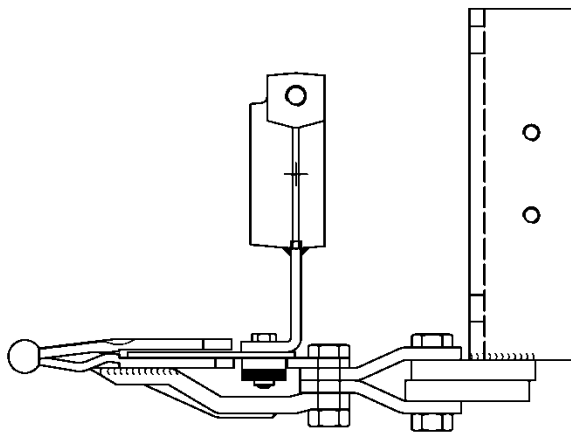
6



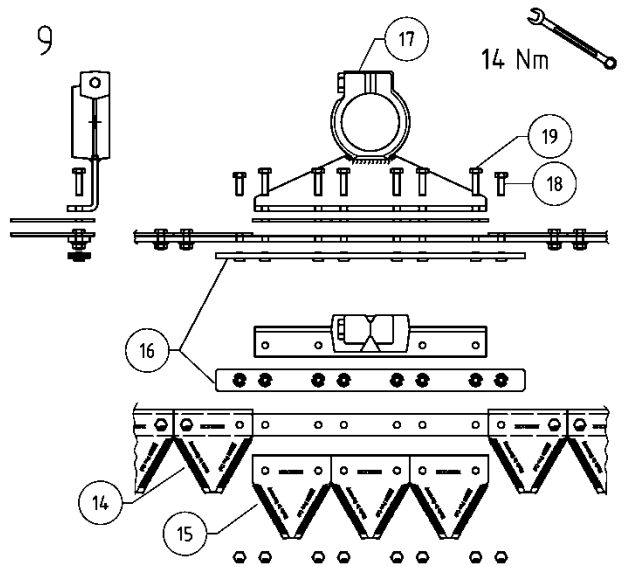
7



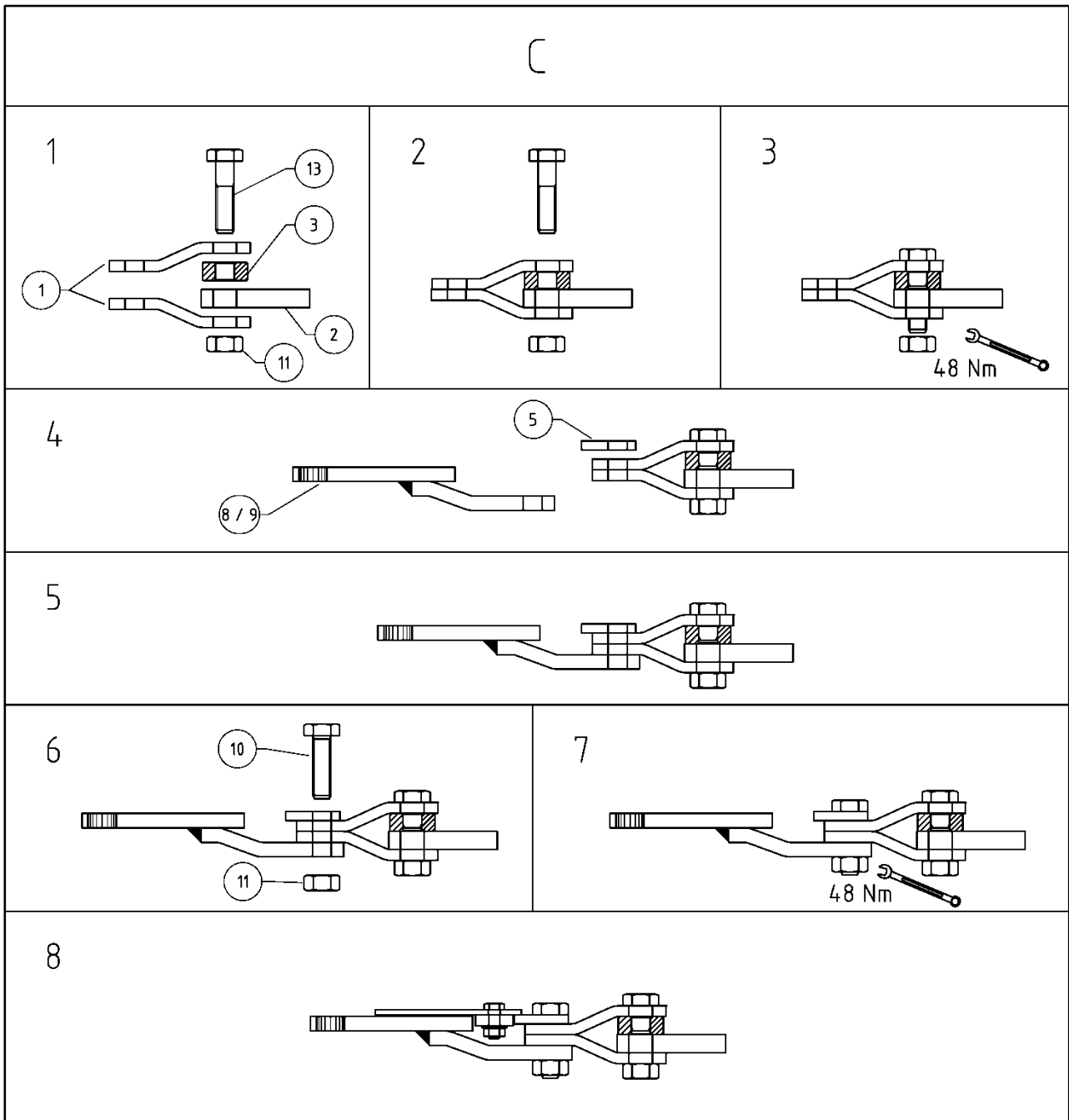
8



9



»»»»»»»» Spearhead



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6 Ordering

Type: HL
 Fremstillingsår: 20

Pro-Drive Gear: _____
 Fremstillingsår: 20

Pos.	Art.-Nr. / part nu.:	Stück / pcs.:	Benennung:	name:
1			Profilschiene	profile bar
2			Verstärkungsleiste	reinforcement strip
3	01064		Distanzhülse	spacer tube
4	10726		Führungsplatte (1 Fuß ; 4-Loch)	spacerbar (1 foot ; 4-holes)
5	01060		Führungsplatte außen (1 Fuß ; 5-Loch)	outer spacerbar (1 foot ; 5-holes)
6	10631		Doppelfinger 17mm mit Abweiserkugeln	guard 17mm with keep-off balls
7	14502		Führungsdoppelfinger 17mm mit Abweiserkugeln	leader-guard 17mm with keep-off balls
8	01048		Schutzfinger rechts	protection guard right
9	01049		Schutzfinger links	protection guard left
10	13014		Sechskantschraube M10 x 35	hexagon head screw M10 x 35
11	10047		Sechskantmutter M10	nut M10
12	12588		Getriebekonsole (Typ: S)	gearbox console (type: S)
13	10076		Sechskantschraube M10 x 40	hexagon head screw M10 x 40
14			Mähnmesser x,x m (inkl. Pos. 15 / 16 / 18 / 19)	knife x foot (incl. Pos. 15 / 16 / 18 / 19)
14.1			Messerrücken x,x m	knife back (x foot)
14.2	10931		Zahnschraube M6 x 16	teeth bolt M6 x 16
14.3	13961		Flanschmutter M6	flange nut M6
15	10991		Messerklinge PRO-CUT fein -CC-	knife section pro-cut fine -CC-
16	10926		Messerverbindung	knife connector
17	Δ		Messerkopf Pro-Drive (nur komplett erhältlich - Pos. 20)	knifehead pro-drive (only complete obtainable - Pos. 20)
18	10067		Sechskantschraube M6 x 18	hexagon head screw M6 x 18
19	01086		Sechskantschraube M6 x 22	hexagon head screw M6 x 22
20	11371		Messerkopf Pro-Drive kpl. (inkl. Pos. 16 / 17 / 18 / 19 / 23)	knifehead pro-drive cpl. (incl. Pos. 16 / 17 / 18 / 19 / 23)
	12766		Kopflager 17mm kpl. (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. (incl. Pos. 22 / 23 / 24)
21	14739		Kopflager 17mm kpl. - wartungsfrei (inkl. Pos. 22 / 23 / 24)	head connector 17mm cpl. - maintenance-free (incl. Pos. 22 / 23 / 24)
22	Δ		Kopflager 17mm (nur komplett erhältlich - Pos. 21)	head connector 17mm (only complete obtainable - Pos. 21)
23	12543		Spannhülse POM	adapter POM
24	10099		Zylinderschraube M10 x 35	bolt M10 x 35
25	12480		Pro-Drive 85Hs G	pro-drive 85Hs G
26	01087		Verbuss Ripp Schraube M12 x 40	ripp bolt M12 x 40
27	01088		Verbuss Ripp Mutter M12	ripp nut M12
28	14871		Kupplungsklaue F38 D=35mm	claw coupling F38 D=35mm
29	12601		Spannscheibe komplett	tension washer complete
30	10230		Zylinderschraube M12 x 30	bolt M 12 x 30
31	12603		Kupplungsstern F38	coupling star F38
32	12586		Motorhalterung	motorholder
33	01066		Scheibe für M8	washer with external chamfer for M8
34	01089		Sechskantschraube M8 x 16	hexagon head screw M8 x 16
35	12610		Kupplungsklaue F38 D=25mm	claw coupling F38 D=25mm
	12442		Hydraulikmotor EPM / OMR 50ccm	hydromotor EPM / OMR 50ccm
36	12443		Hydraulikmotor EPM / OMR 80ccm	hydromotor EPM / OMR 80ccm
	12444		Hydraulikmotor EPM / OMR 100ccm	hydromotor EPM / OMR 100ccm
37	01923		Messerschutz Haltefeder	knife protector retention clip
38			Messerschutz x,x m	knife protector x foot
39			Messerschutz x,x m kpl. (inkl. Pos. 37 / 38)	knife protector x foot cpl. (incl. Pos. 37 / 38)

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