

UK



# HE-VA

Operating Instructions  
Spare parts list  
Declaration of Conformity

As good as it looks

As good as it looks

As good as it looks

As good as it looks



Warning: Before using the machine it is important to read the operation instructions.

## Sub-Tiller Trailed

Hydraulic: 4,0 – 5,0 – 6,0 – 7,0m



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## **EC DECLARATION OF CONFORMITY**

in accordance with the EU Machinery Directive 2006/42/EC  
applicable as from December 29<sup>th</sup> 2009:

HE-VA ApS  
N. A. Christensensvej 34,  
DK-7900 Nykøbing Mors

hereby confirms that the following machine has been manufactured in accordance with the Council  
Directive 2006/42/EC.

The declaration comprises the following machine:

Sub-Tiller Trailed 4,0 m - 5.0 m – 6.0 m – 7.0 m (hydraulic)

Nykøbing 01.06.2010

A handwritten signature in black ink, which appears to read "Villy Christiansen".

Villy Christiansen

The undersigned is furthermore authorized to compile technical documentation for the above machine.

## **Delivery check**

Upon delivery to the dealer/supplier as well as to the customer, check the Sub-Tiller for possible damages.

## **Machine Description**

### **Range of Application**

The Sub-Tiller is a sub-soiler for soil loosening from 0 cm to 60 cm depth. The work is performed either before seeding (min. tillage) or after harvest where a loosening of the tramlines in the field is desirable in order to discourage structure damages. Infinitely variable tine spacing, depending on the actual working task. The Sub-Tiller trailed is ideal for all soil types and is available with the V-profile roller. The Sub-Tiller can be mounted with HE-VA Multi-Seeder, which opens up the possibility of till-seeding of rape, fertiliser, slug pellet/poison or crops for green manure.

The Sub-Tiller is mounted in the tractor's towing eye or lift arms. With this mounting in the lift arms of the tractor, you will have a more simple and precise control of the machine's horizontal position. In order to achieve optimum control you have to be aware of the tractor wheels, and under certain circumstances a mounting of twin wheels is recommendable.

### **Technical specifications:**

<b>Model</b>	<b>4.0 m</b>	<b>5.0 m</b>	<b>6.0 m</b>	<b>7.0 m</b>
Working width	5,0m	5,0 m	6,0 m	7,0 m
Transport height	260 cm	310 cm	360 cm	410 cm
Transport width	265 cm	265 cm	265 cm	265 cm
Power requirement	220-320 hp	250-400 hp	350-500 hp	400-650 hp
Requirement for number of double acting oil outlets	3	3	3	3
Numer of tines	7 pcs	9 pcs	11 pcs	13 pcs
Weight with 600 mm V-Profile roller, max. tines and Quick-Push stone protection	5200 kg	5700 kg	6200 kg	6800 kg
Weight with 600 mm V-Profile roller, max. tines and Hydr. automatic stone protection	5200 kg	5860 kg	6400 kg	7030 kg
Weight with 700 mm V-Profile roller, max. tines and Quick-Push stone protection	5600 kg	5900 kg	6500 kg	7150 kg
Weight with 700 mm V-Profile roller, max. tines and Hydr. automatic stone protection	6000 kg	6060 kg	6700 kg	7380 kg

## **Safety instructions for Sub-Tiller**

Do not start-up the machine if there are persons in exposed positions\* within a hazardous area\*\*.

When persons are in exposed positions (e.g. in connection with adjustment, maintenance, attachment and uncoupling), the following conditions must be observed:

1. The machine must be lowered to firm ground.
2. The hydraulics must be relieved.
3. The tractor must be stopped and the key removed from the ignition switch.
4. The driver must ensure that no persons are staying in exposed positions during the operation.

\* Person in exposed position: Any person who is staying wholly or partly within a hazardous area.

\*\* Hazardous area: On and under the machine within a distance of 4 m from the machine.

Most accidents that happen in connection with the operation, transport and maintenance of machines are caused by non-compliance with the most elementary safety conditions.

Therefore it is vital that anybody working at the machine carefully complies with the safety instructions as well as other instructions applying to the machine.

The machine may only be operated, maintained and repaired by persons, who are familiar with this work and who are further familiar with the possible elements of danger with this particular machine.

**ATTENTION !!**                      **Rotary parts and loose clothes are a dangerous combination.**

**IMPORTANT !!**                      **In connection with the risk of parts falling down, it may endanger the lives of persons staying on the base frame of the machine, when it is operated attached to a tractor.**

## **Safety and Instructions on Hydraulics**

1. The maximum working pressure is 225 bar.
2. It is advisable to label the attachment parts at hydraulic connections between the tractor and the tool in order to eliminate incorrect operation!
3. When checking for hydraulic leaks, use suitable safety wear (eye protectors, gloves, etc.) High-pressure hydraulic oil may penetrate the skin and cause dangerous injuries. In case of injury, consult a doctor immediately. **RISK OF INFECTION!**
4. Before operating the hydraulics, lower the machine to firm ground. Relieve the hydraulics, stop the motor and remove the ignition key.
5. Check the hydraulic hoses on a regular basis, however, every six months as a minimum due to any cracks, wear and tear, etc. Replace any defective hoses immediately.

The life of hydraulic hoses is maximum 5 years.

New hydraulic hoses must meet the manufacturer's requirements.

### **INSTRUCTIONS ON TRANSPORT ON THE PUBLIC ROADS:**

Check before transport on public roads that the attachment of the machine at the tractor is in accordance with the local rules and regulations in force (permitted total weight, permitted axle load, transport width, lights, warning signs, etc.).

### **FRONT AXLE LOAD:**

After the attachment of the machine and at maximum load, the driving properties of the tractor must be ensured. Check that the front axle is sufficiently loaded. As a minimum, the front axle load must be 20% of the tractor weight. Permitted axle load and permitted total weight for the tractor must always be observed.

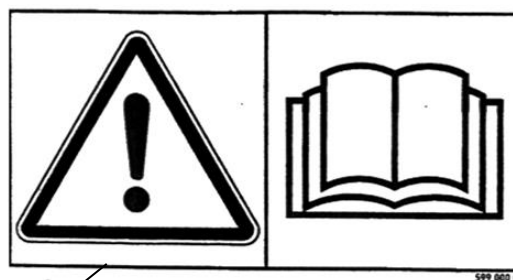
**NB! The driving, controlling and braking properties are affected by the attached machine combination.**

## Labels on the machine

You will find several labels on your machine containing **safety** and practical instructions as regards the correct application of the machine. Please study the instructions and point out to the user the importance of the labels as well as the **safety instructions** in the Operating Instructions. Always keep the labels clean and readable – if not they must be replaced.



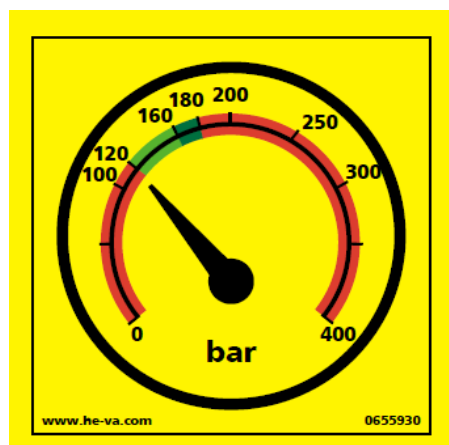
A



B

**HUSK - PLEASE NOTE -  
ACHTUNG - ATTENTION**  
**EFTERSPÆND BOLTE**  
**TIGHTEN UP THE BOLTS**  
**BOLZEN NACHZIEHEN**  
**RESSERRER LES BOULONS**

C



D

### Explanation of the machine labels

- A Plate with number and year of manufacture.
- B Study the Operating Instructions thoroughly before any operation of the machine and observe all safety instructions.
- C Tighten up all bolts regularly. If this is not performed, our guarantee obligations will no longer apply.
- D Correct hydraulic pressure on the release system.



## Start-up of the machine

### General information

1. The machine requires 3 double acting outlets.
2. The hoses for depth adjustment are provided with **green** cable straps, **red** for wheel frame and **blue** for wing sections.
3. The roller (Photo no. 4) and wheel frame (Photo no. 3) of the machine must be placed in the lowest position (fully extended cylinders), otherwise problems/accidents might occur during folding.
4. The wing section cylinder can only be used when the valve for the roller bar has been activated (Photo no. 1).
5. During transport, we recommend that the machine is resting on the wheel frame, via the transport legs (Photo no. 2) – thus lowered.

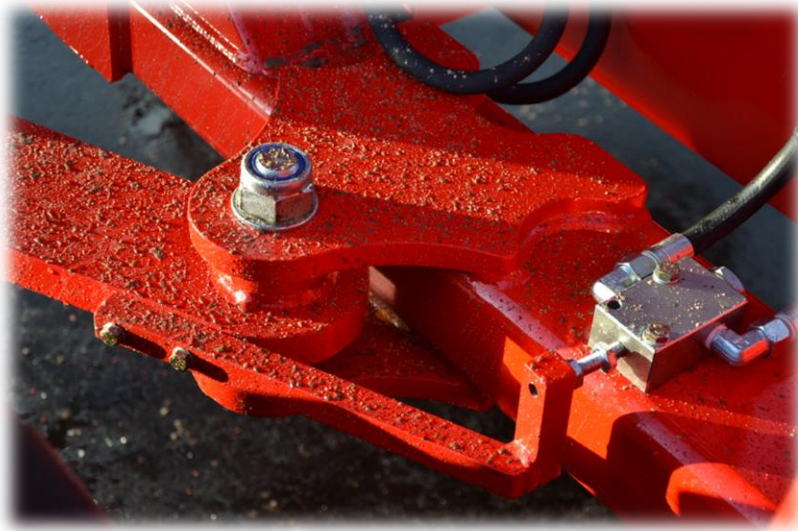


Photo no. 1. Valve for roller bar.



Photo no. 2. Transport legs are resting on the wheel frame.

**From transport to working position**

1. Raise the machine to max. position (Photo no. 3) and check that the roller is in the lowest position (fully extended cylinders) (Photo no. 4).
2. Now unfold the wing sections. (Photo no. 5).
3. Adjust the working depth (See page 11).



Photo no. 3.



Photo no. 4.



Photo no. 5.



Photo no. 6.

**From working position to transport position**

1. Raise the machine to max. position (Photo no.6) and check that the roller is in the lowest position (fully extended cylinders) (Photo no. 4).
2. Now the wing sections are folded together into transport position (Photo no. 5).
3. The machine must be lowered so that the transport legs are resting on the wheel frame (Photo no. 2).



## Setting and adjustment

### Adjustment of the working depth

The arrows below show the three points on the machine where the working depth is adjusted. The working depth is adjusted with clips. As a rule, the two points to which the black arrows are pointing, are to have the same amount of clips. It is important that the weight is not placed on the supporting wheels but mainly on the drawbar and the roller. Regarding the adjustment of the working depth, it is therefore important to adjust the number of clips on the drawbar cylinders. If the machine is mounted in the tractor's lift arms, the depth can be adjusted by the tractor lift.

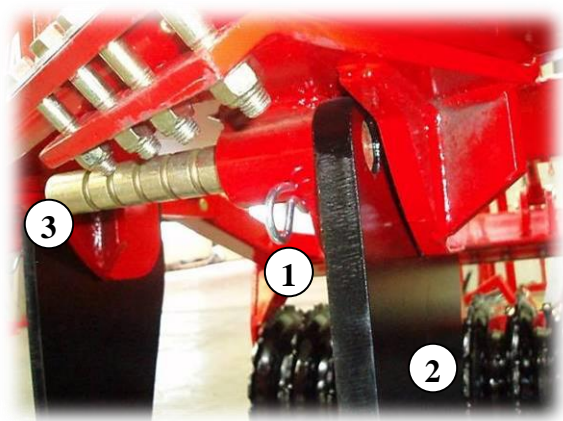


Photo no. 7. Working depth is adjusted with clips.

### Stone protection

#### Quick-Push shear bolt.

When the shear bolt is broken and the tine has been released, place the shear bolt one notch forward before the machine can operate again.

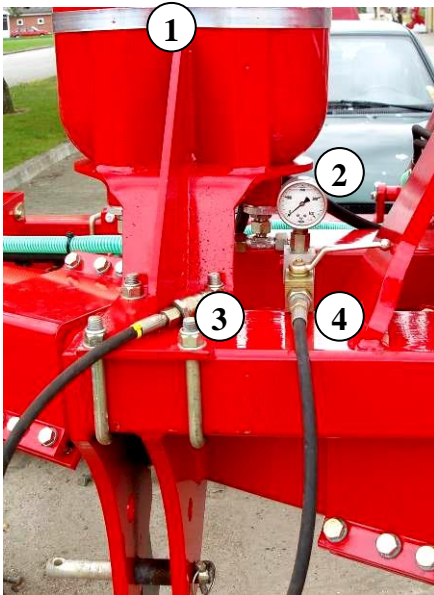


- 1 Pull out the R-clip (Pos. 1).
  - 2 Pull the tine back to normal working position (Pos. 2).
  - 3 Push the shear bolt (Pos. 3) **one** notch forward to a new position in the tine. Do not push the bolt totally through (it can be necessary to remove soil etc. from the hole in the tine).
- ⚠ Important:** All activities under the machine are not advisable while the shear bolt is being moved or changed.
- 4 Push back the R-clip (Pos. 1), so that it locks the shear bolt in its place, and the machine is ready for operation.

When the shear bolt is broken for the eighth time, it is used up. Be aware that the shear bolt must **never** be shorter than 65 mm.

When a new shear bolt is mounted it is important that it is placed correctly. The end of 40 mm (Pos. 3) is to turn away from the tine.

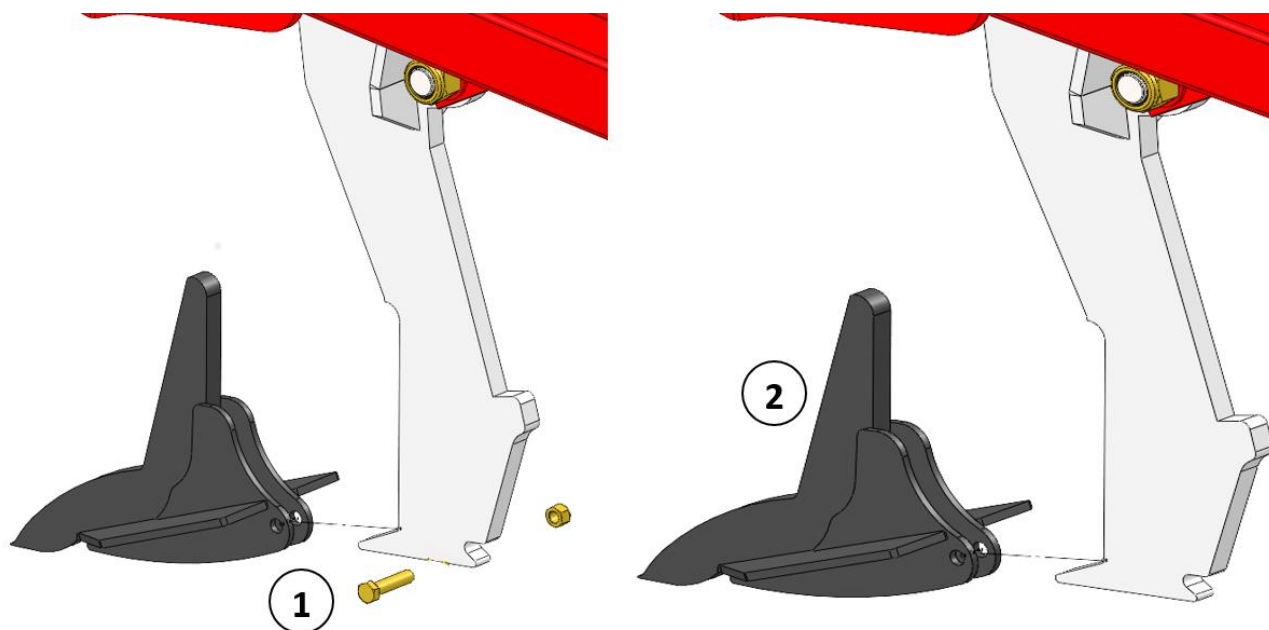
## Hydraulic automatic release system.



- 1 Before each season it must be controlled, that the gas pressure in the accumulator (Pos.1) is 110 bars. ⚠ This requires special tools and can only be performed by an authorized dealer.
- 2 Before the start-up of the machine the hydraulic pressure in the closed hydraulic stone protection system has to be controlled on the machine's pressure gauge (Pos. 2). The pressure must be **minimum 120 bar** and must not exceed 160 bar.
- 3 **IMPORTANT** – the hydraulic pressure is to be controlled continuously and must never be under 120 bar.
- 4 If there is a need to adjust the working pressure, follow the below instructions:
  - a Mount the quick coupling of the hydraulic hose (Pos. 3) in the tractor's oil outlet.
  - b Turn on the ball valve (Pos. 4), and the working pressure can now be adjusted up or down with the tractor's oil outlet.
  - c When the desired pressure is achieved, turn off the ball valve again (Pos. 4), and the tractor's hydraulic system is relieved, before the quick coupling (Pos. 3) is dismantled and placed in the parking device of the machine.
- 5 During the operation of the machine the tine swings automatically to the rear if it meets an obstacle. Under normal circumstances, the tine will automatically return to working position after having passed the obstacle. At extreme obstacles and/or soil conditions it might be necessary to stop and eventually lift the machine from the soil.
 


⚠ It is important that no persons are near the machine as the tine will return to working position with high speed and might throw soil and stones.

### Replacement of wearing point



**Before working with the wearing points, the machine must be secured. This can be performed by placing trestles under the main frame or by supporting the roller.**

**The wearing point might fall off when the shear bolt is removed - risk of foot or leg injury!**

1. Dismount bolt (Pos. 1) by means of 2 pcs. spanners.
2.  The wearing point might fall off, when the shear bolt is removed – risk of foot or leg injury.
3. Dismount the wearing point by pushing it forward. This might be difficult due to entrance of soil, and it might be a good idea to use a hammer.

Mount the new wearing point (Pos. 2), by pushing it to the rear and then into place.

4. Check the bolt for any damages and replace if required. **Reorder the original bolt by replacing. It is a special bolt that secure that the wings isn't tightened**
5. Mount the bolt (Pos. 1), lubricate and tighten it to 20 Nm.  
**Be careful not to tighten the bolt too much, as it might damage the wearing point!**



### Scraper

The Sub-Tiller has special designed scrapers between the packer rings on the V-profile roller. To avoid unnecessary wear and to ensure the best scraper effect it is important to check the centering of the scrapers every day



## Maintenance

- After 10 hours of operation, retighten the machine. Check hydraulic hoses, fittings and cylinders for leaks and retighten.
- Further, check on a regular basis that all bolts are tightened.
- Before the winter storage, wash and lubricate the machine. If you use high-pressure cleaner, do not spray directly on the ball bearings. After the washing, you may spray the machine with oil.

### Lubrication

For lubrication, maintenance and repair, lower the Sub-Tiller, put the brakes of the tractor on and stop the motor.

The 5.0 – 7.0 m Sub-Tiller Trailed have 37 lubricating points - all Sub-Tillers must be lubricated after every 20 working hours as well as after the cleaning in order to press out any water and dirt:

- all cylinders have 2 lubricating points
- all bushes have 1 lubricating point
- all bearings and wheel bearings have 1 lubricating point

Moreover, the machines with hydraulic automatic release system have 2 lubricating points per tine which are to be lubricated after 10 hours of operation (daily).

#### **Attention!**

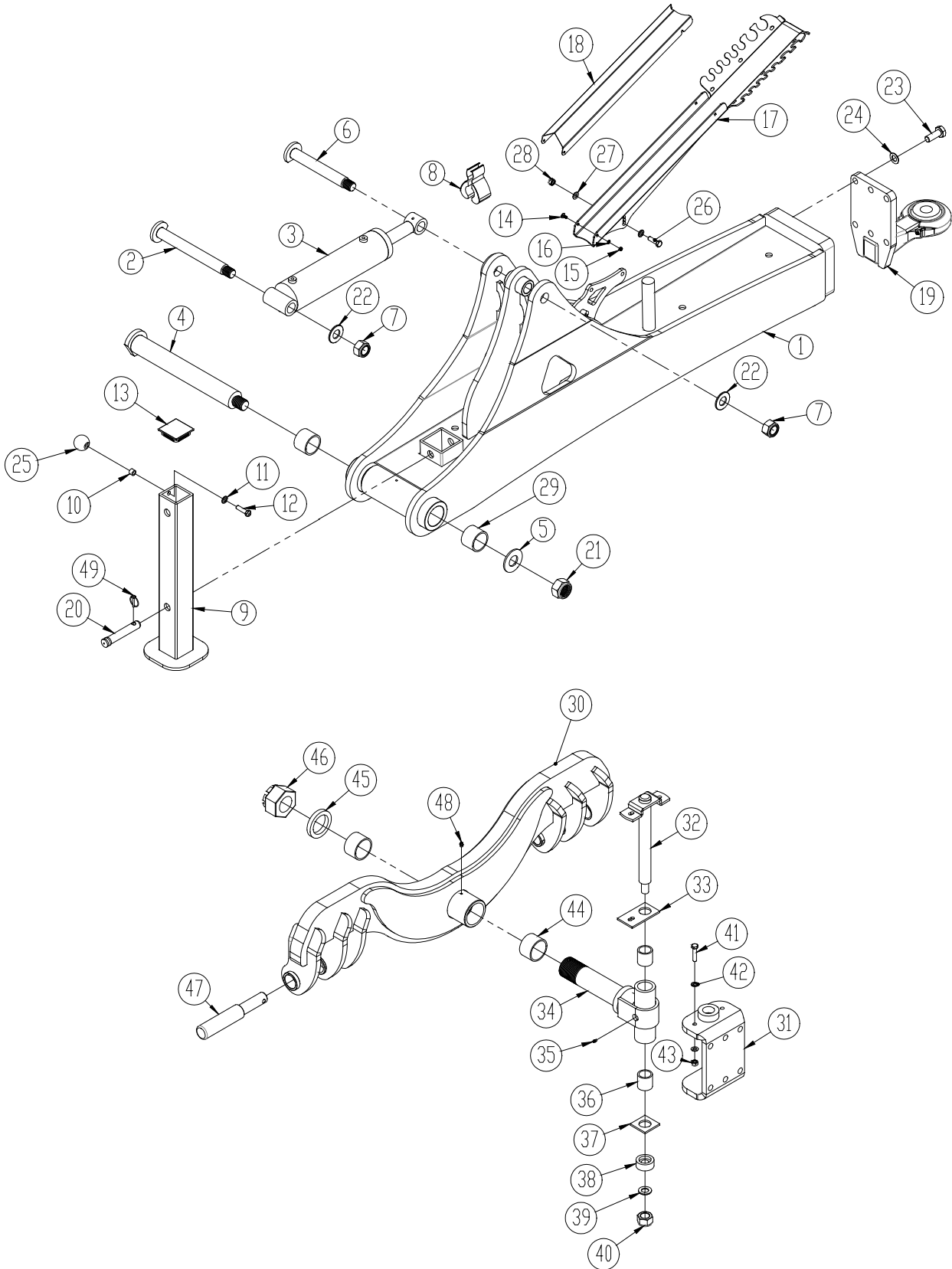
**However, the double-sealed ball bearings in the roller should only be lubricated every 20 working hours and by 1-2 strokes so that the sealing rings are not pressed out.**

#### **Important!**

**Oil, type Hydro Texaco HD32 has been filled in the hydraulic system.**

# Spare parts list

## Drawbar

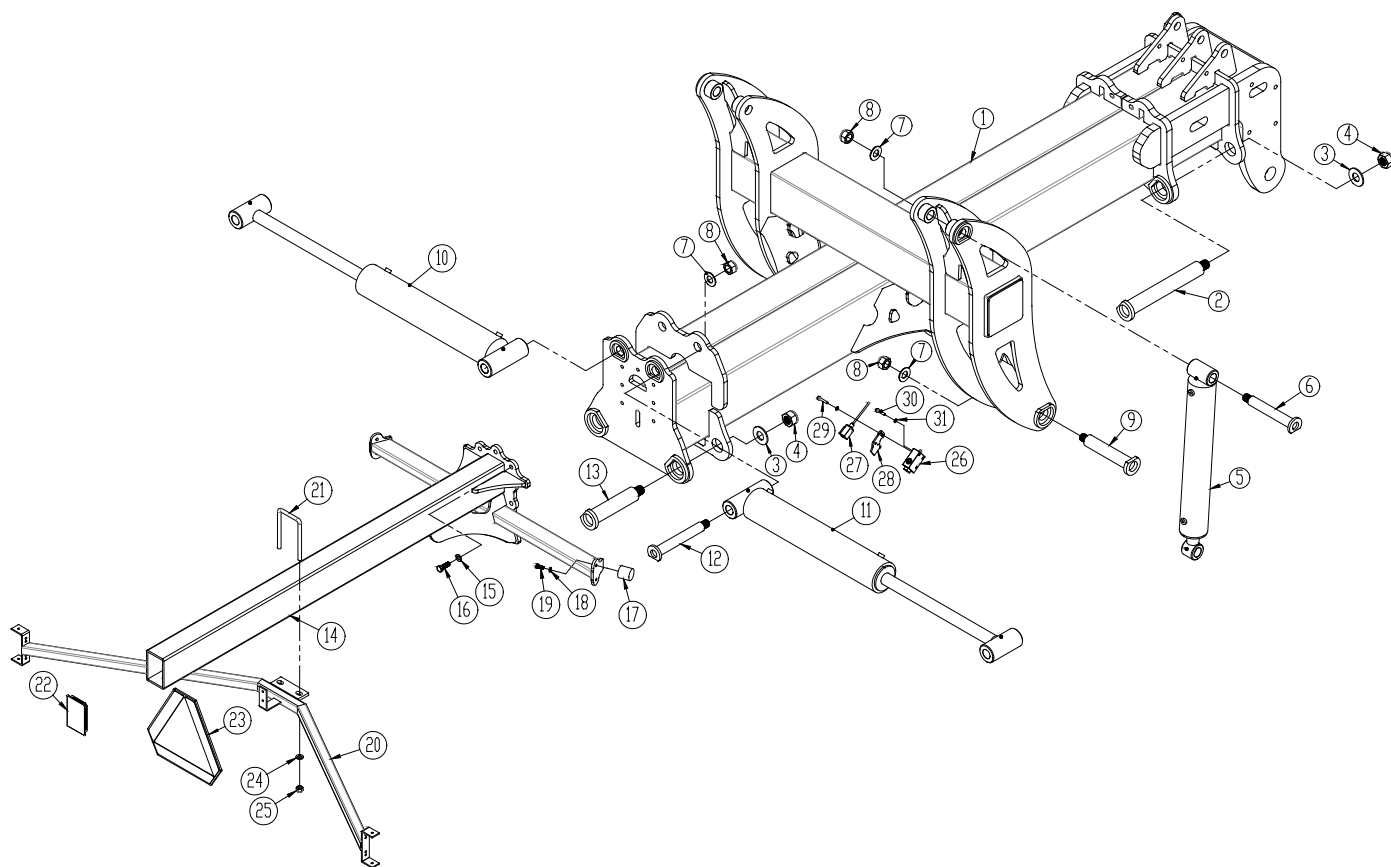




Pos.	Item no.	Designation	No.
1	645001123	Drawbar	1
2	645001057	Pin ø35mm	1
3	7345070	Cylinder 90/40x280	2
4	645001084	Pin ø60mm	1
5	645001323	Washer	1
6	645001344	Pin Ø35mm	1
7	0264155	Locking nut M30	2
8	690200664	Distance clips 6,2mm, blue	
8	690200665	Distance clips 9,4mm, red	
8	690200666	Distance clips 18,8mm, yellow	
8	690200667	Distance clips 31,6mm, black	
8	690200668	Distance clips 50,8mm, silver	
9	645001400	Support leg	1
10	1012000	Spacer Bushing	1
11	0272270	Facet plate ø12mm	1
12	0235370	Bolt M12x45	1
13	0489620	Plastic plug 110x110x3mm	1
14	0246060	Carriage bolt M6x16 8,8	4
15	0264040	Locking nut M6	4
16	0272240	Facet plate Ø6mm	4
17	7345006	Hose holder, Model : Large	1
18	7345003	Screen for hose holder	1
19	630757111	Towing eye (ended)	1
	7420007	Towing eye Kat 3	1
	7420006	Towing eye Kat 4	1
	7420005	Towing eye Kat 5	1
19a	630757106	Ball for Towing eye Kat 3	1
	630757107	Ball for Towing eye Kat 4	1
	630757108	Ball for Towing eye Kat 5	1
20	69525107J	Pin	1
21	0264190	Locking nut M36	1
22	0272350	Facet plate Ø30mm	2
23	0228503	Bolt M20x65 12.9	6
24	0272310	Facet plate Ø20mm	6
25	0489060	Handle Ø45	1
26	0235360	Bolt M12x40 8.8	1
27	0272270	Facet plate Ø12mm	2
28	0264070	Locking nut M12	1

Pos.	Item no.	Designation	No.
29	0475420	Slide bush EG $\varnothing$ 70/60x50mm	2
	630757077	Pivoting drawbar, HD	
30	630757078	Krop f/svingbar træk	1
31	1145335	U-bøjle	1
32	1127870	Træknagle	1
33	1128390	Wear plate	1
34	630757076	Drive shaft	1
35	0432100	Lubricating nipple M6	1
36	0475350	Slide bush EG $\varnothing$ 50/40x50mm	2
37	1127990	Wear plate	1
38	1127900	Washer	1
39	0272330	Facet plate $\varnothing$ 24	1
40	0264130	Locking nut M24	1
41	0235390	Bolt M12x55	2
42	0272270	Facet plate $\varnothing$ 12	4
43	0264070	Locking nut m12	2
44	0475450	Slide bush EG $\varnothing$ 80/70x50mm	2
45	7420000	Spacer ring 15mm	1
	7420001	Spacer ring 12mm	
46	0262500	Castellated nut M64x4mm	1
47	69537273C	Pin for lift arm $\varnothing$ 37/ $\varnothing$ 50	2
48	690136029	Lubricating nipple M8	1
49	0378200	Ring pin $\varnothing$ 4,5mm	1

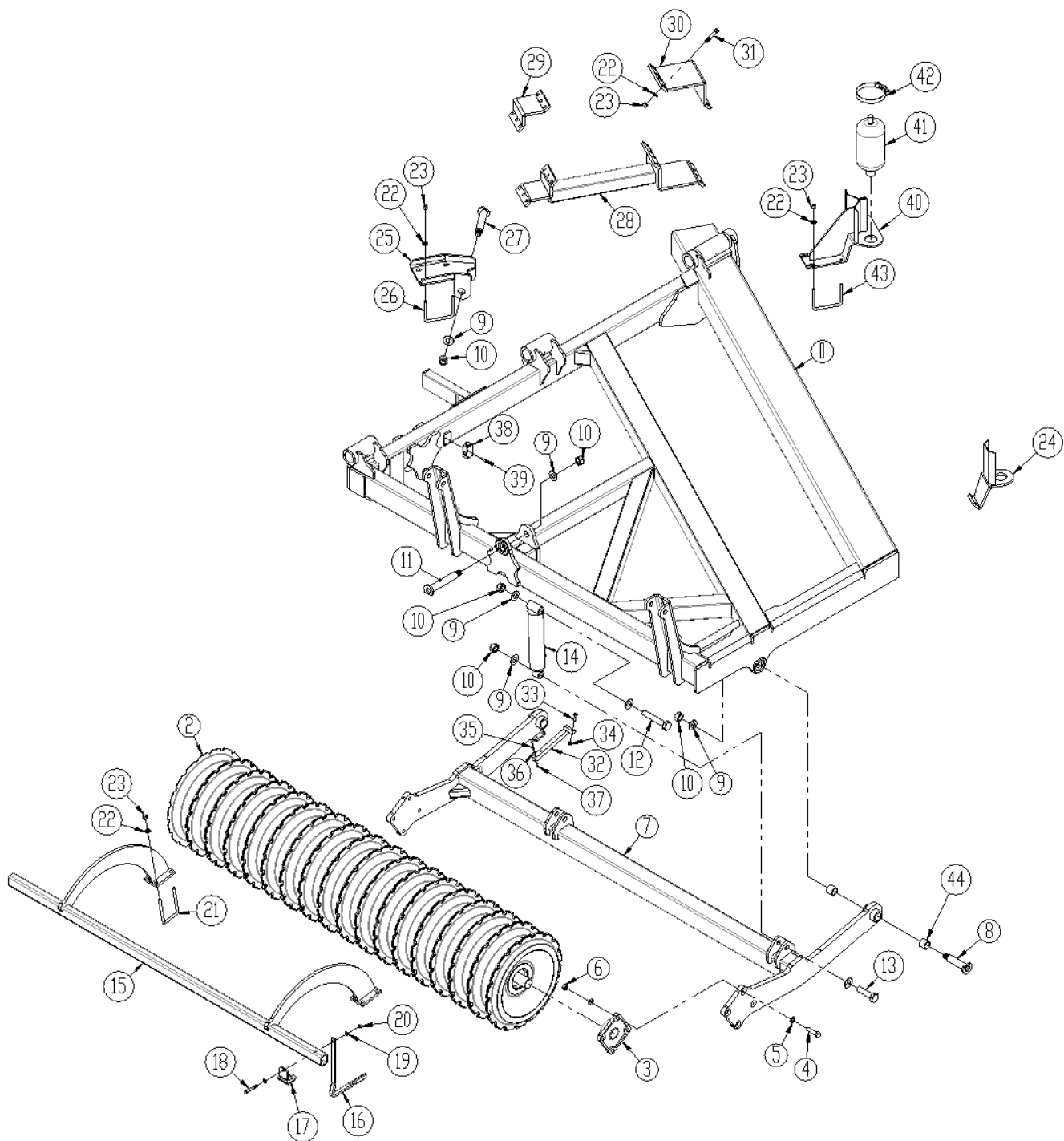


Center section


Pos.	Item no.	Designation	No.
1	645000831	Center section	1
2	645001053	Pin Ø60	2
3	645001323	Facet plate Ø36	
4	0264190	Locking nut M36	
5	690200113	Cylinder 100/50x600mm Ø40/Ø40 mm	2
6	645001045	Pin Ø40	2
7	0272350	Facet plate ø30mm	
8	0264155	Locking nut M30	
9	645001047	Pin Ø50	
10	690200349	Cylinder Ø120/50x600mm (Left)	1
11	690200348	Cylinder Ø120/50x600mm (Right)	1
12	645001275	Pin Ø40	2
13	645001082	Pin Ø60	4
14	64501384	Light beam holder (without tank)	1
	645001423	Light beam holder (1 tank og twin tank)	1
	645001453	Light beam holder (2 tanks)	1

Pos.	Item no.	Designation	No.
15	0272290	Facet plate $\phi$ 16	
16	0235800	Bolt M16x45	
17	0484860	Rubber shock absorber $\phi$ 50 L:50 M10	4
18	0272260	Facet plate $\phi$ 10mm	
19	0235040	Bolt M10x25mm, 8.8	
20	645001336	Bar for light	1
21	690110107	U-bolt M16x80x80x80mm	1
	690110104	U-bolt M16x15x100x150mm	1
22	0489620	Plastic plug 80x80	1
	0489690	Plastic plug 150x100	1
23	0521010	Warning Triangle	1
24	0272290	Facet plate $\phi$ 16	
25	0264090	Locking nut M16	
26	690207101	Mechanical stop valve	1
27	0520464	Finger switch	1
28	645001525	Mounting plate for finger switch	1
29	0234800	Bolt M8x45mm, 8.8	
30	0234790	Bolt M8x40mm, 8.8	
31	0272240	Facet plate $\phi$ 8	

Wing, roller bar & V-profile roller



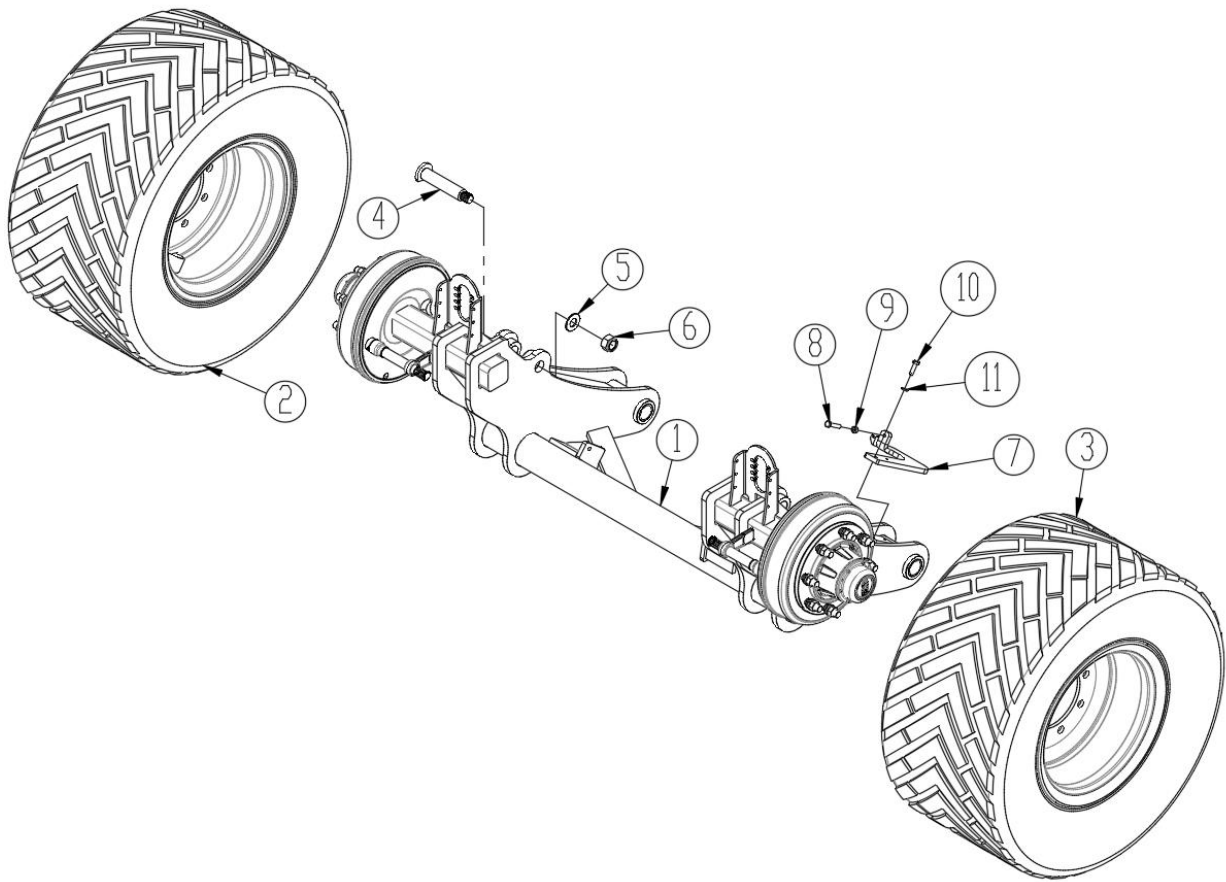
Pos.	Item no.	Designation	4m	5m	6m	7m
1	1240747	Wing (Left)	1			
	1240746	Wing (Right)	1			
	645000795	Wing (Left)		1		
	645000723	Wing (Right)		1		
	645001248	Wing (Left)			1	
	645001253	Wing (Right)			1	
	645000811	Wing (Left)				1
	645000948	Wing (Right)				1
2	7451110	V-profile roller 600mm (Left)	1			
	7451112	V-profile roller 600mm (Right)	1			
	7451103	V-profile roller 700mm (Left)	1			
	7451107	V-profile roller 700mm (Right)	1			
	1160674	V-profile roller 600mm (Left)		1		
	1160671	V-profile roller 600mm (Right)		1		
	7451001	V-profile roller 700mm (Left)		1		
	7451008	V-profile roller 700mm (Right)		1		
	1160634	V-profile roller 600mm (Left)			1	
	1160637	V-profile roller 600mm (Right)			1	
	7451010	V-profile roller 700mm (Left)			1	
	7451012	V-profile roller 700mm (Right)			1	
	1160617	V-profile roller 600mm (Left)				1
	1160613	V-profile roller 600mm (Right)				1
	7451014	V-profile roller 700mm (Left)				1
	7451016	V-profile roller 700mm (Right)				1
3	0478971	Bearing cpl. UCF 312 (Ø60)	4	4	4	4
4	0236170	Bolt M20X80mm, 8.8 (to September 2021)	16	16	16	16
	0229260	Bolt countersunk M20x80mm (from September 2021)	16	16	16	16
5	0272310	Facet plate Ø20				
6	0264110	Locking nut M20				
7	1240687	Roller bar (Left)	1			
	1240697	Roller bar (Right)	1			
	645001416	Roller bar (Left)		1		
	645001412	Roller bar (Right)		1		
	645001259	Roller bar (Left)			1	
	645001263	Roller bar (Right)			1	
	645001028	Roller bar (Left)				1
	645000991	Roller bar (Right)				1
8	645001531	Pin 40mm	4	4	4	4

Pos.	Item no.	Designation	4m	5m	6m	7m
9	0272350	Facet plate Ø30				
10	0264155	Locking nut M30				
11	645001273	Pin 40mm	2	2	2	2
12	0237070	Bolt M30x180mm, 8.8	4	4	4	4
13	0237010	Bolt M30x120mm, 8.8	4	4	4	4
14	690200347	Cylinder 80x40x280	4	4	4	4
15	1240689	Scraper bar (Left) 600mm V-profile roller	1			
	1240695	Scraper bar (Right) 600mm V-profile roller	1			
	1240770	Scraper bar (Left) 700mm V-profile roller	1			
	1240771	Scraper bar (Right) 700mm V-profile roller	1			
	645001419	Scraper bar (Left) 600mm V-profile roller		1		
	645001414	Scraper bar (Right) 600mm V-profile roller		1		
	645001445	Scraper bar (Left) 700mm V-profile roller		1		
	645001446	Scraper bar (Right) 700mm V-profile roller		1		
	645001265	Scraper bar (Left) 600mm V-profile roller			1	
	645001267	Scraper bar (Right) 600mm V-profile roller			1	
	645001348	Scraper bar (Left) 700mm V-profile roller			1	
	645001350	Scraper bar (Right) 700mm V-profile roller			1	
	645001133	Scraper bar (Left) 600mm V-profile roller				1
	645001112	Scraper bar (Right) 600mm V-profile roller				1
	645001529	Scraper bar (Left) 700mm V-profile roller				1
	645001530	Scraper bar (Right) 700mm V-profile roller				1
16	630938520	Scraper (Ø600 roller)	23	31	37	43
	630938521	Scraper (Ø700 roller)	23	31	37	43
17	630938522	Scraper holder	23	31	37	43
18	0235450	Bolt M12x90mm, 8.8				
19	0264070	Locking nut M12				
20	0272270	Facet plate Ø12				
21	690110104	U-bolt M16x150x100x150mm	8	8	8	8
22	0272290	Facet plate Ø16				
23	0264090	Locking nut M16				
24	645001160	Holder for accumulator	2	2	2	2
25	645001089	Brace for bar for hydr. jack stand (left)	7	9	11	13
	645001090	Brace for bar for hydr. jack stand (right)				
26	0382800	U-bolt M16x100x150x100	14	18	22	26
27	645001095	Pin 40mm	7	9	11	13
28	645000985	Brace for Spring bolt leg bar	2	2	4	4
29	645000986	Attachment flange	2	2	4	4
30	645000046	Attachment flange	2	2	4	4

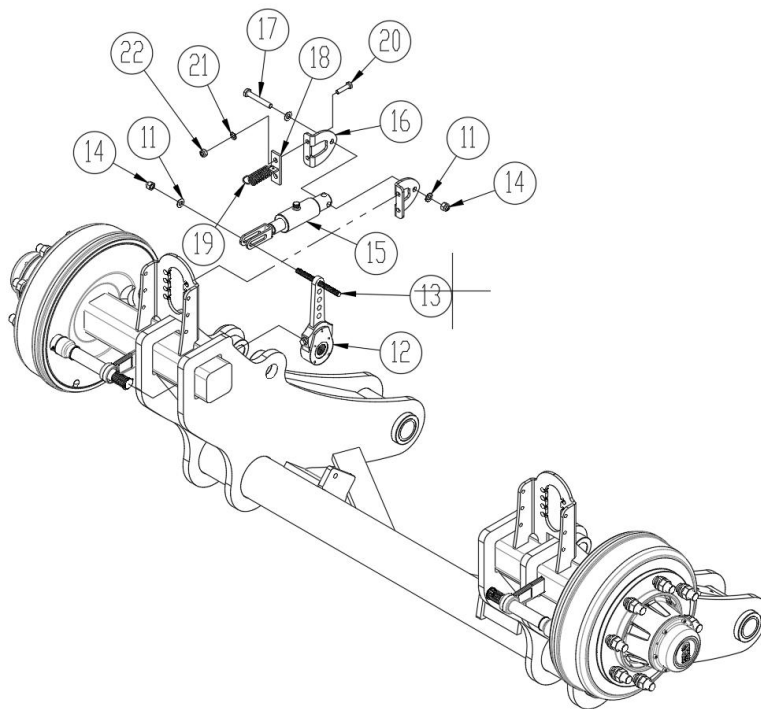


Pos.	Item no.	Designation	4m	5m	6m	7m
31	0238850	Bolt M16x90mm				
32	645001326	Arm f/roller bar ventil	1	1	1	1
33	0235070	Bolt M10x40mm,				
34	0261363	Counter nut M10				
35	0234400	Bolt M6x60				
36	0272240	Facet plate Ø6				
37	0264040	Locking nut M6				
38	690207101	Look at pos 8 page 45				
39	0234800	Bolt M8x45mm				
40	645000125	Support for accumulator	2	2	2	2
41	690206513	Accumulator 4,5L 110 bar (to machine no. 37567)	4	4	4	4
	690206515	Accumulator 6,0L 110 bar (from machine no. 37568)	4	4	4	4
42	690206516	Clamp	4	4	4	4
43	0382800	U-bolt M16x100x150x100	4	4	4	4
44	0475330	Slide bush EG ø50/40x40mm	16	16	16	16

Wheel frame

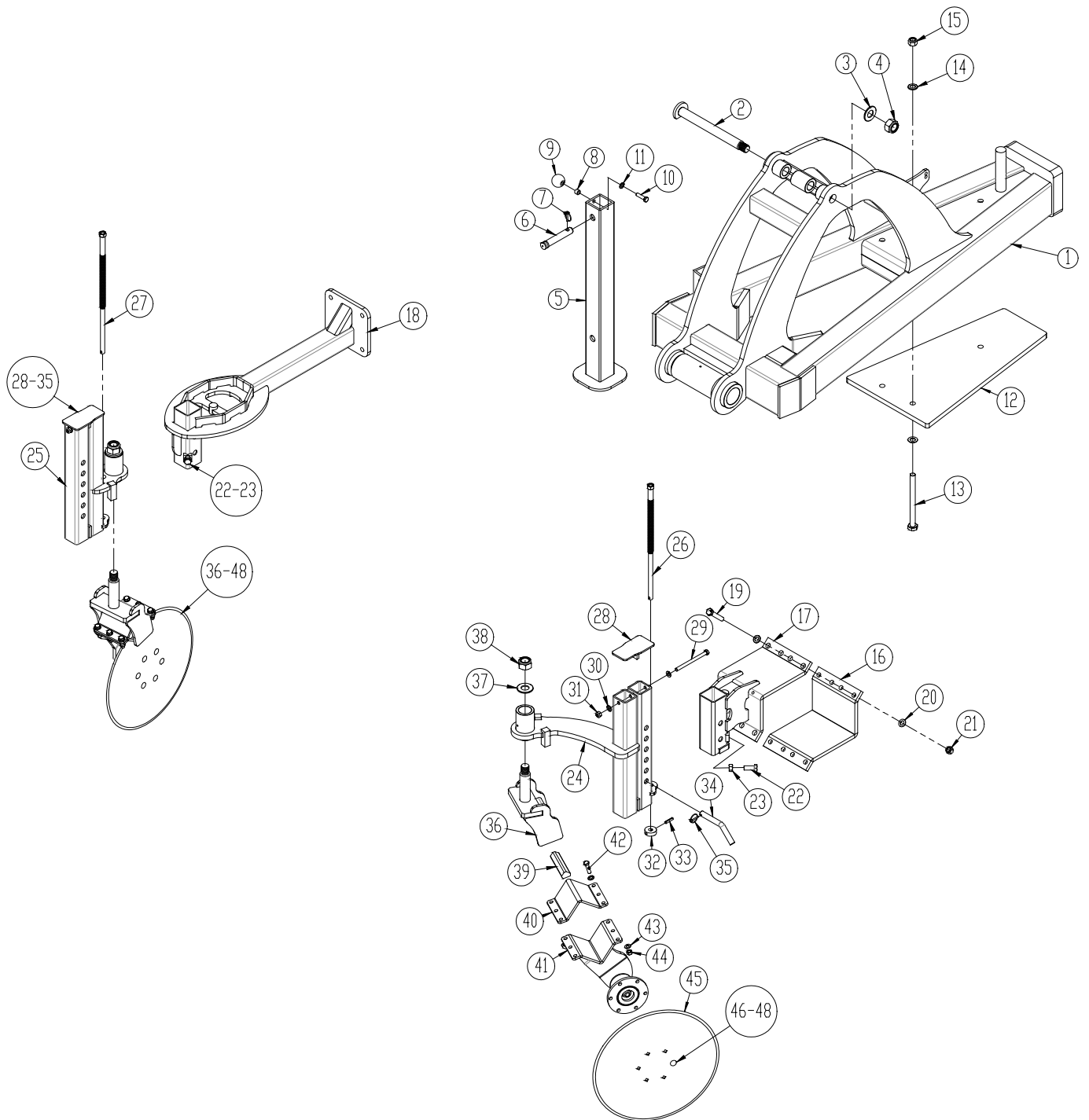


**Hydr. brakes**



<b>Pos.</b>	<b>Item no.</b>	<b>Designation</b>	<b>No</b>
1	645000885	Wheel frame with braking	1
	1240798	Wheel frame without braking (FAD hub) (to machine no. 34387)	1
	1240798	Wheel frame without braking (TVZ hub) (from machine no. 34388)	1
2	690141053	Wheel, cpl. (Left)	1
3	690141054	Wheel, cpl. (Right)	1
4	645001051	Pin	2
5	0272350	Facet plate 30mm	2
6	0264155	Locking nut M30	2
7	645001524	Arm for activating mechanical stop valve	1
8	0235400	Bolt M12x60mm, 8.8	1
9	0261370	Nut M12	1
10	0235360	Bolt M12x40mm, 8.8	2
11	0272270	Facet plate 12mm	1
12	7297582	Brake arm	2
13	7297594	Threaded rod	2
14	0264070	Locking nut M12	6
15	7345015	Cylinder	2
16	7297527	Bracket f/cylinder	4
17	0235440	Bolt M12x80	2
18	7297593	Bracket for tension spring	4
19	0431630	Tension spring	4
20	0235070	Bolt M10x40mm	8
21	0272260	Facet plate Ø10	4
22	0264060	Locking nut M10	4

Disc-opens

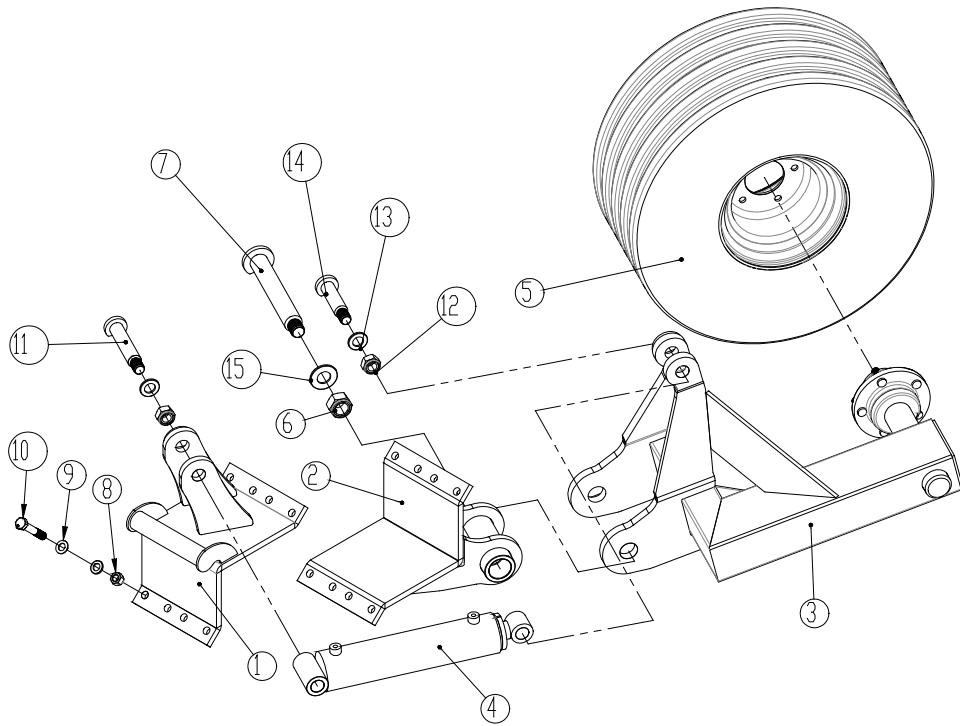


Pos.	Item no.	Designation	No
1	1240176	Drawbar	1
2	1240361	Pin Ø35 L=320	1
3		Look at pos 22 page 17	
4		Look at pos 7 page 17	
5	1240417	Support leg (long model)	1
6		Look at pos 20 page 17	
7		Look at pos 49 page 17	
8		Look at pos 10 page 17	
9		Look at pos 25 page 17	
10		Look at pos 12 page 17	
11		Look at pos 11 page 17	
12	1240182	Weight plate	
13	0236310	Bolt M20x240	3
14	0272310	Facet plate Ø20	6
15	0264110	Locking nut M20	3
			<b>Number pr disc</b>
16	645000046	Bracket	1
17	1240128	Holder f/Disc-opens (left) (standard)	1
	1240077	Holder f/Disc-opens (right) (standard)	1
	1240789	Holder f/Disc-opens (left) (extra tine)	1
	1240786	Holder f/Disc-opens (right) (extra tine)	1
18	1240194	Holder f/Disc-opens (center)	1
19	0238850	Bolt 16x90mm	6
20	0272290	Facet plate Ø16	12
21	0264090	Locking nut M16	6
22	0235790	Bolt M16x40mm	1
23	0261390	Nut M16	1
24	1240097	Telescope tube (left) (standard)	1
	1240076	Telescope tube (right) (standard)	1
	1240788	Telescope tube (left) (extra tine)	1
	1240784	Telescope tube (right) (extra tine)	1
25	1240191	Telescope tube (center)	1
26	1240781	Spindle (left + right)	1
27	1240782	Spindle (center)	1
28	1240082	Lid	1
29	0235520	Bolt M12x160	1
30	0272270	Facet plate Ø12	2
31	0264070	Locking nut M12	1
32	1240401	Stop ring	1
33	0371690	Spring pin Ø8x40mm	1
34	6952095A	Pin Ø20 L=95	1
35	0378200	Ring pin Ø 4,5	1
36	1240078	Tilting bracket	1

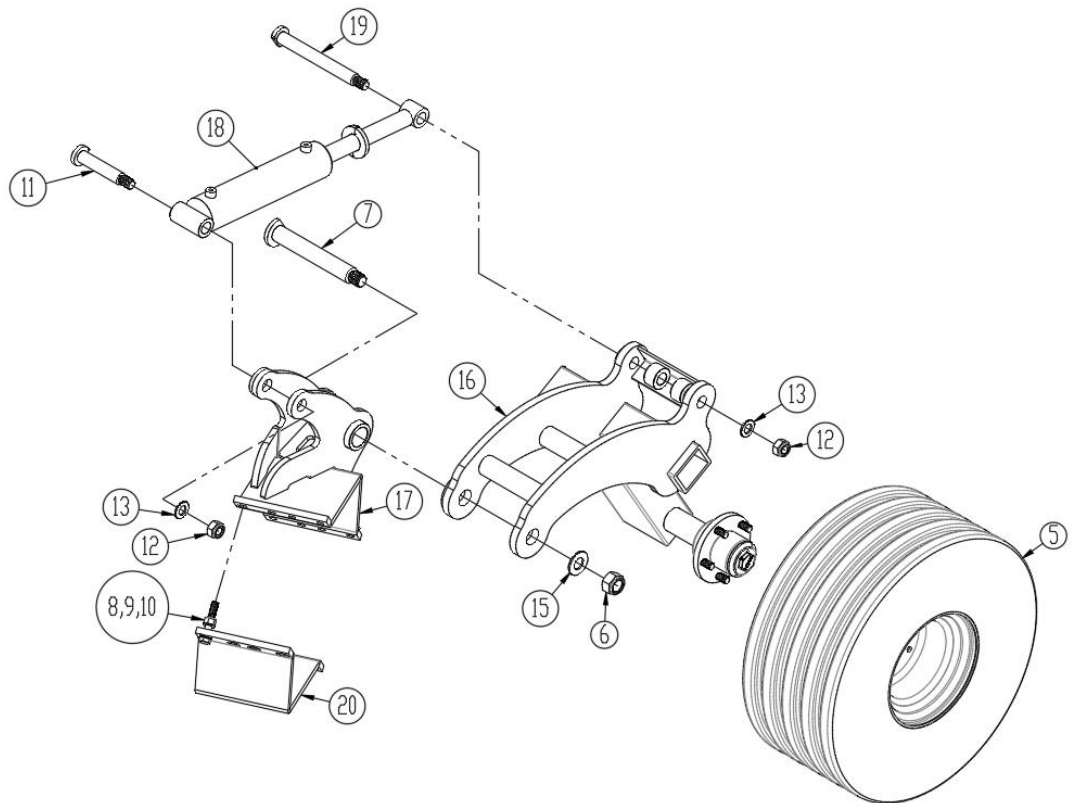
Pos.	Item no.	Designation	No
37	0272350	Facet plate Ø30	1
38	0264155	Locking nut M30	1
39	0484870	Rubber cord	4
40	1240423	Clamping plate	1
41	1240726	Carrier arm	1
	30949030	Hub	
	630949019	Steel washer (offset) Ø45/71,7 mm	
	690140651	Sealing cassette 72-45-14/17	
	690140201	Bearing (Taper roller bearing) ø72mm x ø35mm x	
	0379250	Seeger circlip ring I 72 DIN472	
	690140652	Tight-fitting washer Ø40/50x1mm (Din 988)	
	0483730	O-ring 80x3	
	690117063	Disc spring 20,4x45x2,5	
	0263000	Locking nut M20 kv. 10 (all metal)	
42	690103091	Bolt M12x45	6
43	0272270	Facet plate Ø12	12
44	690113013	Lock nut M12	6
45	0427854	Disc Ø470mm	1
46	0248421	Carriage bolt M10x30	6
47	0272260	Facet plate Ø10	6
48	0264060	Locking nut M10	6



Support wheels

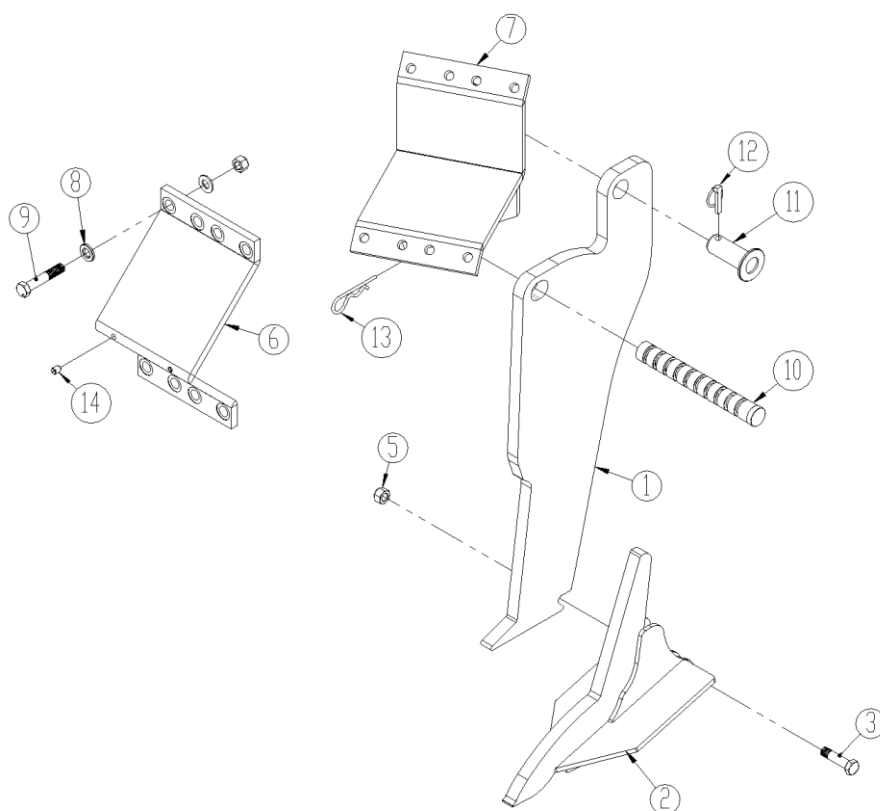


Support wheels (Disc-opens )

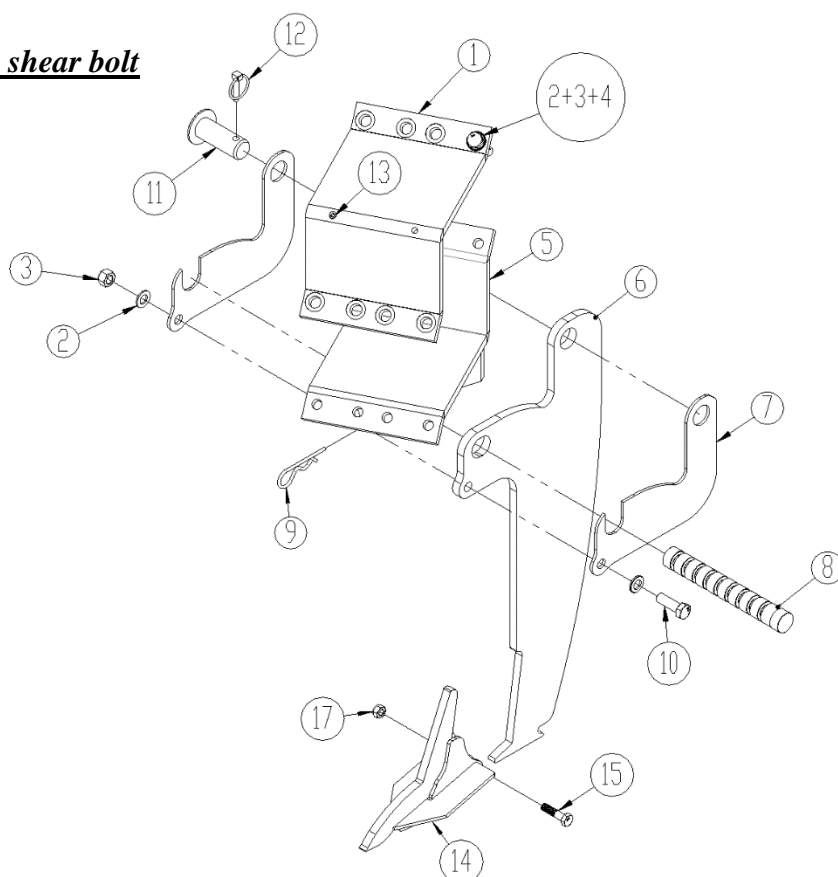




Pos.	Item no.	Designation	No
1	645001291	Upper part (Left)	1
1	645001318	Upper part (Right)	1
2	645001287	Lower part (Left)	1
2	645001317	Lower part (Right)	1
3	645001438	Arm with wheel hub (Left)	1
3	645001449	Arm with wheel hub (Right)	1
4	690200347	Cylinder 80x40x280mm	1
5	0395650	Wheel 300/65x12, cpl.	1
6	0264155	Locking nut M30	2
7	645001045	Pin, 40mm L=244 mm	1
8	0264090	Locking nut M16	8
9	0272290	Facet plate Ø16	16
10	690103136	Bolt M16x90mm, 10.9	8
11	645001078	Pin, 30mm L=130 mm	1
12	0264130	Locking nut M24	2
13	0272330	Facet plate Ø24	2
14	645001293	Pin, 30mm L=96 mm	1
15	0272350	Facet plate Ø30	1
16	1240865	Arm with wheel hub (Left)	1
	1240820	Arm with wheel hub (Right)	1
17	1240866	Lower part (Left)	1
	1240807	Lower part (Right)	1
18	7345084	Cylinder 80x40x280mm	1
19	1240863	Pin Ø30 L=244 mm	1
20	645000046	Clamping plate	1

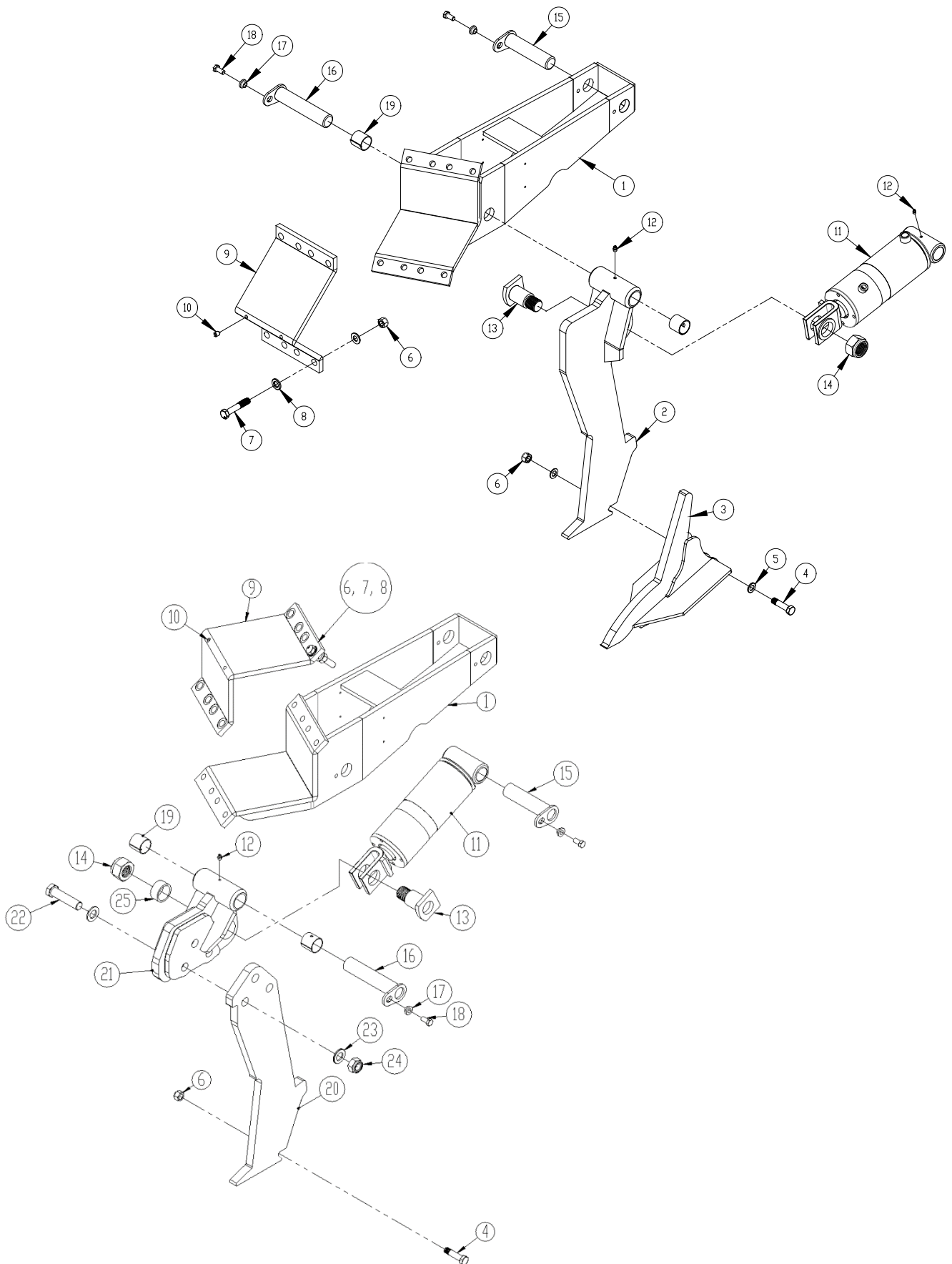
Tine w/Quick-Push shear bolt


Pos.	Item no.	Designation	Number per leg
1	645000062	Tine f/Quick-Push	1
	645000061	Tine f/Quick-Push (+100 mm)	1
	1240425	Tine f/Quick-Push w/ 1 hardmetalplate	1
	1241163	Tine f/Quick-Push w/ 2 hardmetalplate	1
2	645000043	Points w/120 mm wing shares	1
	645000044	Points w/200 mm wing shares	1
	645000044T	Points w/200 mm wing shares w/hardmetalplate	1
	645000063	Points w/350 mm wing shares	1
3	0235852	Steel bolt M16x65 8.8	1
5	0264090	Self-locking nut M16	9
6	645000328	Clamping plate for tine bracket	1
7	645000055	Tine bracket (left)	1
7	645000051	Tine bracket (right+centre)	1
8	0272900	Facet plate Ø16 (hardened)	16
9	0238850	Steel bolt M16x90 10,9	8
10	645000059	Shear bolt Ø35 (chrome)	1
11	69435070F	Pin Ø35 L=71	1
12	0378600	Ring pin Ø10	1
13	0377600	R-clip 6 mm electroplated	1
14	0227523	Pivot screw M12x20 DIN916	2

Easy Draft tine w/Quick-Push shear bolt


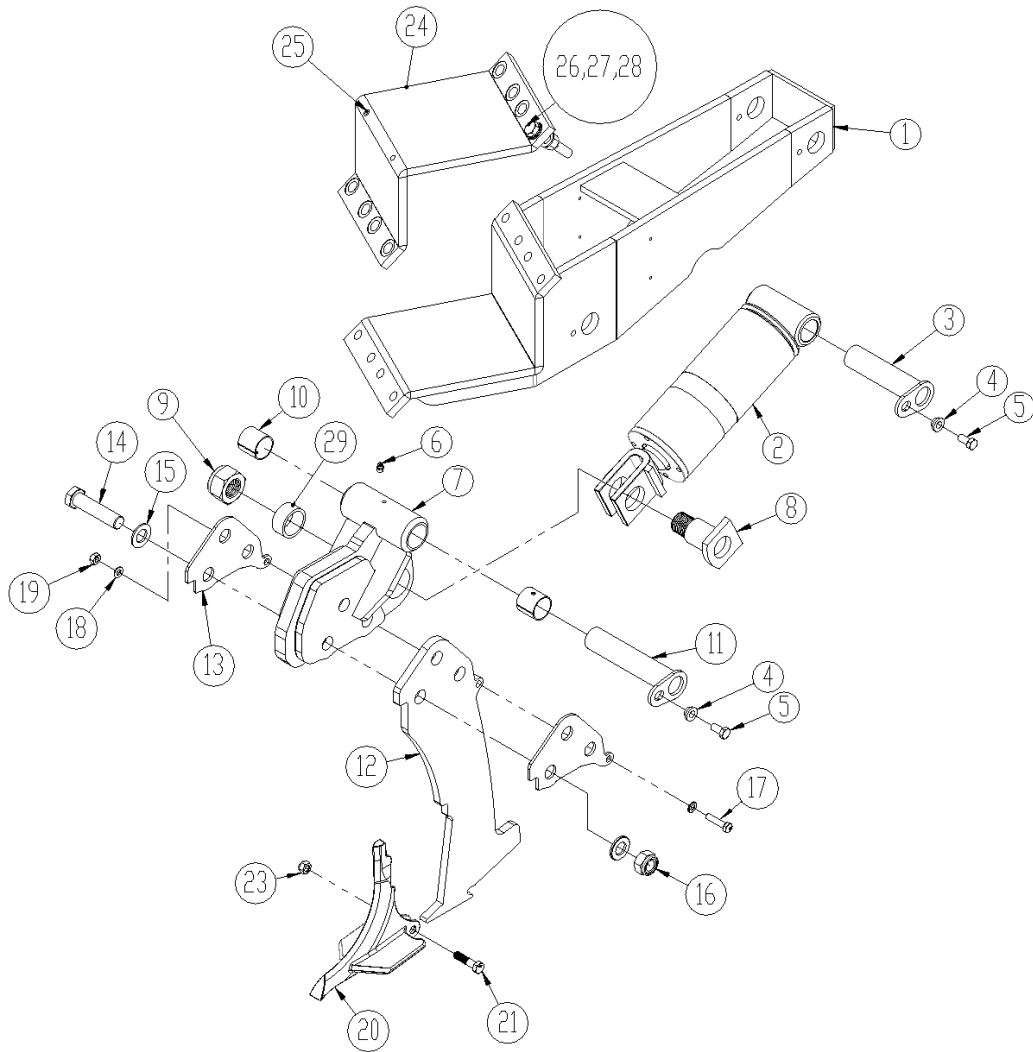
Pos.	Item no.	Designation	No. per leg
1	645000328	Clamping plate for tine bracket	1
2	0272900	Facet plate Ø16	16
3	0264090	Self-locking nut M16	8
4	0238850	Bolt M16x90 10.9	8
5	645000055	Tine bracket (left)	1
	645000051	Tine bracket (right+center)	1
6	645001447	Tine f/Quick-Push, Easy Draft	1
	1241157	Tine f/Quick-Push, Easy Draft (+ 100mm)	
7	645001448	Shims	2
8	645000925	Shear bolt ø35 (chrome black)	1
9	0377600	R-clip 6 mm	1
10	690103127	Bolt M16x50	1
11	69435070F	Pin Ø35 L=71	1
12	0378600	Ring pin Ø11	1
13	0227523	Pivot screw M12x20 DIN916	2
14	645000056	Points w/hardmetal (center)120mm	1
	645000056T	Points w/hardmetal (center/wing)120mm	1
	645000054	Points w/hardmetal (center) 200mm	1
	645000054T	Points w/hardmetal (center/wing) 200mm	1
15	0235372	Bolt M12x50	1
17	0264070	Self-locking nut M12	1

Tine with hydraulic automatic release system

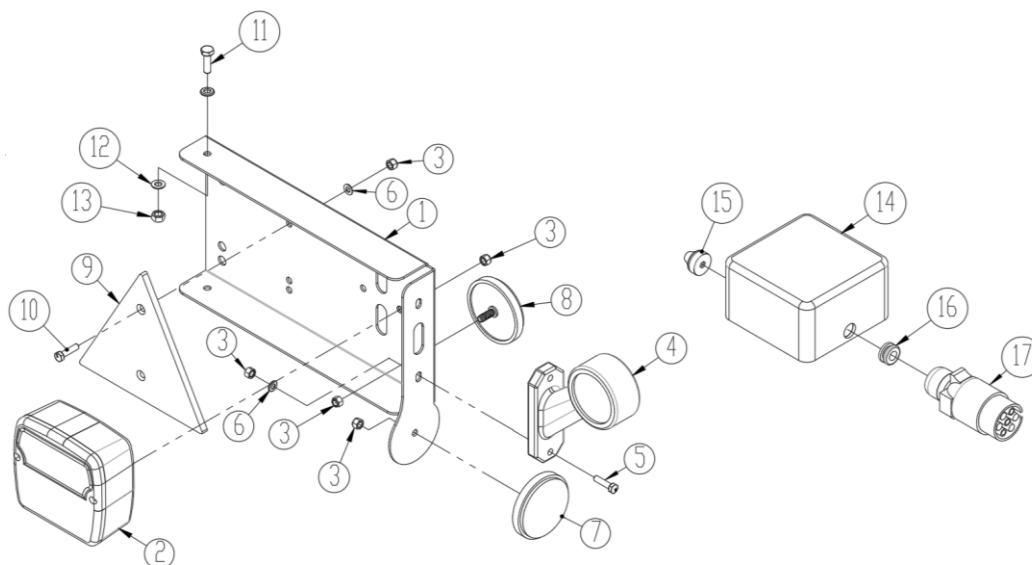


Pos.	Item no.	Designation	No. per leg
1	645000124	Tine bracket for hydr. automatic release system (L)	1
1	645000072	Tine bracket for hydr. automatic release system (R + C)	1
2	645000086	Tine for hydraulic automatic release system	1
	645001100	Tine for hydraulic automatic release system w/ 1 hardmetalplate	1
	1240001	Tine for hydraulic automatic release system w/ 2 hardmetalplate	1
	645000557	Tine for hydraulic automatic release system (+100mm)	
3	645000043	Points w/120 mm wing shares	1
	645000044	Points w/200 mm wing shares	1
	645000044T	Points w/200 mm wing shares w/hardmetal	1
	645000063	Points w/350 mm wing shares	1
4	0235852	Bolt M16x65 8.8	1
6	0264090	Self-locking nut M16	9
7	0238850	Bolt M16x90 10,9	8
8	0272900	Facet plate Ø16 (hardened)	16
9	645000328	Clamping plate for tine bracket	1
10	0227523	Pivot screw M12x20 DIN916	2
11	0467402	Cylinder 110/50x165 with yoke (until 31/12 2018)	1
	0467405	Cylinder 110/50x165 with yoke (from 1/1 2019)	1
11a	690200313	Gasket set for 0467402	1
	0467470	Gasket set for 0467405	1
12	0432500	Lubricating nipple M8	2
13	645000500	Pin	1
14	0264190	Self-locking nut M36	1
15	69440165G	Pin Ø40 L=165	1
16	69440195G	Pin Ø40 L=195	1
17	630532600	Lock bush for pin head	2
18	0235330	Steel setscrew M12x25 8,8	2
19	0475100	Slide bush Ø40/44x40	2
20	645001518	Tine for hydraulic automatic release system	1
	1240727	Tine for hydraulic automatic release system w/ 1 hardmetalplate	1
	1240728	Tine for hydraulic automatic release system (+100mm)	1
21	645001515	Bracket for tine	1
22	0236410	Bolt M24x100 mm	3
23	0272330	Facet plate Ø24 mm	6
24	0264130	Self-locking nut M24	3
25	0475370	Slide bush Ø55/45 L=25	1

Easy Draft tine w/hydraulic automatic release system



Pos.	Item no.	Designation	No. per leg
1	645000072	Tine bracket for hydr. automatic release system (R + C)	1
	645000124	Tine bracket for hydr. automatic release system (L)	1
2	0467402	Cylinder 110/50x165 with yoke (until 31/12 2018)	1
	0467405	Cylinder 110/50x165 with yoke (from 1/1 2019)	1
2a	690200313	Gasket set for 0467402	1
	0467470	Gasket set for 0467405	1
3	69440165G	Pin Ø40 L=165	1
4	630532600	Lock bush for pin head	2
5	0235330	Bolt M12x25	2
6	0432500	Lubricating nipple M8	2
7	645001515	Bracket for tine	1
8	645000500	Pin M36	1
9	0264190	Nut M36	1
10	0475100	Slide bush Ø40/44 L=40	2
11	69440195G	Pin Ø40 L=195	1
12	645001457	Tine	1
13	645001456	Shims	2
14	0236410	Bolt M24x100 mm	3
15	0272330	Facet plate Ø24 mm	6
16	0264130	Self-locking nut M24	3
17	0235080	Bolt M10x45 mm	1
18	0272260	Facet plate Ø10 mm	2
19	0264060	Self-locking nut M10	1
20	645000056	Points w/hardmetal (center)120mm	1
	645000056T	Points w/hardmetal (center/wing)120mm	
	645000054	Points w/hardmetal (center) 200mm	
	645000054T	Points w/hardmetal (center/wing) 200mm	
21	0235372	Bolt M12x50	1
23	0264070	Self-locking nut M12	1
24	645000328	Clamping plate for tine bracket	1
25	0227523	Pivot screw M12x20	2
26	0238850	Bolt M16x90 10.9	4
27	0272900	Facet plate Ø16	8
28	0264090	Self-locking nut M16	4
29	0475370	Slide bush Ø55/45 L=25	1

**LED-Light**


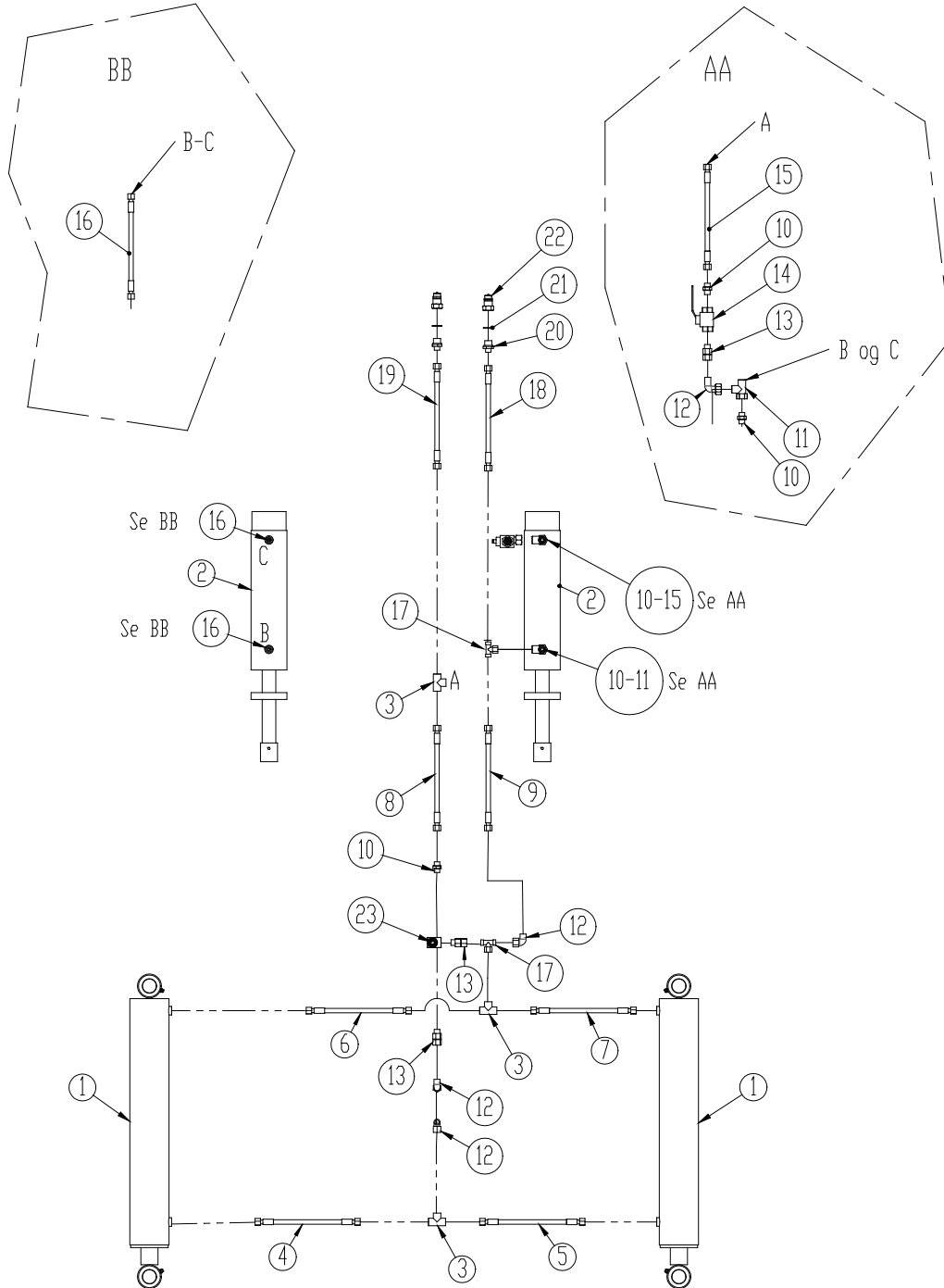
Pos.	Item no.	Designation	Number
1	7357505	Light bracket, left	1
	7357508	Light bracket, right	1
2	7357504	Rear light	2
3	0264030	Self-locking nut M5	
4	7357507	Marking lights (V)	1
	7357509	Marking lights (H)	1
5	0233860	Bolt M5x20	
6	0272230	Facet plate Ø5	
7	0656240	Reflex, yellow	2
8	0656250	Reflex, white	2
9	0521030	Reflex, red	2
10	0233860	Bolt M5x20	
11	0234330	Bolt M6x20	
12	0272240	Facet plate Ø6	
13	0264040	Self-locking nut M6	
14	0520492	Connecting box 105x105x60	1
15	7357545	Rutaseal nippel M20 8-12mm	2
16	7357546	Rubber bushing	1
17	0527140	Plug 7 poles DIN 72 577 – ISO 1724	1
	690160080	Cable 5x1mm <sup>2</sup>	





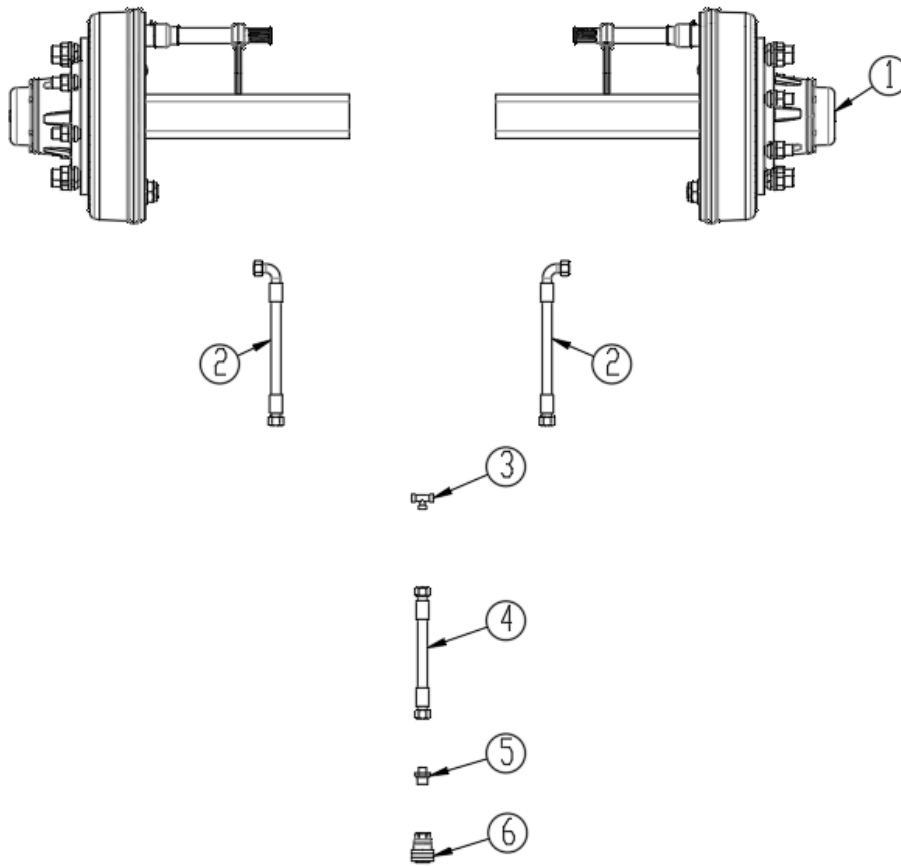
# Hydraulics

## Drawbar and wheel frame



Pos.	Item no.	Designation	Number
1		Look at pos 5 page 20	
2		Look at pos 3 page 16	
3	690203115	Fitting T Ø12	3
	690204507	Fitting T Ø15	3
4	0454280	Hose 1070mm 3/8" (to machine no. 35242)	1
	690201463	Hose 1070mm 1/2" (from machine no. 35243)	1
5	0454315	Hose 1140mm 3/8" (to machine no. 35242)	1
	690201464	Hose 1140mm 1/2" (from machine no. 35243)	1
6	0454216	Hose 790mm 3/8" (to machine no. 35242)	1
	690201461	Hose 790mm 1/2" (from machine no. 35243)	1
7	0454235	Hose 870mm 3/8" (to machine no. 35242)	1
	690201462	Hose 870mm 1/2" (from machine no. 35243)	1
8	0454612	Hose 2180mm 3/8" (to machine no. 35242)	1
	690201465	Hose 2180mm 1/2" (from machine no. 35243)	1
9	0454675	Hose 2500mm 3/8" (to machine no. 35242)	1
	690201469	Hose 2500mm 1/2" (from machine no. 35243)	1
10	0446754	Fitting, straight Ø12 x 3/8" (to machine no. 35242)	4
	0446756	Fitting, straight Ø15 x 3/8" (from machine no.35243)	4
11	0446502	Fitting T 12mm (to machine no. 35242)	2
	0446500	Fitting T 15mm (from machine no.35243)	2
12	0446679	Fitting 90 angel 12mm (to machine no. 35242)	5
	0446680	Fitting 90 angel 15mm (from machine no.35243)	5
13	690203130	Fitting, straight 12mm (to machine no. 35242)	3
	690204510	Fitting, straight 15mm (from machine no.35243)	3
14	0442350	Ball valve 3/8"	1
15	0454172	Hose 500mm 3/8" (to machine no. 35242)	1
	690201423	Hose 500mm 1/2" (from machine no.35243)	1
16	0454164	Hose 400mm 3/8" (to machine no. 35242)	2
	690201414	Hose 400mm 1/2" (from machine no.35243)	2
17	690203125	Fitting T 12 (to machine no. 35242)	2
	690204505	Fitting T 15mm (from machine no.35243)	2
18	0454972	Hose 4610mm 3/8" (to machine no. 35242)	1
	690201468	Hose 4610mm 1/2" (from machine no.35243)	1
19	0454954	Hose 4060mm 3/8" (to machine no. 35242)	1
	690201467	Hose 4060mm 1/2" (from machine no.35243)	1
20	690203103	Fitting, straight Ø12x1/2" (to machine no. 35242)	2
	0446757	Fitting, straight Ø15x1/2" (from machine no.35243)	2
21	0449070	Bounded seal 1/2"	2
22	0444020	Quick coupling 1/2", male	2
23	690207104	Overpressure valve 3/8 "(Adjustable)	1

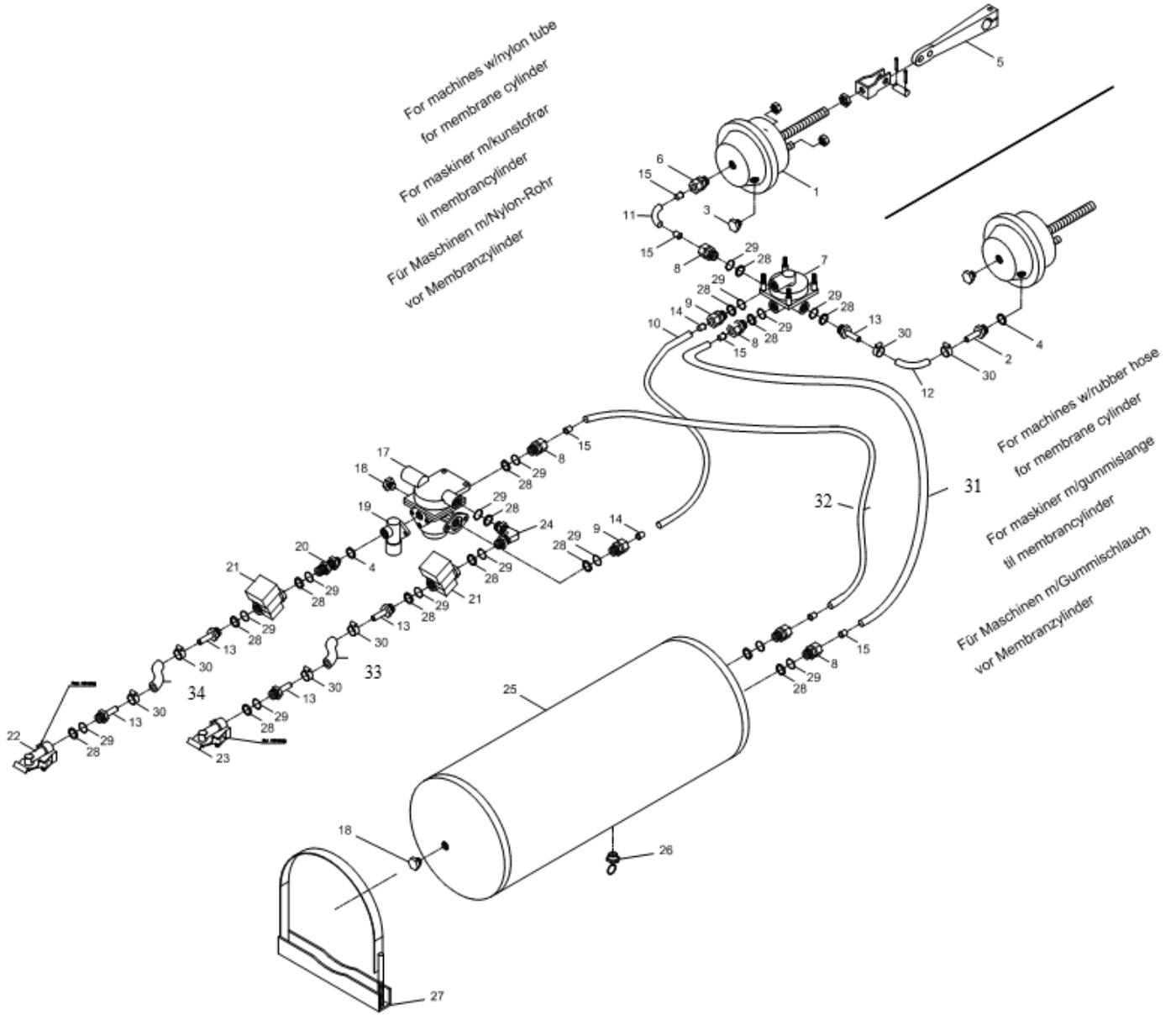
Hydraulic brake



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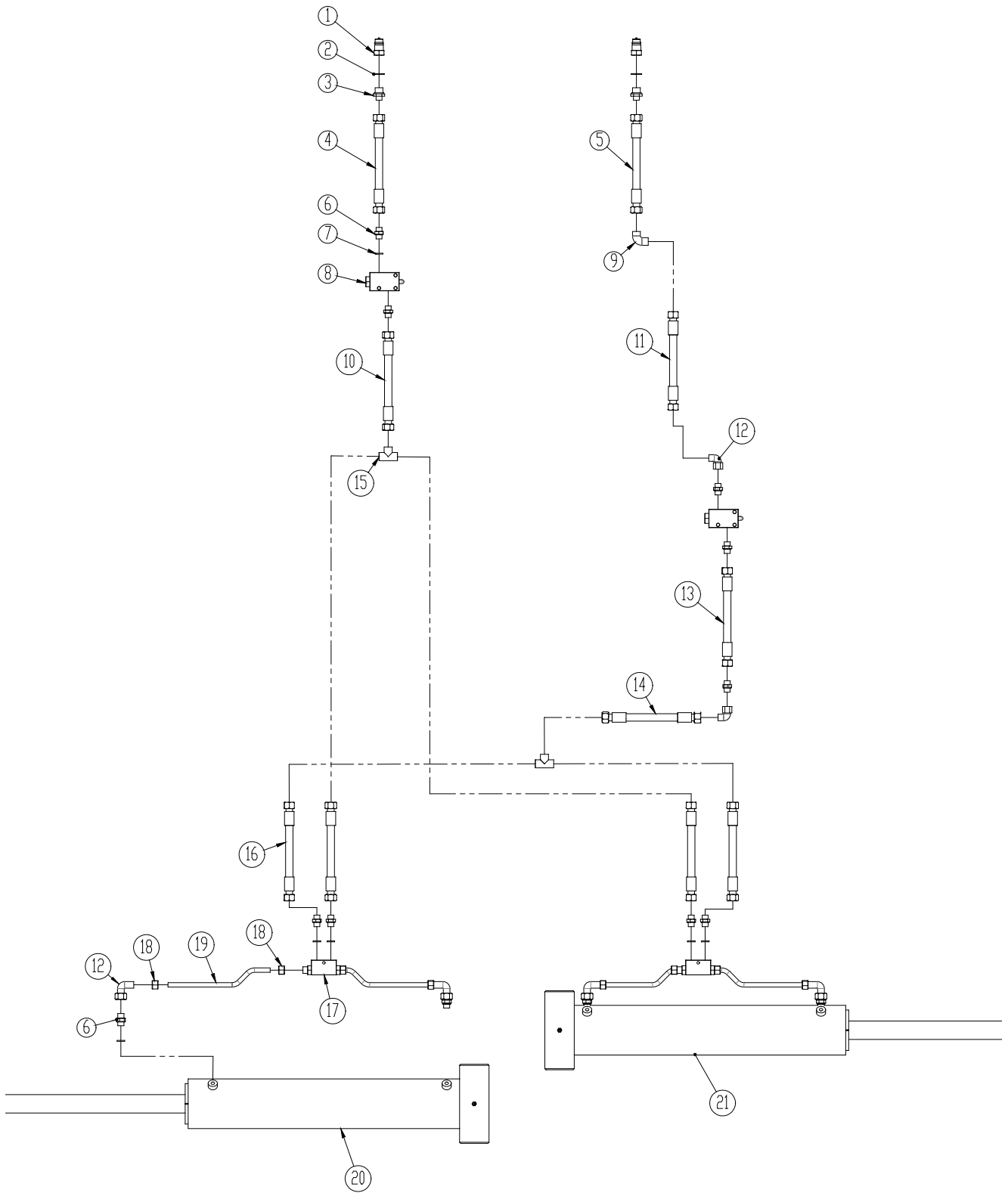
<b>Pos.</b>	<b>Item no.</b>	<b>Designation</b>	<b>4,0m</b>	<b>5,0m</b>	<b>6,0m</b>	<b>7,0m</b>
1	690141160	Hub with brake 6000 kg				
2	0454673	Hose 2500mm ¼"	2	2	2	2
3	690203015	Fitting T10	1	1	1	1
4	0455045	Hose 6600mm ¼"	1	1	1	1
5	690203003	Fitting, straight 10-1/2" BSP	1	1	1	1
6	690203013	Quick coupling, 1/2" BSP ISO567	1	1	1	1

Air brake



Pos.	Item no.	Designation	Number
1	690190001	Membrane cylinder 16"	2
2	690190070	Hose fitting M16x1,5 m/ Ø12 fitting	0
3	690190005	Test fitting, straight M16x1,5	2
4	690208102	Bonded seal PP 45-12	1
5	690190010	Mounting set, short U-bracket	2
6	690202930	Fitting, straight, lige M16x1,5, Ø15 hose	2
7	690190015	Relay valve M22x1,5	1
8	690202941	Fitting, straight M22x1,5, Ø15 hose	6
9	690202940	Fitting, straight M22x1,5, Ø10 hose	2
10	0454952	Hose ¼" 4300mm	1
11	0454480	Hose ½" 1500mm	1
12	0454524	Hose ½" 1600mm	1
13	690190073	Hose fitting M22x1,5, m/Ø12 fitting	0
14	690190090	Support bushing for tube Ø10x1,5mm	0
15	690190095	Support bushing for tube Ø15x1,5mm	0
17	690190025	Trailer air brake valve M22x1,5	1
18	690190026	Plug	2
19	690190035	Relief valve	1
20	690203420	Fitting, straight M16x1,5+M22x1,5	1
21	690190040	Filter M22x1,5	2
22	690190045	Hose coupling M22x1,5 (red)	1
23	690190046	Hose coupling M22x1,5 (yellow)	1
24	690190030	V-Fitting M22x1,5	1
25	690190050	Air receiver 40ltr	1
26	690190051	Drainage valve	1
27	690190052	Suspension for air receiver	2
28	690190060	Pressure ring M22x1,5	15
29	690190065	O-ring M22x1,5	15
30	690109305	Clamp 15-24 mm	0
31	0454175	Hose ½" 500mm	1
32	0454951	Hose ½" 4000mm	1
33	0454596	Hose ½" 2060mm	1
34	0454597	Hose ½" 2060mm	1

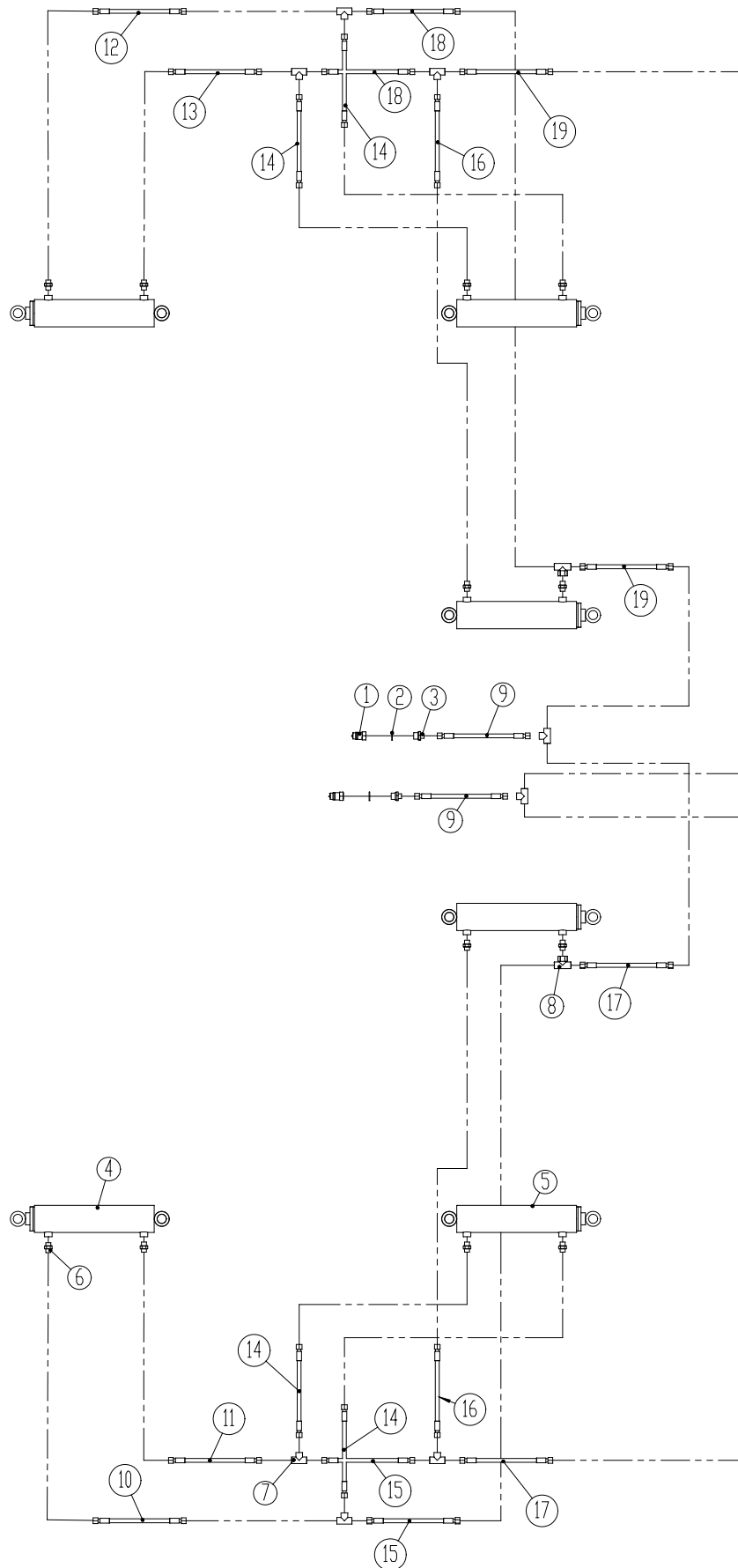
Wing





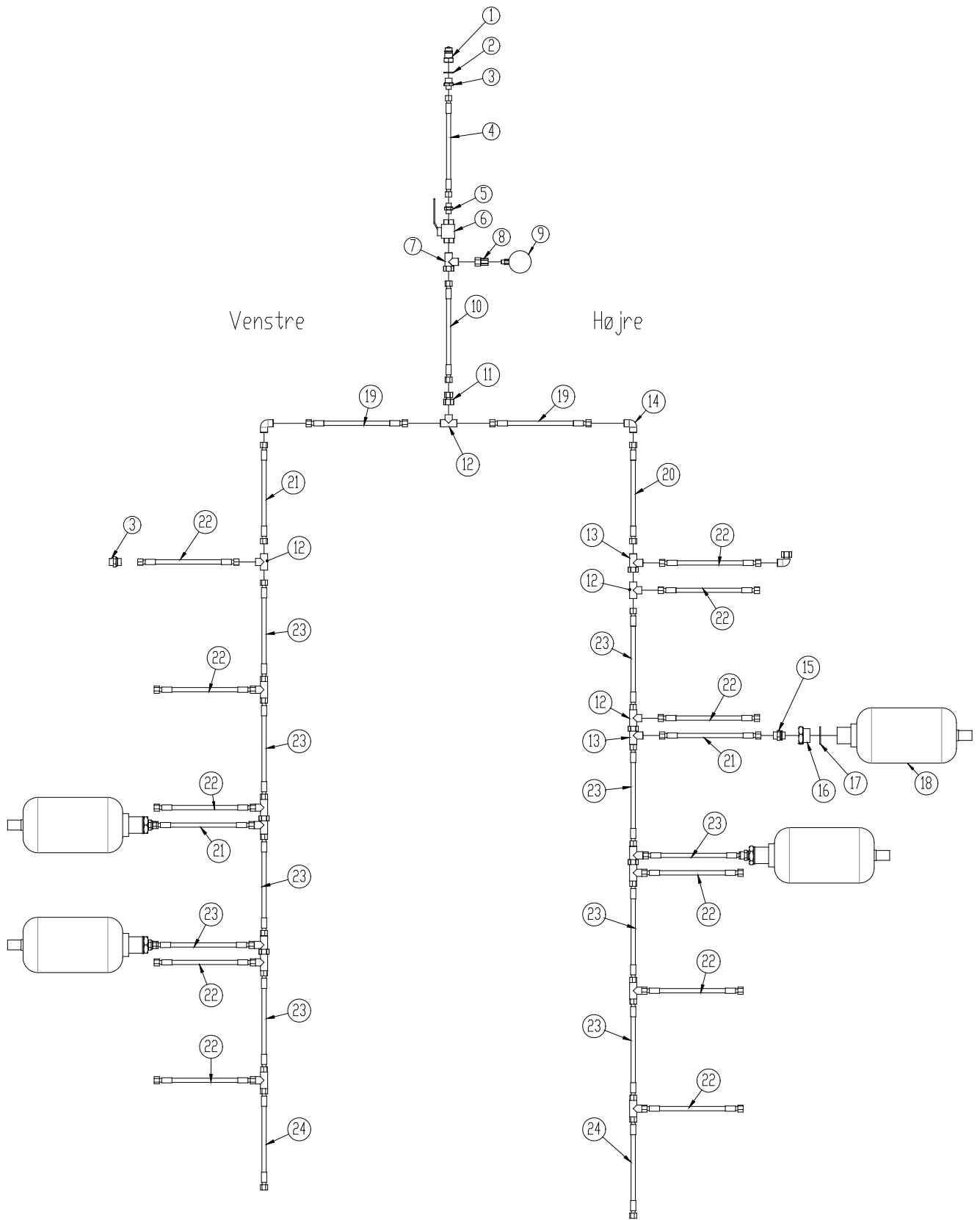
Pos.	Item no.	Designation	Number
1	0444020	Quick coupling ½", male	2
2	0449070	Bounded seal ½"	2
3	690203103	Fitting, straight Ø12x1/2"	2
4	0455155	Hose 7840mm 3/8"	1
5	0455080	Hose 7040mm 3/8"	1
6	0446754	Fitting, straight Ø12 x 3/8"	13
7	0449060	Bounded seal 3/8"	13
8	690207101	Valve FC10NC	2
9	0446200	V-fitting Ø12	1
10	0454570	Hose 1900mm 3/8"	1
11	0454186	Hose 630mm 3/8"	1
12	0446679	Fitting 90angle Ø12	6
13	0454182	Hose 600mm 3/8"	1
14	0454130	Hose 310mm 3/8"	1
15	690203115	Fitting T Ø12	2
16	0454240	Hose 900mm 3/8"	4
17	0442510	Check valve (pilot-controlled, double) ¾"	2
18	690203111	Union nut Ø12	8
19	7345052	Hydraulic tube Ø12 L=278	4
20		Look at pos 10 page 20	1
21		Look at pos 11 page 20	1

Support wheels and roller bar



Pos.	Item no.	Designation	4m	5m	6m	7m
1	0444020	Quick coupling ½", male	2	2	2	2
2	0449070	Bounded seal ½"	2	2	2	2
3	690203103	Fitting, straight Ø12x1/2"	2	2	2	2
4		Look at pos 4 page 32				
		Look at pos 18 page 32				
5		Look at pos 14 page 22				
6	0446754	Fitting, straight Ø12 x 3/8"	12	12	12	12
7	690203115	Fitting T Ø12	8	8	8	8
8	690203125	Fitting T Ø12 with union nut	2	2	2	2
9	0455115	Hose 7540mm 3/8"	2	2	2	2
10	0454836	Hose 2950mm 3/8"	1	1	1	1
11	0454715	Hose 2610mm 3/8"	1	1	1	1
12	0454725	Hose 2670mm 3/8"	1	1	1	1
13	0454655	Hose 2390mm 3/8"	1	1	1	1
14	0454181	Hose 600mm 3/8"	4	4	4	4
15		Hose xxxmm 3/8"	2			
	0454340	Hose 1250mm 3/8"		2		
	0454549	Hose 1700mm 3/8"			2	
	0454621	Hose 2250mm 3/8"				2
16	0454123	Hose 280mm 3/8"	2	2	2	2
17	0454425	Hose 1380mm 3/8"	2	2	2	2
18		Hose xxxmm 3/8"	2			
	0454320	Hose 1160mm 3/8"		2		
	0454497	Hose 1580mm 3/8"			2	
	0454611	Hose 2160mm 3/8"				2
19	0454497	Hose 1580mm 3/8"	2	2	2	2

Hydraulic automatic release system



Pos.	Item no.	Designation	4m	5m	6m	7m
1	0444020	Quick coupling ½", male	1	1	1	1
2	0449070	Bounded seal ½"	1	1	1	1
3	690203103	Fitting, straight Ø12 x 1/2"	1	1	1	1
4	0454975	Hose 4550mm 3/8" st/90°	1	1	1	1
5	0446754	Fitting, straight Ø12 x 3/8"	1	1	1	1
6	0442350	Ball valve 3/8"	1	1	1	1
7	690203314	Fitting T 3/8" /ø12 /ø12	1	1	1	1
8	690206825	Pressure gauge fitting Ø12 / 1/4"	1	1	1	1
9	0442051	Pressure gauge 400 bar	1	1	1	1
10	0454247	Hose 1000mm 3/8" st/90°	1	1	1	1
11	0447701	Fitting reduction nut Ø15/Ø12	1	1	1	1
12	690204507	Fitting T Ø15	7	9	11	13
13	0446500	Fitting T15L	5	5	5	5
14	0446240	Fitting 90° Ø15	2	2	2	2
15	0446757	Fitting, straight 15mm x 1/2"	4	4	4	4
16	690204501	Fitting straight 1/2" x 1 1/4" (to machine no. 37567)	4	4	4	4
	0446720	Fitting straight M22 x 1,5 x 3/4" (from machine no. 37568)				
17	0449110	Bonded seals Ø1 1/4"	4	4	4	4
18		Look at pos 41 page 22				
19	690201447	Hose 300mm 1/2" st/st	2	2	2	2
20	0454183	Hose 600mm 1/2" st/st	1	1	1	1
21	690201458	Hose 690mm 1/2" st/st	3	3	3	3
22	690201430	Hose 590mm 1/2" st/45°	7	9	11	13
23	690201423	Hose 500mm 1/2" st/st	2	4	6	8
24	690201448	Hose 1150 mm 1/2" st/45°	2	2	2	2

## Notes



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