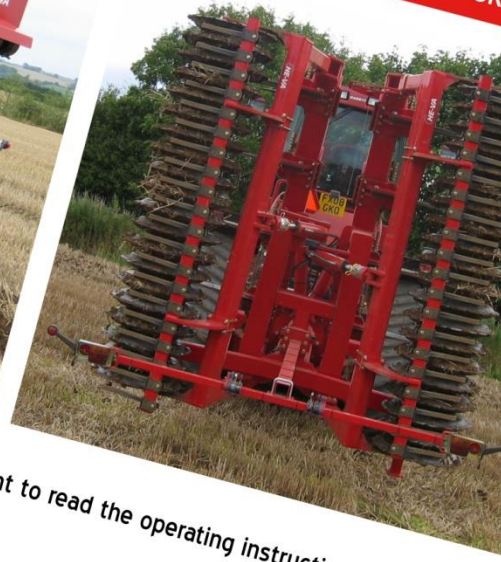


UK

HE-VA

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Operating Instructions
Spare Parts List
Declaration of Conformity



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

Sub-Tiller

Rigid: 2.5 - 3.0 - 3.5 - 4.0 m Hydraulic: 4.0 - 5.0 m



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EC DECLARATION OF CONFORMITY

in accordance with the EU Machinery Directive 2006/42/EC
applicable as from December 29th 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 2.5m – 3.0m – 3.5m – 4.0m (rigid)
Sub-Tiller 4.0m – 5.0m (hydraulic)

Nykøbing 01.06.2010

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

Villy Christiansen

The undersigned is furthermore authorised 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 is ideal for all soil types and a V-profile roller is recommendable for moist and sticky soil types while a square tube roller is recommendable for lighter soil types. The Sub-Tiller can be mounted with HE-VA Multi-Seeder which opens up the possibility of till-seeding of rape or crops for green manure. The Sub-Tiller is mounted in the tractor's three-point suspension, and the hydraulic depth control via the packer roller is controlled by the hydraulic system of the tractor. 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

Model	Rigid models				Hydraulic models	
	2.5 m	3.0 m	3.5 m	4.0 m	4.0 m	5.0 m
Working width	2.5 m	3.0 m	3.5 m	4.0 m	4.0 m	5.0 m
Height folded					2.6 m	3.0 m
Power requirement HP	60-200	60-200	140-280	200-280	200-280	200-360
Requirement for number of double acting oil outlets	1	1	1	1	2	2
No. of tines	2-3pcs.	2-3-5pcs.	5-7 pcs.	7 pcs.	7 pcs.	7-9 pcs.
Weight:						
Square tube roller and Quick-Push shear bolt	985 kg	1230 kg	1480 kg	1560 kg	1910 kg	2240 kg
Square tube roller and hydraulic automatic release system	1090kg	1410 kg	1720 kg	1640 kg	1990 kg	2390 kg
V-profile roller and Quick-Push shear bolt	1500kg	1850 kg	2200 kg	2380 kg	2730 kg	3260 kg
V-profile roller and hydraulic automatic release system	1605kg	2025 kg	2440 kg	2620 kg	2970 kg	3690 kg
Synchronous roller and Quick-Push shear bolt	1205kg	1475 kg	1850 kg	1905 kg	2255 kg	2680 kg
Synchronous roller and hydr. automatic release system	1310kg	1650 kg	2090 kg	2145 kg	2495 kg	3110 kg

Sub-Tiller complies with DS/ISO 11001-1, three-point suspension.

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.

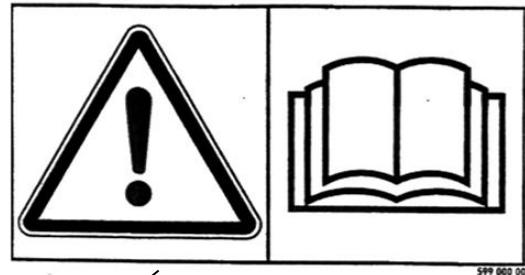
NB! The driving, controlling and braking properties are affected by the attached machine combination.

Labels on the machine

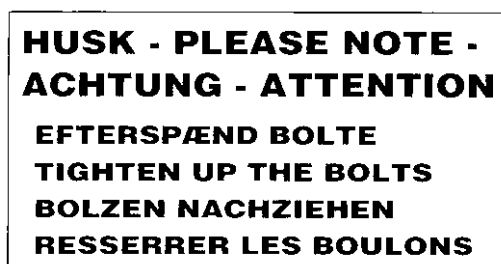
You will find several labels on your machine containing **safety** and practical instructions as regards the correct application of the machine. Please study the instructions and point out to the user the importance of the labels as well as the **safety instructions** in the Operating Instructions. Always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



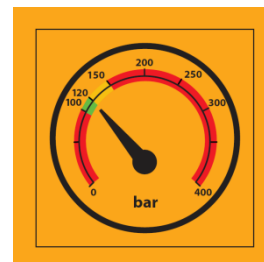
A



B



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

The machine requires 1 double acting outlet (rigid).

The machine requires 2 double acting outlets (hydraulic).

The hoses for depth adjustment are provided with **red** cable straps.

Attachment and uncoupling (rigid machines)

1. Under normal circumstances attach the tractor in the lowest lifting points of the machine both as regards the lifting arms and the top link.
2. When the machine is to be parked and uncoupled from the tractor, it is important, that the roller is placed in the lowest position, so that the machine is placed stably.
3. When uncoupling, relieve the tractor's oil outlet, and the machine's quick couplings can be uncoupled without pressure. The hydraulic cylinder which controls the roller is equipped with a pilot-controlled check valve which hermetically cuts off the oil for the hydraulic cylinder, meaning that it is locked in the chosen position regardless of the tightness of the quick couplings.


Attachment and uncoupling (hydr. machines)

1. Be aware that the machine is to be attached und uncoupled to the tractor in transport position.
2. The roller has to be placed in the lowest position otherwise problems might occur during the folding.

From transport to working position:

3. The machine is to be raised to max. transport height.
4. The depth adjusting cylinder is placed at the top.
5. Now unfold the wing sections.
6. Adjust the working depth.

From working to transport position:

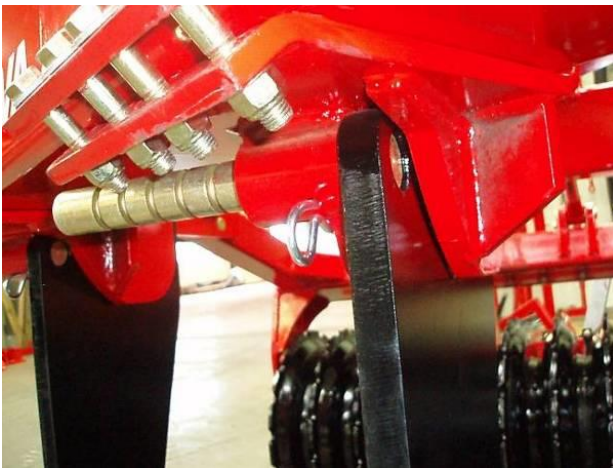
7. Raise the machine to max. transport height.
8. The depth adjusting cylinder (the roller) is placed at the top.
9. Now the wing sections are folded together into transport position.  Be sure that the locking claws lock the wing sections.

Settings and adjustment

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.

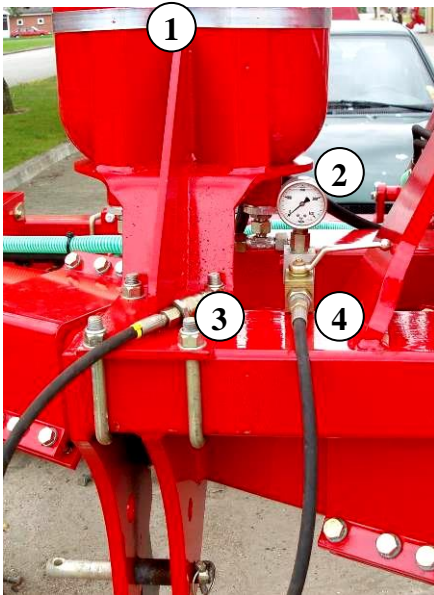


- 1 Pull out the R-clip (Pos. 1).
 - 2 Pull the tine back to normal working position (Pos. 2).
 - 3 Push the shear bolt (Pos. 3) **one** notch forward to a new position in the tine. Do not push the bolt totally through (it can be necessary to remove soil etc. from the hole in the tine).
- ⚠ Important: All activities under the machine are deprecated when 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.

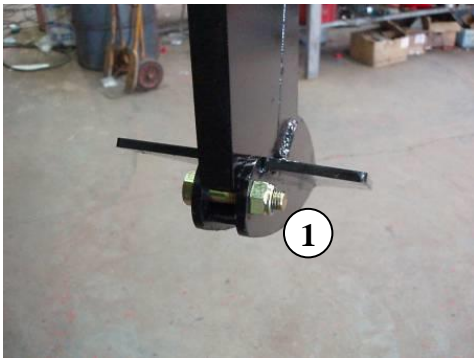
When a new shear bolt is mounted it is important that it is placed rightly. The end of 40 mm (Pos. 3) is to turn away from the tine.

Hydraulic automatic release system.



- 1 Before each season it has to be controlled, that the gas pressure in the accumulator (Pos.1) is 90 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 has to be **minimum 100 bar** and must not exceed 160 bar.
- 3 **IMPORTANT** – the hydraulic pressure is to be controlled continuously and must never be under 100 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 is swinging automatically to the rear if it meets an obstacle. In normal circumstances the tine will automatically return to the working position again 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 to the machine as the tine is returning to the working position with high speed and might throw with soil and stones.

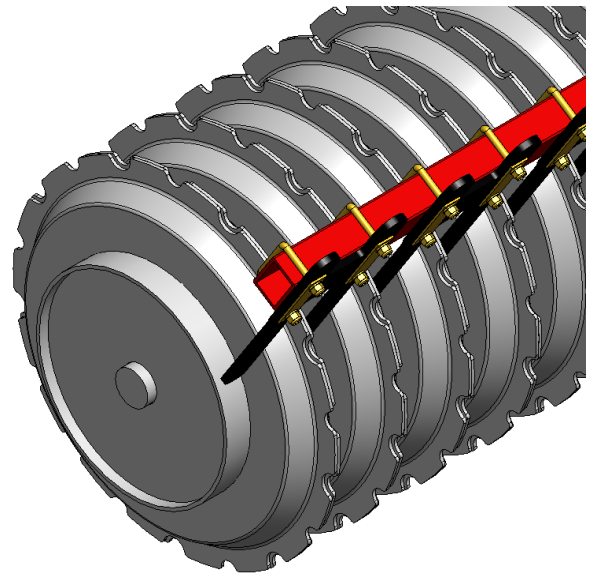
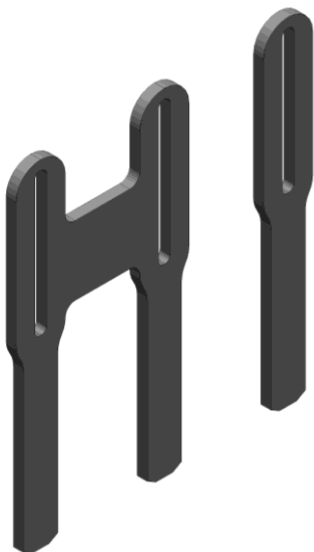
Replacement of wearing point



1. ⚠ Before working with the machine's wearing points, the machine is to be fastened. This can be performed by trestles under the main frame or by a support of the roller.
2. Dismount M16x65 mm bolt (Pos. 1) by means of 2 pcs. 24 mm spanners. ⚠ The wearing point might fall off, when the bolt is removed – take care of foot and leg injuries.
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.
4. Mount the new wearing point, item no. 645000044 (Pos. 2), by pushing the wearing point to the rear and then in its place.
5. Check the M16 x 65 mm bolt for eventual damages and replace it as required, item no. 690103190 + 690113008.
6. Mount the M16 x 65 mm bolt (Pos. 1), lubricate and tighten it with 25 Nm.

Scraper

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



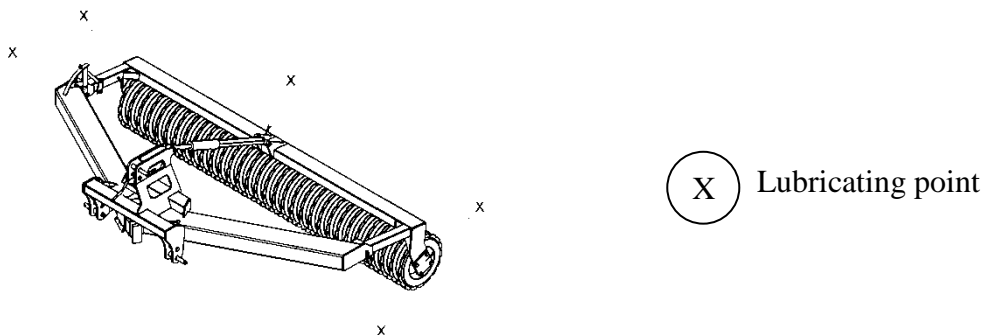
Maintenance

- 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 2.5 – 4.0 m Sub-Tiller (rigid) have five lubricating points and the 4.0 – 5.0 m Sub-Tiller (hydraulic) have 20 lubricating points - all Sub-Tillers must be lubricated after every 30 working hours as well as after the cleaning in order to press out any water and dirt. The lubricating points on the rigid machines are located where the bar is mounted on the frame as well as at ball bearings and cylinders. The lubrication points on the hydraulic machines are furthermore located where the wing sections are hinged on the middle section and at the locking mechanism of the wing sections on the middle section.



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

Attention!

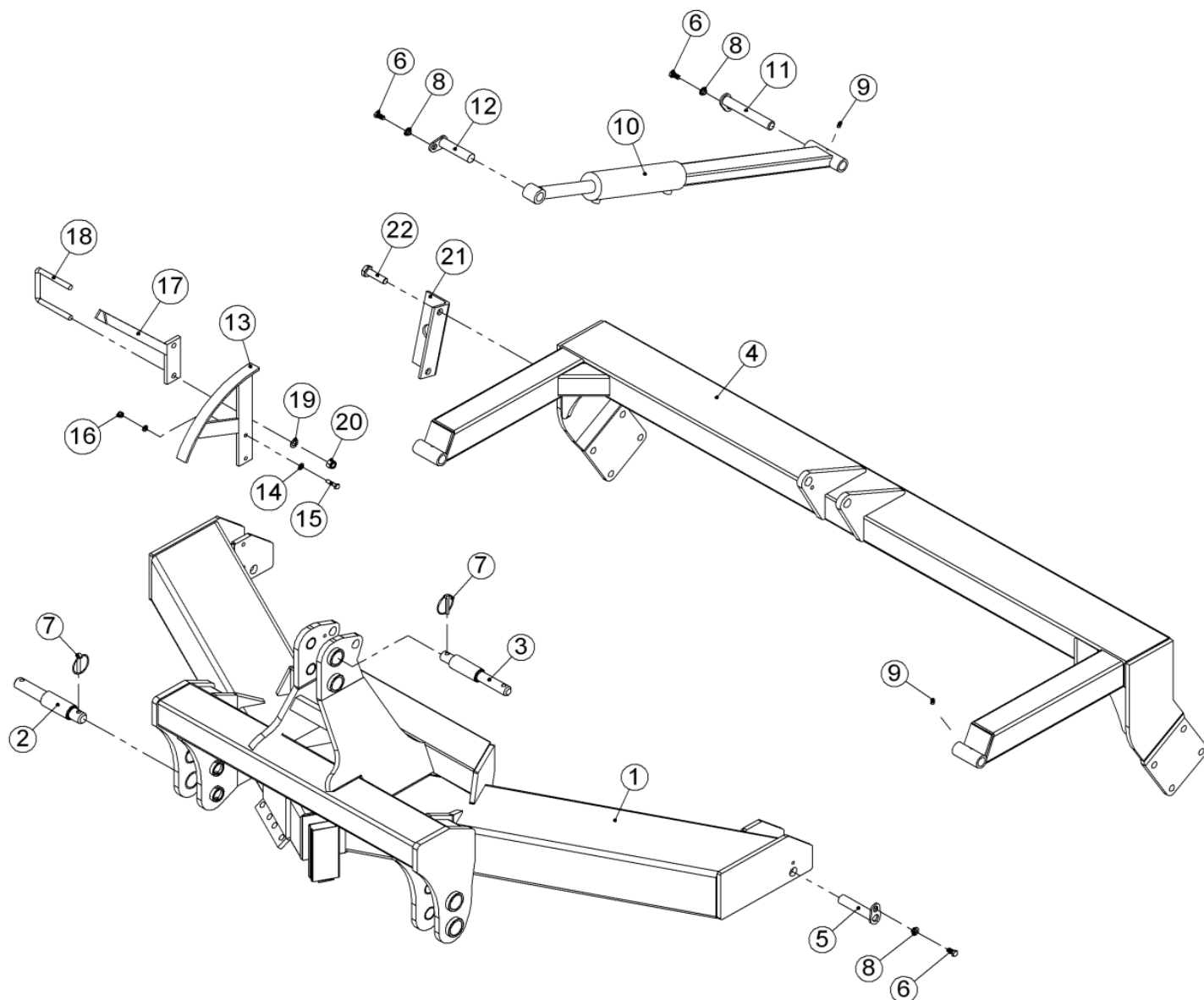
However, the double-sealed ball bearings in the roller should only be lubricated every 20 working hours and by 1-2 strokes so that the sealing rings are not pressed out.

Important!

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

Spare part list

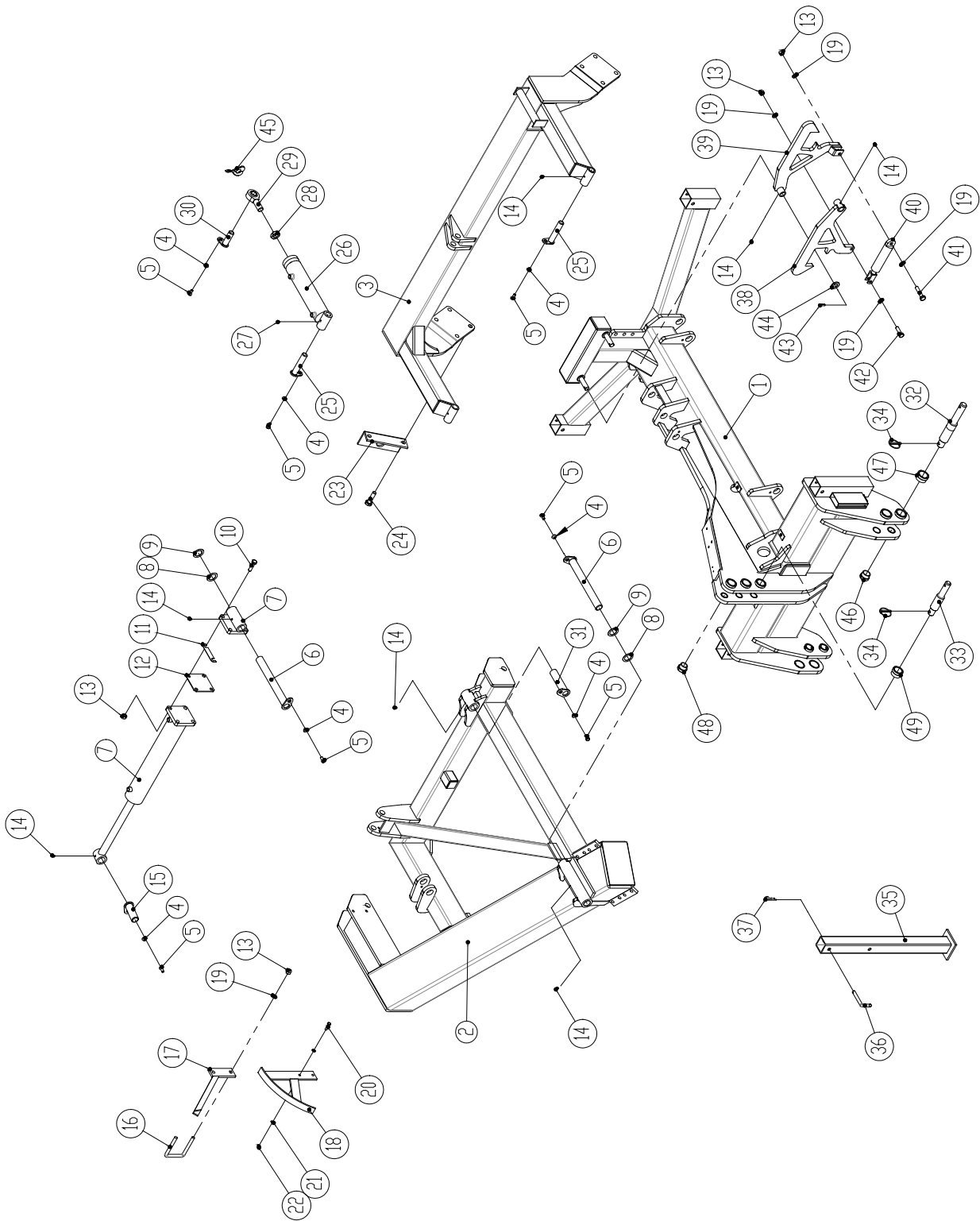
Frame 2,5 – 4,0 m (rigid)



Pos.	Item no.	Designation	2,5 m	3,0 m	3,5 m	4,0 m
1	645000149	Frame 2.5 m	1			
1	645000002	Frame 3.0 m		1		
1	645000090	Frame 3.5 m			1	
1	645000138	Frame 4.0 m				1
2	69537105C	Pin for lift arm Ø37/Ø50 L=105	2	2	2	2
3	69532105C	Pin for top link Ø32/Ø45 L=105	1	1	1	1

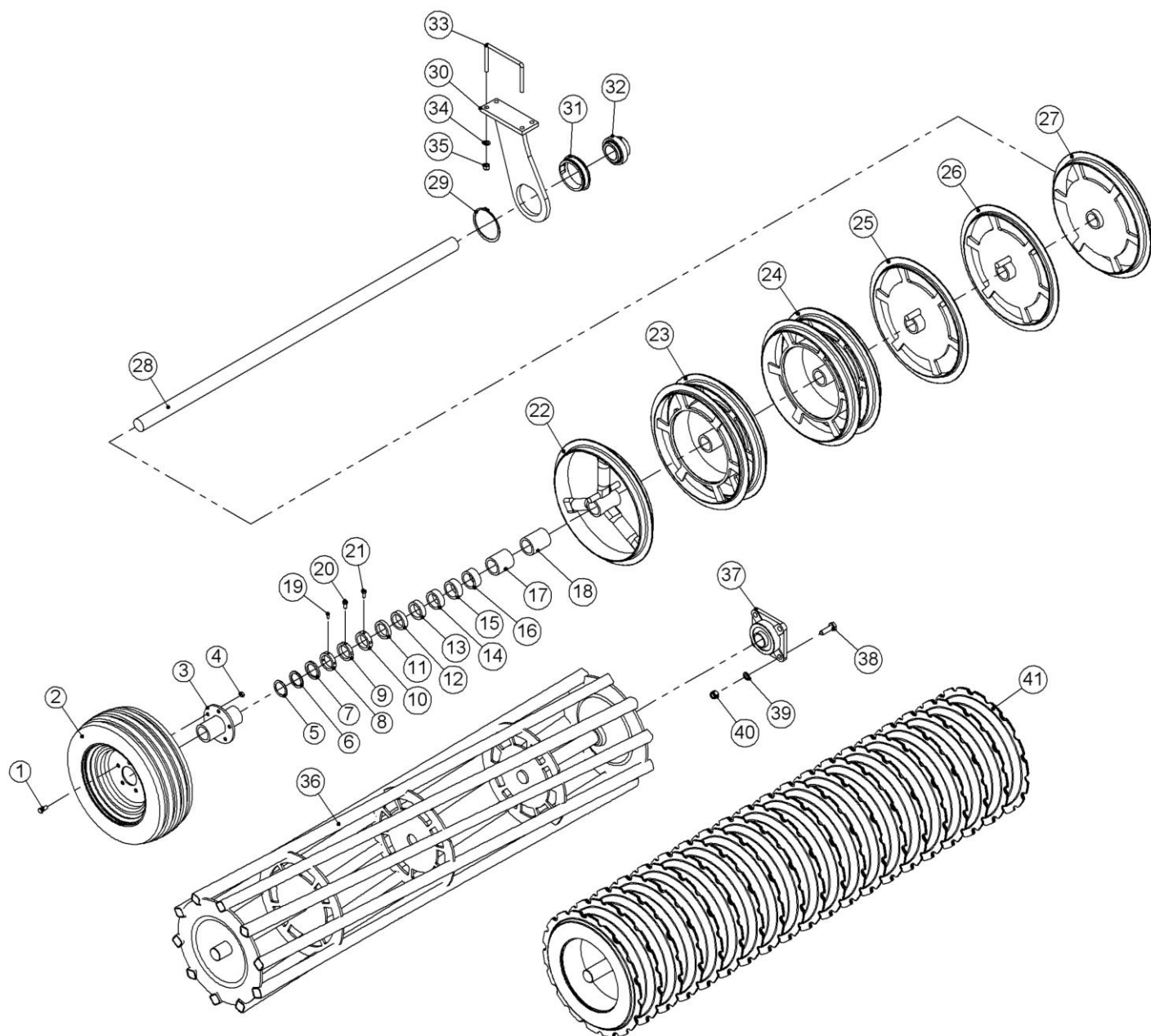
Pos.	Item no.	Designation	2,5 m	3,0 m	3,5 m	4,0 m
4	645000153	Roller bar 2.5 m	1			
4	645000027	Roller bar 3.0 m		1		
4	645000156	Roller bar 3.5 m			1	
4	645000157	Roller bar 4.0 m				1
5	69430145G	Pin Ø30 L=145	2	2	2	2
6	0235330	Steel setscrew M12x25 8.8	4	4	4	4
7	690134008	Ring pin Ø11,5	2	2	2	2
8	630532600	Lock bush for pin head	4	4	4	4
9	0432500	Lubricating nipple M8	3	3	3	3
10	645000036	Cylinder for depth adjustment	1	1	1	1
11	69430200G	Pin Ø30 L=200	1	1	1	1
12	69430125G	Pin Ø30 L=125	1	1	1	1
13	645000162	Scale for depth control	1	1	1	1
14	0272260	Facet plate Ø10	4	4	4	4
15	0235070	Steel setscrew M10x40 8.8	2	2	2	2
16	0264060	Self-locking nut M10	2	2	2	2
17	645000165	Pointer for depth control	1	1	1	1
18	0382160	U-bolt M16 100x100x100	1	1	1	1
19	0272290	Facet plate Ø16	2	2	2	2
20	0264090	Self-locking nut M16	2	2	2	2
21	645000404	Transport bracket	1	1	1	1
22	0236160	Steel bolt M20x75 8.8	2	2	2	2

Frame 4.0 – 5.0 m (hydraulic)



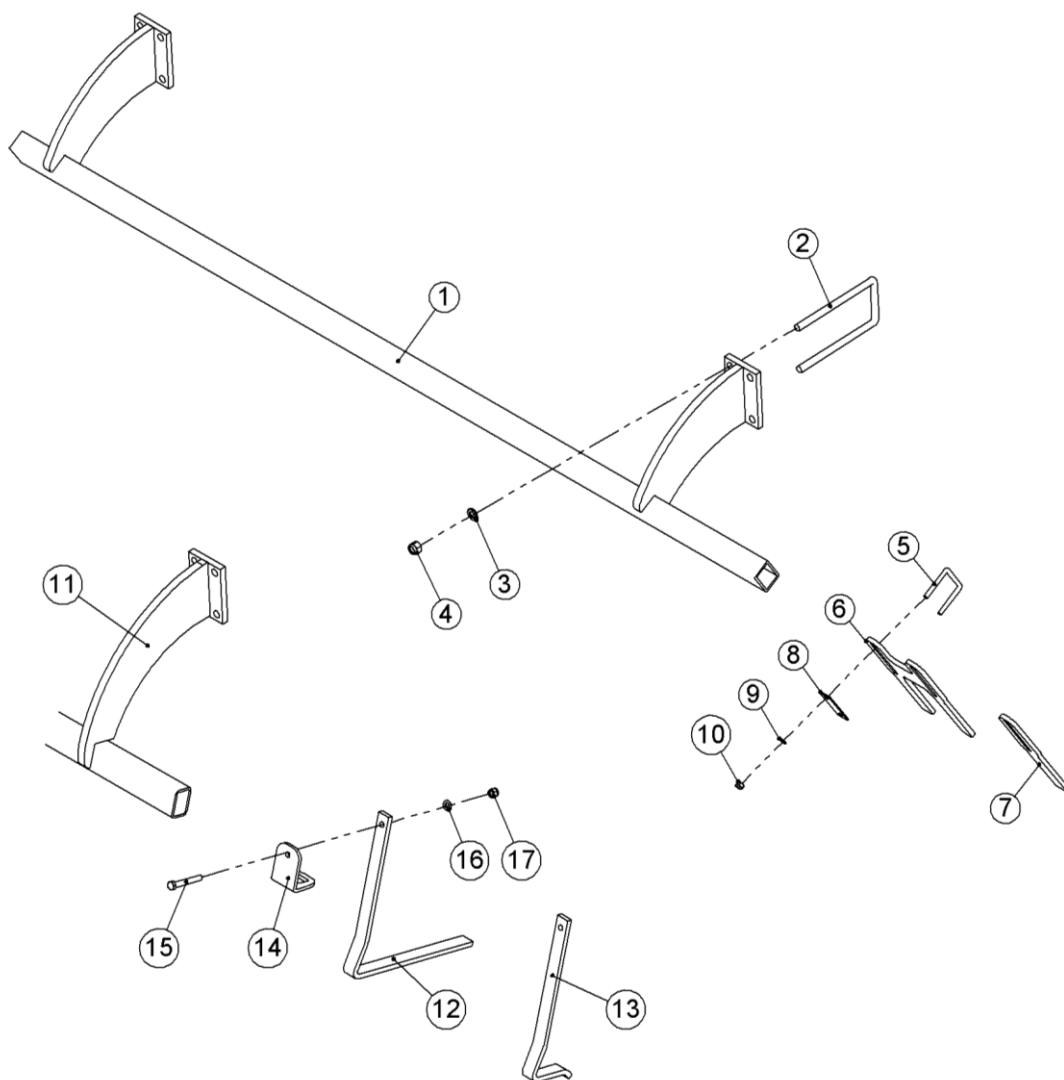
Pos.	Item no.	Designation	Number
1	645000197	Middle frame	1
	645000415	Middle frame (from machine number:26691)	1
2	645000201	4 m wing, left	1
	645000200	4 m wing, right	1
	645000250	5 m wing, left	1
	645000249	5 m wing, right	1
3	645000242	4 m roller bar, left	1
	645000241	4 m roller bar, right	1
	645000258	5 m roller bar, left	1
	645000257	5 m roller bar, right	1
4	630532600	Lock bush for pin head	16
5	0235330	Steel setscrew M12x25 8.8	16
6	69440367G	Pin Ø40x367	4
7	690200255	Cylinder 90/40x500	2
8	0272528	Shim Ø62x42x1	10
9	0272530	Shim Ø62x42x2	10
10	0235840	Steel bolt M16x60 8.8	8
11	645000397	Shim	
12	645000382	Shim	
13	0264090	Self-locking nut M16	8
14	0432500	Lubricating nipple M8	8
15	69440110G	Pin Ø40x110	2
16	0382160	U-bolt M16 100x100x100	1
17	645000165	Pointer for depth control	1
18	645000162	Scale for depth control	1
19	0272290	Facet plate Ø16	5
20	0235070	Steel setscrew M10x70 8.8	2
21	0272260	Facet plate Ø10	4
22	0264060	Self-locking nut M10	2
23	645000404	Transport bracket	1
24	0236160	Steel bolt M20x75 8.8	2
25	69430145G	Pin Ø30x145	2
26	690200117	Cylinder 80/40x255	2
27	0432100	Lubricating nipple M8	2
28	0261452	Counter nut M30x2	2
29	690140772	Rod end M30x2 (male thread)	2
30	69430090G	Pin Ø30x90	2
31	69440165G	Pin Ø40x165	2
32	69537125C	Pin for lift arm Ø37/Ø50x328	2
33	69532095C	Pin for top link Ø32/Ø44x95	1
34	690134008	Ring pin Ø11,5	3
35	645000273	Support stand	4
36	69516094A	Pin Ø16x94	4
37	0377400	R-clip Ø4	4
38	645000169	Locking claw, left	1
39	645000170	Locking claw, right	1

Pos.	Item no.	Designation	Number
40	690200170	Cylinder 40/25x80	1
41	0235880	Steel bolt M16x80 8.8	1
42	0235830	Steel bolt M16x55 8.8	1
43	0371690	Roll pin Ø8x40	2
44	0272340	Facet plate Ø27	4
45	690200664	Distance clip blue 6.2mm	2
	690200665	Distance clip red 9.4mm	2
	690200666	Distance clip yellow 18.8mm	2
	690200667	Distance clip black 31.6mm	4
	690200668	Distance clip silver 50.8mm	4
46	690134036	Bush for lift arm Ø37.5	4
47	690134038	Bush for lift arm Ø50.5	4
48	690134034	Bush for top link Ø32.5	3
49	690134037	Bush for top link Ø45.5	3

Rollers


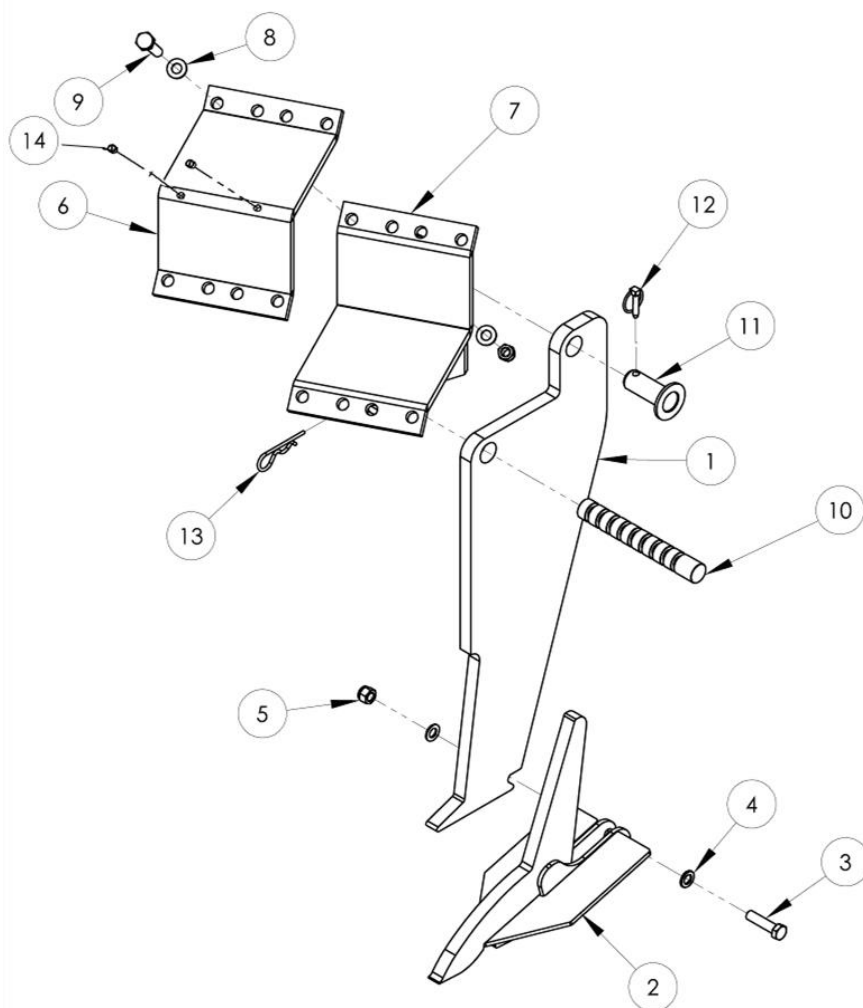
Pos.	Item no.	Designation	Number
1	0395270	Wheel bolt M14x1,5x35mm.	10-45
2	0395600	Complete wheel 200/60-14,5	2-9
3	645000436	Hub	2-9
4	0395290	Wheel nut M14x1,5	10-45
5	0272550	Shim Ø78,5x2mm	
6	0272560	Shim Ø78,5x5mm	
7	645000410	Shim Ø82,5x8mm	
8	645000412	Shim Ø82,5x16 for M8 pivot screw	
9	645000439	Shim Ø82,5x15 for M12 steel setscrew	
10	645000411	Shim Ø82,5x20 for M10 steel setscrew	

Pos.	Item no.	Designation	Number
11	645000442	Shim Ø82,5x15mm	
12	645000441	Shim Ø82,5x20mm	
13	645000432	Shim Ø82,5x23mm	
14	645000433	Shim Ø82,5x28mm	
15	645000434	Shim Ø82,5x31mm	
16	645000435	Shim Ø82,5x35mm	
17	645000430	Shim Ø82,5x92mm	
18	645000440	Shim Ø82,5x105mm	
19	0227521	Stopscrew M8x20mm	
20	0235330	Steel setscrew M12x25mm	
21	0235040	Steel setscrew M10x25mm	
22	1069111	T-profile ring with spoke	
23	1048100	Double T-profile ring, narrow + wide	
24	1048110	Double T-profile ring, wide + wide	
25	645000438	T-profile ring with 124mm hub	
26	645000431	T-profile ring with 92mm hub	
27	645000406	T-profile ring with 40mm hub	
28	678612435	2.5m rigid & 5.0m hydraulic, axle 2435mm	1-2
	678612935	3.0m rigid, axle 2935mm	1
	678613435	3.5m rigid, axle 3435mm	1
	678613935	4.0m rigid, axle 3935mm	1
	678611935	4.0m hydraulic, axle 1935mm	1
29	691370150	Seeger circlip ring Ø150 DIN 471	
30	630764006	Console for support bearing	
31	630764008	Bearing housing	
32	690140115	Ball bearing, Ø60 UC 312	
33	690110105	U-bolt M16x100x200	
34	0272290	Facet plate M16	
35	0264090	Self-locking nut M16	
36	1048210	2.5m rigid & 5.0m hydraulic, square tube roller Ø550	1-2
	1048240	3.0m rigid, square tube roller Ø550	1
	1048280	3.5m rigid, square tube roller Ø550	1
	1048330	4.0m rigid, square tube roller Ø550	1
	1048310	2.0m hydraulic, square tube roller Ø550	2
37	690140808	Bearing complete Ø60 UCF 312	2-4
38	0236140	Steel bolt M20x65mm.	8-16
39	0272310	Facet plate M20	8-16
40	0264110	Self-locking nut M20	8-16
41	630936300	2.5m rigid & 5.0m, V-profile roller Ø600	1-2
	630916300	3.0m rigid, V-profile roller Ø600	1
	630916350	3.5m rigid, V-profile roller Ø600	1
	630926300	4.0m rigid, V-profile roller Ø600	1
	630926301	4.0m hydraulic, V-profile roller Ø600	1

Scraper


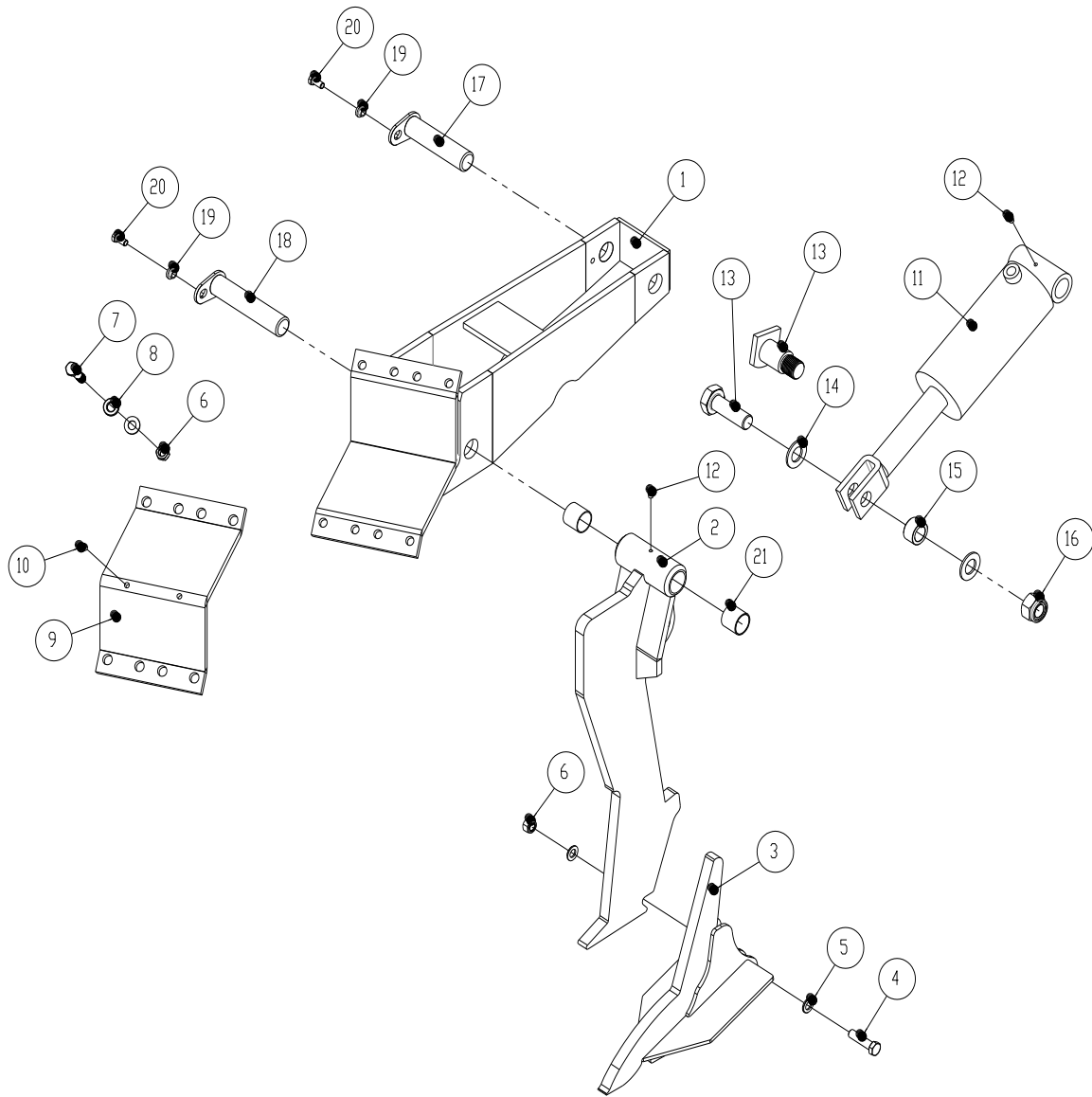
Pos.	Item no.	Designation	Rigid				Hydr.	
			2,5m	3,0m	3,5m	4,0m	4,0m	5,0m
1	645000287	Scraper bar	1					
1	630918555	Scraper bar		1				
1	630918150	Scraper bar			1			
1	630928555	Scraper bar (right)				1	1	
1	630938555	Scraper bar (right)						1
1	630928565	Scraper bar (left)				1	1	
1	630938565	Scraper bar (left)						1

Pos.	Item no.	Designation	2,5m	3,0m	3,5m	4,0m	4,0m	5,0m
2	690110106	U-bolt M16x200x100x200	4	4	4	8	8	8
3	0272290	Facet plate Ø16	8	8	8	16	16	16
4	0264090	Self-locking nut M16	8	8	8	16	16	16
5	690110025	U-bolt M10x50x70x50	19	23	27	31	31	39
6	630938506	Scraper double	9	11	13	15	15	19
7	630938505	Scraper single	1	1	1	1	1	1
8	630938507	Clamping plate	19	23	27	31	31	39
9	0272260	Facet plate Ø10	38	46	54	62	62	78
10	0264060	Self-locking nut M10	38	46	54	62	62	78
11	645000469	Scraper bar f/synchronous roller		1				
	645000467	Scraper bar f/synchronous roller			1			
	645000471	Scraper bar f/synchronous roller				1		
	645000473	Scraper bar f/synchronous roller					1	
	645000475	Scraper bar f/synchronous roller						1
12	630938523	Scraper tine – long model			17			
13	630938524	Scraper tine – short model			1			
14	630938522	Clamp 50x70 f/scraper			18			
15	0235450	Steel bot M12x90mm.			18			
16	0272270	Facet plate Ø12			18			
17	0264070	Self-locking nut M12			18			

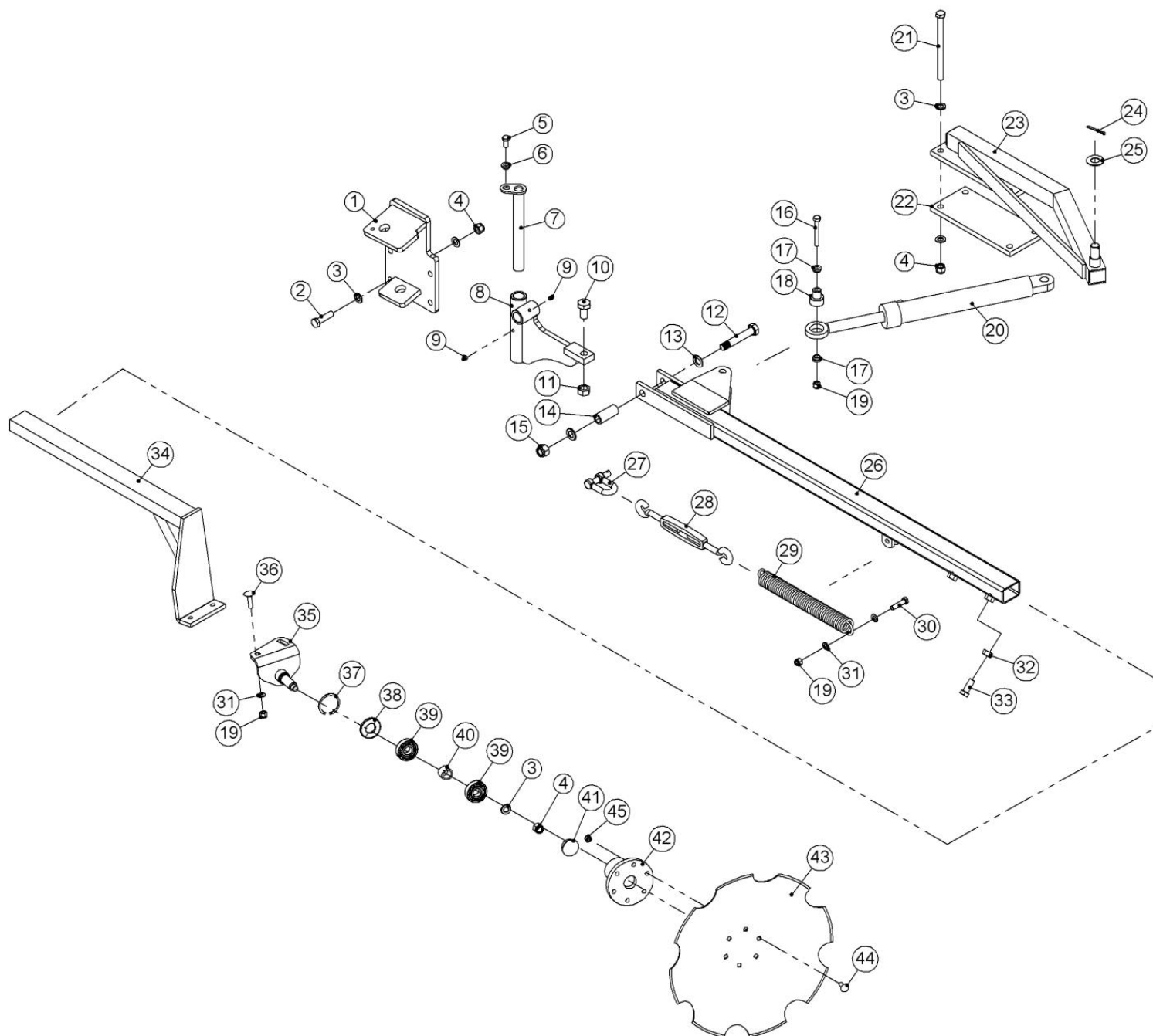
Tine with Quick-Push shear bolt


Pos.	Item no.	Designation	Number per leg
1	645000062	Tine for Quick-Push	1
2	645000044	Wearing point	1
3	0235850	Steel bolt M16x65 8.8	1
4	0272290	Facet plate Ø16	2
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	690117060	Facet plate Ø16 (hardened)	16
9	0238850	Steel bolt M16x90 10,9	8
10	645000059	Shear bolt Ø34	1
11	69435070F	Pin Ø35 L=71	1
12	690134004	Ring pin Ø10	1
13	0377600	R-clip 6 mm electroplated	1
14	0227523	Pivot screw M12x20 DIN916	2

Tine with hydraulic automatic release system



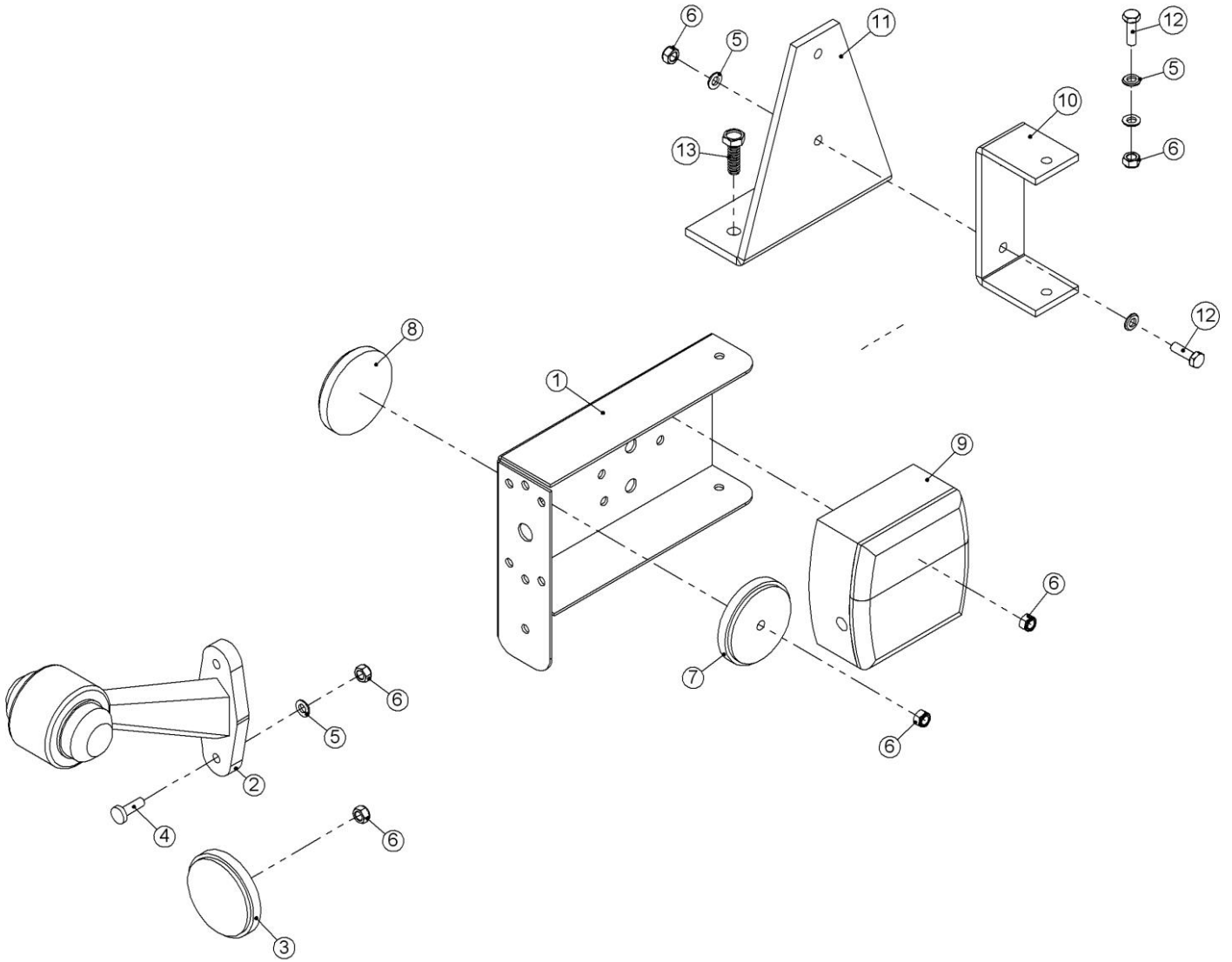
Pos.	Item no.	Designation	No. per leg
1	645000124	Tine bracket for hydr. automatic release system (left)	1
1	645000072	Tine bracket for hydr. automatic release system (r + c)	1
2	645000086	Tine for hydraulic automatic release system	1
3	645000044	Wearing point	1
4	0235850	Bolt M16x65 8.8	1
5	0272290	Facet plate Ø16	2
6	0264090	Self-locking nut M16	9
7	0238850	Bolt M16x90 10,9	8
8	690117060	Facet plate Ø16 (hardened)	16
9	645000328	Clamping plate for tine bracket	1
10	0227523	Pivot screw M12x20 DIN916	2
11	690200305	Cylinder 110/50x165 with yoke (until masnr. 27671)	1
11	0467400	Cylinder 110/50x165 with yoke (from masnr. 27710)	
11a	690200313	Gasket set for cylinder	1
12	0432500	Lubricating nipple M8	2
13	690103868	Steel bolt M30x95 10.9 (until masnr. 27671)	1
13	645000500	Pin (from masnr. 27710)	
14	0272350	Facet plate Ø30 (until masnr. 27671)	2
15	645000113	Bush for hydraulic tine (until masnr. 27671)	1
16	0264155	Self-locking nut M30 (until masnr. 27671)	1
16	0264190	Self-locking nut M36 (from masnr. 27710)	
17	69440165G	Pin Ø40 L=165	1
18	69440195G	Pin Ø40 L=195	1
19	630532600	Lock bush for pin head	2
20	0235330	Steel setscrew M12x25 8,8	2
21	690140715	Slide bush Ø40/44x40	2

Hydraulic marker


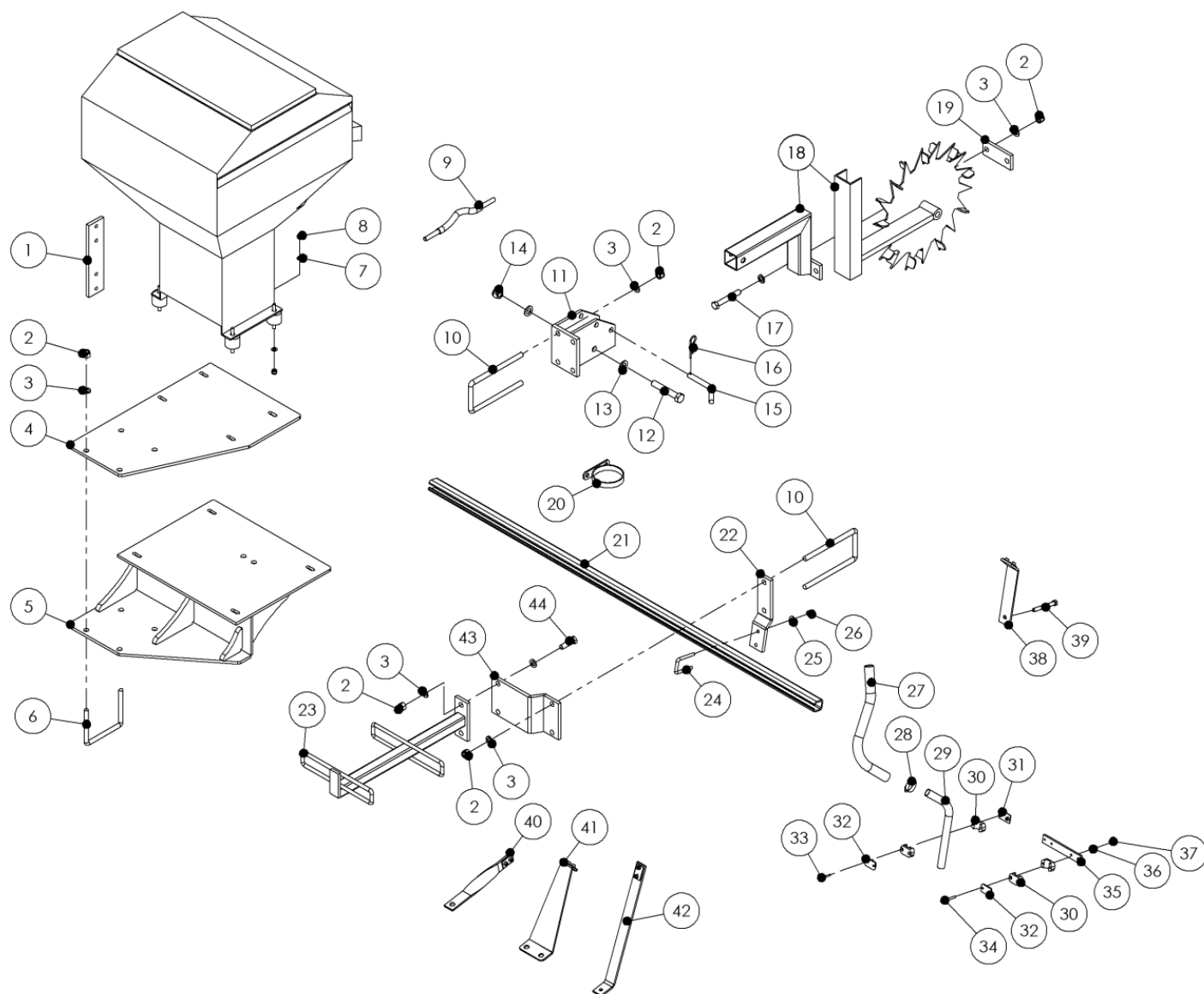
Pos.	Item no.	Designation	Number
1	645000320	Marker bearing, left	1
	645000321	Marker bearing, right	1
2	0235840	Steel bolt M16x60 8.8	8
3	0272290	Facet plate Ø16	34
4	0264090	Self-locking nut M16	34
5	0235330	Steel setscrew M12x25 8.8	2
6	630532600	Lock bush for pin head	2
7	69430275G	Pin Ø30x275	2

Pos.	Item no.	Designation	Number
8	1140043	Turning link, left	1
	1140044	Turning link, right	1
9	0432500	Lubricating nipple M8	4
10	0236090	Steel setscrew M20x40 8.8	2
11	0261410	Steel nut M20	2
12	0236210	Steel bolt M20x120 8.8	2
13	0272310	Facet plate Ø20	4
14	1140091	Distance bush	2
15	0264110	Self-locking nut M20	2
16	0235450	Steel bolt M12x90 8.8	2
17	1140358	Bush	4
18	1140094	Bush	2
19	0264070	Self-locking nut M12	6
20	690200153	Cylinder 50/30x300	2
21	0236010	Steel bolt M16x220 8.8	8
22	645000308	Clamping plate	2
23	645000309	Cylinder bearing, left	1
	645000316	Cylinder bearing, right	1
24	0373350	Split pin Ø5x50	2
25	0271650	Washer Ø24	2
26	645000322	Marker outer tube, left	1
	645000323	Marker outer tube, right	1
27	690304500	Shackle 10 mm	2
28	0433490	Stay tightener M16	2
29	0431800	Extension spring	2
30	0235380	Steel bolt M12x50 8.8	2
31	0272270	Facet plate Ø12	8
32	0261100	Steel nut M12	2
33	0235790	Steel setscrew M16x40 8.8	2
34	645000315	Marker inner tube, left	1
	645000314	Marker inner tube, right	1
35	1140127	Bracket plate, left	1
	1140128	Bracket plate, right	1
36	0248670	Bolt (carrier bolt) M12x45	4
37	0379220	Seeger circlip ring I 62	2
38	0483401	Sealing lamella Z 206	2
39	0472960	Ball bearing 6305 Z	4
40	1066840	Distance bush	2
41	0489380	Plastic plug	2
42	1066810	Hub	2
43	0428051	Disc Ø510	2
44	0248421	Bolt (carrier bolt) M10x30	12
45	0264060	Self-locking nut M10	12

Light mounting



Pos.	Item no.	Designation	Number
1	1043480	Bracket for light, left	1
	1043510	Bracket for light, right	1
2	0527040	Marking lights	2
3	0656240	Reflex, yellow	2
4	0243000	Machine screw M6x20	4
5	0272240	Facet plate Ø6	16
6	0264040	Self-locking nut M6	16
7	0656260	Reflex, red	2
8	0656250	Reflex, white	2
9	0527000	Rear light, left	1
	0527010	Rear light, right	1
10	30930110	Bracket	2
11	30910110	Bracket	2
12	0234330	Steel setscrew M6x20	6
13	0230825	Screw Tapetite M8x25	4

Multi-Seeder mounting (rigid)


Pos.	Item no.	Designation	Number
1	645000332	Bracket for hydr. fan	1
2	0264090	Self-locking nut M16	16
3	0272290	Facet plate Ø16	18
4	645000065	Seed hopper plate for 200 l	1
5	645000331	Seed hopper plate for 410 l	1
6	0382800	U-bolt M16x100x150x100	2
7	0272260	Facet plate Ø10	8
8	0264060	Self-locking nut M10	4
9	0539102	2.5 – 3.0 m flexible driving cable 3.50 m	1
	0539117	3.5 – 4.0 m. flexible driving cable 3.75 m	1
10	690110106	U-bolt M16x200x100x200	5
11	645000099	Suspension for driving wheel	1
12	0236210	Steel bolt M20x120 8.8	1
13	0272310	Facet plate Ø20	2
14	0264110	Self-locking nut M20	1

Pos.	Item no.	Designation	Number
15	69516094A	Pin for support stand Ø16 L=94 mm	1
16	0377400	R-clip Ø4	1
17	0235910	Steel bolt M16x110 8.8	2
18	645000111	Pivoting arm for driving wheel	1
19	645000109	Flange for suspension for driving wheel	1
20	645000335	Tube bracket	1
21	645000275	C-profile for mounting of seed tube outlet 2.5 m	1
	645000276	C-profile for mounting of seed tube outlet 3 m	1
	645000277	C-profile for mounting of seed tube outlet for 3.5 m	1
	645000278	C-profile for mounting of seed tube outlet for 4 m	1
22	645000260	Bracket for mounting of C-profile	3
23	645000291	Seed hose bracket	1
24	0382120	U-bolt M12 40x40x40	3
25	0272270	Facet plate Ø12	6
26	0264070	Self-locking nut M12	6
27	0539055	Seed hose Ø26 inside	2-9
28	690109306	Clamp 26-38 mm 12 mm wide	2-9
29	645000285	Seed tube outlet for Sub-Tiller, bended	2-9
30	0449705	Tube-support Ø25, single	2-9
31	690210224	Welding plate for tube-support Ø25, single	2-9
32	0449706	Top plate for tube-support Ø25, single	2-9
33	0234390	Steel bolt M6x50 8.8	6-14
34	0234400	Steel bolt M6x60 8.8	4
35	645000286	Bracket for seed tube outlet	2
36	0272240	Facet plate Ø6	12
37	0264040	Self-locking nut M6	4
38	1139500	Cable bracket, mounted on the roller frame	1
39	0235460	Steel bolt M12x100 8.8	1
40	645000337	Cable bracket	1
41	645000380	Cable bracket, mounted on the main frame	1
42	645000372	Cable bracket	1
43	645000420	Extension for hose bracket	1
44	0235830	Steel bolt M16x55 8.8	2

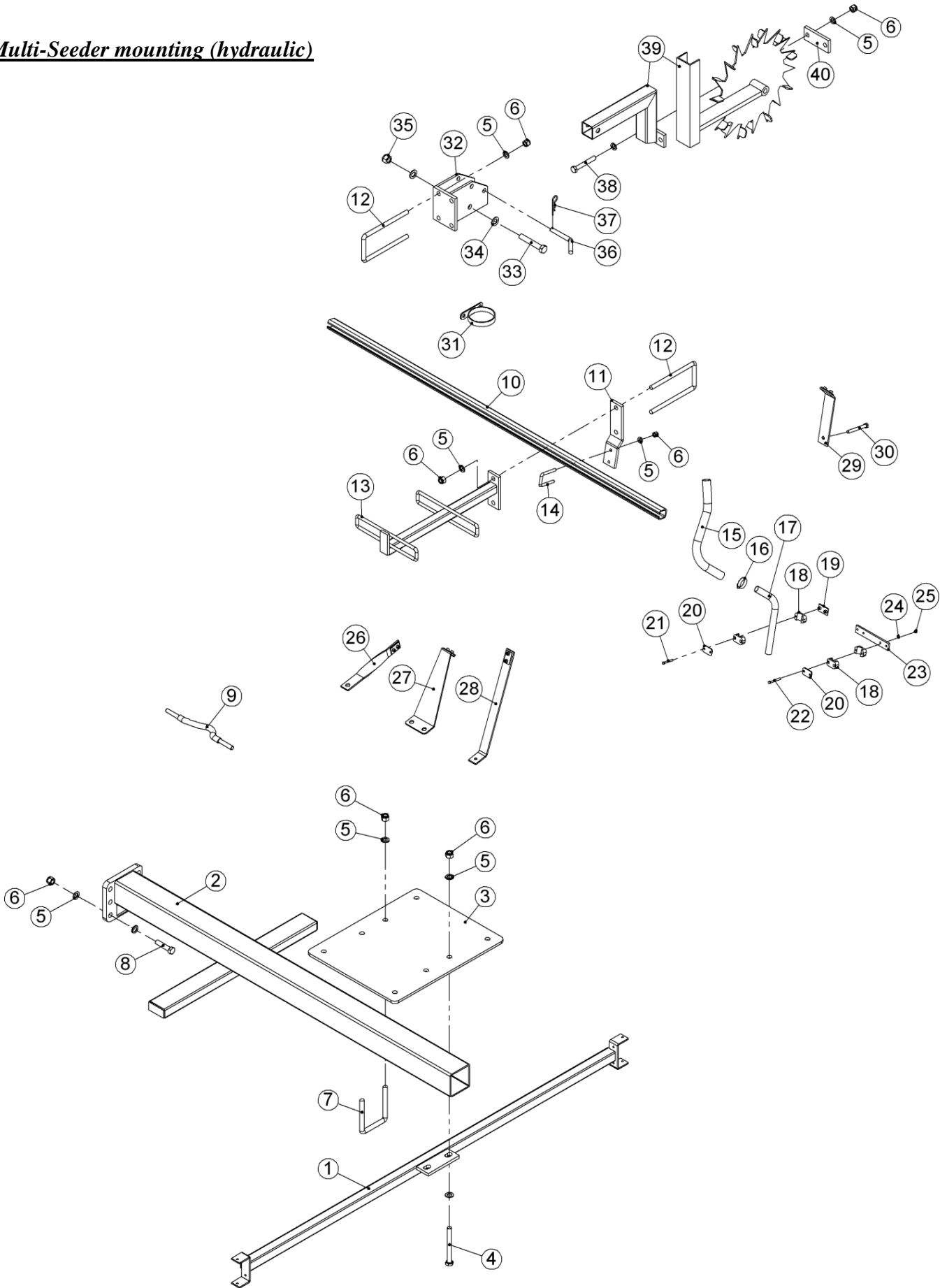
Attention:

The number of hoses and hose lengths can vary - dependent on the machine type, therefore check measurements and number before ordering the spare parts.

Multi-Seeder

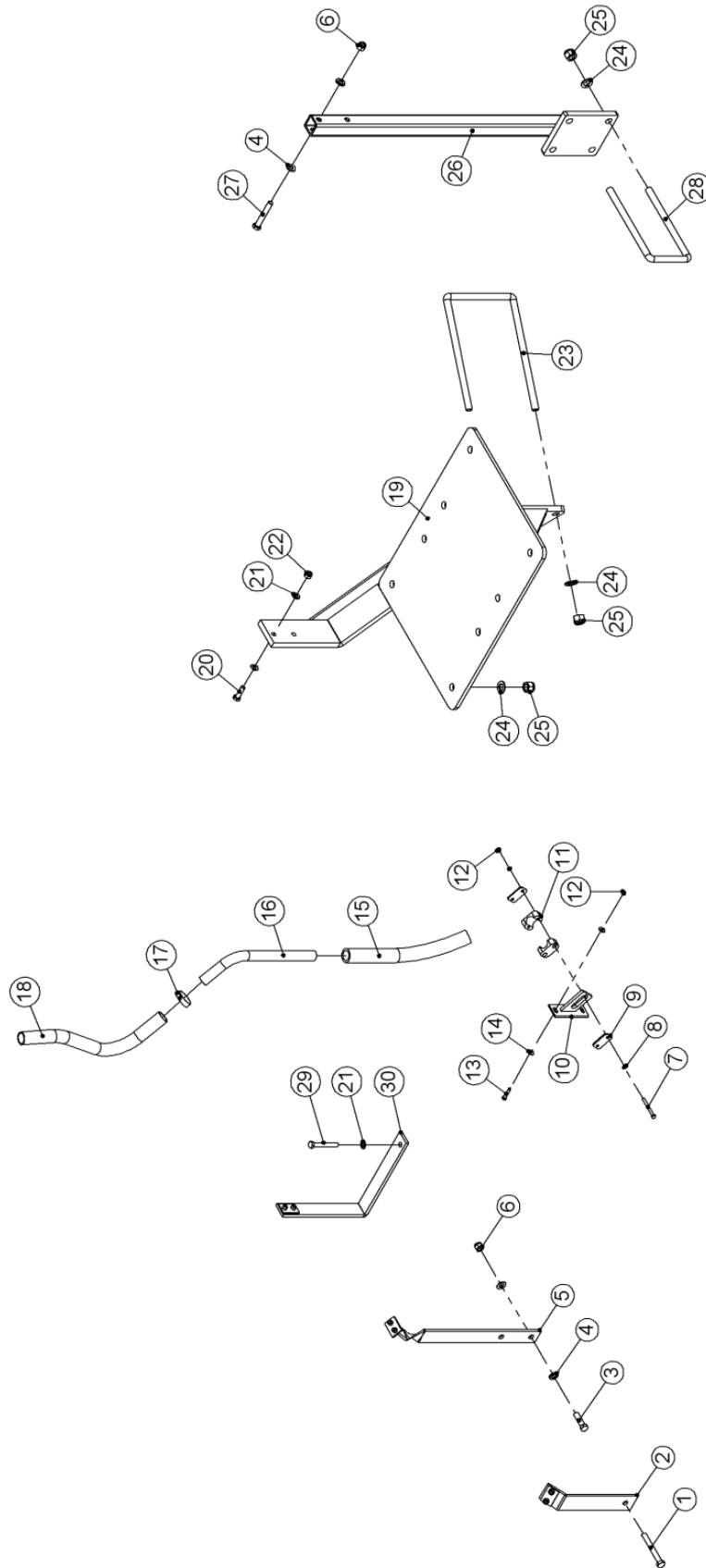
If the Sub-Tiller is mounted with HE-VA Multi-Seeder, we refer you to the separate Multi-Seeder Manual with spare part list.

Multi-Seeder mounting (hydraulic)



Pos.	Item no.	Designation	Number
1	645000360	Light bar	1
2	645000245	Bar	1
	645000364	Bracket for light bar without seed equipment	1
3	645000261	Seed hopper plate 410 l	1
4	0235950	Steel bolt M16x150 8.8	2
5	0272290	Facet plate Ø16	40
6	0264090	Self-locking nut M16	32
7	0382160	U-bolt M16 100x100x100	1
8	0235860	Steel bolt M16x70 8.8	6
9	0539117	Flexible driving cable 3.75 m	1
10	645000419	C-profile for mounting of seed tube outlet 4 m	2
	645000275	C-profile for mounting of seed tube outlet 5 m	2
11	645000260	Bracket for mounting of C-profile	4
12	690110106	U-bolt M16x200x100x200	5
13	645000291	Seed hose bracket	1
14	0382120	U-bolt M12 40x40x40	4
15	0539055	Seed hose Ø26 inside	7-9
16	690109306	Clamp 26-38 mm 12 mm wide	7-9
17	645000285	Seed tube outlet for Sub-Tiller, bended	7-9
18	0449705	Tube-support Ø25, single	14-18
19	690210224	Welding plate for tupe support Ø25, single	7-9
20	0449706	Top plate for tube-support Ø25, single	7-9
21	0234390	Steel bolt M6x50 8.8	14-18
22	0234400	Steel bolt M6x60 8.8	4
23	645000286	Bracket for seed tube outlet	2
24	0272240	Facet plate Ø6	4
25	0264040	Self-locking nut M6	4
26	645000337	Cable bracket	1
27	645000380	Cable bracket, mounted on the main frame	1
28	645000372	Cable bracket	1
29	1139500	Cable bracket, mounted on the roller frame	1
30	0235460	Steel bolt M12x100 8.8	1
31	645000335	Tube bracket	1
32	645000099	Suspension for driving wheel	1
33	0236210	Steel bolt M20x120 8.8	1
34	0272310	Facet plate Ø20	2
35	0264110	Self-locking nut M20	1
36	69516094A	Hub for support stand Ø16 L=94 mm	1
37	0377400	R-clip Ø4	1
38	0235910	Steel bolt M16x110 8.8	2
39	645000111	Pivoting arm for driving wheel	1
40	645000109	Flange for suspension for driving wheel	1

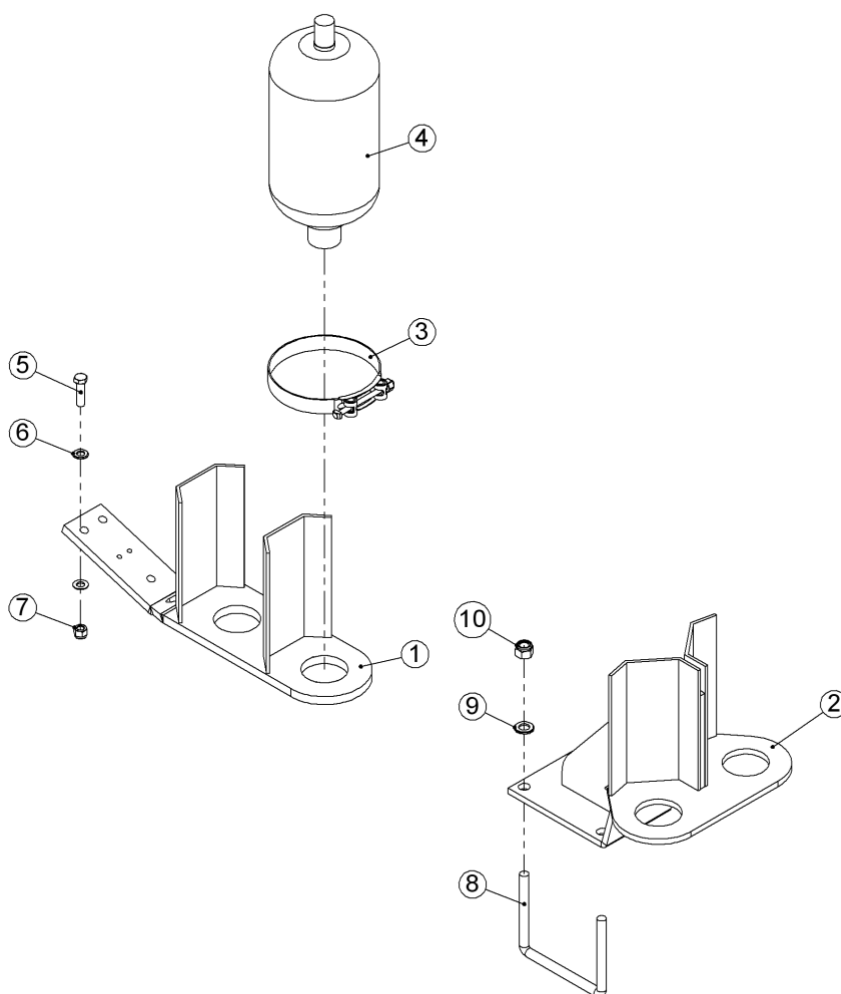
Fertilizer equipment (rigid)



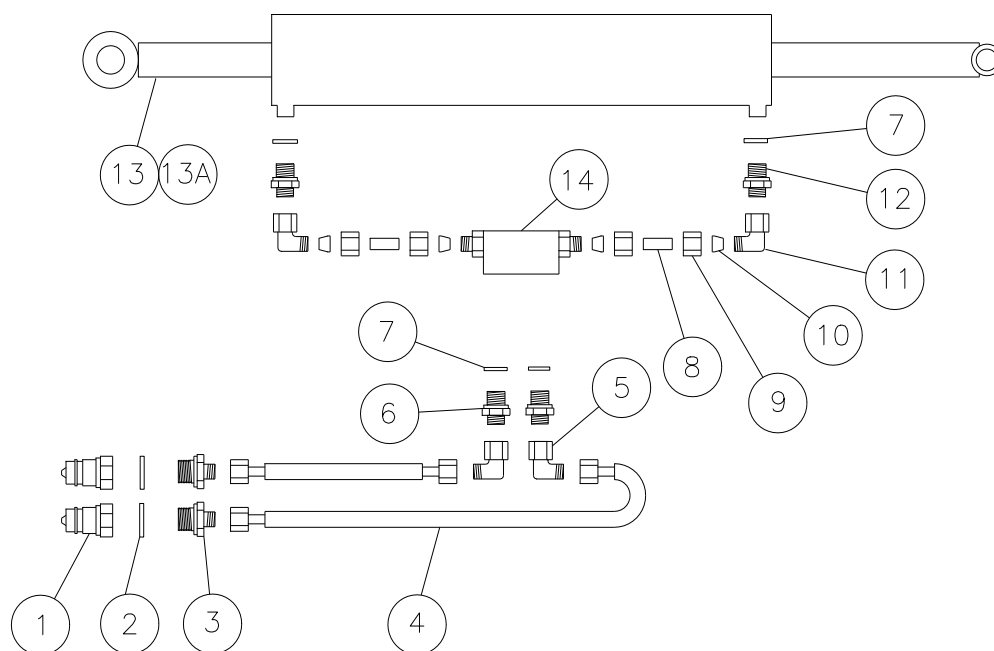
Pos.	Item no.	Designation	Per tine	Fertilizer	Universal spreader
1	0235460	Steel bolt M12x100 8.8		1	
2	1139500	Cable bracket		1	
3	0235370	Steel bolt M12x45 8.8		2	
4	0272270	Facet plate Ø12		8	
5	645000403	Cable bracket		1	
6	0264070	Self-locking nut M12		4	
7	0234400	Steel bolt M6x60 8.8	2		
8	0272240	Facet plate Ø6	4		
9	0449706	Top plate for tube-support Ø25, single	2		
10	645000344	Bracket for fertilizer tube	1		
11	0449705	Tube-support Ø25, single	2		
12	0264040	Self-locking nut M6	4		
13	0234350	Steel bolt M6x30 8.8	2		
14	0271530	Washer Ø6	4		
15	0487487	Rubber hose ø25x350	1		
16	645000283	Seed tube outlet, bended	1		
17	0434460	Clamp 26-38 mm 9 mm wide	1		
18	0539055	Seed hose Ø26 inside	1		
19	645000345	Bracket for fertilizer tank 410 l		1	
20	0235060	Steel setscrew M10x35		2	
21	0272260	Facet plate Ø10		4	
22	0264060	Self-locking nut M10		2	
23	0382850	U-bolt M16 260x180x260		2	
24	0272290	Facet plate Ø16		8	4
25	0264090	Self-locking nut M16		8	4
26	645000377	Stand for Universal spreader			1
27	0235440	Steel bolt M12x80 8.8			2
28	690110106	U-bolt M16 200x100x200			2
29	0235140	Steel setscrew M10x75		1	
30	645000429	Cable bracket		1	

Spare part list – Hydraulics

Support for accumulator

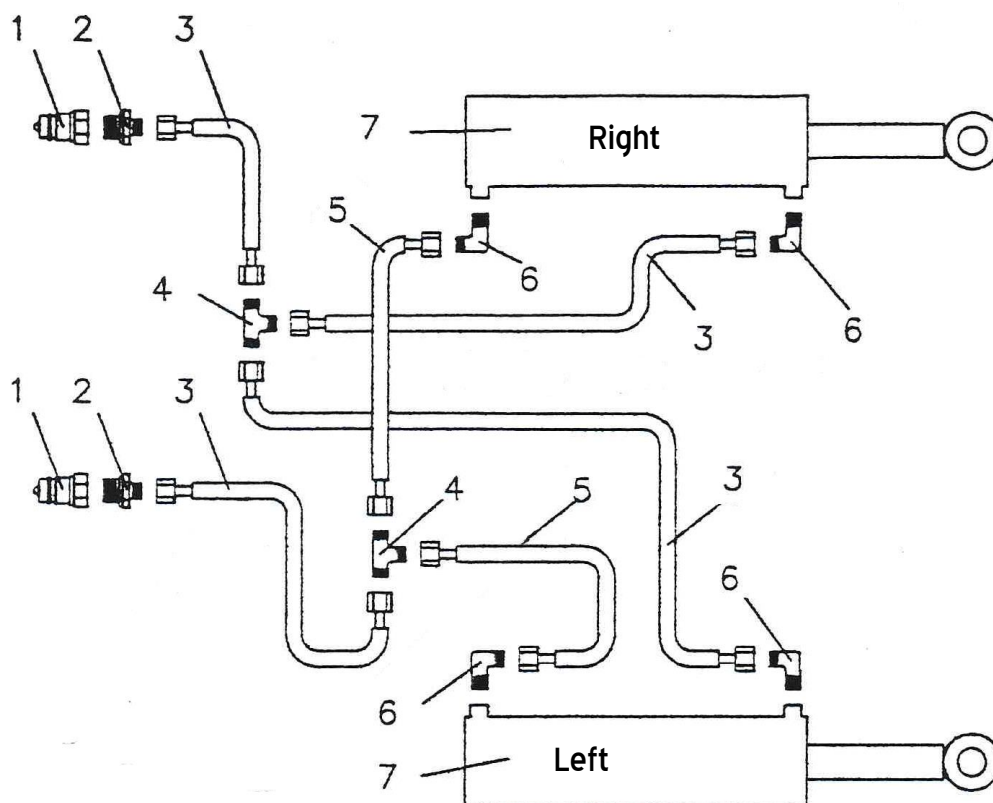


Pos.	Item no.	Designation	Rigid	Hydraulic
1	645000370	Support for accumulator		1
1	645000422	Support for accumulator (from machine no. 26691)		1
2	645000125	Support for accumulator (rigid models)	1	
3	690206516	Clamp 175-187 mm.	2	2
4	690206513	Accumulator 4,5L 90 bar	2	2
5	0235370	Steel bolt M12x45 8.8		3
6	0272270	Facet plate Ø12		6
7	0264070	Self-locking nut M12		3
8	0382800	U-bolt M16x100x150x100		2
9	0272290	Facet plate Ø16		4
10	0264090	Self-locking nut M12		4

Hydraulics for depth control of roller (rigid)


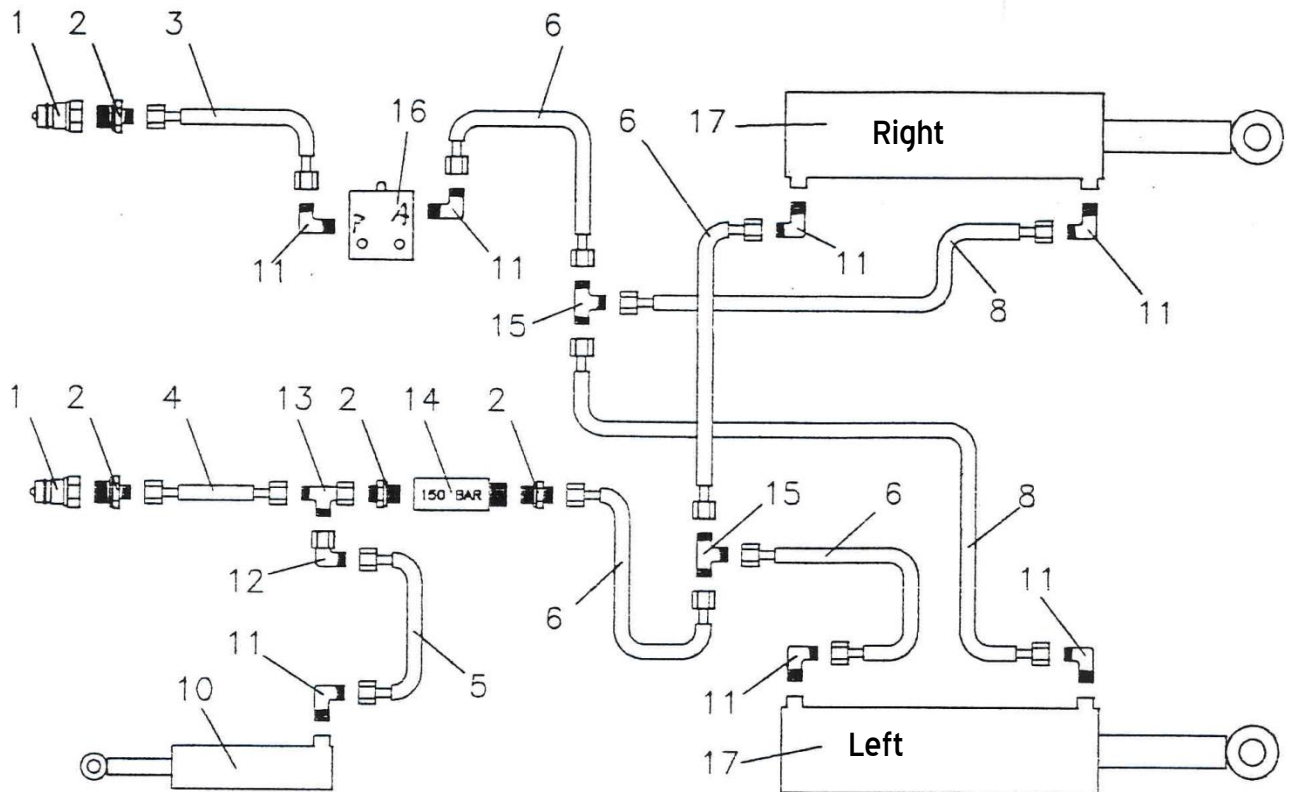
Pos.	Item no.	Designation	2,5m	3,0m	3,5m	4,0m
1	0444020	Quick coupling, male E402 1/2"	2	2	2	2
2	0449070	Bounded seal 1/2"	2	2	2	2
3	0446752	Fitting, straight Ø10-1/2" BSP	2	2	2	2
4	690201046	Hydraulic hose 1660 mm 1/4"	2			
	690201016	Hydraulic hose 1830 mm 1/4"		2		
	0454577	Hydraulic hose 1950 mm 1/4"			2	
	0454645	Hydraulic hose 2300 mm 1/4"				2
5	0446678	Fitting 90angle Ø10x3/8"	2	2	2	2
6	0446751	Hexagon nipple Ø10x3/8"	2	2	2	2
7	0449060	Bounded seal 3/8"	4	4	4	4
8	662000804	Hydraulic tube Ø12 L=106	2	2	2	2
9	690203111	Union nut Ø12	4	4	4	4
10	690203110	Olive ring Ø12	4	4	4	4
11	0446679	Fitting 90angle Ø12	2	2	2	2
12	0446754	Hexagon nipple Ø12x3/8"	2	2	2	2
13	645000036	Cylinder 80/40 – 280 mm.	1	1	1	1
13A	690200142	Gasket set 80/40	1	1	1	1
14	0442510	Check valve (pilot-controlled, double) 3/8"	1	1	1	1

Hydraulics for depth control of roller (hydraulic)



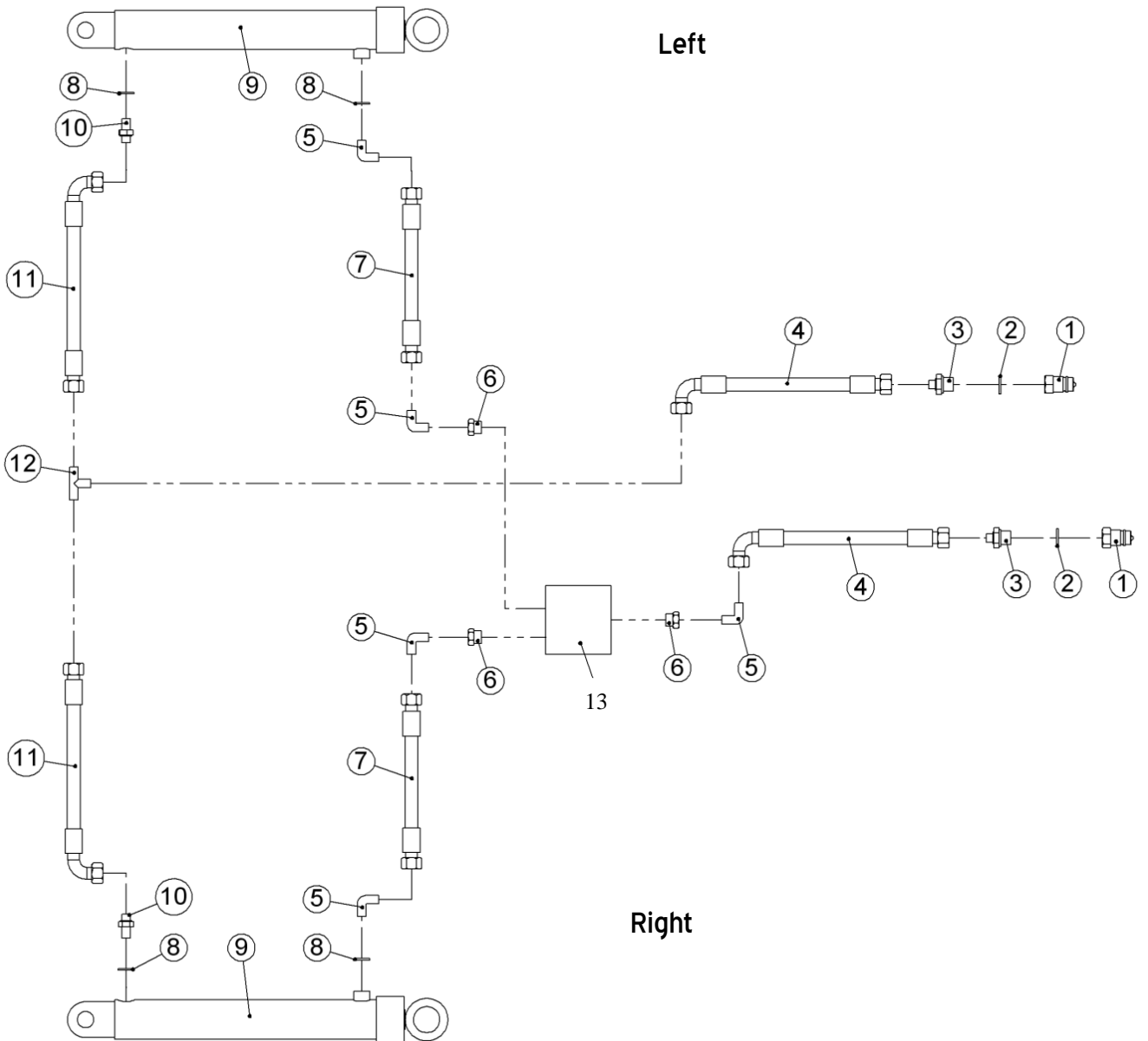
Pos.	Item no.	Designation	Number
1	0444020	Quick coupling, male E402 ½"	2
2	0446752	Fitting, straight Ø10-½" BSP	2
3	0454645	4 m hydr. hose 2300 mm. ¼" st/st	4
3	0454645	5 m hydr. hose 2300 mm. ¼" st/st	4
4	690203015	Fitting T Ø10	2
5	0454583	4 m hydr. hose 2050 mm. ¼" st/st	2
5	0454583	5 m hydr. hose 2050 mm. ¼" st/st	2
6	690203006	Fitting, 90angle Ø10-¾" BSP	4
7	690200085	Cylinder 80/40 – 255 mm.	2

Hydraulics for folding cylinder

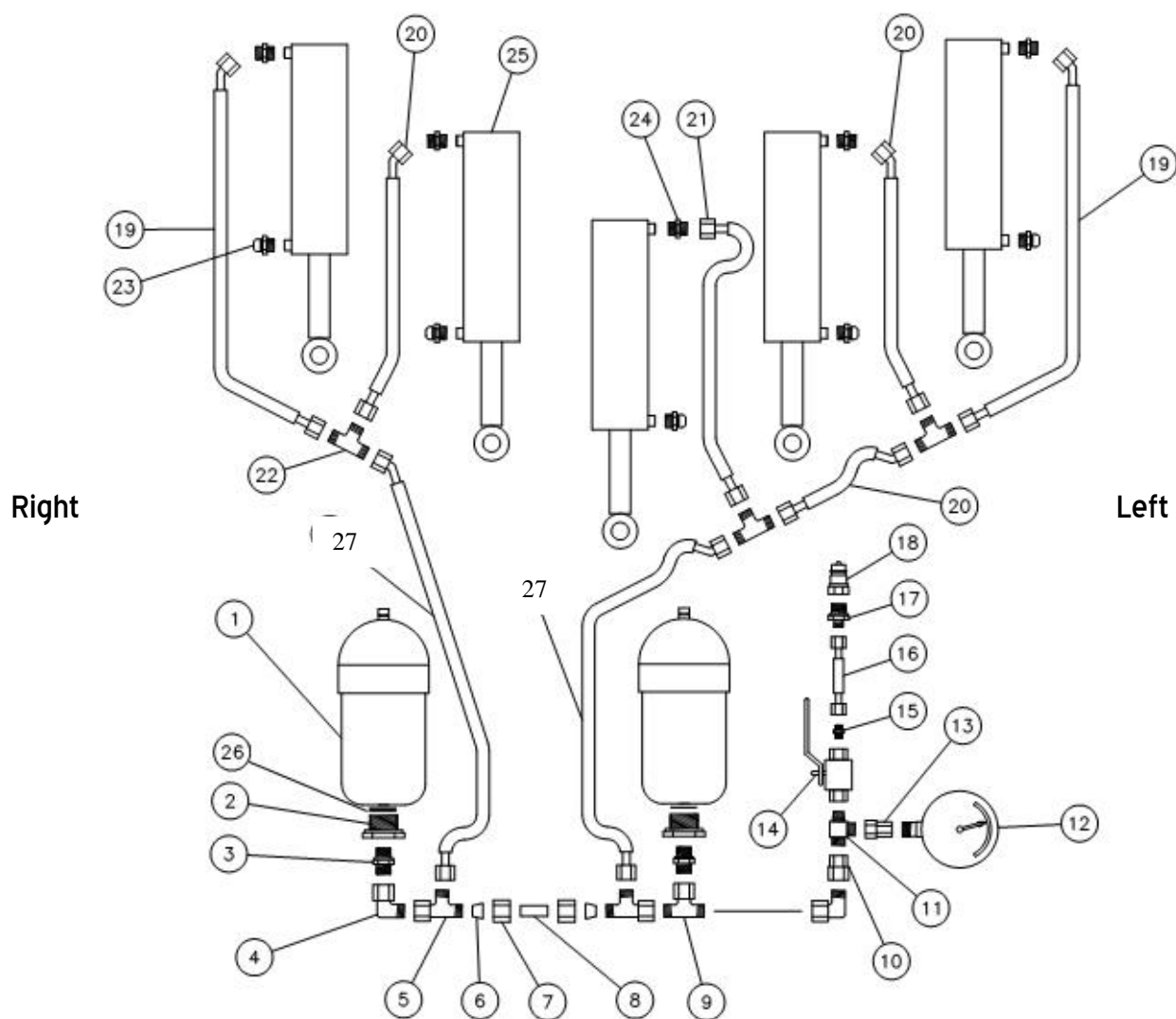


Pos.	Item no.	Designation	Number
1	0444020	Quick coupling, male E402 ½"	2
2	0446752	Fitting, straight Ø10-½" BSP	4
3	0454938	Hydraulic hose 3700 mm. ¼" st/st	1
4	0454577	Hydraulic hose 1950 mm. ¼" st/st	1
5	0454498	Hydraulic hose 1590 mm. ¼" st/st	1
6	0454210	Hydraulic hose 710 mm. ¼" st/st	3
8	0454215	Hydraulic hose 820 mm. ¼" st/st	2
10	690200170	Cylinder 50/25 – 80 mm.	1
11	690203006	Fitting, 90angle Ø10-¾" BSP	7
12	690203016	Fitting 90angle Ø10	1
13	690203014	Fitting T10L	1
14	0442450	Sequential valve ½" inside tube 30-12	1
15	690203015	Fitting T10	2
16	690207101	Mechanical stop valve FC10 – normally closed	1
17	690200256	Cylinder 90/40 - 500mm	2

Hydraulics for marker



Pos.	Item no.	Designation	Number
1	0444020	Quick coupling, male E402 1/2"	2
2	0449070	Bounded seal 1/2"	2
3	0444490	Fitting, straight Ø10-1/2" BSP	2
4	0454560	Hydraulic hose 1850 mm 1/4" st/90°	2
5	0446130	Fitting, 90angle 1/4", 1x conic	5
6	1058230	Fitting	3
7	0454690	Hydraulic hose 2550 mm 1/4" st/st	2
8	0449050	Bounded seal 1/4"	4
9	690200153	Cylinder 50/30 – 300 mm.	2
10	0444500	Hexagon nipple 1/4", 1x conic	2
11	0454610	Hydraulic hose 2150 mm 1/4" st/90°	2
12	0446510	Fitting T1/4"	1
13	0442810	Valve	1

Hydraulics for automatic release system (rigid)


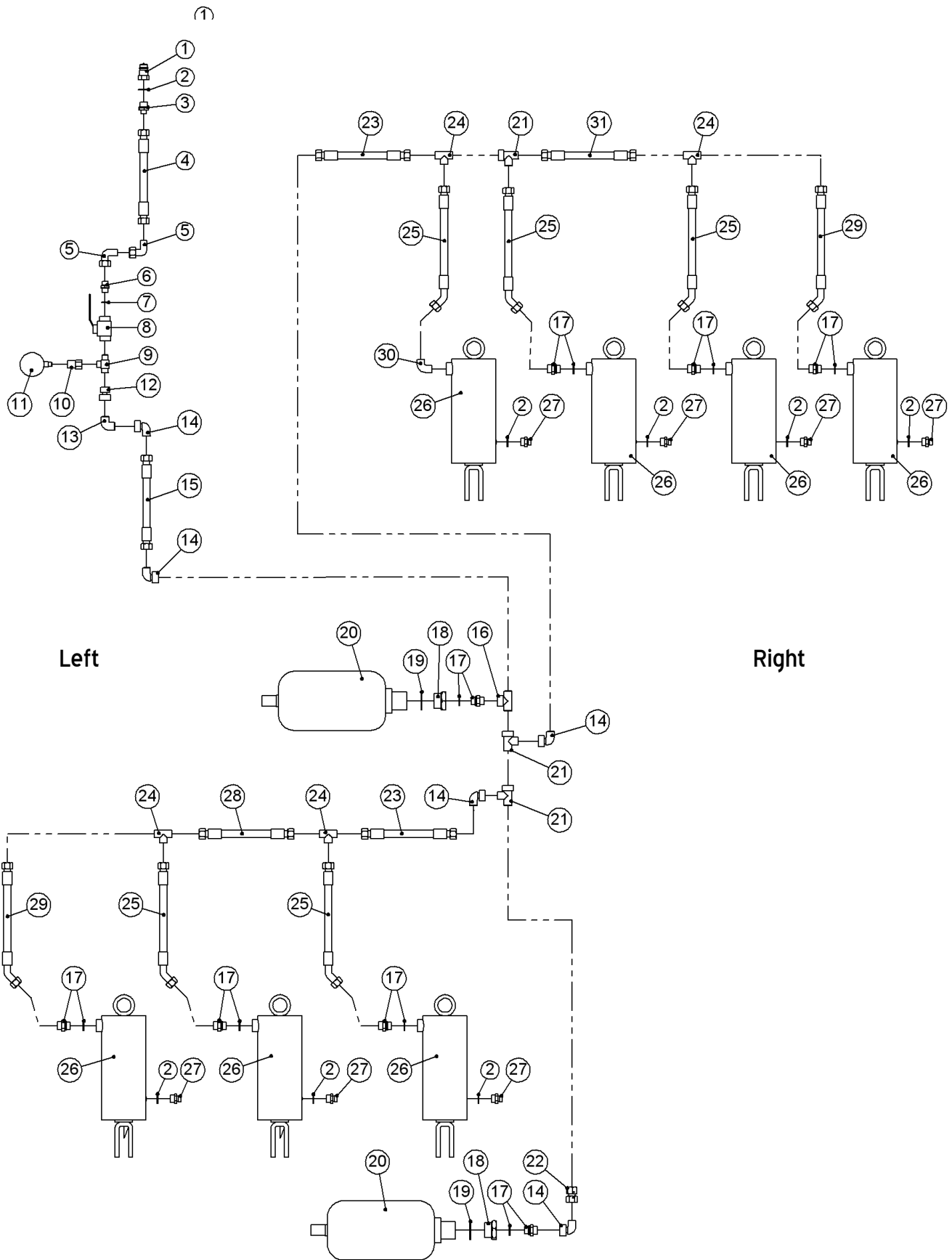
Pos.	Item no.	Designation	Number
1	690206513	Accumulator 4 l 90 bar	2
2	690204501	Fitting straight 1/2"x1 1/4"	2
3	690204512	Fitting straight Ø15x1/2"	2
4	690204500	Fitting 90angle Ø15 mm premounted union nut	2
5	690204502	Fitting T15L	2
6	690204503	Olive ring Ø15	2
7	690204504	Union nut Ø15	2
8	662000803	Hydraulic tube Ø15 L=38	1
9	690204505	Fitting T15	1
10	690204506	Reversed fitting Ø15 / 1/2"	1
11	690203314	Fitting T 3/8"-Ø12-Ø12	1
12	690206824	Pressure gauge 400 bar	1
13	690206825	Pressure gauge fitting Ø12 / 1/4"	1

Pos.	Item no.	Designation	Number
14	690202990	Ball valve 3/8" PN500 DN 10	1
15	690203002	Fitting, straight Ø10-3/8" BSP	1
16	690201032	Hydraulic hose 1130 mm 1/4" st/st	1
17	690203003	Fitting, straight Ø10-1/2" BSP	1
18	0444020	Quick coupling 1/2" E402, male	1
19	690201448	Hydraulic hose 1150 mm 1/2" st/45°	2
20	690201430	Hydraulic hose 590 mm 1/2" st/45°	0-9
21	690201414	Hydraulic hose 400 mm 1/2" st/st	0-1
22	690204507	Fitting T15	0-7
23	690206002	Filter plug 1/2" (until masnr. 27671)	2-7
23	0446350	Fitting (from masnr. 27710)	2-7
23a	0487590	PvC hose (from masnr. 27710)	2-7
23b	0230290	Taptite (from masnr. 27710)	2-7
23c	0449310	Rubber suspension (from masnr. 27710)	2-7
24	690204512	Fitting straight Ø15x1/2"	2-7
25	690200305	Cylinder 110/50x165 w/yoke (until masnr. 27671)	2-7
25	0467400	Cylinder 110/50x165 w/yoke (from masnr. 27710)	2-7
26	0449110	Bounded seal 1 1/4"	2
27	0454183	Hydraulic hose 600 mm 1/2" st/st	2

Attention:

The number of hoses and hose lengths can vary – dependent on the machine type, therefore check measurements and number before ordering the spare parts.

Hydraulics for automatic release system (hydraulic)



Pos.	Item no.	Designation	4m. 7 tines	5m. 7 tines	5m. 9 tines
1	0444020	Quick coupling ½” E402, male	1	1	1
2	0449070	Bounded seal ½” (until masnr. 27671)	8	8	10
2	0449050	Bounded seal ¼” (from masnr. 27710)	8	8	10
3	0446752	Hexagon nipple, Ø10-½” BSP	1	1	1
4	0454630	Hydraulic hose 2300 mm ½” st/st	1	1	1
5	0446678	Fitting 90angle Ø10	2	2	2
6	0446751	Hexagon nipple, Ø10-¾” BSP	1	1	1
7	0449060	Bounded seal ¾”	1	1	1
8	0442350	Ball valve ¾”	1	1	1
9	690203314	Fitting T ¾”-Ø12-Ø12	1	1	1
10	690206825	Pressure gauge fitting Ø12-¼”	1	1	1
11	0442052	Pressure gauge 0-400 bar	1	1	1
12	690204506	Reversed fitting Ø15-½”	1	1	1
13	0446240	Fitting Ø15	1	1	1
14	0446680	Fitting Ø15	5	5	5
15	690201445	Hydraulic hose 1150 mm ½” st/st	1	1	1
16	690204505	Fitting T15	1	1	1
17	690204512	Fitting straight Ø15x½” w/o-ring	7	7	9
18	690204501	Fitting straight ½”x¼”	2	2	2
19	0449110	Bounded seal 1 ¼”	2	2	2
20	690206513	Accumulator 4 l 90 bar	2	2	2
21	690204502	Fitting T15 L	3	3	3
22	0447530	Reversed fitting Ø15 w/o-ring	1	1	1
23	690201449	Hydraulic hose 850 mm ½” st/st	2		
24	690204507	Fitting T15	4	4	6
25	690201430	Hydraulic hose 590 mm ½” st/45°	5	5	7
26	690200305	Cylinder 100/50x165 w/yoke (until masnr. 27671)	7	7	9
26	0467400	Cylinder 100/50x165 w/yoke (from masnr. 27710)	7	7	9
27	690206002	Filter plug ½” (until masnr. 27671)	7	7	9
27	0446350	Fitting (from masnr. 27710)	7	7	9
27a	0487590	PvC hose (from masnr. 27710)	7	7	9
27b	0230290	Taptite (from masnr. 27710)	7	7	9
27c	0449310	Rubber suspension (from masnr. 27710)	7	7	9
28	690201458	Hydraulic hose 690 mm ½” st/st	1		
29	690201448	Hydraulic hose 1150 mm ½” st/45°	2		
30	690203151	Fitting ½”	1	1	1
31	0454183	Hydraulic hose 600 mm ½” st/st	1		

Notes

Maskiner til vækst
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Maskiner til vækst



2010
Danmark



The design is subject to modification without notice.