

UK

HE-VA

Operating Instructions
Spare Parts List
Declaration of Conformity



Warning: Be sure to read the operation instructions before using the machine.

Combi-Tiller MKII

Manual no. 8000561-03 28.08.24



N. A. Christensensvej 34
DK-7900 Nykøbing Mors
Tel: 97724288
Fax: 97722112
www.he-va.com

Content

*

EC-DECLARATION OF CONFORMITY	4
DELIVERY CHECK.....	4
MACHINE DESCRIPTION.....	4
RANGE OF APPLICATION.....	4
TECHNICAL SPECIFICATIONS.....	4
SAFETY INSTRUCTIONS FOR COMBI-TILLER.....	5
SAFETY AND INSTRUCTIONS ON HYDRAULICS	6
INSTRUCTIONS ON TRANSPORT ON THE PUBLIC ROADS:	6
FRONT AXLE LOAD:	6
LABELS ON THE MACHINE	7
EXPLANATION OF THE MACHINE LABELS.....	7
START-UP OF THE MACHINE.....	8
GENERAL INFORMATION.....	8
ATTACHMENT UND UNCOUPLING :.....	8
COMBI-TILLER - THREE-POINT MOUNTED MODELS.	8
COMBI-TILLER - COMBINED WITH TRAILED DISC-ROLLER.....	8
WHEN OPERATING THE COMBI-TILLER.....	9
SETTINGS AND ADJUSTMENT	9
STONE PROTECTION	9
QUICK-PUSH SHEAR BOLT	9
HYDRAULIC AUTOMATIC RELEASE SYSTEM	11
REPLACEMENT OF WEARING POINT	12
MAINTENANCE.....	13
LUBRICATION	13
SPARE PARTS LIST	14
FRAME HYDRAULIC MODEL	14
4.0 – 5.0 M	14
FRAME AND THREE-POINT LINKAGE, RIGID MODEL	15
3.0 – 3.5 – 4.0 M.....	15
SUPPORT WHEEL	16
DRAWBAR	17
WING SECTION.....	18
LINKAGE.....	20
CROSSBAR	21
TINE TYPES	22
QUICK-PUSH TINES, SPARE PARTS UP TO MACHINE NO. : 200454	23
HYDRAULIC RELEASE SYSTEM, SPARE PARTS.....	24
QUICK-PUSH TINES, SPARE PARTS FROM MACHINE NO. : 200455	25

NOTES.....	26
COMBI-TILLER MIDDLE FRAME AND WINGS	27
SUPPORT WHEEL	29
SPINDLE FOR SUPPORT WHEEL	30
MIDDLE FRAME FOR DISC-ROLLER.....	31
TINE QUICK PUSH 200 MM WEARING POINT, LONG/SHORT/LEFT/RIGHT (FROM MACH. NO. 32794).....	33
TINE QUICK PUSH WITH 120 MM EASY DRAFT WEARING POINT, LONG/SHORT/LEFT/RIGHT	35
OVERVIEW QUICK PUSH TINEHOLDERS	37
TINE HYDRAULIC WITH 200 MM WEARING POINT, LONG MODEL, (SHORT NOT SHOWN).....	38
TINE HYDRAULIC WITH EASY DRAFT 120 MM WEARING POINT, LONG MODEL	40
HYDRAULICS	42
FOLDING CYLINDER	42
DRAWBAR	43
LINKAGE.....	44
HYDRAULICS FOR AUTOMATIC RELEASE SYSTEM (RIGID)	45
HYDRAULICS FOR AUTOMATIC RELEASE SYSTEM (HYDRAULIC)	47



EC-DECLARATION OF CONFORMITY

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

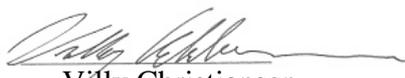
HE-VA ApS
N. A. Christensensvej 34,
DK-7900 Nykøbing Mors

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

The declaration comprises the following machine:

Combi-Tiller 3.0 – 3.5 – 4.0 m rigid
Combi-Tiller 4.0 – 5.0 m hydraulic

Nykøbing the 28th Februar 2011


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 Combi-Tiller for possible damages.

Machine description

Range of Application

Combi-Tiller is a sub-soiler developed for working solo or combined with a stubble implement or a drill unit. The Combi-Tiller MKII lifts the soil to break hard stratum of earth/plough pan together with an oxidation of the soil – without bringing large unwanted clods to the surface. The Combi-Tiller has a working depth from -50 mm down to 300 mm. The tine points have 200 mm wing shares lifting and loosening the soil in the chosen working depth. The Combi-Tiller is ideal for all soil types.

The Combi-Tiller is available for mounting directly in the three-point suspension of the tractor with the possibility to be combined with an implement mounted in the sub-soiler's linkage. Alternatively, the Combi-Tiller is available in a combination with a trailed HE-VA Disc-Roller.

In order to achieve optimum control, you have to be aware of the tractor's wheels, and in some soil conditions a mounting of twin wheels is recommended.

The machine is delivered in transport position from the factory.

Technical specifications

	Rigid models			Hydr. models	
Model	3.0 m	3.5 m	4.0 m	4.0 m	5.0 m
Working width	3.0 m	3.5 m	4.0 m	4.0 m	5.0 m
Height folded				196 cm	269 cm
Power requirement, HP+combined implement	50-100	60-120	70-140	70-140	90-180
Requirement for number of double acting oil outlets	1	1	1	2	2
No. of tines	5 pcs.	6 pcs.	7 pcs.	7 pcs.	9 pcs.
Weight:					
Quick-Push shear bolt	890	985	1085	1580 kg	1840 kg
Hydraulic autom. release system	1035	1130	1230	1735 kg	2035kg

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

Safety instructions for Combi-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:

The machine must be lowered to firm ground.

The hydraulics must be relieved.

The tractor must be stopped and the key removed from the ignition switch.

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

The maximum working pressure is 225 bar.

It is advisable to label the attachment parts at hydraulic connections between the tractor and the tool in order to eliminate incorrect operation!

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!**

Before operating the hydraulics, lower the machine to firm ground.

Relieve the hydraulics, stop the motor and remove the ignition key.

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:

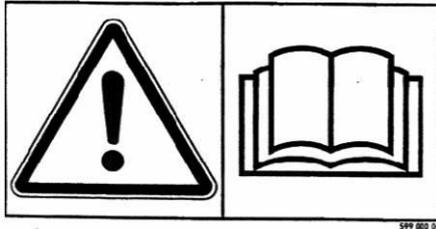
After the attachment of the machine and at maximum load, the driving properties of the tractor must be ensured. Check that the front axle is sufficiently loaded. As a minimum, the front axle load must be 20% of the tractor weight. Permitted axle load and permitted total weight for the tractor must always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

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

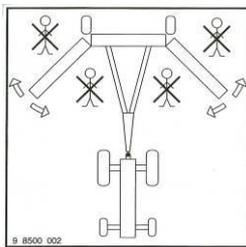
Labels on the machine

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.

Explanation of the Machine Labels



Study the Operating Instructions thoroughly before any operation of the machine and observe all safety instructions.



Always make sure that the working area of the wing sections is free before they are unfolded into working position.

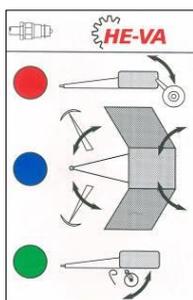
Tighten up all bolts regularly. If this is not performed, our guarantee obligations will no longer apply.

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

Maximum torque in Nm. w/lubricated thread			
Metric thread	Quality 8.8	Quality 10.9	Quality 12.9
M12	81	114	136
M14	128	181	217
M16	197	277	333
M18	275	386	463
M20	385	541	649
M22	518	728	874
M24	665	935	1120



Plate with number and year of manufacture.



Indication label for the machine's hydraulic systems.



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.

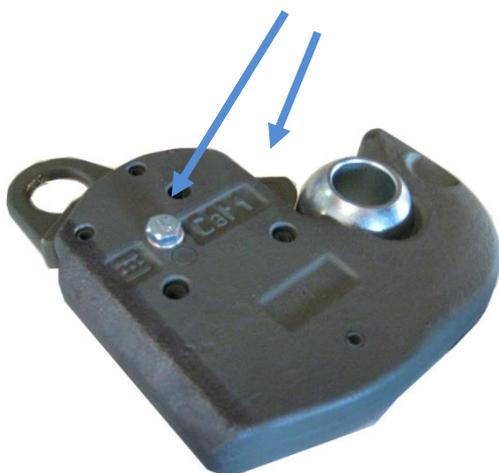
Attachment und uncoupling :

Combi-Tiller - three-point mounted models.

1. Reverse the tractor to the implement and it is mounted in the three-point suspension of the tractor.
2. Mount all the hydraulic hoses in the tractor outlet.
3. The machine is to be raised to max. transport height.
4. Now the foldable models can be unfolded.
5. Adjust the working depth.

Combi-Tiller - combined with trailed Disc-Roller.

1. Reverse the tractor to the implement.
2. Mount all the hydraulic hoses in the tractor outlet.
3. Now pressurize the drawbar and wheel cylinder, so that the drawbar is adapted to the tractor draw height.
4. Now back the tractor to the implement and attach.
5. The machine is to be raised to max. height.
6. Now the foldable models can be unfolded.



Quick Coupling LOCKED



Quick Coupling UNLOCKED

When operating the quick coupling must be locked, using bolts, to prevent damage to the equipmen

When operating the Combi-Tiller

Advarsel!

When operating the Combi-Tiller only weak and elongated curves are allowed.

Curves from a certain stage will put on forces sideways to the tines, and it might cause serious damage to the machine construction

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.

Pull out the R-clip (Pos. 1).

Pull the tine back to normal working position (Pos. 2).

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).

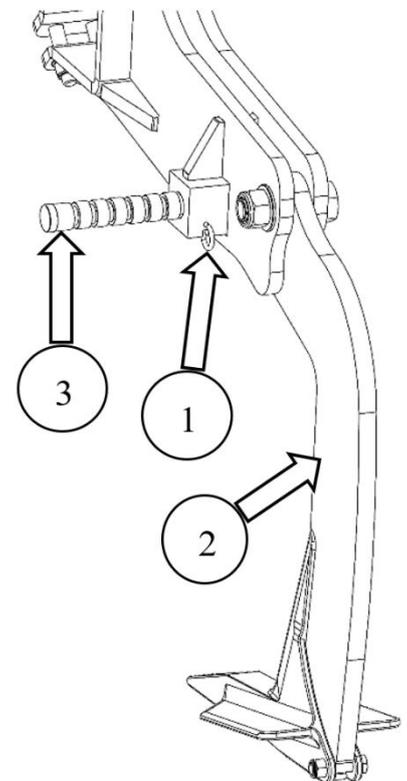
Important: All activities under the machine are deprecated when the shear bolt is being moved or changed.

Push back the R-clip (Pos. 1), so that it locks the shear bolt in its place, and the machine is ready for operation.

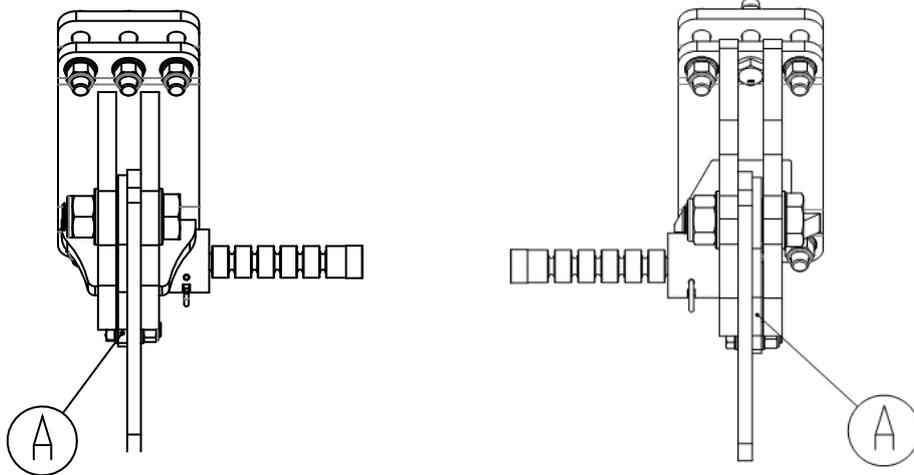
When the shear bolt is broken for the eighth time, it is used up.

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.



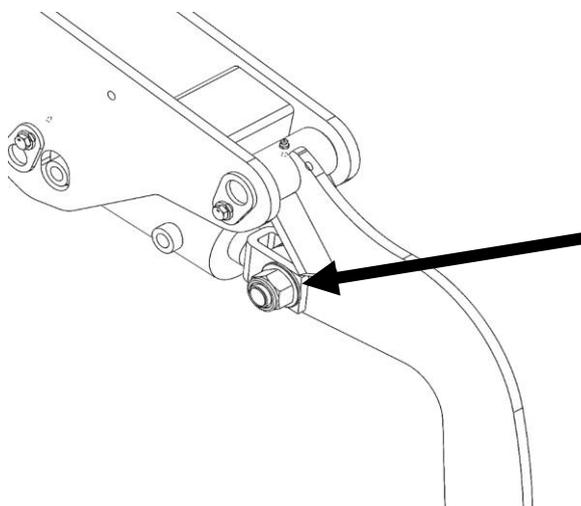
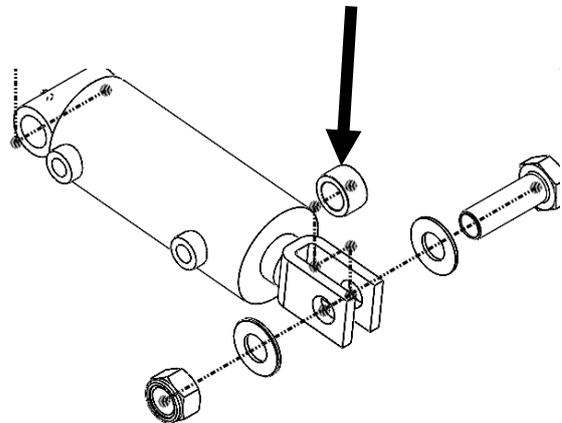
OBS: A → Shims must always be mounted on the opposite side as the shearpin is inserted from.



Importance regarding the hydraulic release system:

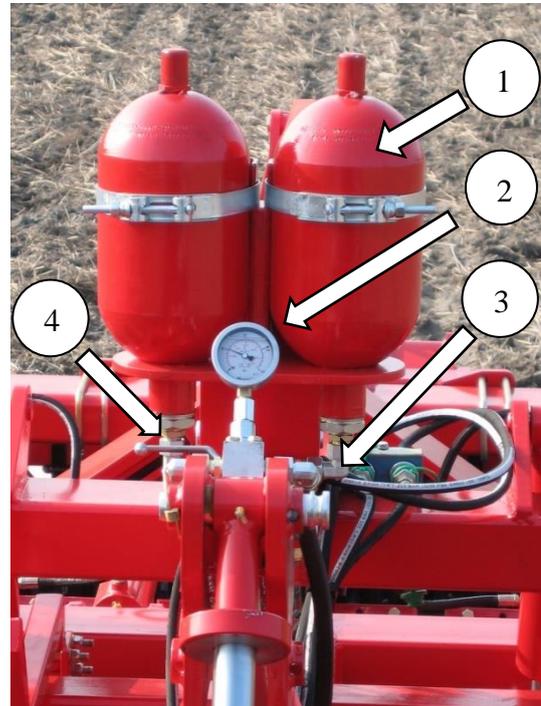
The bolt at the clevis end of cylinder, must obtain sufficient tension to keep bushing no. 645000113 fixed from spinning in its position. When tines are releasing from rocks, the bushings must not spin at all.

Bushing no. 645000113



Important to tighten up this bolt after 25 hours of operation when tine or cylinder has been replaced to 1000 Nm. When taking apart also check the bushing no. 645000113 for wearing.

Hydraulic automatic release system



Before each season it has to 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.

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 120 bar** and must be kept in a working range up to 160 bar. The hydraulic pressure must never exceed 180 bar.

IMPORTANT – the hydraulic pressure is to be controlled continuously and must never be under 120 bar.

If there is a need to adjust the working pressure, follow the below instructions:

Mount the quick coupling of the hydraulic hose (Pos. 3) in the tractor's oil outlet.

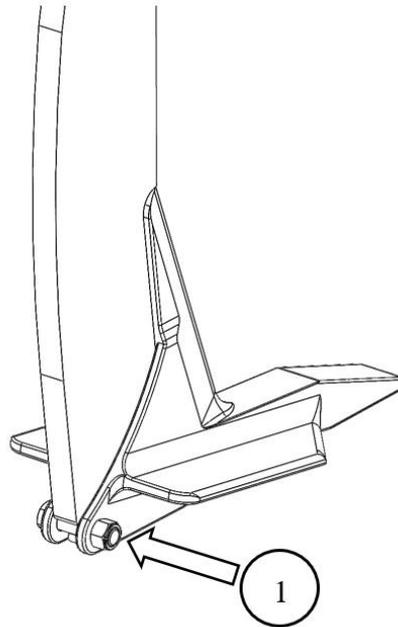
Turn on the ball valve (Pos. 4), and the working pressure can now be adjusted up or down with the tractor's oil outlet.

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.

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.

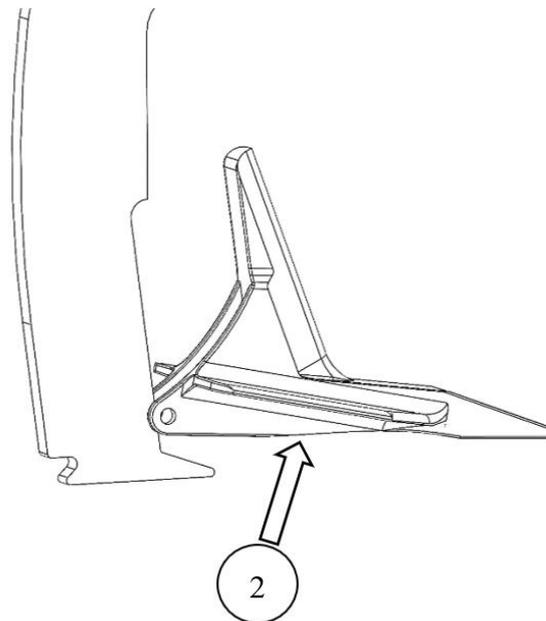
Replacement of wearing point



⚠ Before working with the machine's wearing points, the machine is to be fastened. This can be performed by trestles under the main frame.

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.**

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, item no. 645000044 (Pos. 2), by pushing the wearing point to the rear and then in its place.

Check the M16 x 65 mm bolt for eventual damages and replace it as required, item no. 0235852+0272290+0264090

Mount the M16 x 65 mm bolt (Pos. 1), lubricate and tighten it with approx 20 Nm.

Be carefull not to overtighten – the wearing point can be damaged

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.

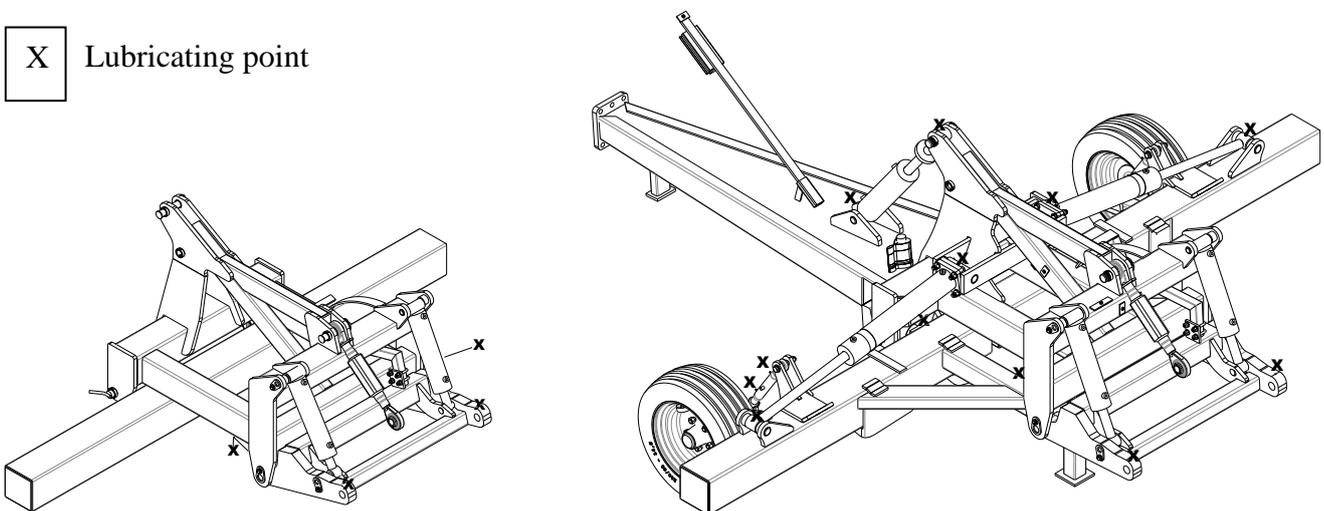
Lubrication

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

The 3.0 m, 3.5 m and 4.0 m Combi-Tiller (rigid) have 5 lubricating points, and the 4.0 m and 5.0 m Combi-Tiller (hydraulic) have 20 lubricating points, all Combi-Tiller models 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 at the movable linkage and at the cylinder as well. The lubricating points on the hydraulic models are furthermore located where the wing sections are hinged on the middle section and at the support wheels.

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

X Lubricating point



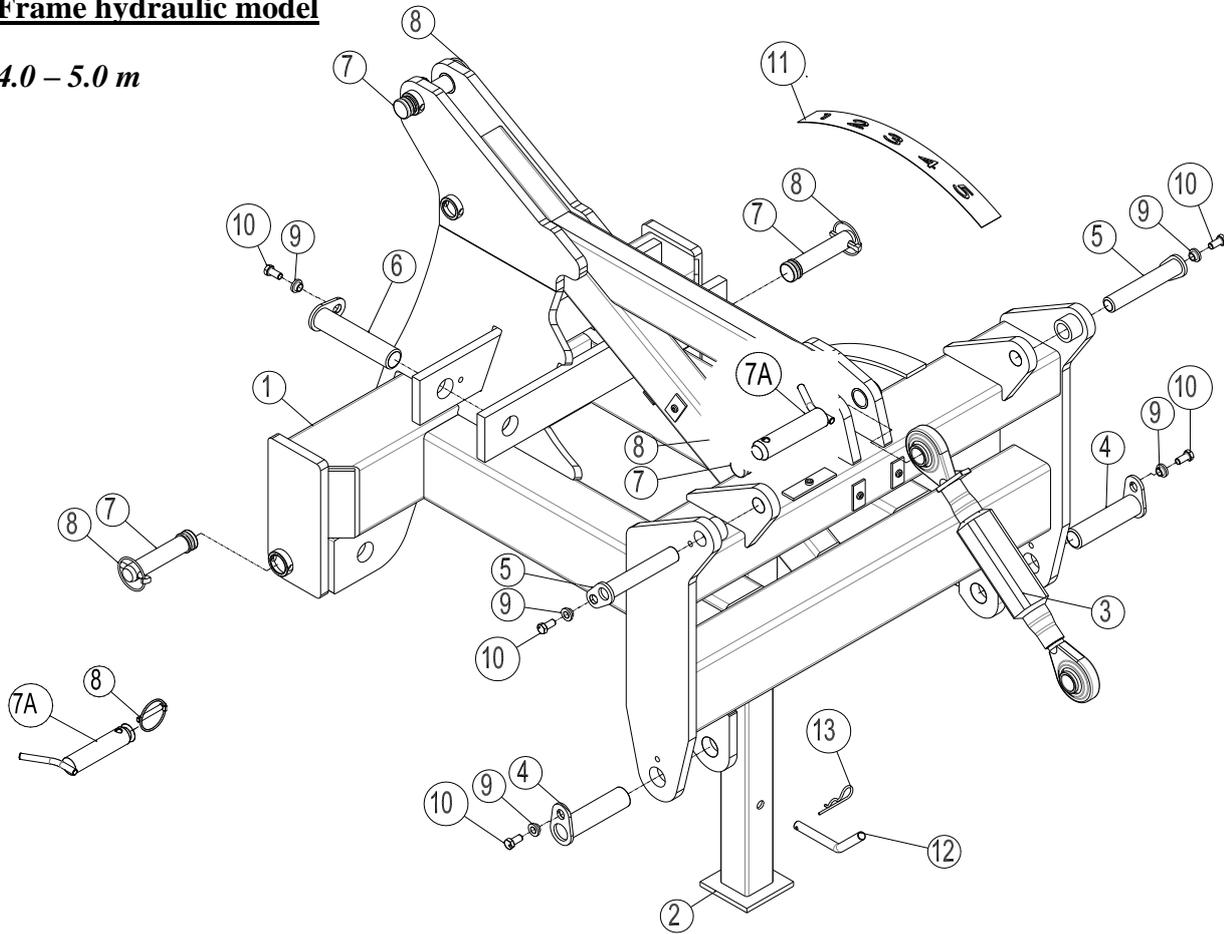
Important!

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

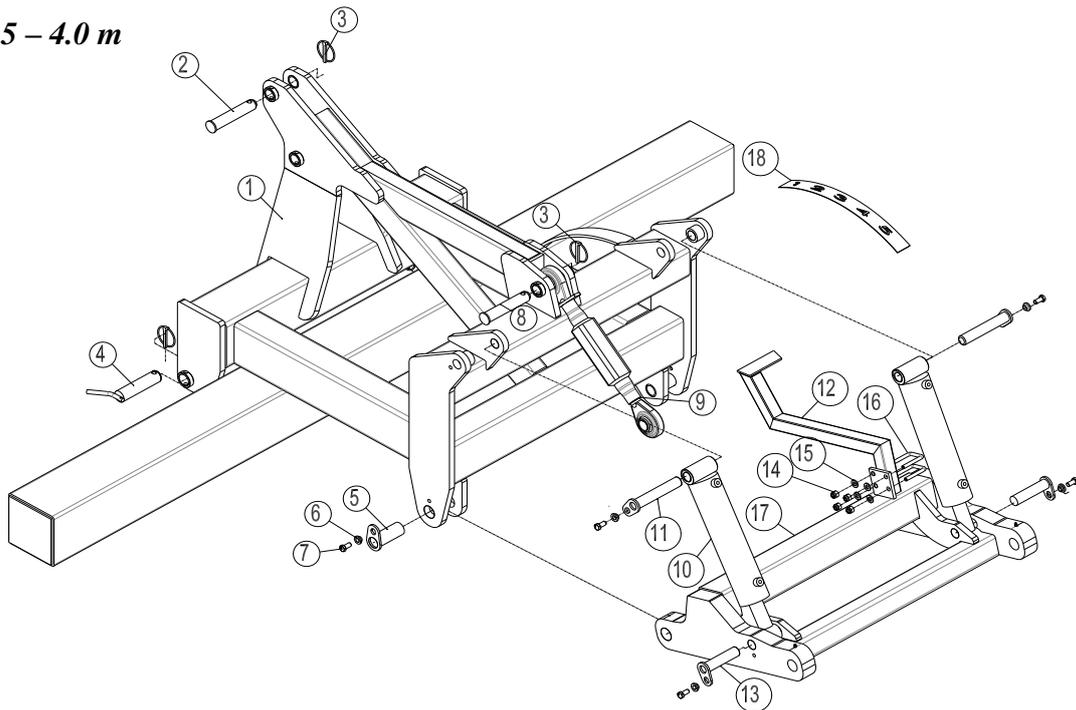
Spare parts list

Frame hydraulic model

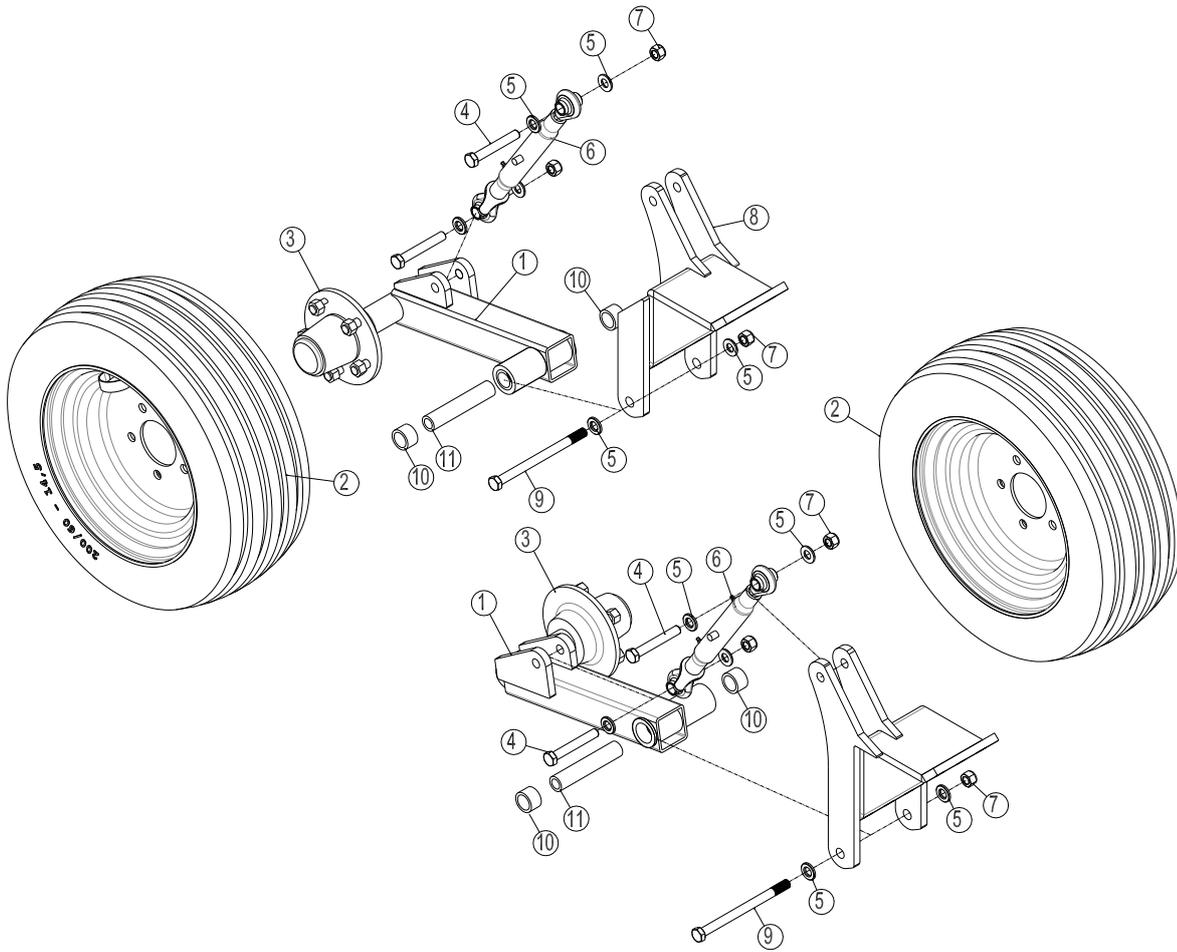
4.0 – 5.0 m



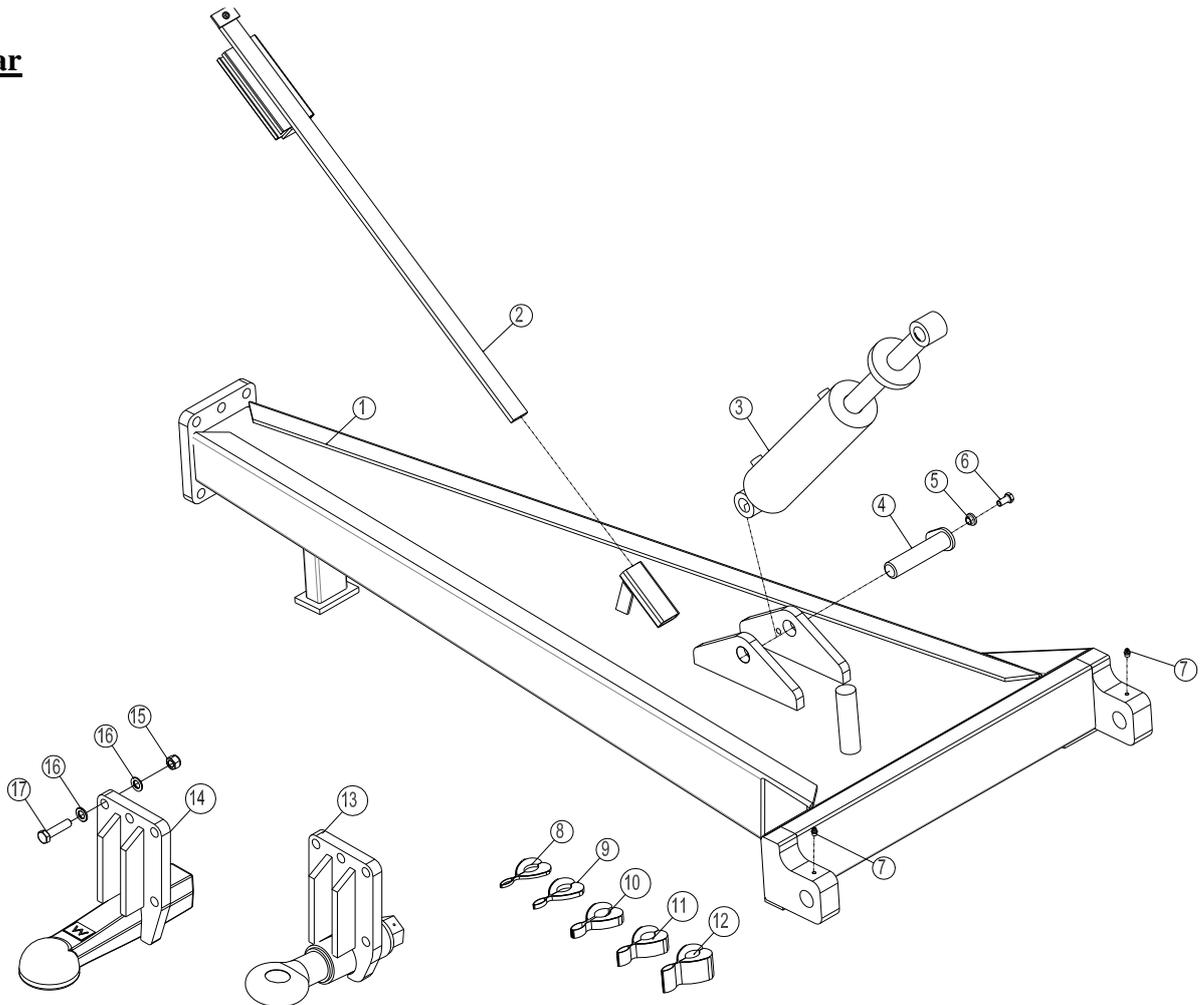
Pos.	Item no.	Designation	4.0 m	5.0 m
1	645200016	Frame	1	1
2	645200013	Support leg	1	1
3	690302025	Top link strengthened	1	1
4	69440155G	Pin Ø40 L=155	2	2
5	69530175G	Pin Ø30 L=175	2	2
6	69440187G	Pin Ø40 L=187	2	2
7	69532119J	Pin for top link Ø32 L=119	2	2
7A	69537129B	Pin for liftarm Ø37 L=129	2	2
8	690134008	Ring pin, Ø11,5, ring Ø60	4	4
9	630532600	Lock bush for pin head	6	6
10	690101101	Bolt M12x25 8.8	6	6
11	698500018	Label for scale	1	1
12	69516094A	Pin Ø16x94	1	1
13	690133005	R-clip Ø4	1	1

Frame and three-point linkage, rigid model**3.0 – 3.5 – 4.0 m**

Pos.	Item no.	Designation	3.0 m	3.5 m	4.0 m
1	645200090	Frame	1		
1	645200091	Frame		1	
1A	645200213	Frame		1	
1	645200092	Frame			1
2	69532100J	Pin for top link: Ø32 L=100	1	1	1
2A	69532105C	Pin for top link. Ø32/Ø45 L=105		1	
3	690134008	Ring pin: Ø11, Ø60 ring	4	4	4
4	69537129B	Pin for lift arm: Ø37 L=129	2	2	2
4A	69537105C	Pin for lift arm: Ø37/Ø50 L=105		2	
5	69440100G	Pin: Ø40 L=100	2	2	2
6	630532600	Lock bush for pin head	6	6	6
7	690101101	Bolt M12x25 8.8	6	6	6
8	69532119J	Pin for top link: Ø32 L=119	1	1	1
9	690302025	Top link	1	1	1
10	690200200	Cylinder 80/40x280 – plainØ30	2	2	2
10a	690200142	Gasket set 80/40 (Klinkby)			
10a	690200143	Gasket set 80/40 (Laizhou)			
11	69530175G	Pin: Ø30 L=175	2	2	2
12	645200170	Pointer at scale	1	1	1
13	69430125G	Pin: Ø30 L=125	2	2	2
14	690113006	Self-locking nut M12	4	4	4
15	690117014	Facet plate Ø12	4	4	4
16	690110050	U-bolt M12x40x40x40	2	2	2
17	645200113	Lift bracket	1	1	1
18	698500018	Label for scale	1	1	1

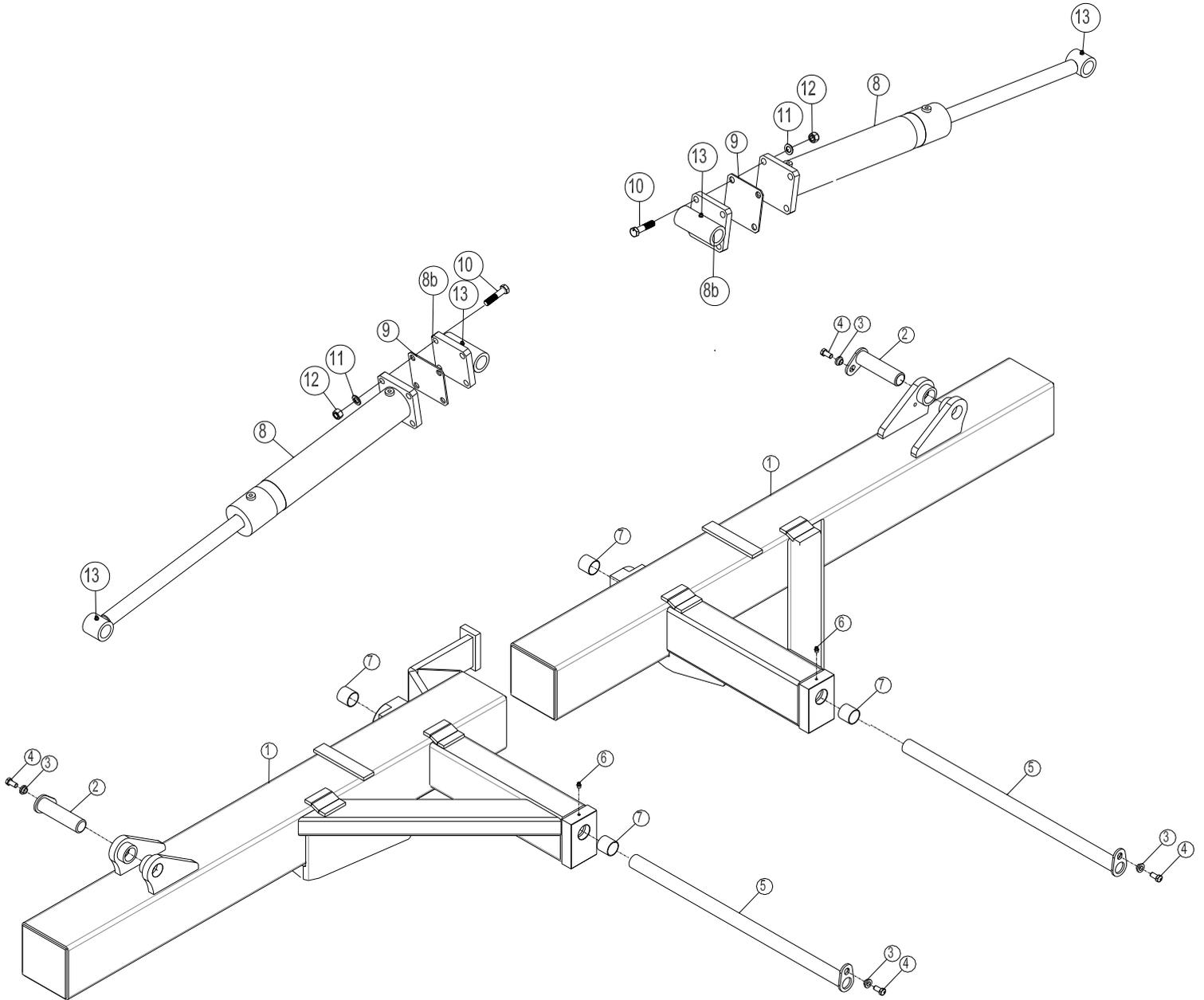
Support wheel

Pos.	Item no.	Designation	4.0 m	5.0 m
1	645200063	Wheel base, right	1	1
1	645200088	Wheel base, left	1	1
2	0395600	Complete wheel 200/60-14,5 10PR-5Rib	2	2
3	0395200	Hub	2	2
3a	0395270	Hub bolt M14x1,5 R14	10	10
3b	0395290	Wheel nut M14x1,5 R14	10	10
3c	0395260	Hub cap Ø62	2	2
4	690103117	Bolt M16x110 8.8	4	4
5	690117060	Facet plate Ø16	12	12
6	690302022	Top link M22 L=380-540	2	2
7	690113008	Self-locking nut M16	6	6
8	645200064	Bracket for support wheel, right	1	1
8	645200089	Bracket for support wheel, left	1	1
9	690103174	Bolt M16x220 8.8	2	2
10	0475307	Bush EG 40/30 L=25	4	4
11	645200066	BK-tube 30x5 L=155	2	2

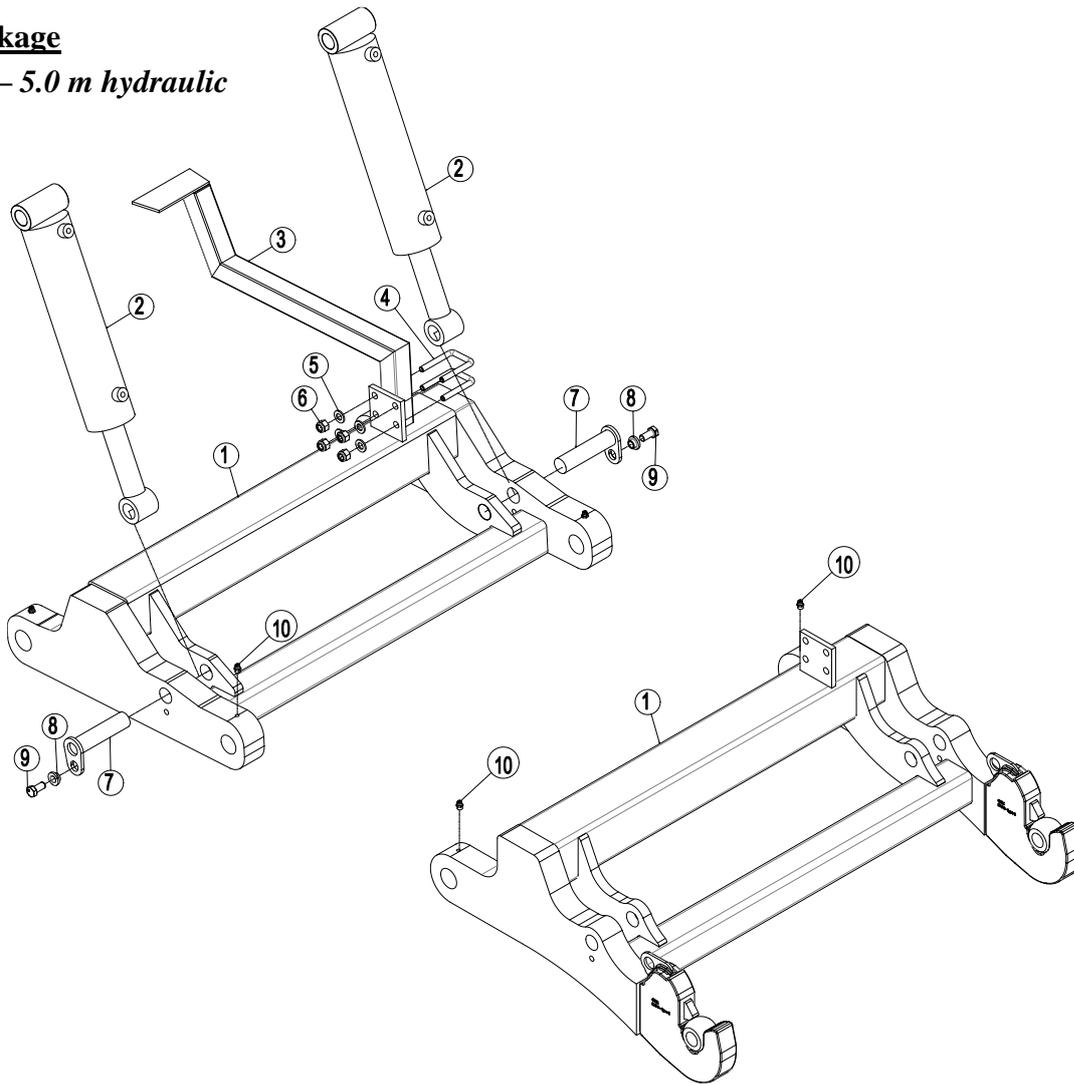
Drawbar

Pos.	Item no.	Designation	4.0 m	5.0 m
1	630931052	Drawbar	1	1
2	630771200	Parking device f/hoses	1	1
3	690200258	Cylinder 90/40x280mm Ø35/Ø32,5	1	1
3a	690200268	Gasket set 90/40 (Klinkby)		
3a	690200274	Gasket set 90/40 (Laizhou)		
4	69435153G	Pin Ø35 L=153	1	1
5	630532600	Lock bush for pin head	1	1
6	690101101	Bolt M12x25 8.8	1	1
7	690136029	Lubricating nipple M8	2	2
8	690200664	Distance clip "blue" 6.2mm	1	1
9	690200665	Distance clip "red" 9.4mm	1	1
10	690200666	Distance clip "yellow" 18.8mm	1	1
11	690200667	Distance clip "black" 36.1mm	1	1
12	690200668	Distance clip "silver" 50.8mm	1	1
13	630757041	Towing eye w/bracket Ø50 pivotal 1x30°	1	1
14	630757023	Towing eye w/bracket – ball hitch	1	1
15	690113011	Self-locking nut M20	6	6
16	690117005	Facet plate Ø20	12	12
17	690103173	Bolt M20x70 10.9	6	6

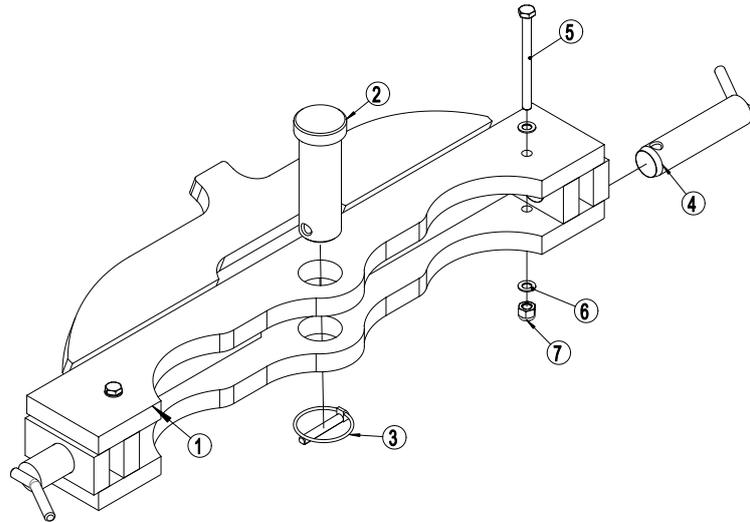
Wing section



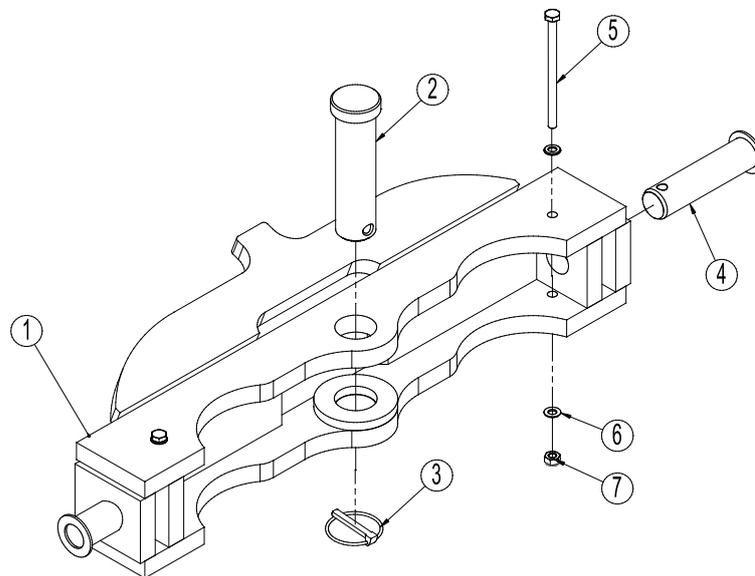
Pos.	Item no.	Designation	4.0 m	5.0 m
1	645200191	Wing section, left	1	
1	645200196	Wing section, right	1	
1	645200197	Wing section, right		1
1	645200198	Wing section, left		1
2	69440155G	Pin Ø40 L=155	2	2
3	630532600	Lock bush for pin head	4	4
4	690101101	Bolt M12x25 8.8	4	2
5	69440827G	Pin Ø40 L=827	2	2
6	690136029	Lubricating nipple M8	2	2
7	690140715	Slide bush Ø40/44 L=40	4	4
8	690200255	Cylinder 90/40x500	2	2
8a	690200273	Gasket set 90/40 (Hydraflex)		
8b	690200253	Square flange w/bushing Ø40,25	2	2
9	645200176	Shim for customization of cylinder length 3 mm		
9	645200178	Shim for customization of cylinder length 4 mm		
9	645200174	Shim for customization of cylinder length 5 mm		
9	645000396	Shim for customization of cylinder length 1 mm		
10	690103200	Bolt M16x70 8.8	8	8
11	690117013	Facet plate Ø16	8	8
12	690113008	Self-locking nut M16	8	8
13	690136029	Lubricating nipple M8	2	2

Linkage**4.0 – 5.0 m hydraulic**

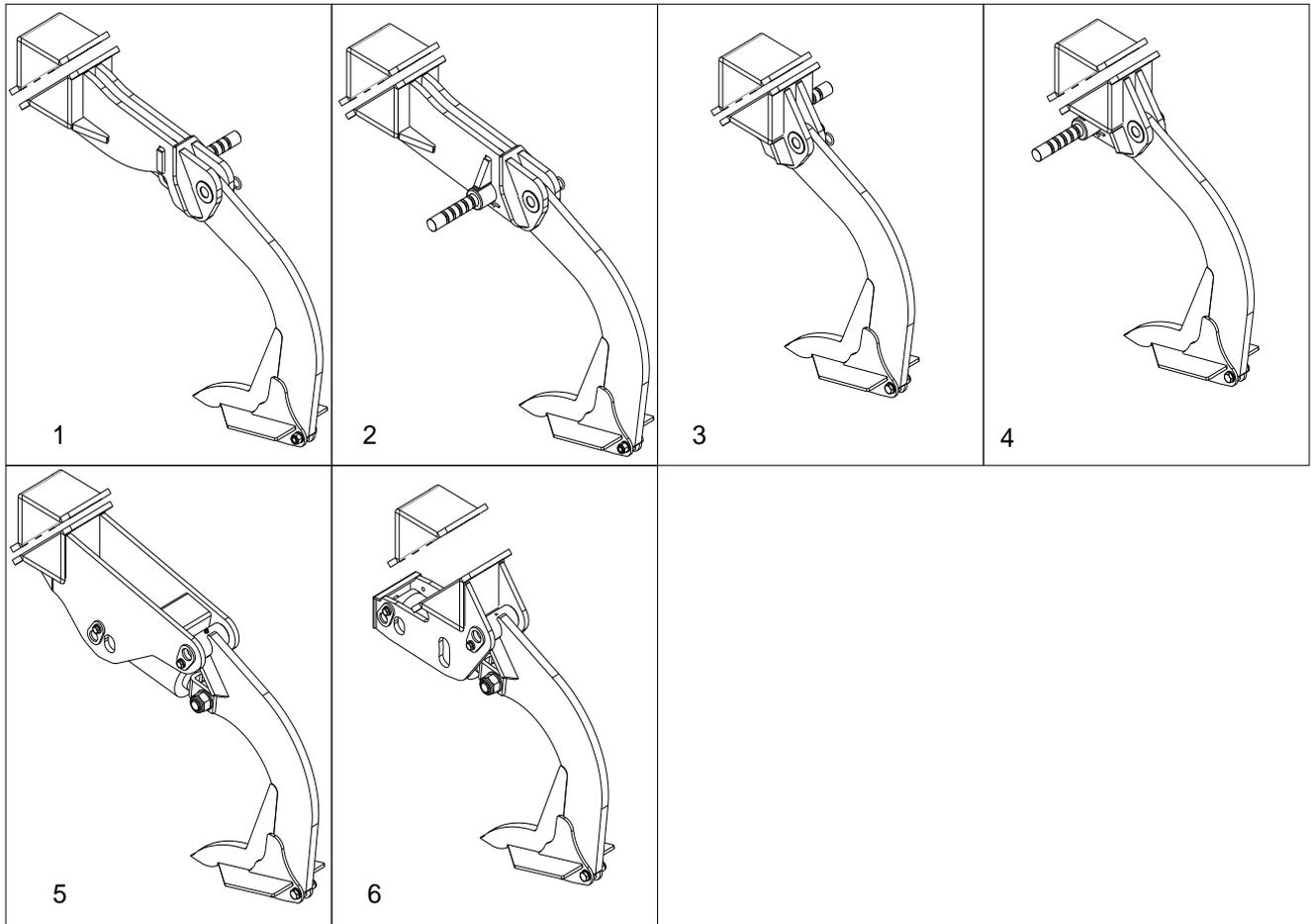
Pos.	Item no.	Designation	4.0 m	5.0 m
1	645200171	Lift frame, CAT II distance	1	1
1	645200231	Liftframe, CAT III Quick couplung and CAT II distance	1	1
1a	690134006	Ball CAT 3/2 Ø64/Ø28,4	2	2
1b	690106011	Repairset f/Coupling Release KATIII CBM typeII		
2	690200200	Cylinder 80/40x280mm Ø30/Ø30	2	2
2a	690200143	Gasket set 80/40 (Laizhou)		
2a	690200142	Gasket set 80/40 (Klinkby)		
3	645200167	Pointer at scale	1	1
4	690110050	U-bolt M12 40x40x40	2	2
5	690117014	Facet plate Ø12	4	4
6	690113006	Self-locking nut M12	4	4
7	69430125G	Pin Ø30 L=125	2	2
8	630532600	Lock bush for pin head	2	2
9	690101101	Bolt M12x25 8.8	2	2
10	690136029	Lubricating nipple M8	4	4

Crossbar

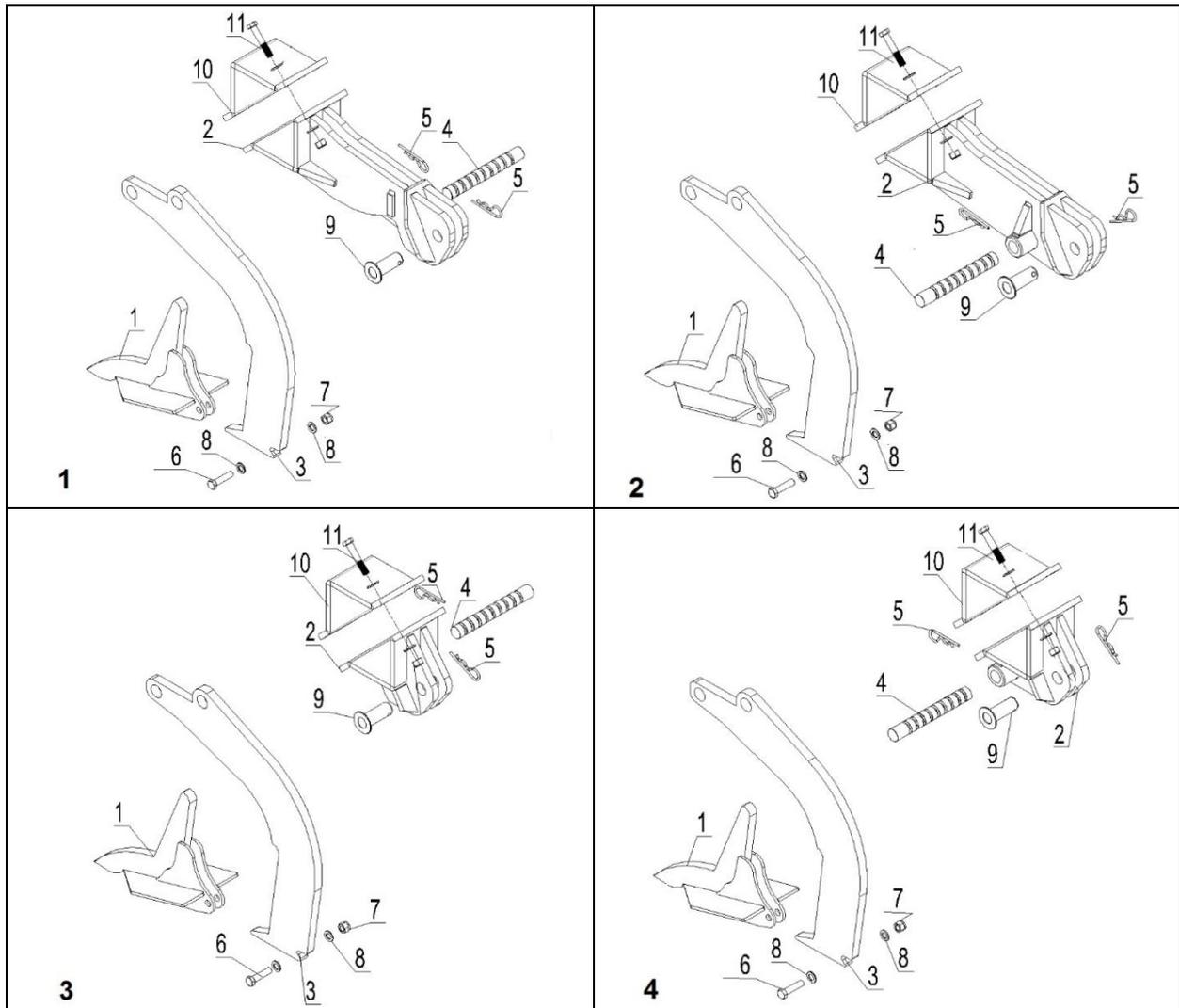
Pos.	Item no.	Designation	4.0 m	5.0 m
1	645200207	Crossbar	1	1
2	69448140J	Pin Ø48 L=140	1	1
3	690134008	Ring pin Ø11,5 Ø60 ring	1	1
4	69537150B	Pin for lift arm Ø37 L=150 (CAT.III)	2	2
5	690103079	Bolt M10 x 130 10.9	2	2
6	0272260	Facet plate Ø10	4	4
7	0264060	Self-locking nut M10	2	2



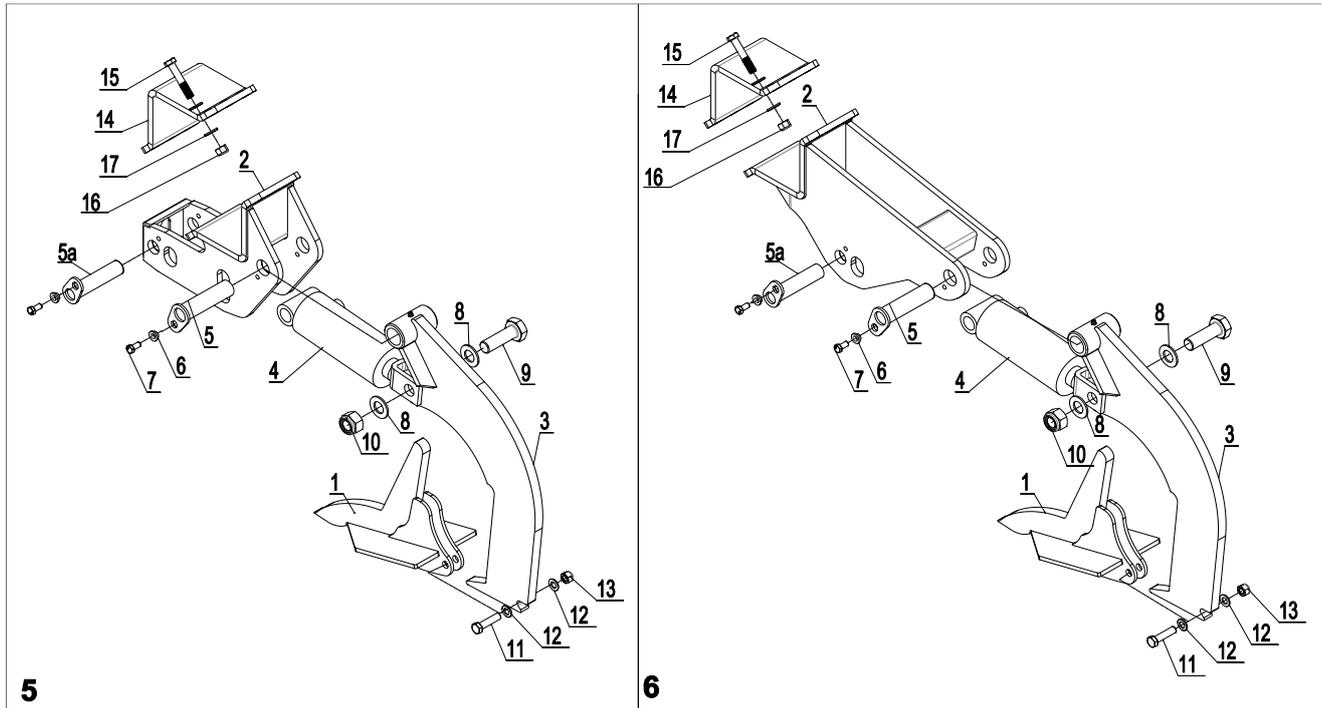
Pos.	Item no.	Designation	4,0 m	5,0 m
1	645200240	Crossbar	1	1
2	69448180J	Pin Ø48 L=180	1	1
3	690134008	Ring pin Ø11,5 Ø60 ring	1	1
4	69440155F	Pin Ø40 L=155	2	2
5	0235240	Bolt M10 x 160 10.9	2	2
6	0272260	Facet plate Ø10	4	4
7	0264060	Self-locking nut M10	2	2

Tine types

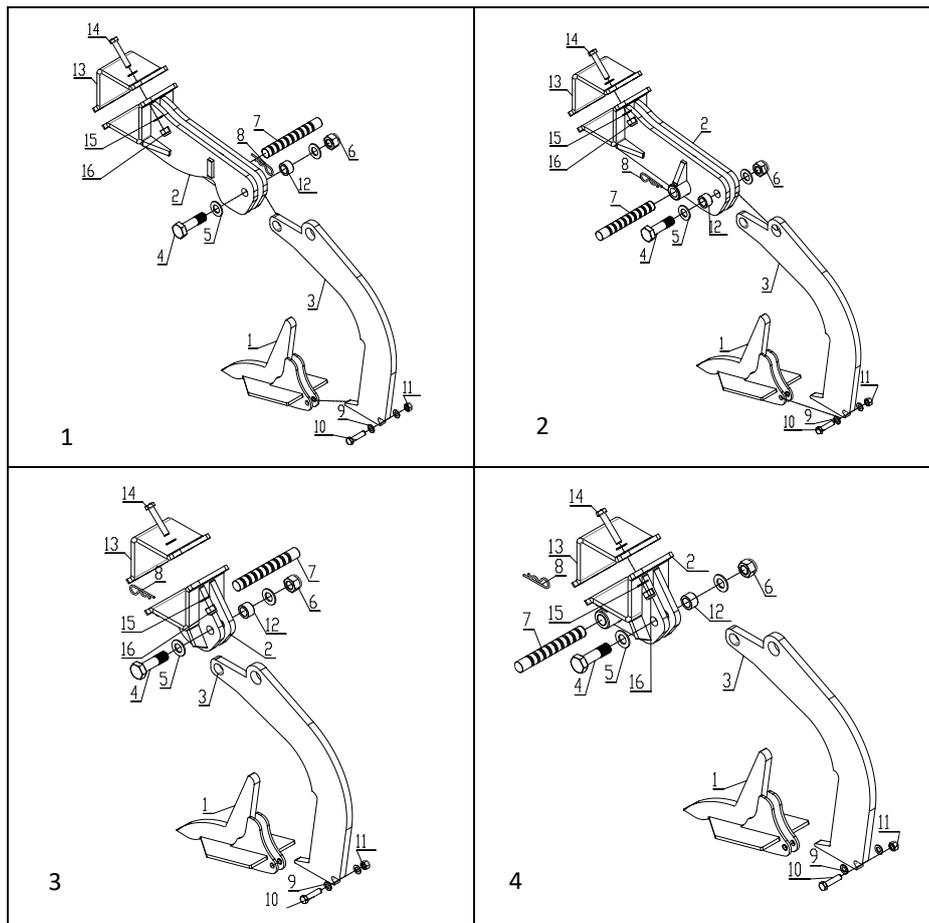
Pos.	Designation		Pcs. per machine				
			3.0 m rigid	3.5 m rigid	4.0 m rigid	4.0 m hydr.	5.0 m hydr.
1	Quick-Push mechanical release system	Long – Right		1			
2	Quick-Push mechanical release system	Long – Left	2	2			
3	Quick-Push mechanical release system	Short – Right	1	2			
4	Quick-Push mechanical release system	Short – Left	2	1			
5	Hydraulic automatic release system	Long - Automatic	2	3	4	4	4
6	Hydraulic automatic release system	Short - Automatic	3	3	3	3	5

Quick-Push tines, spare parts up to machine no. : 200454

Drawing	Pos.	Item no.	Designation	Per tine
	1	645000044	Wearing point	1
1	2	645200059	Tine bracket, long right	1
2	2	645200060	Tine bracket, long left	1
3	2	645200057	Tine bracket, short right	1
4	2	645200058	Tine bracket, short left	1
	3	645200046	Leg	1
	4	645000059	Shear bolt f/25 mm tine, yellow cromated	1
	4	645000925	Shear bolt f/15 mm tine, black cromated	1
	5	690133006	R-clip	2
	6	690103190	Bolt M16x65 8.8	1
	6	0235852	Bolt M16x65 (specialbolt) from maschinenr. 200971	1
	7	0264090	Self-locking nut M16	1
	8	0272290	Facet plate Ø16	2
	9	69435070F	Pin Ø35 L=70	1
	10	645200061	Clamping plate for tine bracket	1
	11	690103324	Bolt M18x100 10.9	6
	11a	690117015	Facet plate Ø18	12
	11b	690113016	Self-locking nut M18	6

Hydraulic release system, spare parts

Drawing	Pos.	Item no.	Designation	Per tine
	1	645000044	Wearing point	1
5	2	645200081	Tine bracket, short	1
6	2	645200080	Tine bracket, long	1
	3	645200085	Leg	1
	4	690200114	Cylinder 100/50x130 – Ø35/Ø30 fork	1
	4a	690200285	Gasket set 100/50mm	
	5	69440148G	Pin Ø40 L=148	1
	5a	69435148G	Pin Ø35 L=148	1
	6	630532600	Lock bush for pin head	2
	7	690101101	Bolt M12x25 8.8	2
	8	690115014	Facet plate Ø30	2
	9	690103868	Bolt M30x95 10.9 DIN6914	1
	10	690113018	Self-locking nut M30	1
	11	690103190	Bolt M16x65 8.8	1
	11	0235852	Bolt M16x65 (specialbolt) fra serienr. 200971	1
	12	0272290	Facet plate Ø16	14
	13	0264090	Self-locking nut M16	7
	14	645200061	Clamping plate for tine bracket	1
	15	690103324	Bolt M18x100 10.9	6
	16	690113016	Låsemøtrik M18	6
	17	690117015	Facetskive Ø18	12

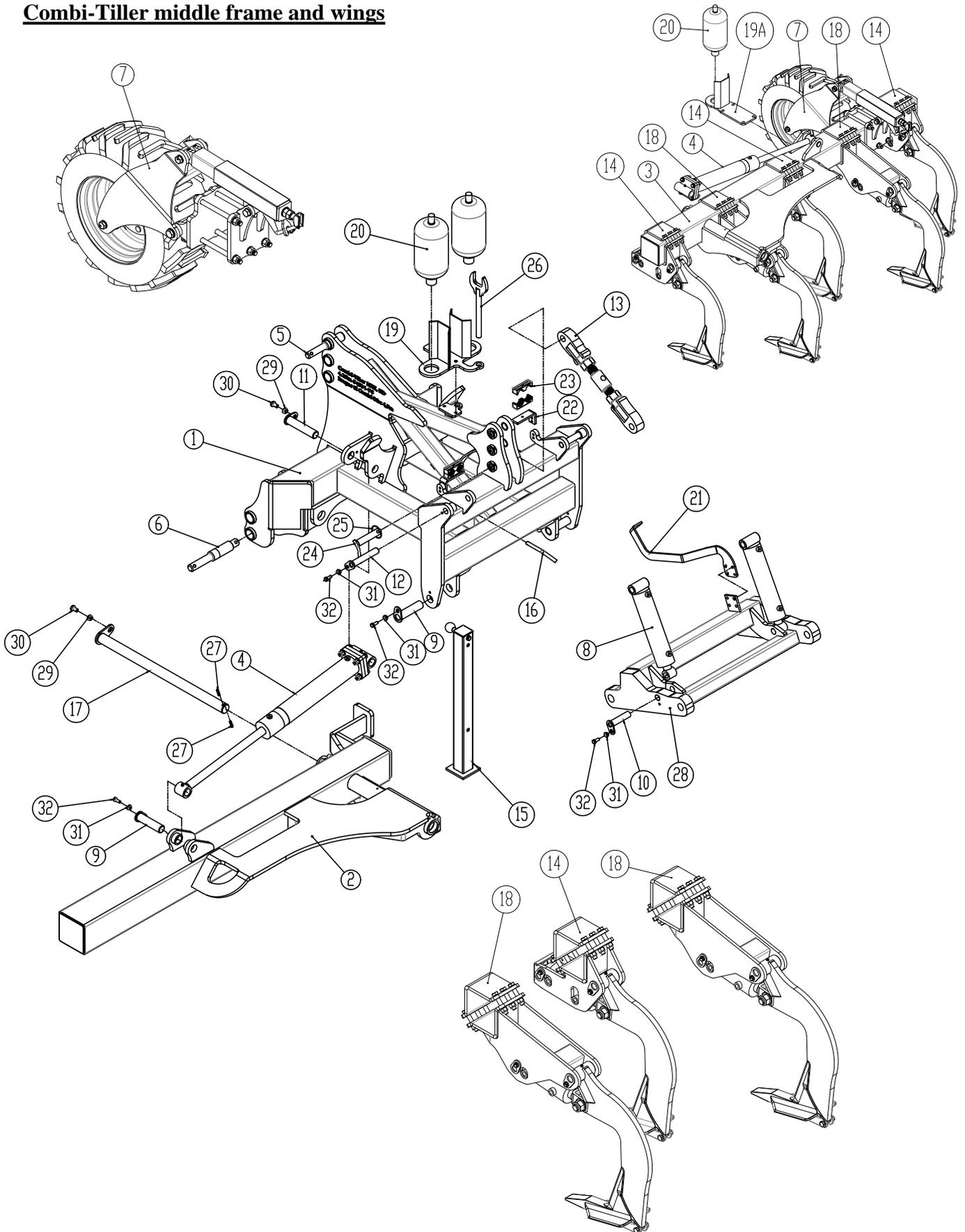
Quick-Push tines, spare parts from machine no. : 200455

Drawing	Pos.	Item no.	Designation	Per tine
	1	645000044	Wearing point	1
1	2	645200183	Tine bracket, long right	1
2	2	645200185	Tine bracket, long left	1
3	2	645200187	Tine bracket, short right	1
4	2	645200188	Tine bracket, short left	1
	3	645200184	Leg	1
	4	690103869	Bolt M30x110 10.9	1
	5	690115014	Facet plate Ø30	2
	6	690113018	Self-locking nut M30	1
	7	645000059	Shear bolt f/25 mm tine, yellow cromated	1
	7	645000925	Shear bolt f/15 mm tine, black cromated	1
	8	690133006	R-clip	2
	9	0272290	Facet plate Ø16	2
	10	690103190	Bolt M16x65 8.8	1
	10	0235852	Bolt M16x65 (specialbolt) from maschinenr. 200971	1
	11	0264090	Self-locking nut M16	1
	12	645000113	Bush	1
	13	645200061	Clamping plate for tine bracket	1
	14	690103324	Bolt M18x100 10.9	6
	15	690113016	Låsemøtrik M18	6
	16	690117015	Facetskive Ø18	12

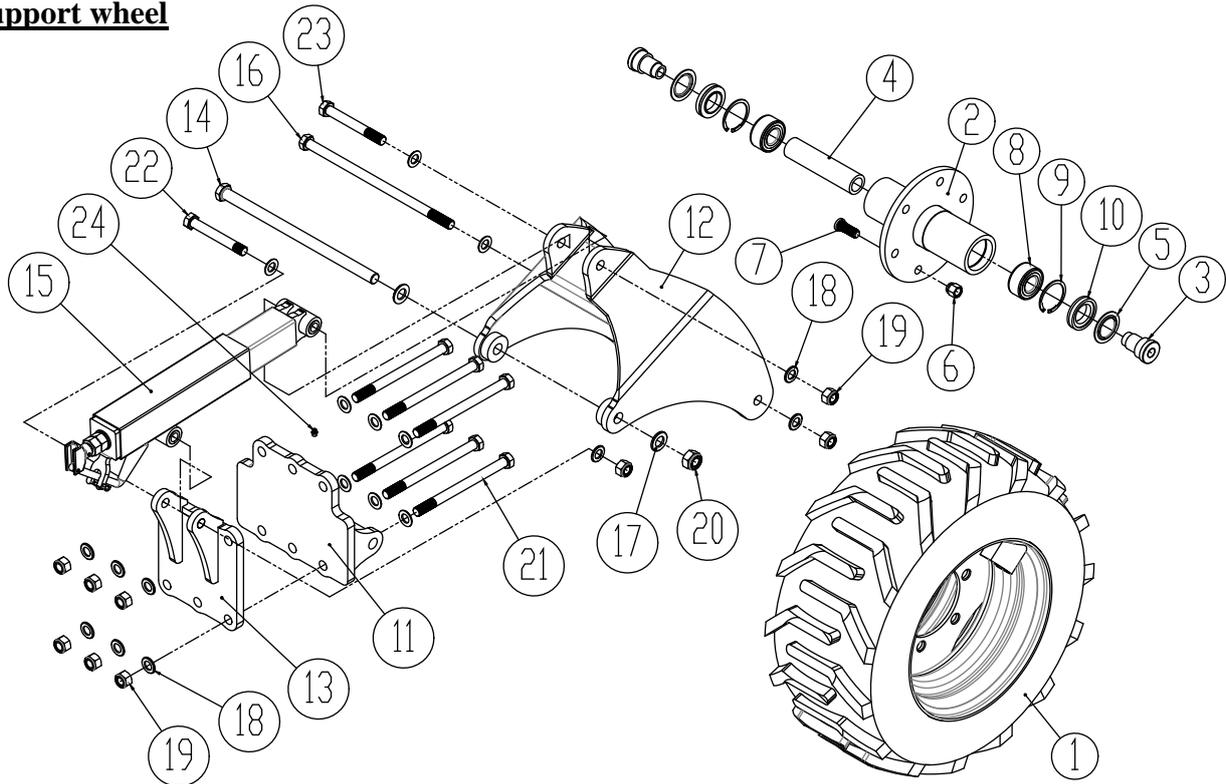
Notes

--	--

Combi-Tiller middle frame and wings



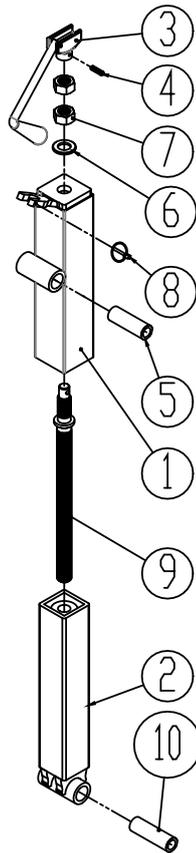
Pos.	Item no.	Designation	4,5m	5,5m
1	1237093	Middle frame, Cat. 3, 4N	1	1
2	1237145	Wing left HD 4,25m	1	
2	1237109	Wing left HD 5,25m		1
3	1237146	Wing right HD 4,25m	1	
3	1237108	Wing right HD 5,25m		1
4	690200255	Cylinder Ø90/40x500	2	2
4a	690200273	Gasket set 90/40 (Hyraflex)		
5	69532105C	Ø45 round steel – SB27M12CB	1	1
6	69537125C	Round steel E 360 (St. 70-2)	2	2
7	1237007	Support wheel complete	2	2
8	690200200	Cylinder Ø80/40x280	2	2
8a	690200143	Gasket set 80/40 (Laizhou)		
9	69440155G	Pin Ø40 L=155	4	4
10	69430125G	Pin Ø30 L=125	2	2
11	69440187G	Pin Ø40 L=187	2	2
12	69530175G	Compressed steel	2	2
13	1237155	Toplink, complete	1	1
14	1237152	Tine complete, hydr. auto, short model	3	4
15	1237125	Support wheel, complete	1	1
16	69516094A	Compressed steel Ø16	1	1
17	69450865G	Pin Ø50 L=865	2	2
18	1237151	Tine complete, hydr. auto, long model	4	5
19	645200076	Holder for accumulator	1	1
19A	1237054	Holder for accumulator		2
20	690206513	Accumulator 4,5 L 90 bar	2	4
21	1237204	Indicator scale for lift	1	1
22	1237231	Bracket for hose holder	2	2
23	0449750	Hose holder	4	4
24	69532129B	Pin Ø32 L=129 w/handle	1	1
25	690134008	Ring clip Ø11,5 Ø60 ring	4	4
26	1285081	Topstangsværktøj	1	1
27	0371702	Roll pin Ø10x40 mm	4	4
28	645200171	Lift console, Combi-Tiller MKII	1	1
29	630532700	Lock bushing for pin head	4	4
30	0235770	Bolt M16x30	4	4
31	630532600	Lock bushing for pin head	4	4
32	0235340	Bolt M12x30 8.8 fzb	4	4

Support wheel

Pos.	Item no.	Designation	Pc.
1	0395654	Wheel 300/55x14,5 SG Flotation, complete	1
2	7365004	Hub 6-holes	1
3	7365001	End bushing for hub assembly	2
4	7365002	Bushing Steel pipe Ø45x7	1
5	630949019	Disc Ø45/71,7	2
6	0396470	Hub nut M18x1,5 R19	6
7	0396460	Hub bolt M18x1,5 L=49	6
8	690140201	Bearing (conical double roller bearing)	2
9	0379250	Seeger circlip ring	2
10	690140651	Sealing kit 72-45-14/17	2
11	1237008	Mounting bracket part 1 of 2	1
12	1237009	Wheel frame	1
13	1237010	Mounting bracket part 2 of 2	1
14	0236570	Bolt M24x440 8.8.	1
15	1237011	Spindle, cpl. (see next page)	1
16	690103286	Bolt M20x420 8.8	1
17	0272330	Facet washer Ø24 fzb	2
18	0272310	Facet washer Ø20 DIN125B	18
19	0264110	Self-locking nut M20	9

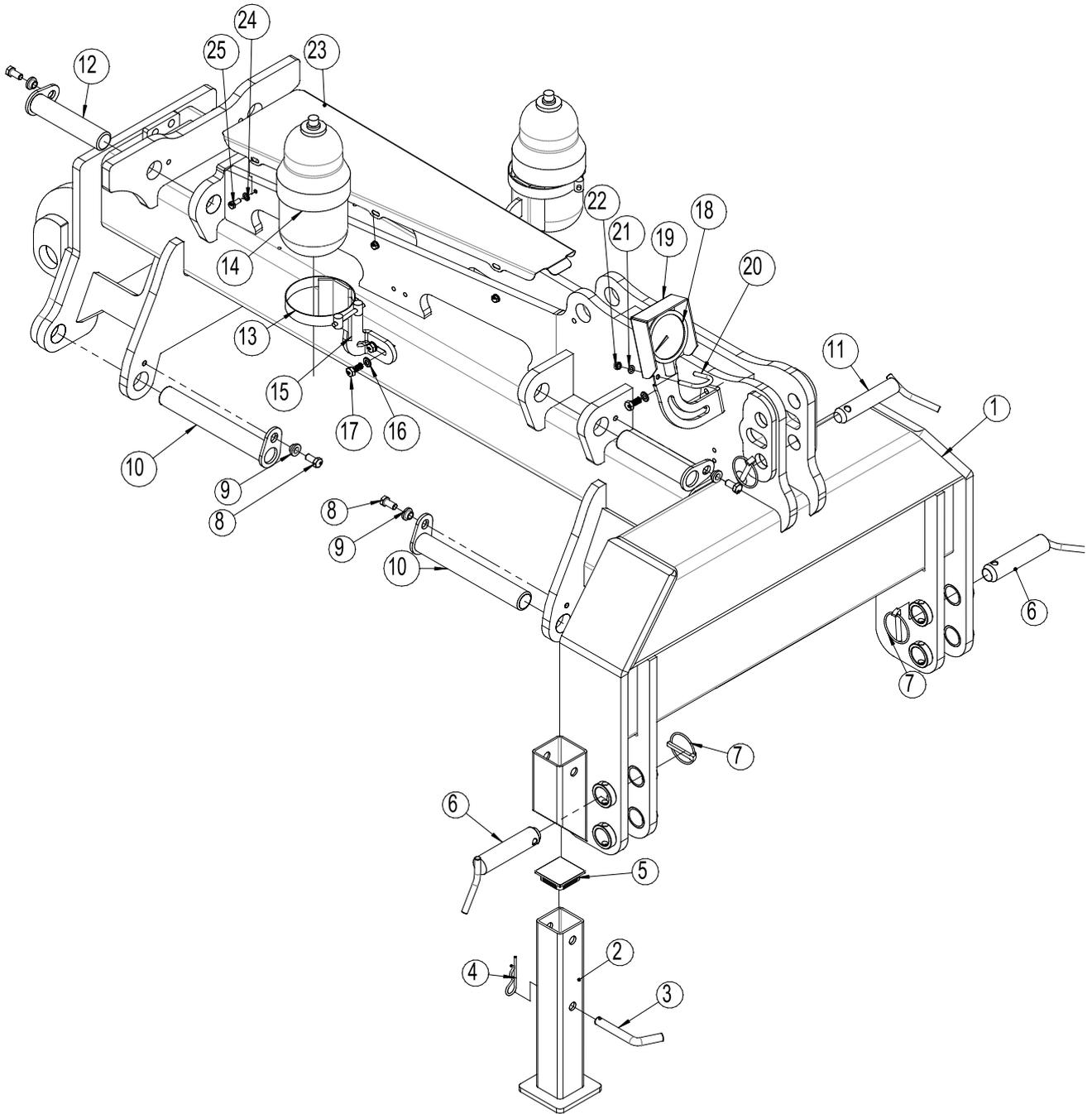
20	0264130	Self-locking nut M24 8.8 fzb DIN985	1
21	690103297	Bolt M20x260 10.9	6
22	0236240	Bolt M20x150 8.8	1
23	0236250	Bolt M20x160 8.8	1
24	690136029	Grease nipple M8 straight	1

Spindle for support wheel



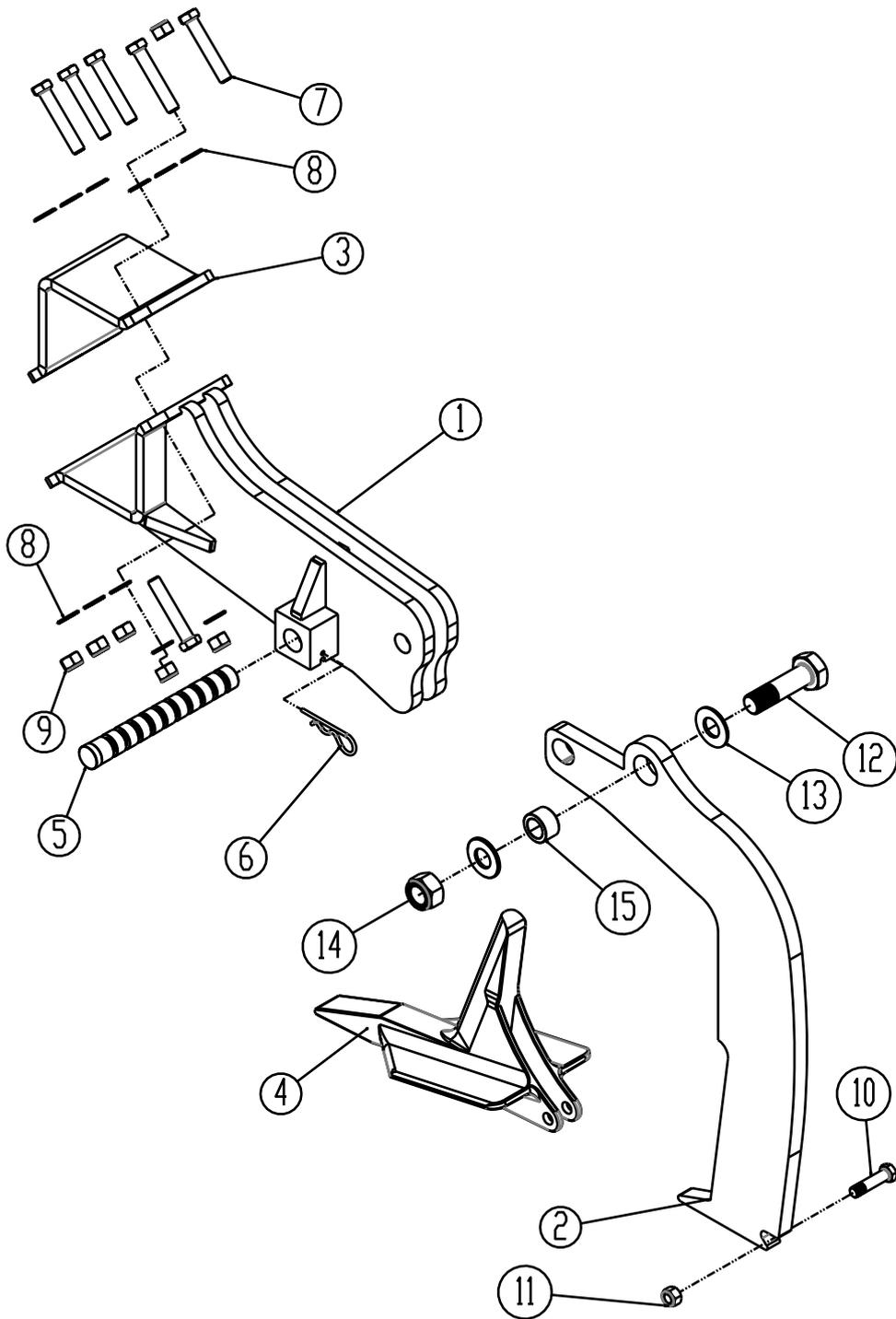
Pos.	Item no.	Designation	Pc.
1	675101007	Outer part, complete	1
2	1237023	Inder part, complete	1
3	903041102	Handle	1
4	0371660	Roll pin Ø8x30 mm	1
5	675101006	BK-pipe 30x5 L=89 S235JR	1
6	690117011	Facet washer Ø24	1
7	0261425	Nut M24, galvanized	2
8	690134001	Ring clip Ø4,5 mm	1
9	690304122	Rod with threads 28TR L=455	1
10	1237022	BK-pipe 30x5 L=98 S235JR	1

Middle frame for Disc-Roller

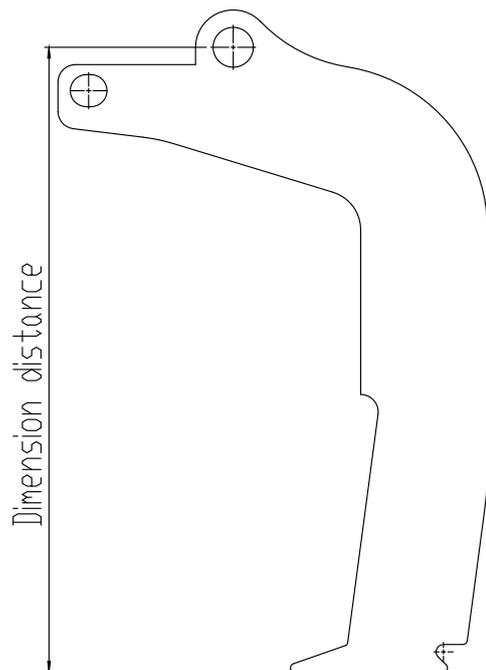


Pos.	Item no.	Designation	4,5m	5,5m
1	1300114	Centre frame w/protection	1	1
2	630916554	Supporting leg	1	1
3	1030280	Pin Ø16 L=80,5mm / 45°	1	1
4	0377400	R-clip Ø4	1	1
5	0489610	Plastic plug RHS 70x70x5	1	1
6	69537129B	Pin Ø37 =129 (Pin for lift arm CAT III) w/handle and cotter slot	2	2
7	690134008	Ring pin Ø11,5 – ring Ø60	3	3
8	690101101	Bolt M12x25 8.8 m/lim	4	4
9	630532600	Lock bush for pin head	4	4
10	69440287G	Pin Ø40 L=287	2	2
11	69532129B	Pin Ø32 L=129 (Pin for top link CAT III) w/handle and cotter slot	1	1
12	69440187G	Pin Ø40 L=187	2	2
13	690206511	Clamp for accumulator HST 2,3 ltr	2	2
14	690206510	Accumulator HST 2,3 ltr. 40 Bar	2	2
15	1300065	Holder for accumulator, right	1	1
15a	1300062	Holder for accumulator, left	1	1
16	0272260	Facet washer Ø10	6	6
17	0235040	Bolt M10x25 8.8	6	6
18	0442052	Manometer 250 Bar Ø100	1	1
19	1300067	Holder for Manometer	1	1
20	690110003	O-ring M8x60x Ø35	1	1
21	0272250	Facet washer Ø8	2	2
22	0264050	Self-locking bush M8	2	2
23	1300120	Protection for center frame	1	1
24	0234750	Steel set screw M8x20 fzb 8.8	6	6
25	0272250	Facet washer Ø8	6	6

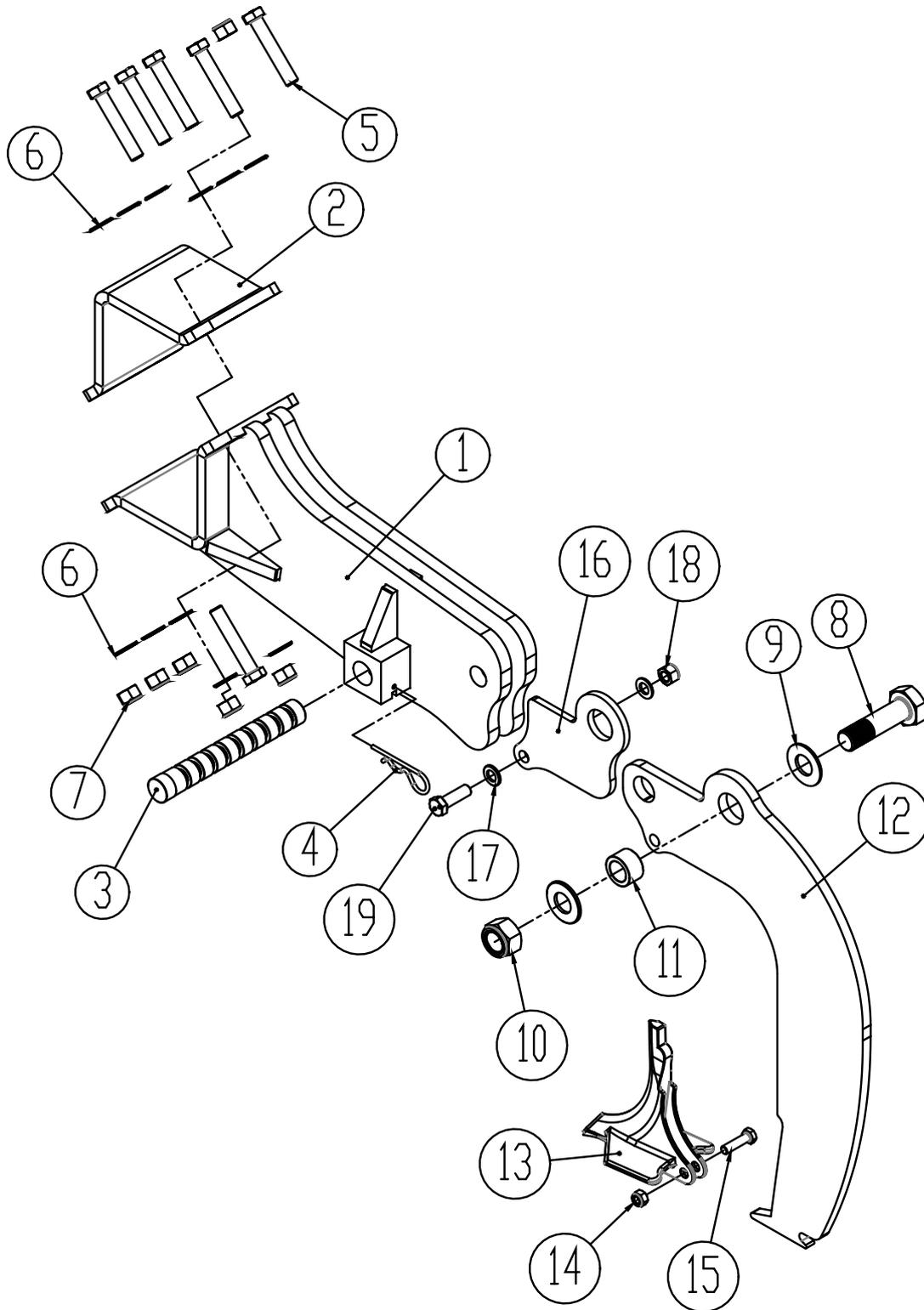
Tine Quick Push 200 mm wearing point, long/short/left/right (from mach. No. 32794)



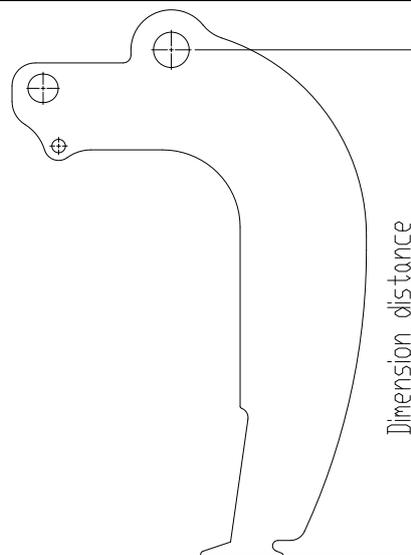
Pos.	Item no.	Designation	Long model	Short model
	1237139	Tine complete w/tine holder, Quick-Push left long		
	1237135	Tine complete w/tine holder, Quick-Push left short		
	1237141	Tine complete w/tine holder, Quick-Push right long		
	1237133	Tine complete w/tine holder, Quick-Push right short		
1	1237136	Quick-Push tine holder, left long	1	
1	1237134	Quick-Push tine holder, left short		1
1	1237140	Quick-Push tine holder, right long	1	
1	1237126	Quick-Push tine holder, right short		1
2	1237090	Tine 25mm Hardox 500, dimension distance 720 mm	1	1
3	645200061	Mounting bracket 15mm Domex 420 MC	1	1
4	645000044	Wearing point 200 mm wide	1	1
5	645000059	Shear pin Ø36 34CrNiMo6 Yellow Zink Plated	1	1
6	0377600	Hair pin Ø6	1	1
7	690103324	Bolt M18x100 10.9	7	7
8	0272300	Facetwasher Ø18	13	13
9	0264100	Self-locking nut M18	7	7
10	0235852	Bolt M16x65 8.8	1	1
11	0264090	Self-locking nut M16	1	1
12	690103869	Bolt M30x110 10.9	1	1
13	0272350	Facet washer Ø30 mm fzb	2	2
14	0264155	Self-locking nut M30	1	1
15	645000113	Bushing for tine	1	1



Tine Quick Push with 120 mm Easy Draft wearing point, long/short/left/right



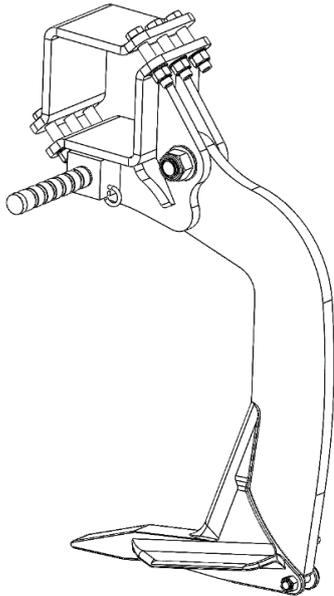
Pos.	Item no.	Designation	Long model	Short model
	1237232	Tine complete w/tine holder, Quick-Push left long		
	1237234	Tine complete w/tine holder, Quick-Push left short		
	1237239	Tine complete w/tine holder, Quick-Push right long		
	1237240	Tine complete w/tine holder, Quick-Push right short		
1	1237136	Quick-Push tine holder, left long	1	
1	1237134	Quick-Push tine holder, left short		1
1	1237140	Quick-Push tine holder, right long	1	
1	1237126	Quick-Push tine holder, right short		1
2	645200061	Mounting bracket 15mm Domex 420 MC	1	1
3	645000925	Shear pin Ø36 34CrNiMo6 Black Zink Plated	1	1
4	0377600	Hair-clip Ø6	1	1
5	690103324	Bolt M18x100 10.9	7	7
6	0272300	Facet washer Ø18	13	13
7	0264100	Self-locking nut M18	7	7
8	690103869	Bolt M30x110 10.9	1	1
9	0272350	Facet washer Ø30 mm fzb	2	2
10	0264155	Self-locking nut M30	1	1
11	645000113	Bushing for tine	1	1
12	1237235	Tine 15mm Hardox 500, dimension distance 660 mm	1	1
13	645000056	Low Draft cast wearing point 120 mm w/wolfram plate	1	1
14	0264070	Self-locking nut M12, fzb DIN985	1	1
15	0235380	Bolt M12x50 8.8	1	1
16	1237237	Sims 10 mm plate S235	1	1
17	690117013	Facet washer Ø16	2	2
18	690113008	Self-locking nut M16	1	1
19	690103197	Bolt M16x50 8.8	1	1



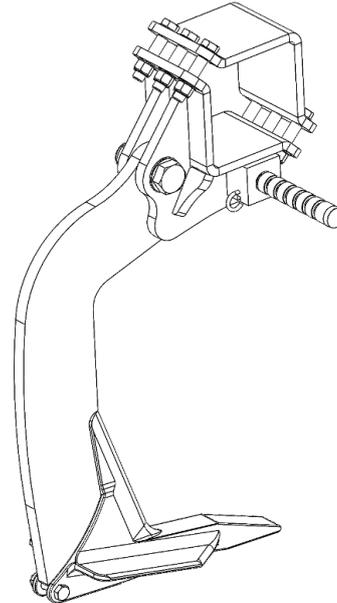
Overview Quick Push tineholders

Notice: When ordering spare parts for tine holders be aware that there on each machine with Quick-Push are 4 different models of tine holders. Respectively left/right models which also are in long and short. The different models are shown below here with 200 mm wearing points. The complete tine is available in the same conditions for the 120 mm Easy Draft wearing point in the same tine holder.

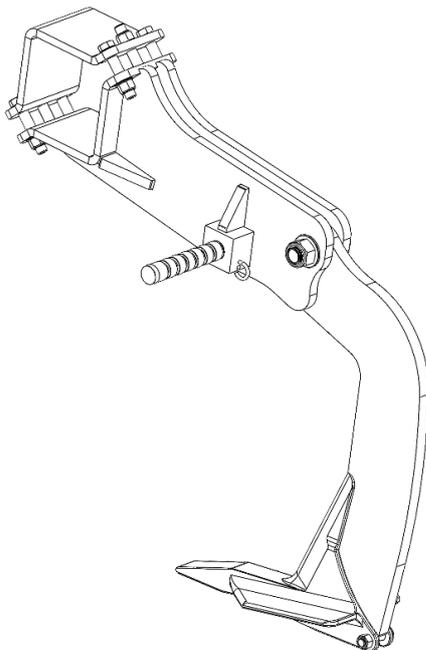
Complete tine with holder, left short
No. 1237135



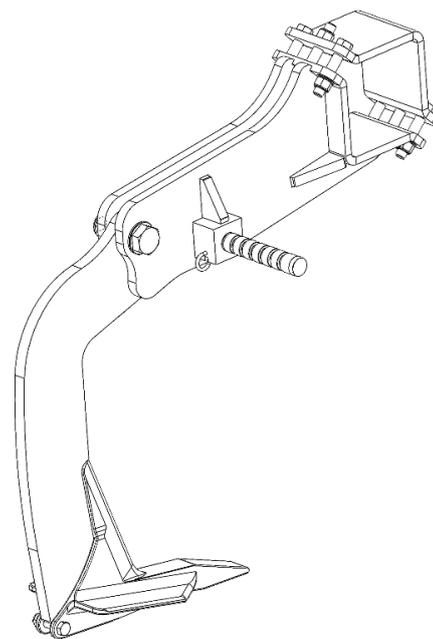
Complete tine with holder, right short
No. 1237133



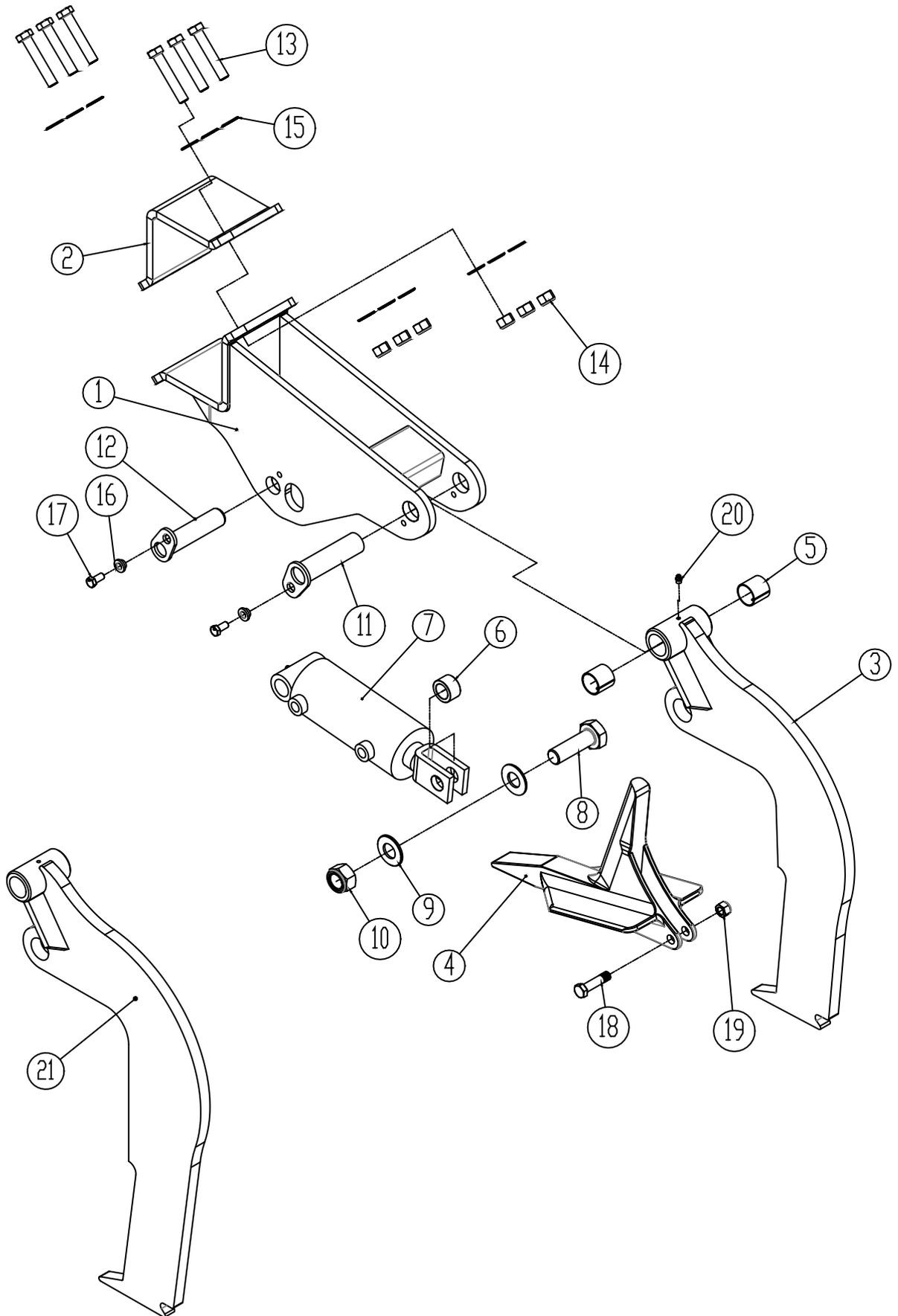
Complete tine with holder, left long
No. 1237139



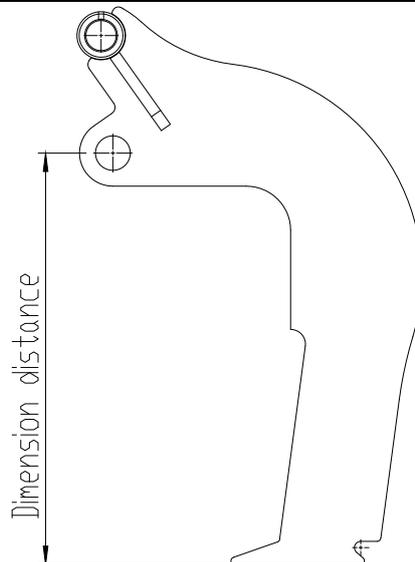
Complete tine with holder, right long
No. 1237141



Tine hydraulic with 200 mm wearing point, long model, (short not shown)



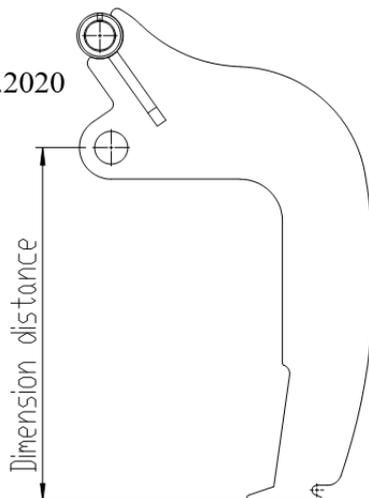
Pos.	Item no.	Designation	Long model	Short model
	1237151	Tine complete w/tine holder, Hydraulic long		
	1237152	Tine complete w/tine holder, Hydraulic short (not shown)		
1	645200080	Hydraulic tine holder, long model	1	
1	645200081	Hydraulic tine holder, short model		1
2	645200061	Mounting bracket 15mm Domex 420 MC	1	1
3	1237149	Tine 25 mm for hydr. push, Dimension distance 560 mm	1	1
4	645000044	Wearing point with 200 mm wings	1	1
5	690140715	Bushing for tine pin Ø40/Ø44 L=40 mm <i>before machine no. 201282</i>	2	2
5	0475309	I-bushing EG ø40/444 L=40 from machine no. 201282	2	2
6	645000113	Bushing for rod end - clevis	1	1
7	690200114	Cylinder Ø100/50x130 w/rod end - clevis	1	1
7a	690200285	Gasket set 100/50 (Laizhou)		
8	690103868	Bolt M30x95 10.9	1	1
9	0272350	Facet washer Ø30 mm, fzb	2	2
10	0264155	Self-locking nut M30	1	1
11	69440148G	Pin Ø40 L=148	1	1
12	69435148G	Pin Ø35 L=148	1	1
13	690103324	Bolt M18x100 10.9	6	6
14	0264100	Self-locking nut M18	6	6
15	0272300	Facet washer Ø18	12	12
16	630532600	Lock bushing for pin head	2	2
17	690101101	Bolt M12x25 8.8	2	2
18	0235852	Bolt M16x65 8.8	1	1
19	0264090	Self-locking nut M16	1	1
20	690136029	Grease nipple M8	1	1
21	1237228	Tine 25 mm for hydr. push, extended 140 mm		



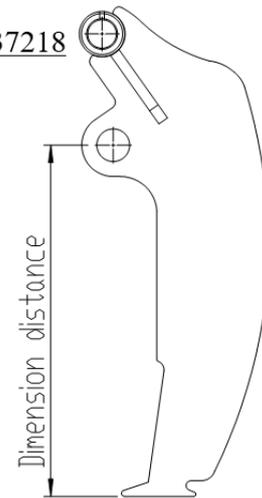
Pos.	Item no.	Designation	Short model	Long model
	1237214	Tine complete w/tine holder, Hydraulic long	Ended 4/6-2020	
	1237220	Tine complete w/tine holder, Hydraulic long		
	1237208	Tine complete w/tine holder, Hydraulic short (not shown)	Ended 4/6-2020	
	1237219	Tine complete w/tine holder, Hydraulic short		
1	645200080	Hydraulic tine holder, long model	1	
1	645200081	Hydraulic tine holder, short model		1
2	645200061	Mounting bracket 15mm Domex 420 MC	1	1
3	3	Tine f/hydr. Push, Easy draft, Dimension distance 505 mm. Replaced the 04.06.2020	Ended 4/6-2020	
3	3	Tine f/hydr. Push, Easy draft, Dimension distance 505 mm	1	1
4	690140715	Bushing for tine pin Ø40/Ø44 L = 40 before machine no 201282	2	2
4	0475309	I-Pressbushing EG ø44/40 L=40 from machine no. 201282	2	2
5	645000113	Bushing for rod end - clevis	1	1
6	690200114	Cylinder Ø100/50x130 w/rod end - clevis	1	1
6a	690200285	Gasket set 100/50 (Laizhou)		
7	690103868	Bolt M30x95 10.9	1	1
8	0272350	Facet washer Ø30 mm, fzb	2	2
9	0264155	Self-locking nut M30	1	1
10	69440148G	Pin Ø40 L=148	1	1
11	69435148G	Pin Ø35 L=148	1	1
12	690103324	Bolt M18x100 10.9	6	6
13	0264100	Self-locking nut M18	6	6
14	0272300	Facetwasher Ø18	12	12
15	630532600	Lock bushing for pin head	2	2
16	690101101	Bolt M12x25 8.8	2	2
17	690136029	Grease nipple M8	1	1
18	0235380	Bolt M12x50	1	1
19	0264070	Self-locking nut M12	1	1
20	645000056	Low Draft cast wearing point 120 mm w/wolfram plate	1	1

Tine no. 1237209

Replaced pr. 04.06.2020

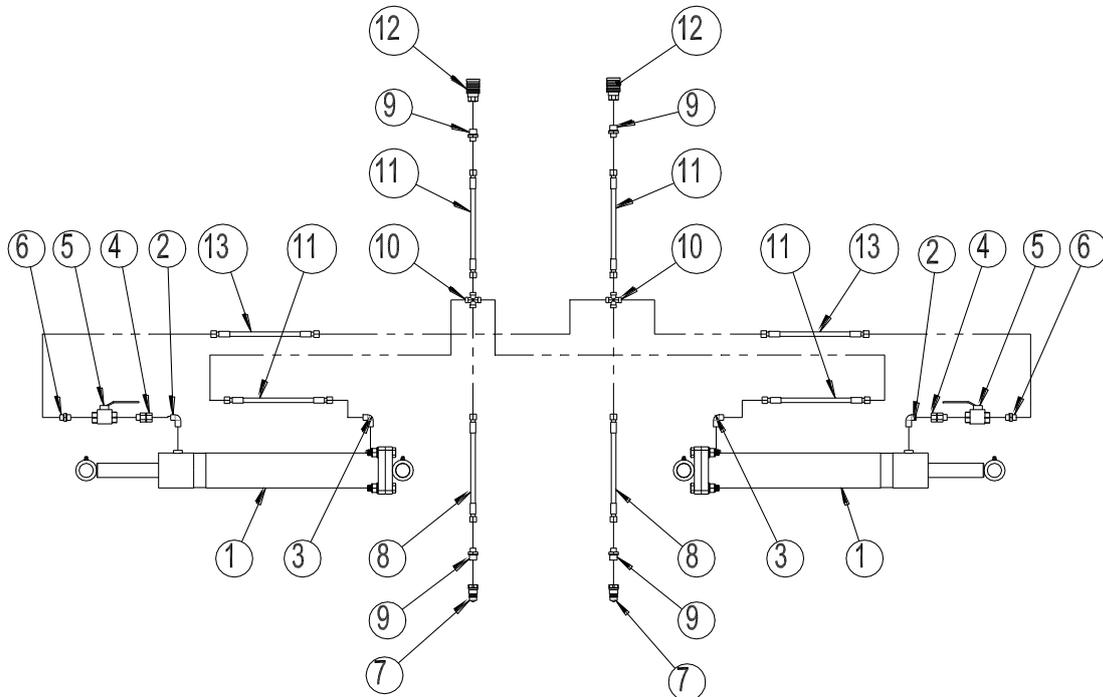


Tine no. 1237218



Hydraulics

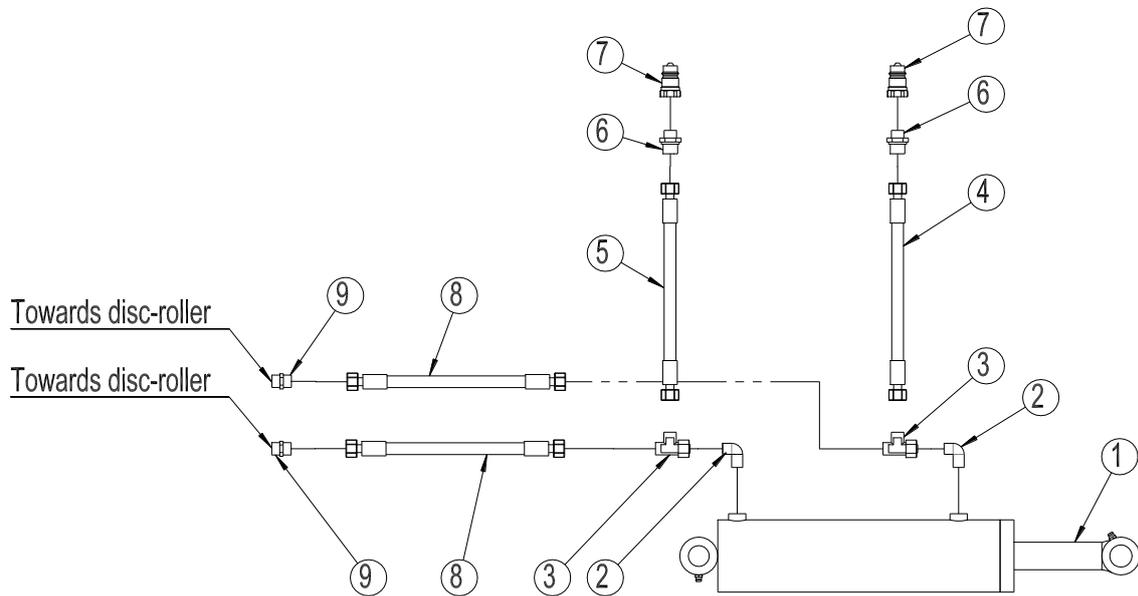
Folding cylinder



Pos.	Item no.	Designation	Number
1	690200255	Cylinder 90/40x500	2
1a	690200268	Gasket set 90/40 (Klinkby)	
1a	690200274	Gasket set 90/40 (Laizhou)	
2	690203106	Fitting, 90angle Ø12-3/8" BSP	2
3	690203006	Fitting, 90angle Ø10-3/8" BSP	2
4	690203130	Fitting 12mm with O-ring	2
5	690202990	Ball valve 3/8"	2
6	690203002	Fitting, straight Ø10-3/8" BSP	2
7	690203001	Quick coupling 1/2", male	2
8	690201029	Hydraulic hose 4300 mm 1/4" st/st	2
9	690203003	Fitting straight Ø10 x1/2" BSP	4
10	690203019	Fitting 10 mm	2
11	690201015	Hydraulic hose 710 mm 1/4" st/st	4
12	690203000	Quick coupling 1/2" female	2
13	690201067	Hydraulic hose 790 mm 1/4" st/st	2

Attention:

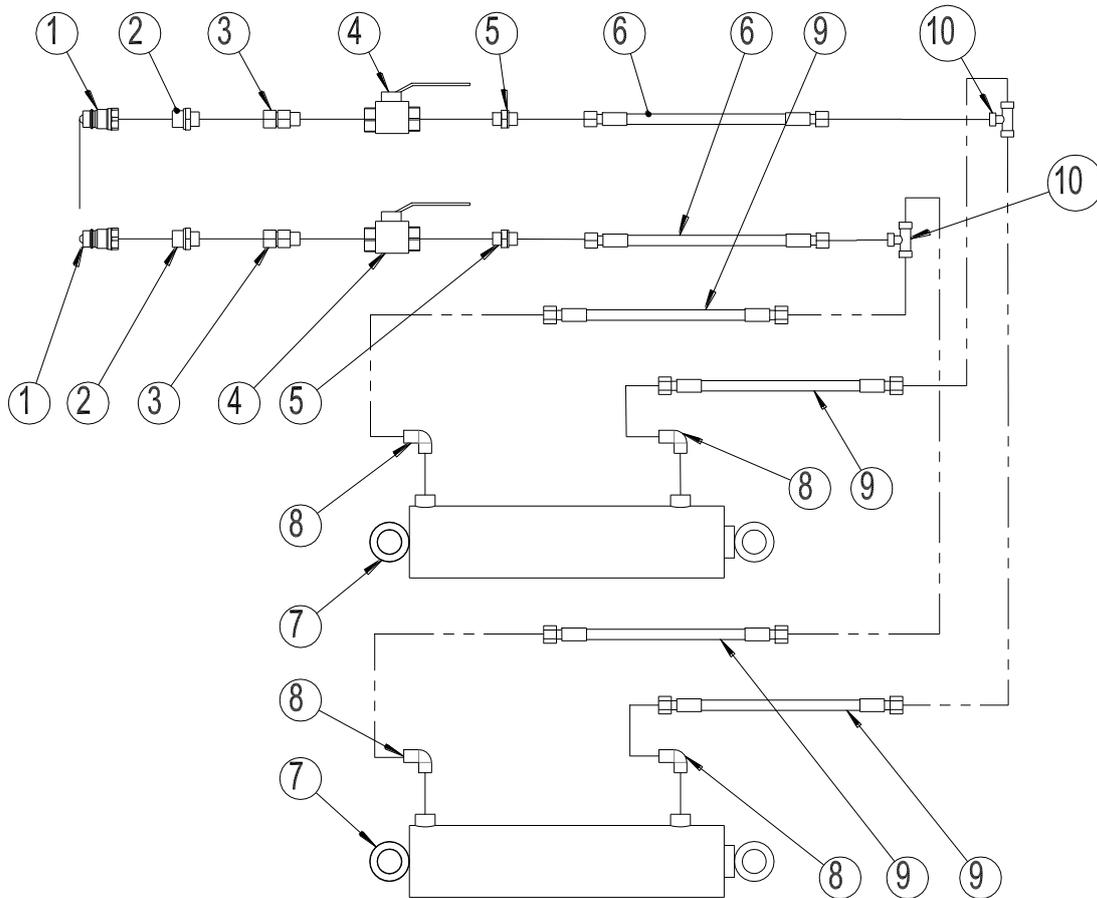
The number of hoses and hose lengths can vary – dependent on the machine type , therefore check measurements and number before ordering the spare parts.

Drawbar

Pos.	Item no.	Designation	Number
1	690200258	Cylinder 90/40x280mm Ø35/Ø32	1
1a	690200268	Gasket set 90/40 (Klinkby)	
1a	690200274	Gasket set 90/40 (Laizhou)	
2	690203106	Fitting, 90angle Ø12-3/8" BSP	2
3	690203017	Fitting T12 L premounted with O-ring	2
4	690201232	Hydraulic hose 3520 mm 3/8" st/st	1
5	690201231	Hydraulic hose 3320 mm 3/8" st/st	1
6	690203103	Fitting straight Ø12 x1/2" BSP	2
7	690203001	Quick coupling 1/2", male	2
8	690201228	Hydraulic hose 1495 mm 3/8" st/st	2
9	690203118	Fitting 12mm	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.

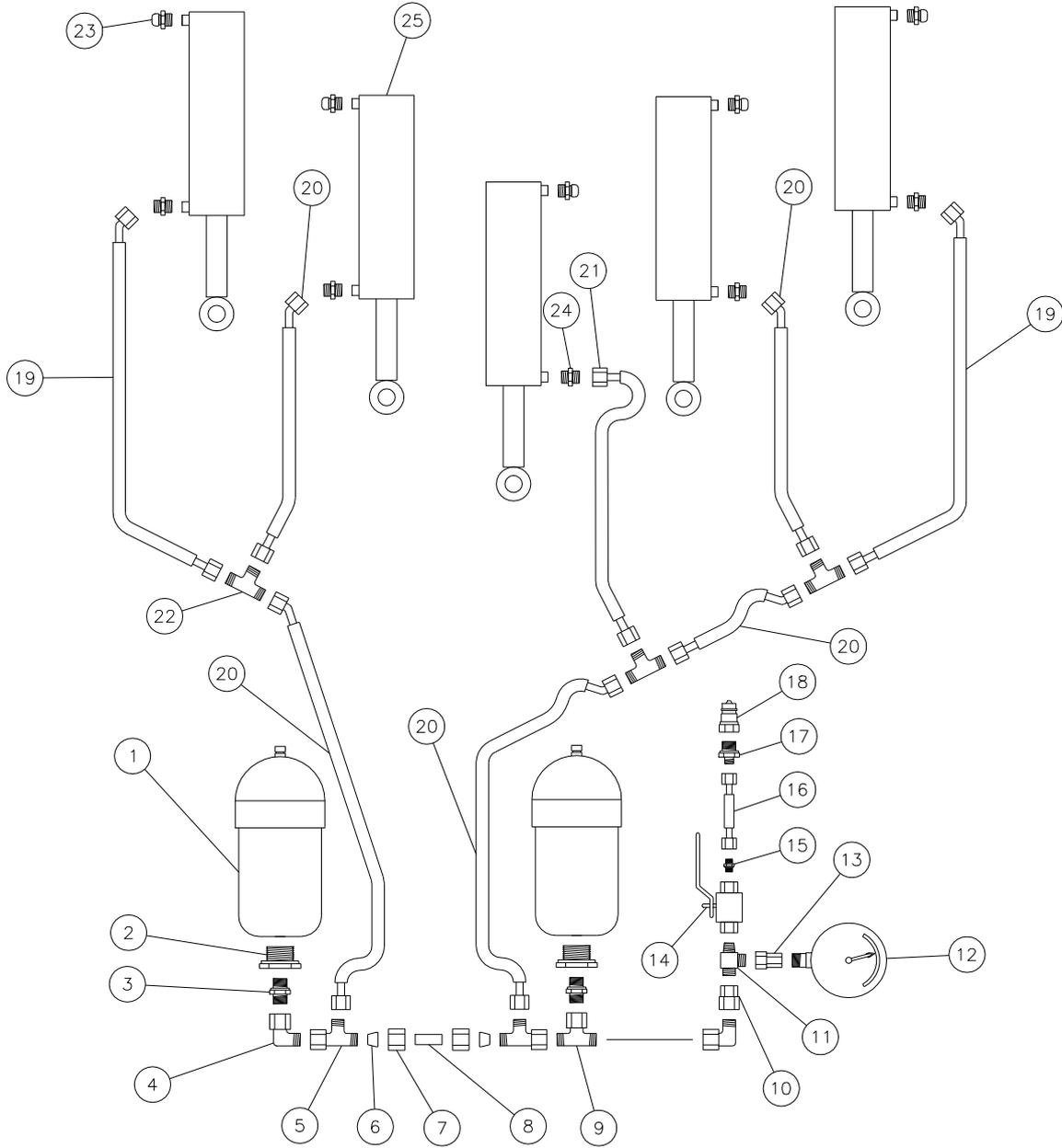
Linkage

Pos.	Item no.	Designation	Number
1	690203001	Quick coupling 1/2", male	2
2	690203103	Fitting straight Ø12 x1/2" BSP	2
3	690203130	Fitting 12 mm with O-ring	2
4	690202990	Ball valve 3/8"	2
5	690203002	Fitting, straight 10-3/8" BSP	2
6	690201004	Hydraulic hose 4950 mm 1/4" st/st	2
7	690200200	Cylinder 80x40x280	2
7a	690200143	Pakningsæt 80/40 (Laizhou)	
7a	690200142	Pakningsæt 80/40 (Klinkby)	
8	690203006	Fitting 90angle 10-3/8" BSP	4
9	690201042	Hydraulic hose 500 mm 1/4" st/st	4
10	690203015	Fitting T10	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 (rigid)

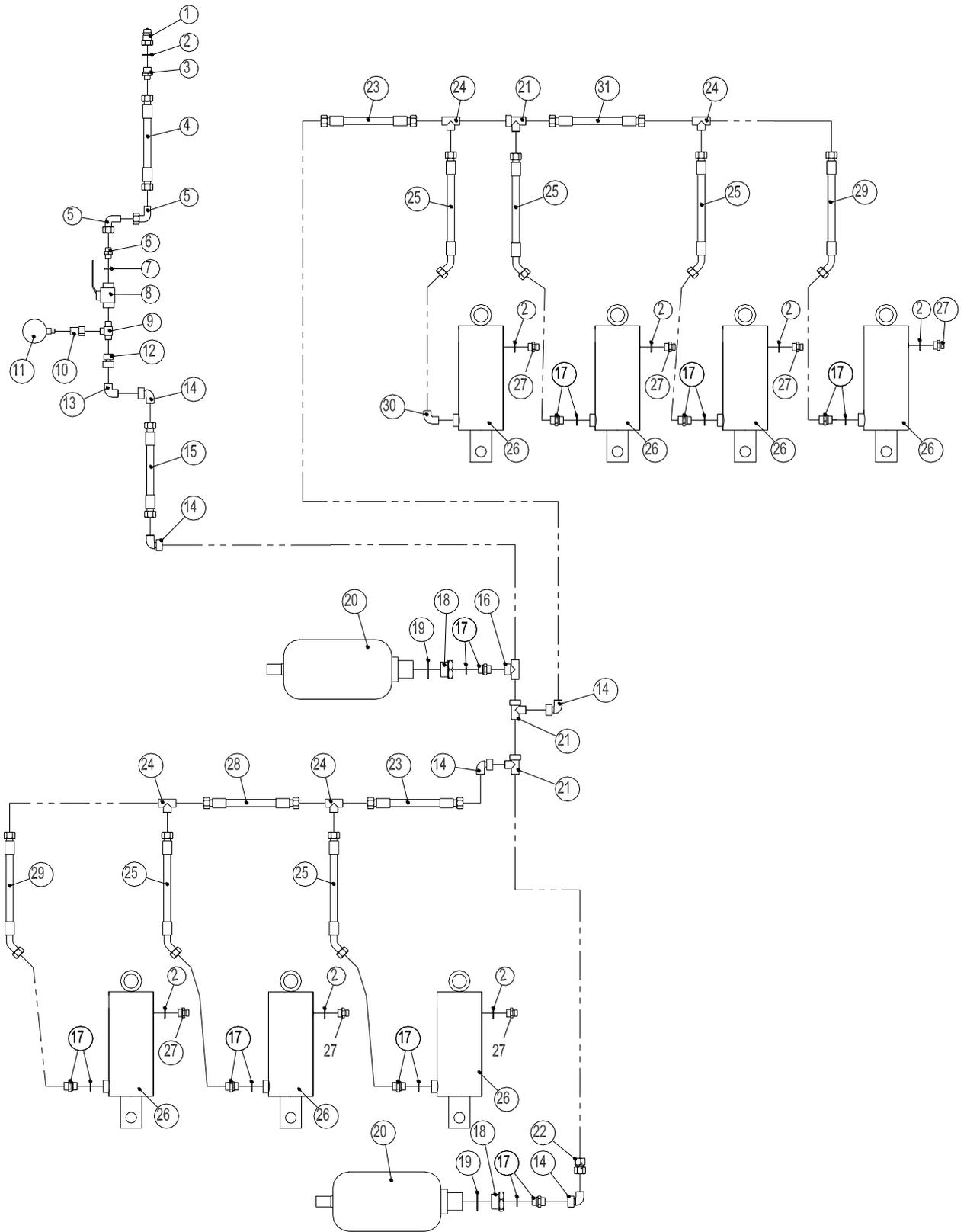


Pos.	Item no.	Designation	Number
1	690206513	Accumulator 4.5 l 90 bar	2
2	690204501	Fitting straight ½" x 1 ¼"	2
3	690204512	Fitting straight Ø15 mm x ½"	2
4	690204500	Fitting 90angle Ø15 mm premounted union nut	2
5	690204502	Fitting T Ø15L	2
6	690204503	Olive ring Ø15	2
7	690204504	Union nut Ø15	2
8	662000803	Hydraulic tube Ø15 L=38	1
9	690204505	Fitting T Ø15	1
10	690204506	Reversed fitting Ø15 / ½"	1
11	690203314	Fitting T ⅜"-Ø12-Ø12	1
12	690206824	Pressure gauge 400 bar	1
13	690206825	Pressure gauge fitting Ø12 / ¼"	1
14	690202990	Ball valve ⅜" PN500 DN 10	1
15	690203002	Fitting, straight Ø10-⅜" BSP	1
16	690201032	Hydraulic hose 1130 mm ¼" st/st	1
17	690203003	Fitting, straight Ø10-½" BSP	1
18	690203001	Quick coupling ½" E402, male	1
19	690201448	Hydraulic hose 1150 mm ½" st/45°	2
20	690201430	Hydraulic hose 590 mm ½" st/45°	0-9
21	690201414	Hydraulic hose 400 mm ½" st/st	0-1
22	690204507	Fitting T Ø15	0-7
23	690206002	Filter plug ½"	2-9
24	690204512	Fitting straight Ø15x½"	2-9
25	690200114	Cylinder 100/50x130 – Ø35/Ø30 fork	2-9
25a	690200285	Gasket set 100/50 Laizhou	
25a	690200028	Gasket set 100/50 (Klinkby)	
26	0449110	Bounded seal 1 ¼"	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	4 m - 7 tines	5 m - 7 tines
1	690203001	Quick coupling ½" E402, male	1	1
2	690208108	Bonded seal Ø21,5x28,6x2,0 ½" BSP	8	8
3	690203003	Fitting, Ø10-½" BSP	1	1
4	690201432	Hydraulic hose 2300 mm ½" st/st	1	1
5	690203016	Fitting 90angle Ø10	2	2
6	690203002	Fitting, Ø10-¾" BSP	1	1
7	690208096	Bonded seal Ø17,3x23,8x2,0 ¾" BSP	1	1
8	690202990	Ball valve ¾"	1	1
9	690203314	Fitting T ¾"-Ø12-Ø12	1	1
10	690206825	Pressure gauge fitting Ø12-¼"	1	1
11	690206824	Pressure gauge 0-400 bar	1	1
12	690204506	Reversed fitting Ø15 / Ø12	1	1
13	690204508	Fitting Ø15	1	1
14	690204500	Fitting 90angle Ø15 mm premounted union nut	5	5
15	690201445	Hydraulic hose 1150 mm ½" st/st	1	1
16	690204505	Fitting T Ø15	1	1
17	690204512	Fitting, straight Ø15x½" w/o-ring	7	7
18	690204501	Fitting, straight ½"x¼"	2	2
19	690208111	Bonded seal Ø42,93x52,38x3,0 1 ¼"	2	2
20	690206513	Accumulator 4.5 L 90 bar	2	2
21	690204502	Fitting T Ø15 L.	3	3
22	690204509	Reversed fitting Ø15 w/o-ring	1	1
23	690201449	Hydraulic hose 850 mm ½" st/st	2	2
24	690204507	Fitting T Ø15	4	4
25	690201430	Hydraulic hose 590 mm ½" st/45°	5	5
26	690200114	Cylinder 100/50xØ35/Ø30 rod end-clevis	7	7
26a	690200285	Pakningssæt 100/50 (Laizhou)		
27	690206002	Filter plug ½"	7	7
28	690201458	Hydraulic hose 690 mm ½" st/st	1	1
29	690201448	Hydraulic hose 1150 mm ½" st/45°	2	2
30	690203151	Fitting ½"	1	1
31	690201431	Hydraulic hose 600 mm ½" st/st	1	1

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.

GOOD AS IT LOOKS!
AS GOOD AS IT LOOKS!



The design is subject to modification without notice.