

HE-VA

Operating Instructions
Spare Parts List
Declaration of Conformity

as it looks



As good as it looks



As good as it looks

As good as it looks



As good as it looks

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

Grass-Roller

Trailed: 4,5 m - 6,3 - 8,2 m

Manual no. 8000391-07 160922

HE-VA

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Contents

*	
*	2
EC DECLARATION OF CONFORMITY	4
DELIVERY CHECK	5
MACHINE DESCRIPTION	5
TECHNICAL SPECIFICATIONS	6
TECHNICAL REQUIREMENTS	6
SAFETY INSTRUCTIONS	7
GENERAL INFORMATION	7
INSTRUCTIONS ON TRANSPORT ON THE PUBLIC ROADS:	7
SAFETY – AND OTHER MARKINGS ON THE MACHINE	8
OPERATING INSTRUCTIONS	9
ATTACHMENT	9
UNFOLDING AND FOLDING	9
SETTINGS AND ADJUSTMENT	10
WEIGHT TRANSFER	10
LONG FINGER HARROW	10
LEVELLING BOARD	11
ROLLER SCRAPER	11
MAINTENANCE	12
LUBRICATION	12
REPAIRS	12
SPRING-BOARD	13
MOUNTING OF CYLINDER ON SPRING-BOARD	13
SPARE PARTS LIST	14
HOW TO READ THE SPARE PARTS LIST	14
FRONT - AND BACK DRAWBAR 4,5 M	14
FRONT AND REAR DRAWBAR 6,3 - 8,2M BEFORE MAY 2010, BEFORE MACHINE NO. 341713	16
FRONT DRAWBAR FROM JUNE 2010 MACHINE NUMBER 341713	18
HOSE PARKING FROM MAY 2016	20
FRONT- AND BACK DRAWBAR, FROM MACHINE NO. 347534	20
TRANSPORT BRACKET, ONLY WHEN STARRINGS ARE MOUNTED, ALL MODELS	22
MIDDLE SECTION BEFORE MACHINE 344648	22
MIDDLE SECTION AFTER MACHINE NO. 344648	24
WING SECTIONS BEFORE SERIAL NO. 347070	25
WING SECTION RIGHT / LEFT AFTER SERIAL NO. 347070	26
WING SUSPENSION AND FOLDING CYLINDER 4,5M	26
PACKER ROLLER	28
RINGS	29
ROLLER SECTION WITH CAST IRON RINGS	30
SUPPORT BEARING	31
HARROW 4,5 METER	32
HARROW FOR MIDDLE SECTION 6,3 - 8,2M BEFORE DECEMBER 2014	34
BRACKETS - LIFTING FRAMES – HARROW 6.3 AND 8.2M FROM JANUARY 2015	39
LEVELLING BAR 4,5 – 6,3 – 8,2M	41

SPARE PARTS LIST SPRING-BOARD	42
MIDDLE AND SIDE SECTION TO SUIT HARROW MOUNTING 4,5M	42
MIDDLE AND SIDE SECTION TO SUIT HARROW MOUNTING 6,3 - 8,2M.....	43
MIDDLE SECTION INCL. HYDRAULICS, WHEN ONLY SPRING-BOARD 6.3 – 8.2M	44
SIDE SECTION INCL. HYDRAULICS, WHEN ONLY SPRING-BOARD (LEFT SHOWN) 6.3M	46
SIDE SECTION INCL. HYDRAULICS, WHEN ONLY SPRING-BOARD (LEFT SHOWN) 8.2M	47
SPRING-BOARD TINE WITH TRAVERSE LOCKING SYSTEM	49
SPARE PARTS LIST – MOUNTING OF MULTI-SEEDER.....	50
4,5 METER.....	50
6,3 AND 8,2 METER.....	50
SPARE PARTS LIST HYDRAULICS.....	54
TIP, FOLDING & WEIGHT TRANSFER SYSTEM RED AND BLUE 4,5M	54
HYDRAULICS FOR FOLDING & WEIGHT TRANSFER SYSTEM (BLUE) 6.3M	56
TIP CYLINDER FOR MIDDLE SECTION (RED) 6.3M.....	56
HYDRAULICS FOLDING & WEIGHT TRANSFER SYSTEM (BLUE) 8.2M (BEFORE MACHINE NO. 352600)	58
TIP CYLINDER FOR MIDDLE SECTION (RED) 8.2M.....	58
HYDRAULICS FOLDING & WEIGHT TRANSFER SYSTEM (BLUE) 8.2M (AFTER MACHINE NO. 352600).....	60
HYDRAULICS, FRONT HARROW (GREEN) 4,5 - 6.3M	62
HYDRAULICS, FRONT HARROW (GREEN) 8.2M.....	64
SPRING-BOARD 4,5 - 6,3M.....	65
SPRING-BOARD 8,2M	66
HYDRAULIC BRAKES	67
AIR BRAKES ALL MODELS	68





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:

Grass – Roller 4,5m - 6,3m – 8,2m

Nykøbing the 29th December 2009



Villy Christiansen

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

Delivery check

Check the roller for any damage. Check the hydraulic hoses for cuts and squeezing damage. Check also that the other hydraulic components have not been damaged during transport.

Check that the frame construction has not been damaged. You should also check that the roller blocks have not been exposed to impacts, which may have damaged the roller tube or the double-sealed ball bearings. Finally check that the transport wheel nuts are tightened and OK. Check the air pressure in the tyres: approx. 3.8 bar/55 psi.

Instructions regarding unloading and placing.

The machine is delivered in completely mounted condition. Our specially trained driver will help with the unloading of the machine.

The machine should be unloaded from the lorry using a tractor and the ramps as instructed by the driver.

The machine should then be placed on level, firm ground.

Machine description

Grass-Roller is a roller for consolidation of grassland. With water in the smooth steel rollers a high weight is achieved and with that effective consolidation which guarantees an evenly pressed grassland. This helps achieve the highest yield from the grass and good quality clean silage without soil, stones, spores etc. With a hydr. long finger harrow in 2 rows mounted in front of the Grass-Roller the grass can be ripped out and dead thatch can be removed or divided into fine particles. The Grass-Roller can be equipped with Spring-Board levelling bar or molehill bar mounted on the long finger harrow for levelling of molehills, cow pats etc., which helps avoid ingress of soil and foreign matter into fodder when harvested. Add a HE-VA Multi-Seeder onto the Grass-Roller and grass or other seeds can be drilled at the same time as the consolidation. This allows complete reseeding, and overseeding or patching in existing pastures.



Technical specifications

Grass-Roller		4,5 m	6.3 m	8.2 m
Working width	Cm	450	630	820
Max. legal speed	Km/h	25	25	25
Total weight	Kg	1560	3050	4210
Total weight with water	Kg	2830	5280	6420
Axle pressure	Kg	-	1980	3094
Axle pressure with water	Kg	-	3650	4720
Towing eye pressure	Kg	-	810	1116
Towing eye pressure with water	Kg	-	1550	1700
Total length	Cm	409	409	550
Width in total	Cm	222	242	244
Roller volume	L	3 x 420 L	3 x 770 L	1 x 770 L 2 x 1130 L
Front harrow				
Tine spacing	Cm	9	9	9

Technical requirements

Tractor		4,5 m	6.3 m	8.2 m
Motor performance	kW (HP)	70 - 120	100 - 140	120 - 160

Electric system

Battery voltage	V	12	12	12
Plug for lights		7 - poles	7 – poles	7 – poles

Hydraulic system all models

Max. working pressure	Bar	220	220	220
Pump effect	L/min	Min 15	Min 15	Min 15

Oil type

Hydro Texaco HD32	Hydro Texaco HD32	Hydro Texaco HD32
Specifikation DIN 51524-3/ISO 11158 L-HV		



Safety instructions

General information

Do not start-up the machine if there are persons in exposed **positions**¹ within a **hazardous area**.²

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.

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.

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 checked. 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.

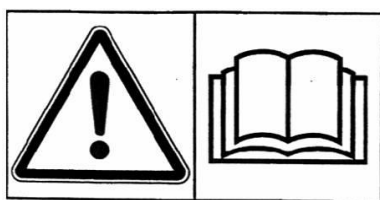
Notice! The driving, controlling and braking properties are affected by the attached machine combination.

¹ Persons in exposed positions: Any person who is staying wholly or partly within a hazardous area.

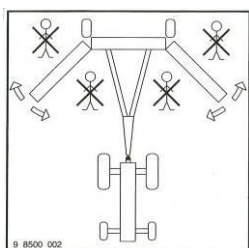
² Hazardous area: On and under the machine within a distance of 4 m from the machine.



Safety – and other markings on the machine



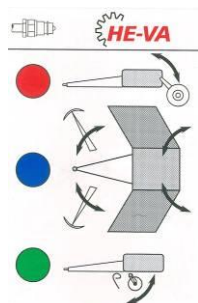
Study the Operating Instructions thoroughly before any operation of the machine and observe all safety instructions.



Take care that no persons are within the machine's hazardous area during the unfolding and folding procedure.



Plate with number and year of manufacture.

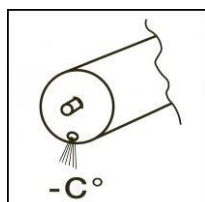


Indication label for the machine's hydraulic systems:

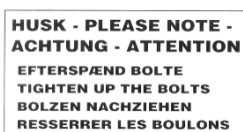
Red: Tip-hydraulics (Lifting of middle section)

Blue: Wing-hydraulics (Folding and weight transfer system)

Green: Extra equipment



Empty the rollers of water, before the temperature is below 0 C°. If this is not observed, our guarantee obligations will no longer apply.



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

Maximum torque according to ISO 898-1 in Nm. w/lubricated thread			
Metric thread	Quality 8.8	Quality 10.9	Quality 12.9
M10	38	54	63
M12	66	95	110
M14	105	150	176
M16	164	235	274
M18	233	323	377
M20	331	458	535
M22	450	622	727
M24	572	791	925
Hub bolts M18x1,5 fine thread		360	
Hub bolts M22x1,5 fine thread		550	

Operating Instructions

Attachment

On delivery the roller is in transport position. At start-up the roller is attached to the tractor.

Important:

Check that the towing hook height is between 500 and 550 mm.

Raise the support leg and place it in the transport fittings on top of the drawbar. Now fit all the hydraulic hoses.

The roller requires two double-acting hydraulic outlets.

The hoses for the tip cylinder are provided with **red** cable straps.

The hoses for the wing cylinder are provided with **blue** cable straps.

The hoses for the long finger harrow are provided with **green** straps (extra equipment).

Power plug and control box for weight transfer protection are putted into the cabin (8.2m models)

Unfolding and folding

of the machine, notice no. 2 and 6 are only for 6,3m

1. Check that the male quick couplings mounted from the factory fit the tractor's female quick couplings.
2. Contact on the control box for weight transfer protection activated (diode lights up)
3. Now pressurise the tip-cylinder (red), so that the side sections are lifted free of the transport cradle.
4. Then the wing-cylinders are pressured (blue), so that the side sections are folded out as much as possible, the hydraulic rams being fully closed.
5. Now relieve the pressure of the tip-cylinder (red), and the roller will tip forward, down to working position. When the bottom has been reached, let go of the hydraulic handle.
6. Contact on the control box for weight transfer protection de-activated (diode off)
7. Now the wing-cylinders are pressured (blue), so that the side sections are pressed down against the ground and the manometer is showing the hydraulic pressure according to the schedule on the next page in order to obtain the correct weight transfer between the middle section and the side sections.

Change-over from working to transport position, notice no. 8 and 13 are only for 6,3m

8. Contact on the control box for weight transfer protection activated (diode lights up)
9. First the side sections are lifted free of the ground by pressurising the wing-cylinders (blue).
10. The roller is tipped completely backwards and is locked by pressurising the tip-cylinder (red).
11. Now pressurise the wing-cylinders (blue), so that the side sections are turning forwards, towards the stop on the transport fittings of the drawbar.
12. When both side sections are parallel with the drawbar, they are lowered down into the transport cradle by relieving the tip-cylinder (red). This is to be performed with care.
13. Contact on the control box for weight transfer protection de-activated (diode off)
14. All hydraulic hoses are relieved, and the machine is ready for transport.

Important: It is not permitted to pressurise any cylinders in transport position.



Settings and adjustment

Weight transfer

The weight transfer is adjusted dependent on the water quantity in the rollers. The weight transfer is adjusted by pressurising the hydraulic system (blue).

The pressure is read on the machine's manometer.

Water level / Bar	4,5 m	6,3 m	8,2 m
1/1	15	30	40-45
3/4	15	30	40-45
1/2	15	30	40-45
1/4	15	30	40-45

NOTE: The weight transfer system can be loaded with max. **100 bar**.

Long finger harrow

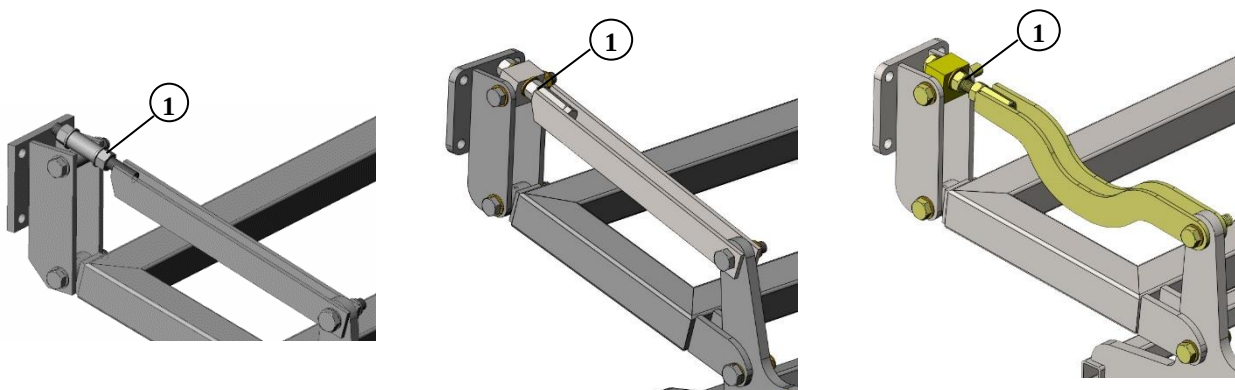
The long finger harrow is raised and lowered with the hydraulic system, which is marked with the **green** colour.

During work the long finger harrow can be raised and lowered as required. However, you have to take care that the harrow does not work too deeply meaning that it will carry the whole roller's weight.

Recommended harrow depth: 25 mm below the roller.

The front harrow is to operate in horizontal position when the machine is in working position. This is adjusted on the parallel rods, by loosening the nuts on each parallel rod and by tightening on the opposite side. ①

Each tine can be worn approx. 200 mm. However, they will be less flexible and maybe there is a need for an earlier replacement.

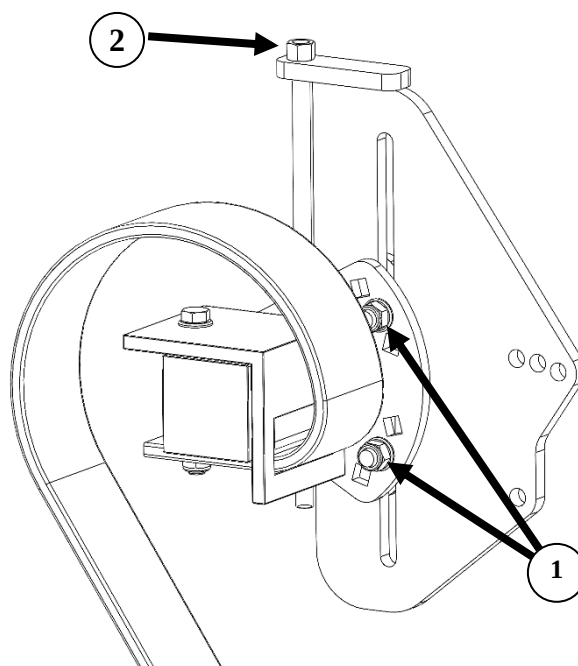


From machine number 341717

Levelling board

The levelling board is raised in proportion to the wear and tear of the tines. This is performed by loosening 2 nuts (pos. 1), and hereafter screwing with a 19 mm spanner on the thread spindle (pos. 2), which determines the height. When the desired height is reached, the 2 nuts (pos. 1), are tightened again.

Be sure that all adjusters are set the same otherwise the levelling board will operate unevenly. This is easily done by measuring the length of the spindle.



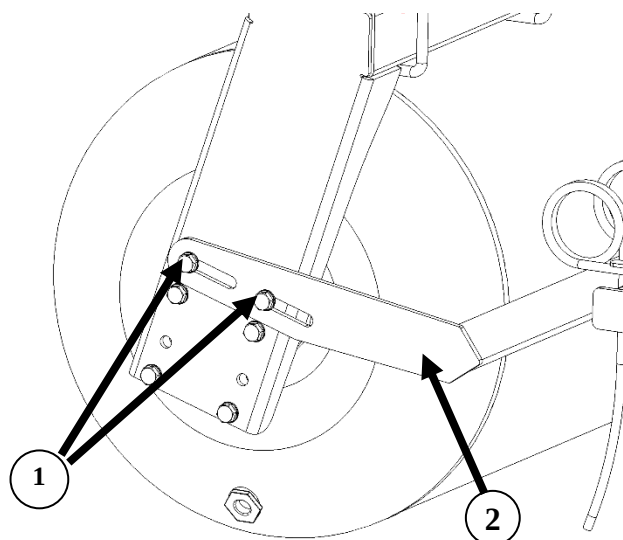
Roller scraper

6.3 m

The scrapers are bolted on the end plates. In order to adjust the scraper bar loosen the 2 bolts (pos. 1) at the top and push the scraper bar (pos. 2) against the roller. Please be aware that the scraper bar is to be placed 5 – 10 mm from the roller.

8.2 m

The scrapers are adjusted in the same way as for 6.3 m. In the middle of the side sections 2 bolts are placed, which are to be loosened too.



Maintenance

Lubrication

Important:

After every approx. 10 working hours the wheels, ball bearings and stop rings are tightened. Hoses, fittings and cylinders are inspected for eventual leaks and are tightened too.

After every approx. 10 working hours all movable parts in the side sections are to be lubricated as well as the 3 lubricating points on the wing cylinder. After every 30 working hours the tip cylinder's pins and the 3 pins in the drawbar are to be lubricated.

The bearings of the roller are to be lubricated after every 100 working hours and/or after cleaning.

Important:

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

After the season, the roller is to be cleaned and lubricated with grease and oil.

Important:

The piston rods are to be lubricated with grease, for long term storage.

Repairs

All repairs are to be performed with original HE-VA spare parts.



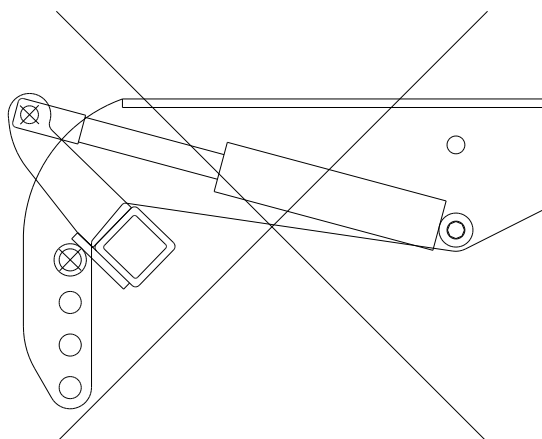
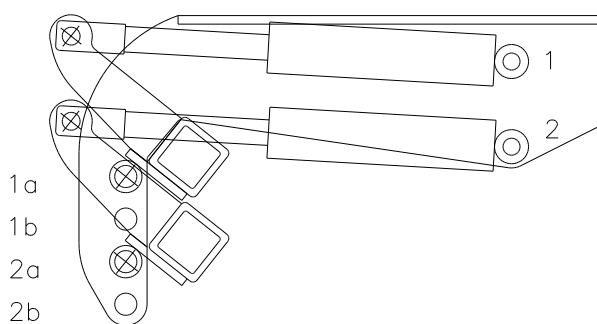
Spring-Board

The Spring-Board requires 1 double-acting hydraulic outlet on the tractor. The tine angle and thereby the aggressiveness of the tines is hydraulically controlled from the driver's cab and the depth control is done manually. The Spring-Board tine bar is adjustable in height and thereby the working angle of the tines against the ground is being changed. The tines work independently, but may be connected by means of a transverse locking system (extra equipment) if a greater levelling effect is required. The change-over is done very easily and quickly without any tools.

Mounting of cylinder on Spring-Board

The hydraulic cylinders are mounted as shown below. It is important that the mounting is performed properly to get the correct force on the cylinders.

On the Grass-Roller the cylinders for Spring-Board must be mounted in hole 2 and 2b. Moreover, the tine points of the Spring-Board tines are placed completely down, so that they are bolted in the lower holes.

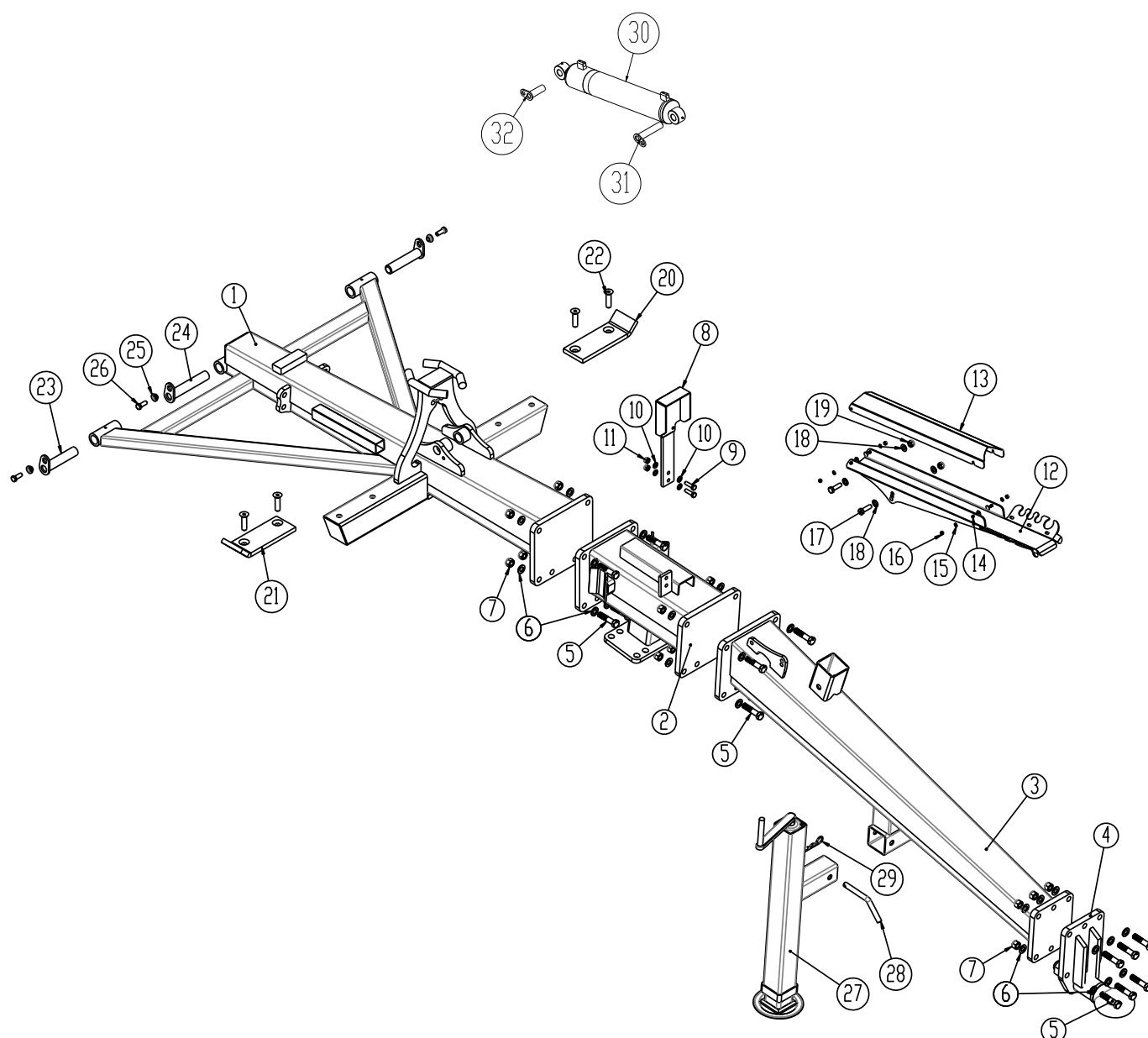


Spare parts list

How to read the Spare parts list

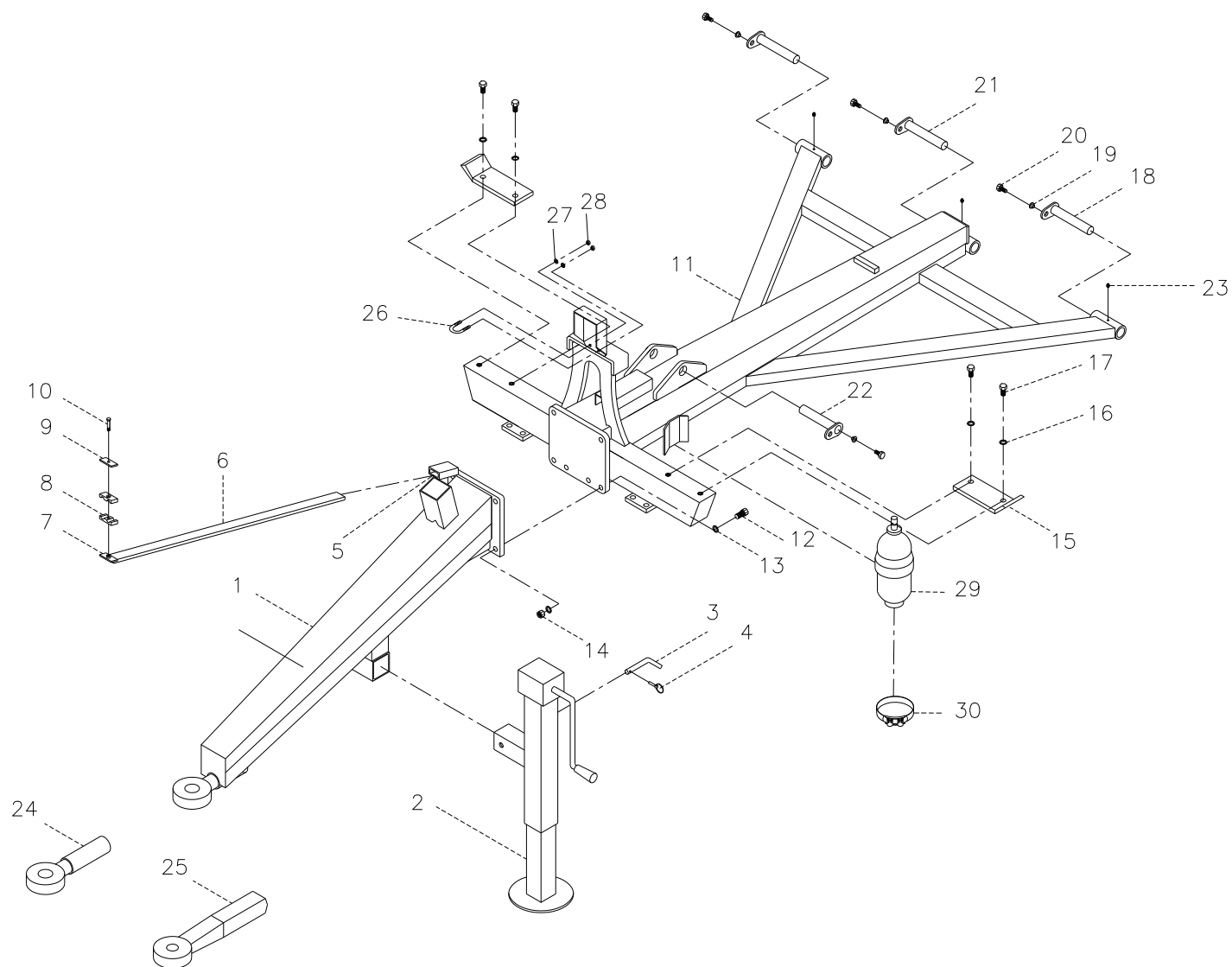
The exploded drawings are always ahead of the belonging parts table. Pay attention to some part tables which are continued to the next page. Also, some drawings are on two pages, one after the other.

Front - and back drawbar 4,5 m



Pos.	Item no.	Designation	4,5m
1	630536200	Back drawbar	1
2	630286135	Drawbar extension 500 mm	1
3	630757032	Drawbar	1
4	630757028	Towing eye complete	1
5	690103130	Bolt M16x70 10.9	18
6	0272290	Faceted washer Ø16 DIN 125B	36
7	0264090	Self-locking nut M16	18
8	630941066	Manometer bracket	1
9	0235060	Set bolt M10x35 8.8	2
10	0272260	Faceted washer Ø10 DIN 125B	4
11	0264060	Self-locking nut M10	2
12	7345001	Hose parking main part	1
13	7345003	Hose parking upper part	1
	7345010	Hose parking complete	
14	0246060	Carriage bolt M6x16 Fzb DIN 603	4
15	0272240	Faceted washer Ø6 Fzb	4
16	0264040	Self-locking nut M6	4
17	0235360	Set bolt M12x40 8.8	2
18	0272270	Faceted washer Ø12 Fzb DIN 125B	4
19	0264070	Self-locking nut M12	2
20	630762045	Transport bracket left	1
21	630762048	Transport bracket right	1
22	0229000	Bolt M16x60 countersinck DIN 7991	4
23	69430140G	Pin Ø30 L=140	2
24	69430170G	Pin Ø30 L=170	1
25	630532600	Lock bushing for pinhead	2
26	0235340	Bolt M12x30 8.8 Fzb	3
27	690141095	Support leg	1
28	69216094A	Pin Ø16 L=94	1
29	0377400	R-clip Ø4	1
30	690200109	Tip-Cylinder 100/50x600 Hydrflex	1
	690200284	Gasket set 100/50 mm Hydrflex	
31	69430150G	Pin Ø30 L=150	1
32	69430090G	Pin Ø30 L=90	1

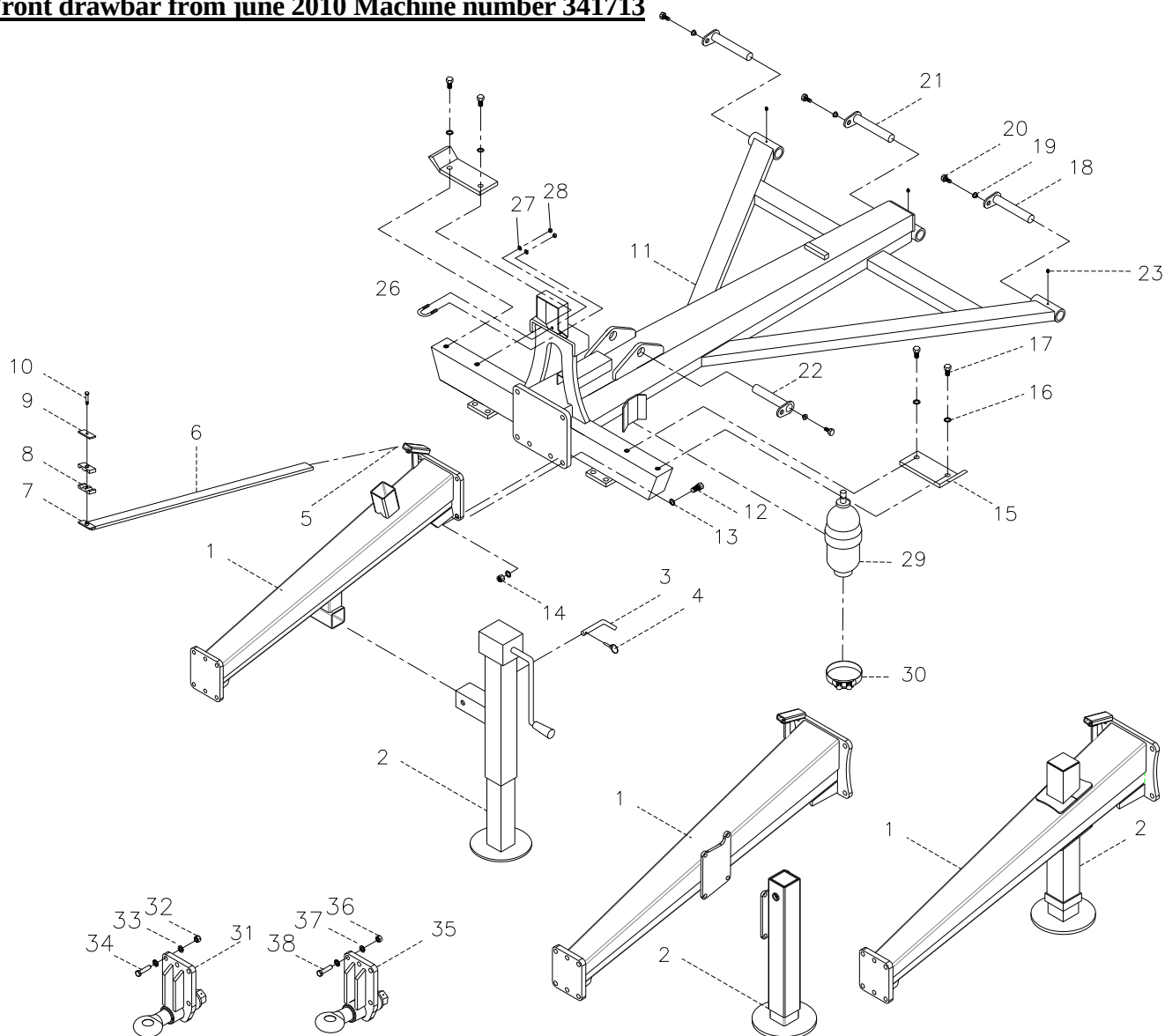
Front and rear drawbar 6,3 - 8,2m before May 2010, before machine no. 341713



Pos.	Item no.	Designation	6.3m	8.2m
1	630771010	Front drawbar	1	0
1	630831000	Front drawbar	0	1
2	690141102	Supporting leg 6000 kg	1	1
3	69516094A	Pin Ø16 L=94	1	1
4	690133005	R-clip Ø4	1	1
5	690103075	Bolt M10x25	1	1
6	630771200	Parking device for hose	1	1
7	690210212	Welding plate for tube-support double	1	1
8	690210210	Tube-support double Ø14/Ø14	2	2
9	690210211	Top plate for tube-support double	1	1
10	690210213	Screw for tube-support double	1	1
11	630327110	Back drawbar	1	0
11	630347500	Back drawbar	0	1
12	690103190	Bolt M16x65	1	0
12	690103164	Bolt M20x70	0	1
13	0272290	Facet plate Ø16	1	0
13	0272310	Facet plate Ø20	0	1
14	0264090	Self-locking nut M16	1	1
14	0264110	Self-locking nut M20	0	1
15	630762045	Transport bracket, left	1	1
15A	630762048	Transport bracket, right	1	1
16	690119008	Spring washer Ø16	2	2
17	690103127	Bolt M16x50	2	2
18	69435175G	Pin Ø35 L=175	2	2
19	630532600	Lock-bush for pin head	4	4
20	690101101	Bolt M12x25	4	4
21	69435185G	Pin Ø35 L=185	1	1
22	69435175G	Pin Ø35 L=175	1	1
23	0432510	Lubricating nipple M8	3	3
24	690141211	Towing eye (Danish)	1	1
25	690105003	Towing eye (German)	1	1
26	690110003	U-bolt M8x60xØ35	1	1
27	0272250	Facet plate ø8	2	2
28	0264050	M8 Self-locking nut	2	2
29	690206403	Accumulator H700R 15 bar	1	1
29a	690206410	Accumulator H700R 40 bar	1	1
30	690206511	Clamp for accumulator	2	2



Front drawbar from june 2010 Machine number 341713



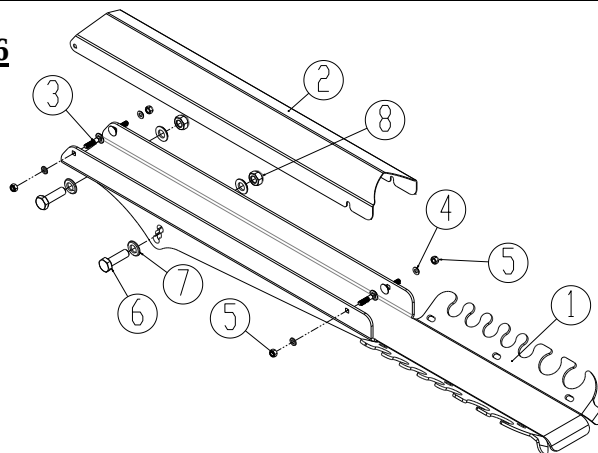
Pos.	Item no.	Designation	6,3m	8,2m
1	630771000	Front drawbar	1	0
1	630771020	Front drawbar from machine number 344524	1	
1	630831015	Front drawbar from machine number 341713	0	1
1	630831021	Front drawbar w/centre mounted supporting leg from machine number 342015		1
2	690141102	Supporting leg 6000 kg	1	1
2	690141099	Supporting leg hydraulic from machine number 341713		1
2	690141098	Supporting leg hydraulic from machine number 342015		1
3	69516094A	Pin Ø16 L=94	1	1
4	0377400	R-clip Ø4	1	1
5	690103075	Bolt M10x25	1	1
6	630771200	Parking device for hose	1	1
7	690210212	Welding plate for tube-support double	1	1

The tabel continues →



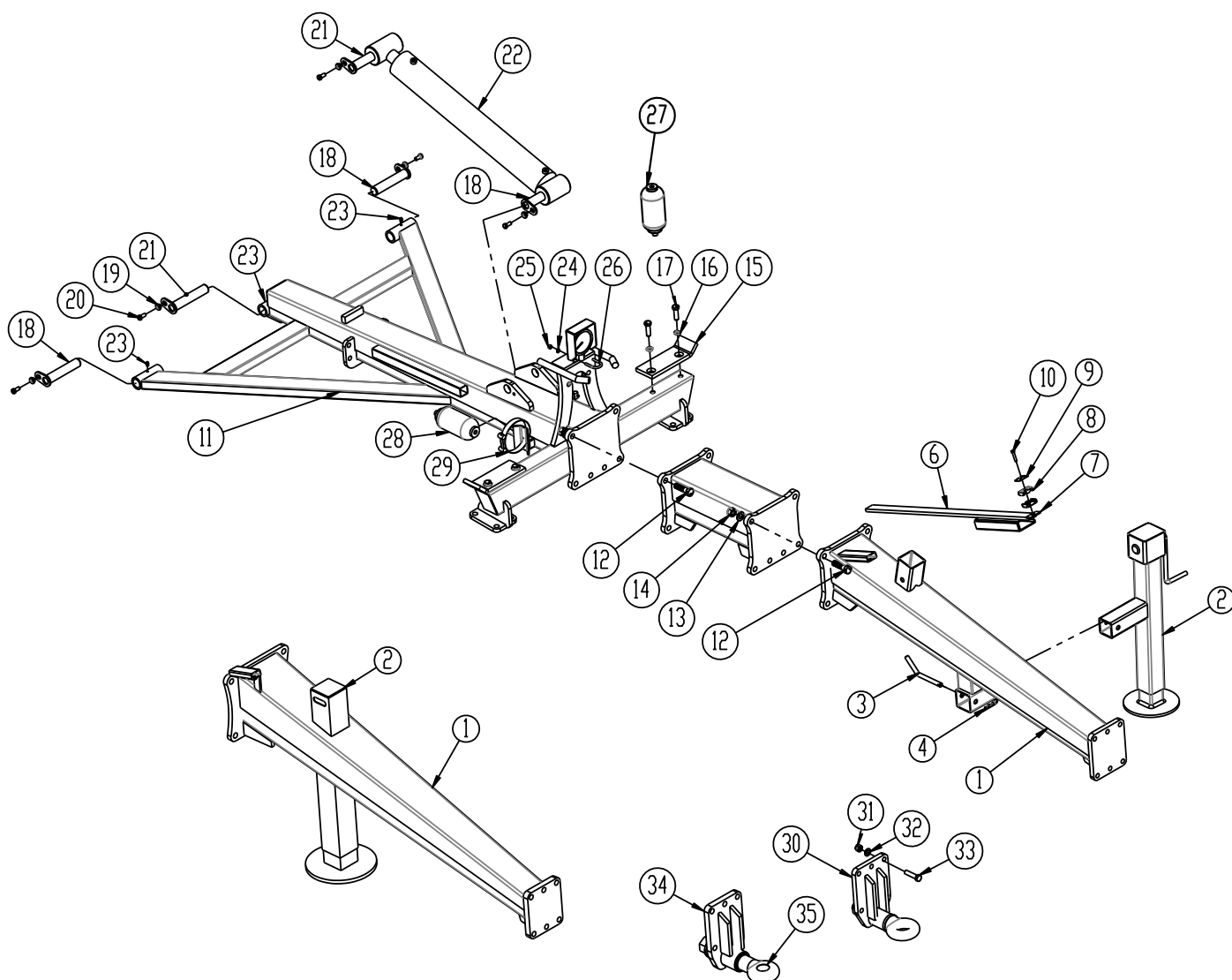
8	690210210	Tube-support double Ø14/Ø14	2	2
9	690210211	Top plate for tube-support double	1	1
10	690210213	Screw for tube-support double	1	1
11	630327110	Back drawbar	1	0
11	630327515	Back drawbar from machine number 344524	1	0
11	630347500	Back drawbar	0	1
12	0235851	Bolt M16x65 10.9	6	0
12	690103173	Bolt M20x70 10.9 from machine number 344524	6	
12	690103173	Bolt M20x70 10.9	0	6
13	0272290	Facet plate Ø16	12	0
13	0272310	Facet plate Ø20 from machine number 344524	12	
13	0272310	Facet plate Ø20	0	12
14	0264090	Self-locking nut M16	6	6
14	0264110	Self-locking nut M20 from machine number 344524	6	
14	0264110	Self-locking nut M20	0	1
15	630762045	Transport bracket, left	1	1
15a	630762048	Transport bracket, right	1	1
16	690119008	Spring washer Ø16	2	2
17	690103127	Bolt M16x50	2	2
18	69435175G	Pin Ø35 L=175	2	2
19	630532600	Lock-bush for pin head	4	4
20	690101101	Bolt M12x25	4	4
21	69435185G	Pin Ø35 L=185	1	1
22	69435175G	Pin Ø35 L=175	1	1
23	0432510	Lubricating nipple M8	3	3
26	690110003	U-bolt M8x60xØ35	1	1
27	0272250	Facet plate ø8	2	2
28	0264050	M8 Self-locking nut	2	2
29	690206403	Accumulator H700R 15 bar	1	1
29a	690206410	Accumulator H700R 40 bar	1	1
30	690206511	Clamp for accumulator	2	2
31	630757028	Drawbar cpl.Ø50 pivotal M16 bolte	1	0
31a	690141211	Towing eye Ø50 pivotal M16 bolts	1	
32	0264090	Self-locking nut M16	6	0
33	0272290	Facet plate Ø16	12	0
34	0235851	Bolt M16x65 10.9	6	0
35	630757017	Drawbar cpl.Ø50 pivotal M20 bolte	0	1
35a	690105006	Towing eye Ø50 pivotal M20 bolte		1
36	0272310	Self-locking nut M20	0	6
37	690113011	Facet plate Ø20	0	12
38	690103069	Bolt M20x80 10.9	0	6

Hose parking from may 2016



Pos.	Item no.	Designation	6.3-8,2m
1	7345006	Hose parking large model	1
2	7345003	Hose parking upper part	1
3	0246060	Carriage bolt M6x16 Fzb DIN 603	4
4	0272240	Faceted washer Ø6 Fzb	4
5	0264040	Self.-locking nut M6	4
6	0235360	Set bolt M12x40 8.8	2
7	0272270	Faceted washer Ø12 Fzb DIN 125B	4
8	0264070	Self-locking nut M12	2

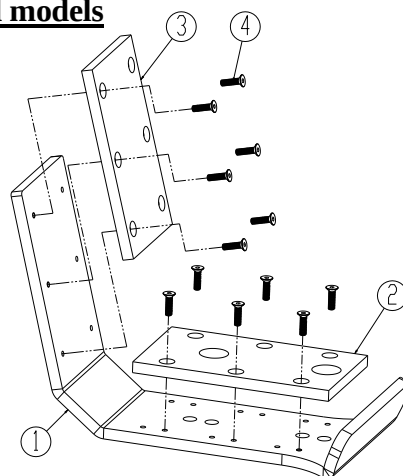
Front- and back drawbar, From machine no. 347534



Pos.	Item no.	Designation	6.3m	8.2m
1	630771020	Front drawbar	1	0
1	630831021	Front drawbar	0	1
2	690141102	Supporting leg 6000 kg	1	0
2	690141098	Supporting leg, Hydraulic	0	1
3	69516094A	Pin Ø16 L=94	1	1
4	0377400	R-clip Ø4	1	1
5	690103075	Bolt M10x25	1	1
6	630771200	Parking device for hose	1	1
7	690210212	Welding plate for tube-support double	1	1
8	690210210	Tube-support double Ø14/Ø14	2	2
9	690210211	Top plate for tube-support double	1	1
10	690210213	Screw for tube-support double	1	1
11	630330001	Back drawbar	1	0
11	630367136	Back drawbar, From serial no. 347534	0	1
12	690103173	Bolt M20x70 10.9	12	12
13	0272310	Faceted washer Ø20	12	12
14	0264110	Self-locking nut M20	12	12
15	630762045	Transport bracket Right	1	1
15	630762048	Transport bracket Left	1	1
16	690119008	Spring washer Ø16	2	2
17	690103127	Bolt M16x50	2	2
18	69435175G	Pin Ø35 L=175	3	3
19	630532600	Lock-bush for pin head	5	5
20	690101101	Bolt M12x25 8.8	5	5
21	69435185G	Pin Ø35 L=185	2	2
22	690200020	Tip cylinder Ø100/50 x 700 mm, Ø35 mm Replaced by 690200310	1	
	690200285	Gasket set, 100/50mm, Laizhou		
22	690200310	Tip cylinder Ø110/50x700 mm, Ø35/Ø35 mm	1	
	690200311	Gasket set, 110/50, Laizhou		
22	690200315	Tip cylinder Ø110/60 x 1000 mm, Ø35/Ø35 mm		1
	690200316	Gasket set, 110/60, Laizhou		
23	0432510	Lubricating nipple M8	3	3
24	690110003	U-bolt M8x60xØ35	1	1
25	0272250	Facet plate ø8	2	2
26	0264050	Self-locking nut M8	2	2
27	690206403	Accumulator H700R 15 bar	1	1
28	690206410	Accumulator H700R 40 bar	1	1
29	690206511	Clamp for accumulator	2	2
30	630757028	Towing eye complete Ø50, turnable, M16 bolts	1	
31	0264090	Self-locking nut M16	6	
31	0264110	Self-locking nut M20		6
32	0272290	Faceted washer Ø16	12	
32	0272310	Facetwasher Ø20		12
33	0235851	Bolt M16x65 10.9	6	
33	690103173	Bolt M20x70 10.9		6
34	630757017	Towing eye complete, Ø50, turnable, heavy duty, M20 bolte		1
35	690141211	Towing eye Ø50, turnable, heavy duty		1

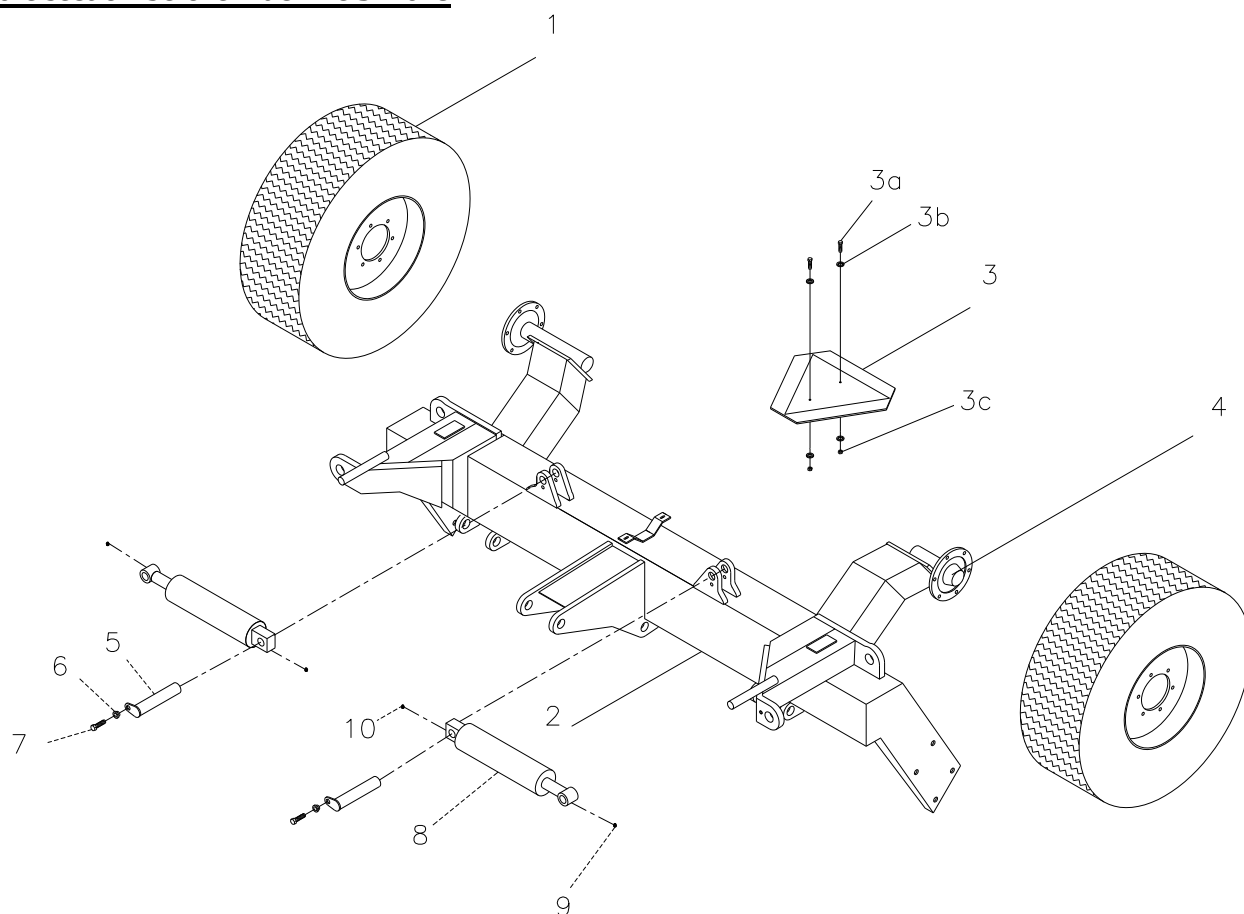


Transport bracket, only when Starrings are mounted, all models



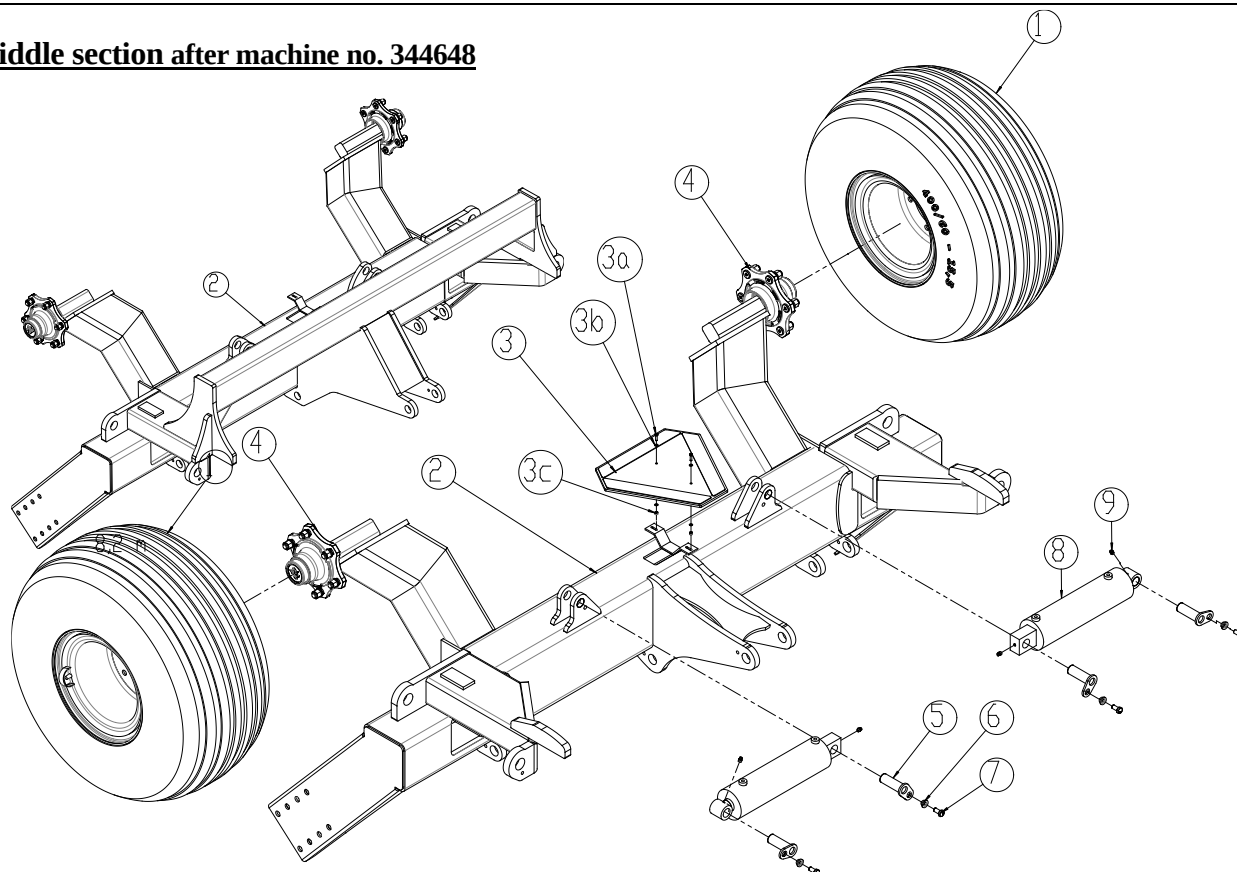
Pos.	Item no.	Designation	Qty.
1	1210334	Transport bracket	2
2	1210333	Plastic PEHD-300 15 mm black, horizontal	2
3	1210336	Plastic PEHD-300 15 mm black, vertical	2
4	0228032	Bolt countersunk M8x30 8.8 fzb DIN 7991	24

Middle section before machine 344648



Pos.	Item no.	Designation	4,5m	6.3m	8.2m
1	690141310	Wheel 10.0/75x15,3-10 ply,	2		
1	690141335	Wheel 400 / 60 x 15,5 14 ply		2	2
2	630536300	Middle section From machine no. 347231	1		
2	630327100	Middle section		1	
2	630347600	Middle section			1
2	630347602	Middle section From machine no. 344648			1
3	0521010	Warning triangle		1	1
3a	0233860	Bolt M5x20		2	2
3b	0272230	Facet plate Ø5		4	4
3c	0264030	Self-locking nut M5		2	2
4	690141025	Hub 1700 kg - TVZ, see cover at hub for identification	2		
4	0395440	Hub 1700 kg - He-va, see cover at hub for identification	2		
4	690141030	Hub 2500 kg. - TVZ, see cover at hub for identification		2	2
4	0395442	Hub 2500 kg. - He-va, see cover at hub for identification		2	2
4	7297579	Nav m/bremse 3700 kg TVZ		2	2
4a	690141039	Hub bolt M18x1,5x49		12	12
4b	690141055	Hub nut M18		12	12
4f	690141314	Hub cover ø78 1700 kg hub - TVZ see cover for identtif.	2		
4f	0395436	Hub cover ø78 1700 kg hub - He-va see cover for identtif.	2		
4f	690141033	Hub cover ø80 2500 kg hub - TVZ see cover for identtif.		2	2
4f	0395437	Hub cover ø88 2500 kg hub - He-va see cover for identtif.		2	2
5	69430090G	Pin ø30 L=90	1		
5	69430100G	Pin ø30 L=100		2	2
6	630532600	Lock bush for pin head		2	2
7	690101101	Bolt M12x25		2	2
8	630286167	Traverse cylinder ø70/ø40-600 (not shown)	1		
8a	690200068	Gasket set 70/40 mm Laizhou			
8	630762047	Traverse cylinder 90/40 - 280		2	
8a	690200274	Gasket set 90/40			
8	690200340	Traverse cylinder 100/40 x 285			2
8a	690200290	Gasket set 100/40			
9	0432100	Lubricating nipple M6		2	2
10	0432510	Lubricating nipple M8		2	2

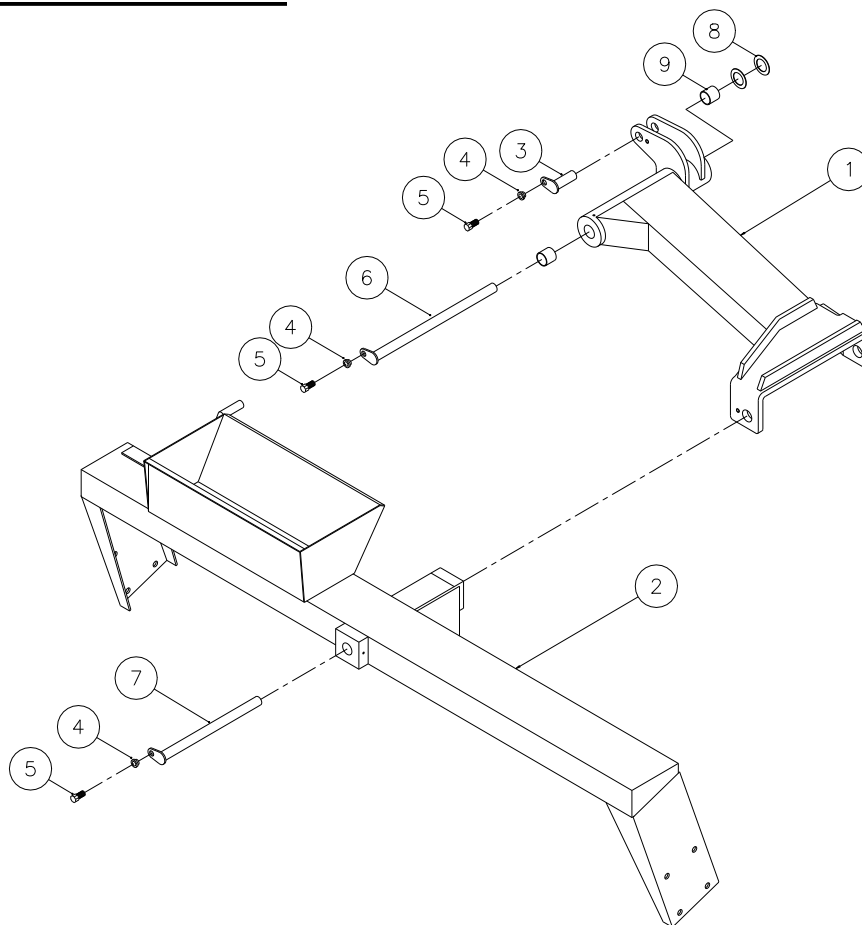
Middle section after machine no. 344648



Pos.	Item no.	Designation	6,3m	8,2m
1	690141335	Wheel 400 / 60 x 15,5 14 PLY	2	2
2	630330065	Middle section	1	
2	630347602	Middle section		1
2	630327615	Middle section with brakes	1	0
2	1200847	Middle section with brakes	0	1
3	0521010	Warning triangle	1	1
3a	0233860	Bolt M5x20	2	2
3b	0272230	Faceted washer Ø5	4	4
3c	0264030	Self locking nut M5	2	2
4	690141030	Hub 2500 kg. - TVZ, see cover at hub for identification	2	2
4	0395442	Hub 2500 kg. - He-va, see cover at hub for identification	2	2
4	7297579	Nav m/bremse 3700 kg TVZ	2	2
4	690141044	Hub w/brakes 4500 kg - TVZ	2	2
4a	690141039	Hub bolt M18x1,5x49	12	12
4b	690141055	Hub nut M18	12	12
4f	690141033	Hub cap ø80 (2500 kg hub) - TVZ see cover for identif.	2	2
4f	0395437	Hub cover ø88 2500 kg hub - He-va see cover for identif.	2	2
5	69430090G	Pin Ø30 L=90	2	
5	69435090G	Pin Ø35 L=90		2
6	630532600	Lock bush for pin head	2	2
7	690101101	Bolt M12x25	2	2
8	630762047	Traverse cylinder 90/40 – 280	2	
8a	690200274	Gasket set 90/40		
8	690200340	Traverse cylinder 100/40x285 Ø35/Ø35		2
8a	690200290	Gasket set 100/40		
9	690136029	Lubricating nipple M8	2	2



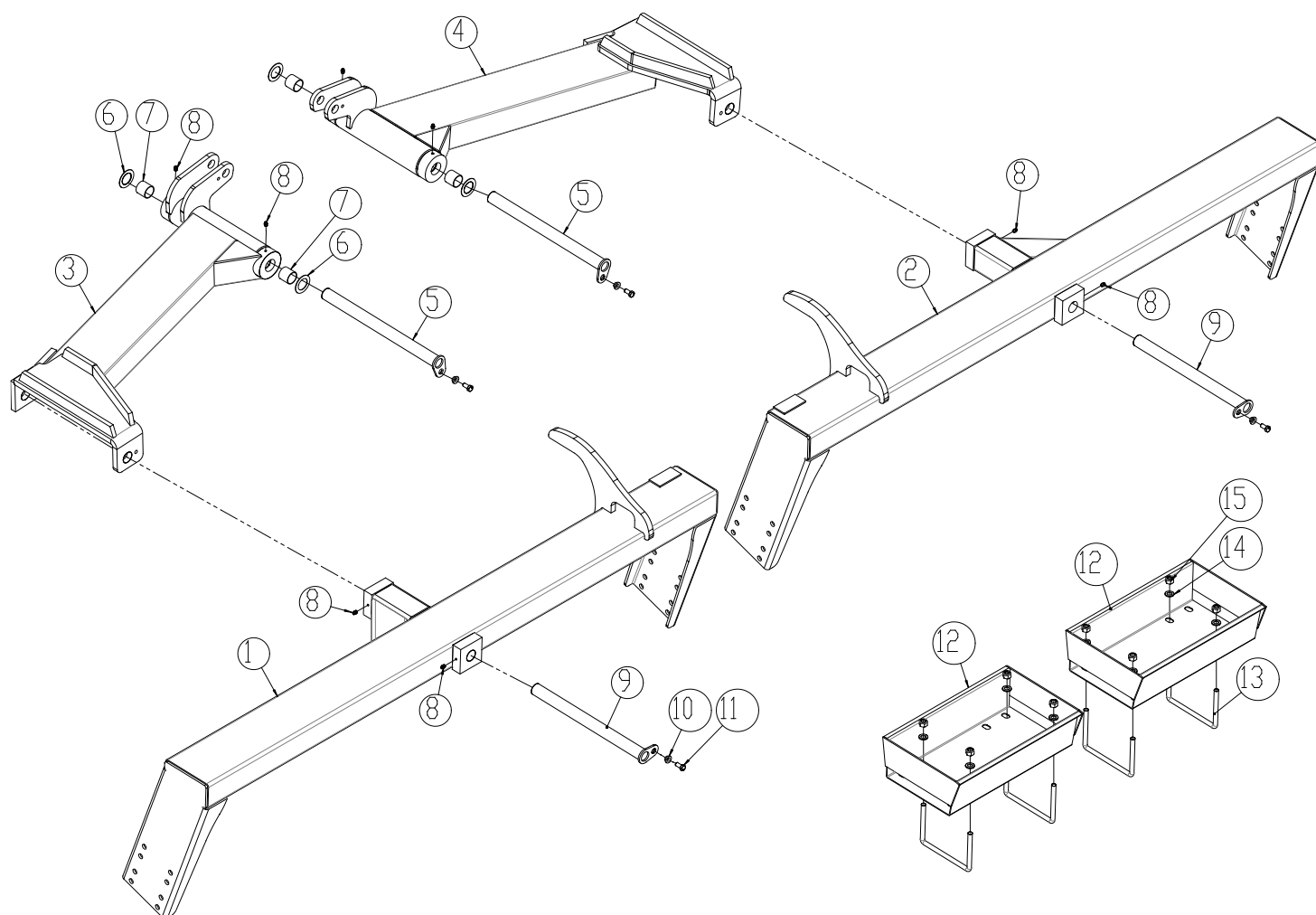
Wing sections Before serial no. 347070



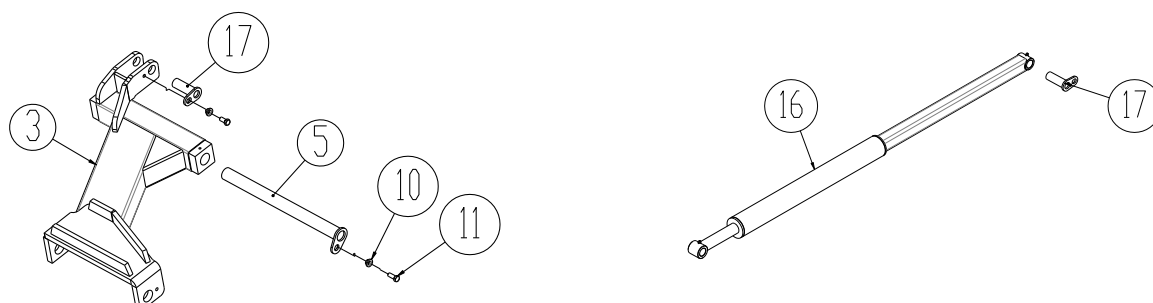
Pos.	Item no.	Designation	6,3m	8,2m
1	630773000	Wing suspension right	1	
1	630773100	Wing suspension left	1	
1	630347710	Wing suspension right Before serial no. 344648		1
1	630347712	Wing suspension right After serial no. 344648		1
1	630347700	Wing suspension left Before serial no. 344648		1
1	630347702	Wing suspension left After serial no. 344648		1
2	630774000	Wing section right Before serial no. 347070	1	
2	630774100	Wing section left Before serial no. 347070	1	
2	630347810	Wing section right Before serial no. 347070		1
2	630347800	Wing section left Before serial no. 347070		1
3	69430090G	Pin $\varnothing 30$ L=90	2	2
4	630532600	Lock bush for pin head	6	6
5	0235330	Bolt M12x25	6	6
6	69440525G	Pin $\varnothing 40$ L=525	2	2
7	69440508G	Pin $\varnothing 40$ L=508	2	
7	69440550G	Pin $\varnothing 40$ L=550		2
8	690140714	Spacer disc $\varnothing 42/\varnothing 66 \times 1,5$	4	4
9	690140715	Bushing $\varnothing 40/\varnothing 44$ L=40	4	4



Wing section right / left After serial no. 347070



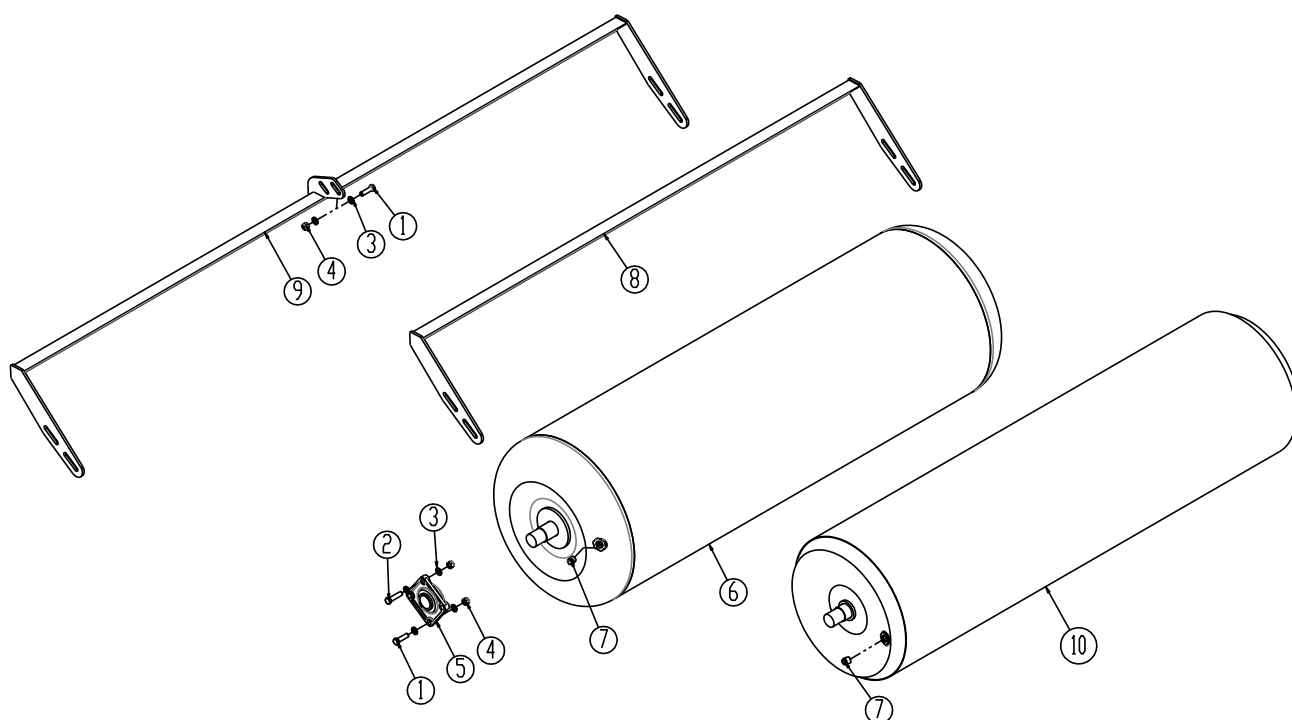
Wing suspension and folding cylinder 4,5m



Pos.	Item no.	Designation	4,5m	6,3m	8,2m
1	630286159	Side section, right	1		
1	630330062	Side section, right After serial no. 347070		1	
1	630367102	Side section, right After serial no. 347534			1
2	630286146	Side section, left	1		
2	630330071	Side section, left After serial no. 347070		1	
2	630367101	Side section, left After serial no. 347534			1
3	630536410	Wing suspension, right	1		
3	630773000	Wing suspension, right		1	
3	630347712	Wing suspension, right			1
4	630536400	Wing suspension, left	1		
4	630773100	Wing suspension, left		1	
4	630347702	Wing suspension, left			1
5	69440525G	Pin Ø40 L=525	2	2	2
6	690140714	Spacer disc Ø42/Ø66 x 1,5mm	4	4	4
7	690140715	Bushing Ø40/Ø44 L=40	4	4	4
8	0432510	Lubricating nipple M8	8	8	8
9	69440508G	Pin Ø40 L=508	2	2	
9	69440550G	Pin Ø40 L=550			2
10	630532600	Lock bush for pin head	4	4	4
11	690101101	Bolt M12x25	4	4	4
12	630555015	Stone boxes, incl U-bolts	2	2	2
13	690110105	U-bolt M16x100x200x100	4	4	4
14	0272290	Faceted washer Ø16	8	8	8
15	0264090	Self-locking nut M16	8	8	8
16	630286167	Folding cylinder 4,5m - 70/40x600 welded with extension	1		
	690200068	Gasket set 70/40 Laizhou			
17	69430090G	Pin Ø30 L=90	2		

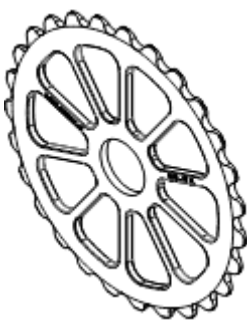


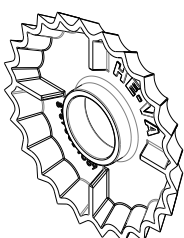
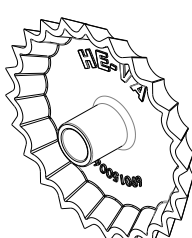
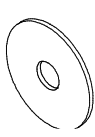
Packer roller



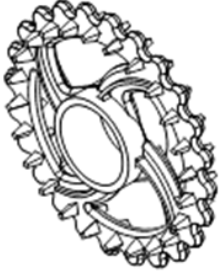
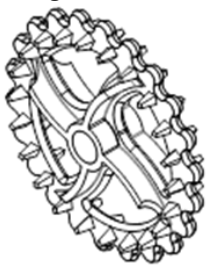
Pos.	Item no.	Designation	4,5m	6,3m	8,2m
1	0235830	Bolt M16x55 8.8	12	12	16
2	0235850	Bolt M16x65 8.8	12	12	12
3	0272890	Faceted washer Ø16	60	48	56
4	0264090	Self-locking nut M16	30	24	28
5	690140813	Bearing UCF 211, ø55, 4-holes, ø60 shaft	6	6	6
6	630536600	Valser f/sideled+midterled L=1500 / Ø610	3		
6	630327207	Roller f/wing section+middle section L=2370 / Ø710		3	1
6	630327239	Roller f/side section L= 3283 / Ø710			2
7	690203321	Plug ¾" RG-sort	6	6	6
8	630536615	Scraper bar middle section	1		
8	630762041	Scraper bar		3	1
9	630536610	Scraper bar side sections right/left	2		
9	630327232	Scraper bar for side section right/left			2
10	630330079	Roller L=2370 / Ø610		3	

Rings

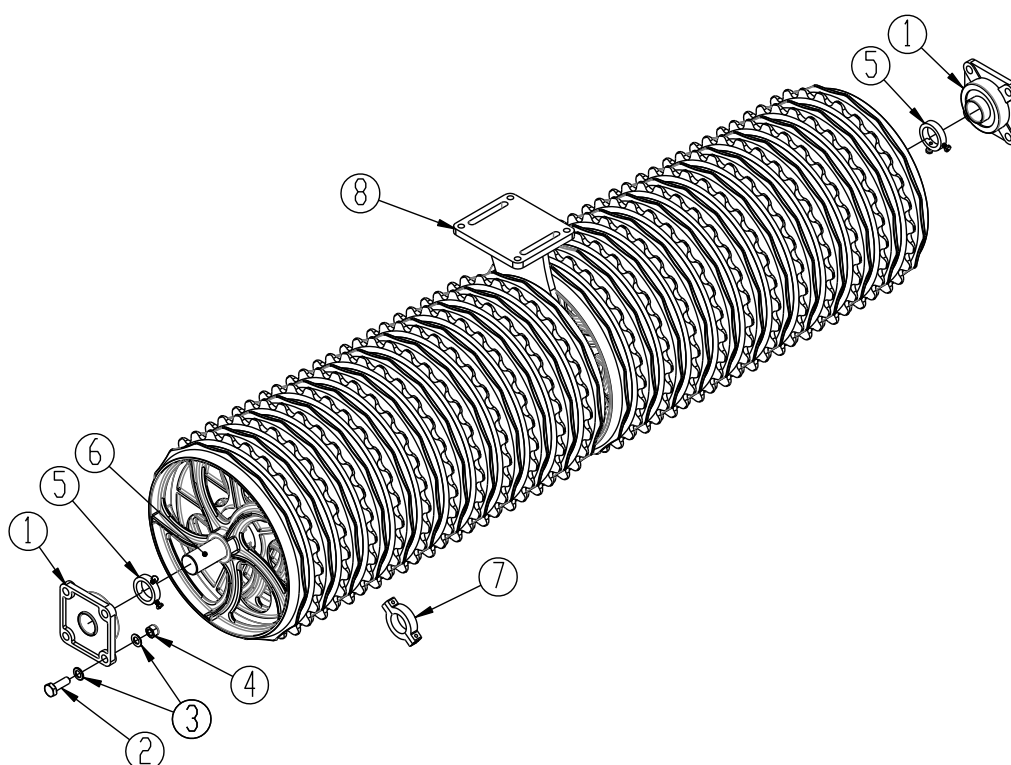
Cambridge rings Ø620 mm		Description	Quality	Part no.
Pos. 12 620 mm Lenient (10 spokes) 	Pos. 13 620 mm Breaker (10 spokes) 	Pos. 12 Hub 104 mm	GG25	690150113
		Pos. 12 Hub 104 mm	GGG50	7375016
		Pos. 12 Hub 80 mm	GG25	690150111
		Pos. 12 Hub 80 mm	GGG50	7375015
		Pos. 12 Hub 72 mm □	GGG50	7375021
		Pos. 12 Hub 82 mm □	GGG50	7375022
		Pos. 13	GG25	690150067
		Pos. 13	GGG50	690150116

Star ring Ø450/Ø500 mm			Description	Quality	Part no.
Pos. 17 500 mm 	Pos. 18 450 mm 	Pos. 19 235 mm 	Pos. 17 Ø500/Ø135	GGG50	690150063
			Pos. 18 Ø485	GGG50	690150064
			Pos. 19 Mounting plate		690150112

Star ring Ø550/Ø600 mm			Description	Quality	Part no.
Pos. 20 600 mm 	Pos. 21 550 mm 	Pos. 19 235 mm 	Pos. 20 Ø600/Ø135	GGG50	690150065
			Pos. 21 Ø550	GGG50	690150066
			Pos. 19 Mounting plate		690150112

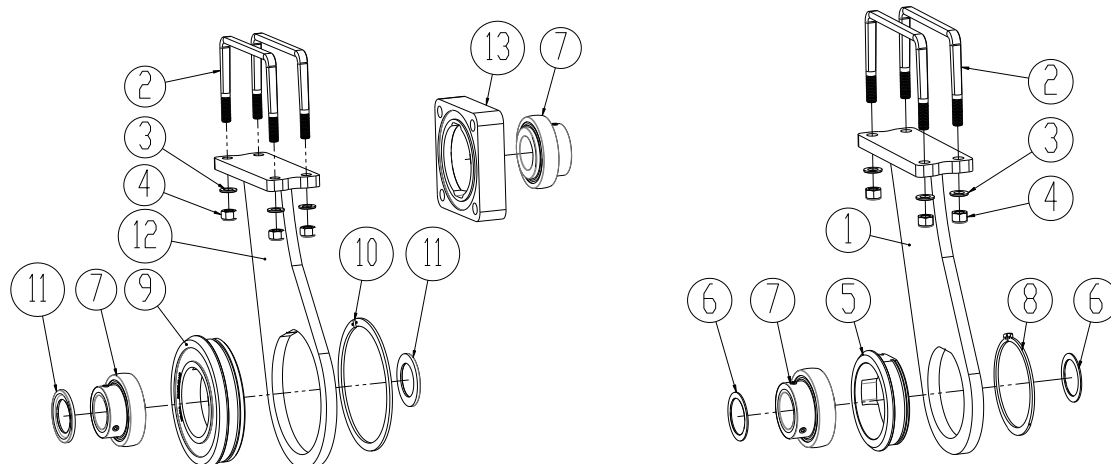
Crosskill 550/600 mm			Beskrivelse	Quality	Part no.
Pos. 22 Loose Crosskill 	Pos. 23 Rigid Crosskill 	Pos. 24 Hub 	Pos. 22 600 mm	GG25	690150075
			Pos. 23 550 mm	GG25	690150074
			Pos. 24 Hub Ø104		690150076

Roller section with cast iron rings



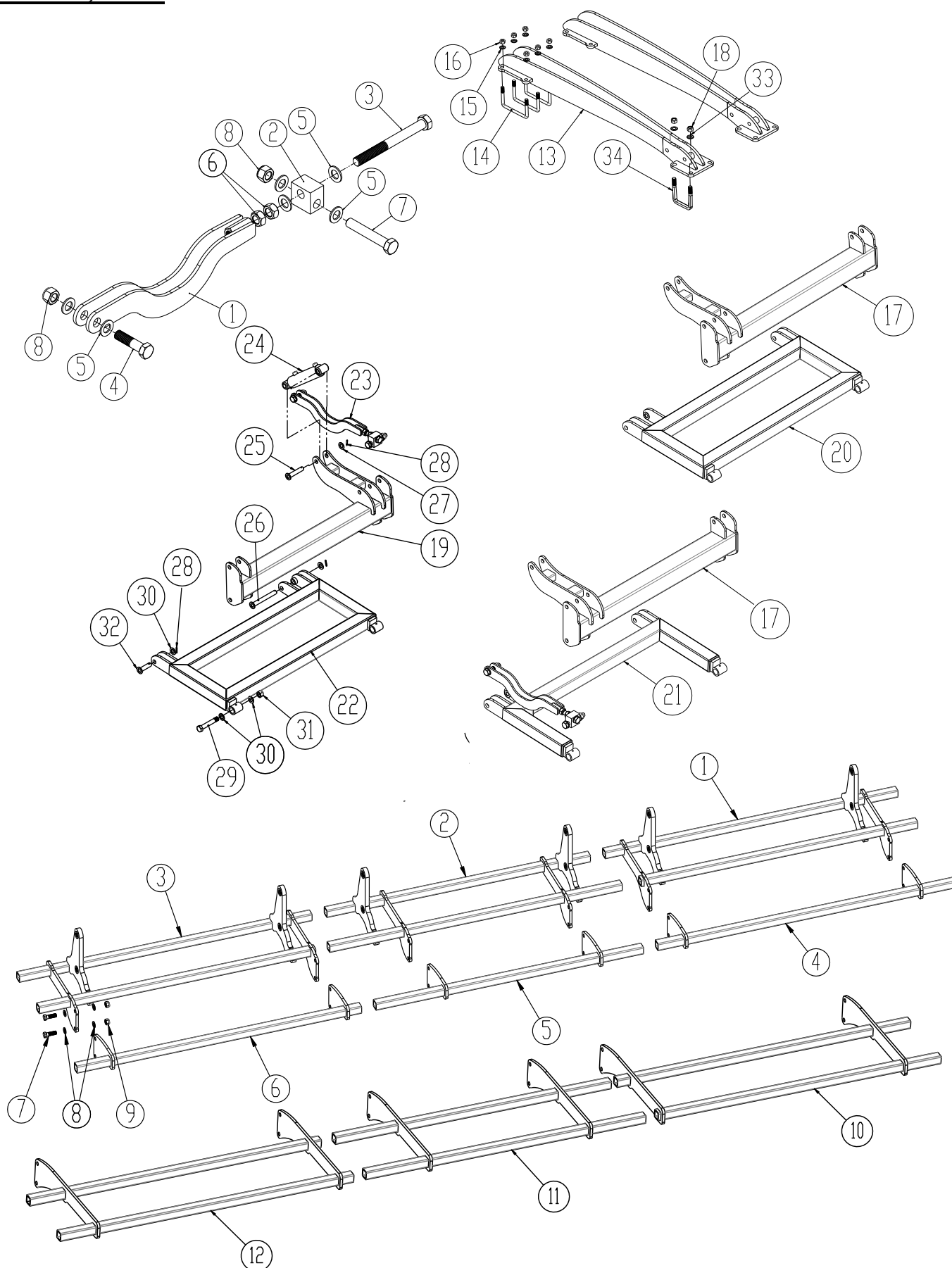
Pos.	Art. No.	Designation	4,5	6,3	8,2
1	690140813	Bearing UCF 211 ø55, complete bearing	6	6	6
2	690103197	Bolt M16x50 8.8 fzb	24	24	24
3	0272290	Faceted washer Ø16 DIN125B	48	48	48
4	0264090	Self-locking nut M16	24	24	24
5	671040400	Stop bushing w/2 pc. M12 bolts (til Ø60 shaft)	3	3	5
6	678661736	Axle for middle + side sections Ø60 ST70 L=1736	3		
6	678692370	Shaft f/middle section Ø60 CrNiMo6 L=2370		1	1
6	678662370	Shaft f/side section Ø60 ST70 L=2370		2	
6	678633283	Shaft f/side section Ø60 ST60 L=3283			2
8		Support bearing, for side sections see next page			2

Support bearing



Pos.	Art. No.	Designation	8,2
1	630764006	Console for bearing with Ø60 axle	2
2	0382852	U-bolt M16x100x200x100	4
3	0272290	Faceted washer Ø16 DIN125B	8
4	0264090	Self-locking nut M16	8
5	630764008	Housing for bearing	2
6	7355000	Thrust plate, narrow f/ UCF312 hub	4
7	690140116	Bearing UC312 R6 (ø60)	2
8	691370150	Seeger circlip ring Ø150 DIN471	2
9	7355040	Bearing housing UCRSC 312 w/molded PVC ring	2
10	691370220	Seeger circlip ring Ø220 DIN471	2
11	7355000	Thrust plate, narrow f/ UCF312 hub	4
12	1210139	Console for rubber damped support bearing with Ø60 axle	2
13	7355013	Bearing housing UCRSF 312 w / molded PVC ring	6

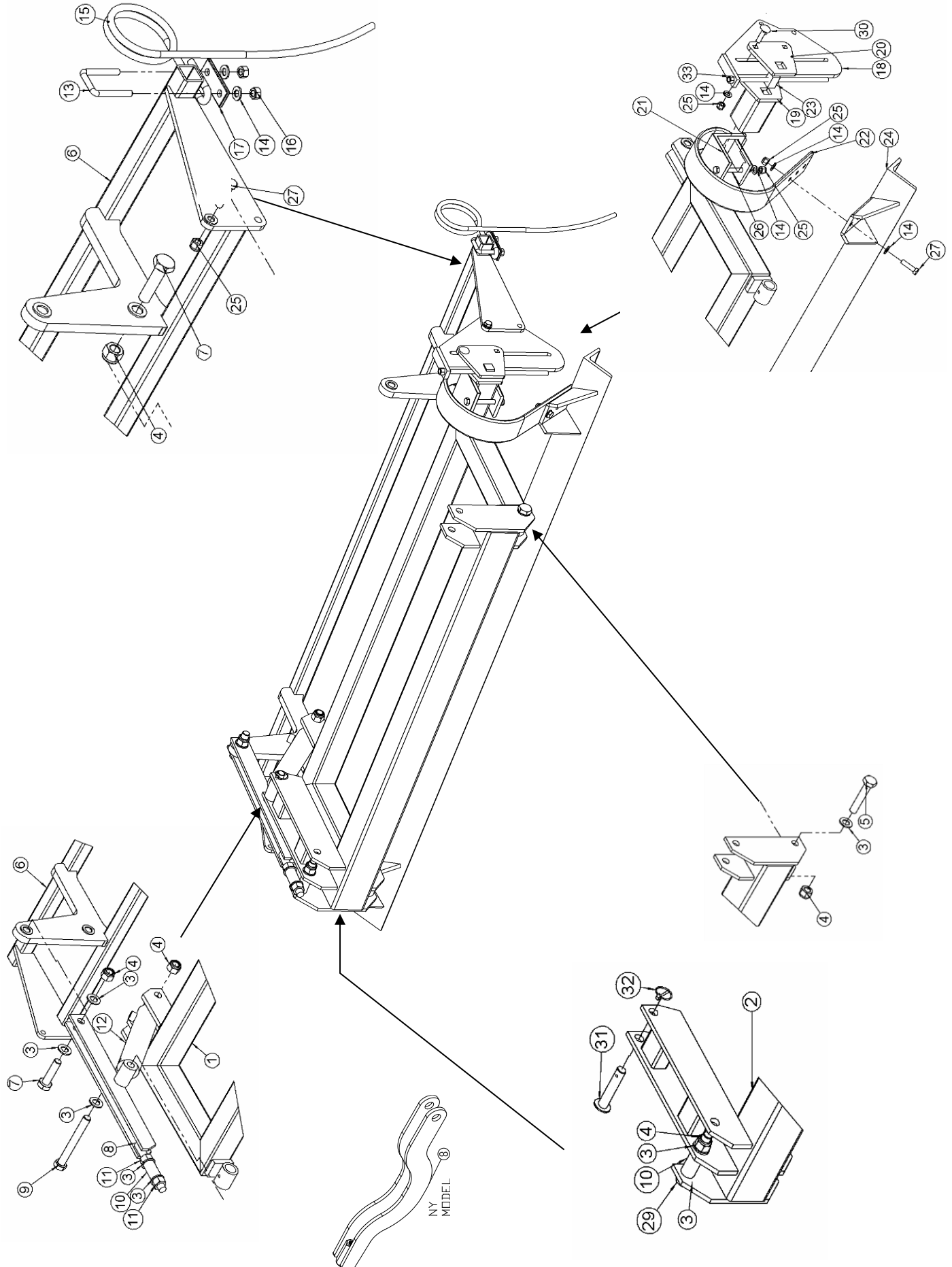
Harrow 4,5 meter



Pos.	Item no.	Designation	4,5m
1	630286141	Harrow frame, left	1
2	630286150	Harrow frame, middle	1
3	630286153	Harrowframe, right	1
4	1200223	1 additional harrow bar Grass-Roller left	1
5	1200224	1 additional harrow bar Grass-Roller middle	1
6	1200225	1 additional harrow bar Grass-Roller right	1
7	0235810	Bolt M16x50 8.8	12
8	0272290	Faceted washer Ø16	24
9	0264090	Låsemøtrik M16	12
10	630286154	2 additional harrow bar Grass-Roller left	1
11	630286161	2 additional harrow bar Grass-Roller middle	1
12	630286160	2 additional harrow bar Grass-Roller right	1
13	630286130	Horn	4
14	690110102	U-bolt M16x80x160x80	12
15	0272290	Faceted washer Ø16	24
16	0264090	Self-locking nut M16	24
17	630286145	Suspention for front harrow left and middle	2
18	0264100	Self-locking nut M18	24
19	630286164	Suspention for front harrow right	1
20	630286109	Lifting frame frontharrow left	1
21	630286181	Lifting frame frontharrow middle	1
22	630286110	Lifting frame frontharrow right	1
23	630327523	Parallel arm complete	3
24	690200040	Cylinder 50/30x155 Ø20,5/20,5	3
	690200046	Gasket set 50/30 mm (Laizhou)	
25	69520087F	Pin Ø20 L=87	3
26	69520155F	Pin Ø20 L155	3
27	0272310	Faceted washer Ø20	9
28	0371395	Roll pin Ø5x35	9
29	0236200	Bolt	6
30	0272310	Faceted washer Ø20	12
31	0264110	Self-locking nut M20	6
32	69520061F	Nagle	3
33	0272300	Faceted washer Ø18	24
34	0382900	DragbåndM18x100x100x100	12



Harrow for middle section 6,3 - 8,2m before December 2014



Pos.	Item no.	Designation	6.3m	8.2m
1	630327182	Lifting frame left + middle front harrow	1	1
2	630327183	Suspension f/harrow middle section	1	1
2a	690110101	U-Bolt M16x100x100x100 for mounting of 63027183	4	4
2b	0272290	Facetwasher Ø16	8	8
2c	0264090	Self-locking nut M16	8	8
3	0272310	Facet plate Ø20	24	24
4	0264110	Self-locking nut M20	8	8
5	0236200	Bolt M20x110 8.8	2	2
6	630327178	Harrow section middle section	1	0
6	630327226	Harrow section middle section	0	1
7	0236170	Bolt M20x80 8.8	3	3
8	630327180	Parallel rod f/front harrow	2	2
8	630327252	Parallel rod f/front harrow From machine number 341717	2	2
8	630327521	Parallelrod (new curved model) From machine number 341717	2	2
8a	690112015	Bolt M20 x 150 Set bolt From machine number 341717	2	2
9	0236265	Bolt M20x180 8.8	1	1
10	630327179	Toggle joint at bracket on the harrow (ended)	2	2
10	630327251	Angle block for parallel rod From machine number 341717	2	2
11	0261410	Nut M20	4	4
12	690200040	Cylinder 50/30x155mm Ø20/Ø20 mm	1	1
12a	690200045	Gasket set 50/30		
13	690110050	U-bolt M12 40x40x40	23	23
14	0272270	Facet plate Ø12	74	74
15	0426110	Long finger tine ø12 x 100 curved	23	23
16	690113013	Self-locking nut M12 (all-metal) Quality 10	46	46
17	1012520	Clamping plate M12	23	23
18	630327192	Height adjustment for levelling board	2	2
19	630327193	Clamping plate w/bar for height adjustment	2	2
20	630327191	Clamping plate for height adjustment	2	2
21	0422390	Clamp	2	2
22	0422144	Spring-Board tine 80x10mm – short	2	2
23	630327199	Threaded block for height adjustment of levelling board	2	2
24	630327196	Levelling board – Middle section	1	0
24	630327237	Levelling board – Middle section	0	1
25	690113019	Self locking nut M12 (all-metal) Quality 8	16	16
26	0235470	Bolt M12x110 8,8	2	2
27	0235380	Bolt M12x50 8.8	10	10
28	0236210	Bolt M20x120 8.8	3	3
30	0248680	Bolt (carrier bolt) M12x50	4	4
31	69520087F	Pin Ø20 L=87	1	1
32	0378200	Ring pin Ø4,5 mm	1	1
33	630327217	Threaded rod for levelling board	2	2

This diagram illustrates the assembly of a mechanical device, likely a pump or valve actuator, using various components. The main assembly is shown in a perspective view, with several sub-assemblies and individual parts shown in exploded views around it. Arrows indicate the sequence and direction of assembly.

- Main Assembly:** The central component is a long, angled frame (1) with multiple support rails (2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36). It features a complex internal mechanism with various linkages, bearings, and seals.
- Sub-Assemblies and Components:**
 - Top Right:** A detailed view of a linkage mechanism (10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36) showing the internal structure and components.
 - Bottom Right:** A detailed view of a linkage mechanism (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36) showing the internal structure and components.
 - Bottom Left:** A detailed view of a linkage mechanism (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36) showing the internal structure and components.
 - Top Left:** A detailed view of a linkage mechanism (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36) showing the internal structure and components.
- Assembly Sequence:** The diagram uses numbered arrows to indicate the order of assembly. For example, arrow 1 points to the main frame, while arrows 2 through 36 point to various components that are assembled onto the frame in sequence.

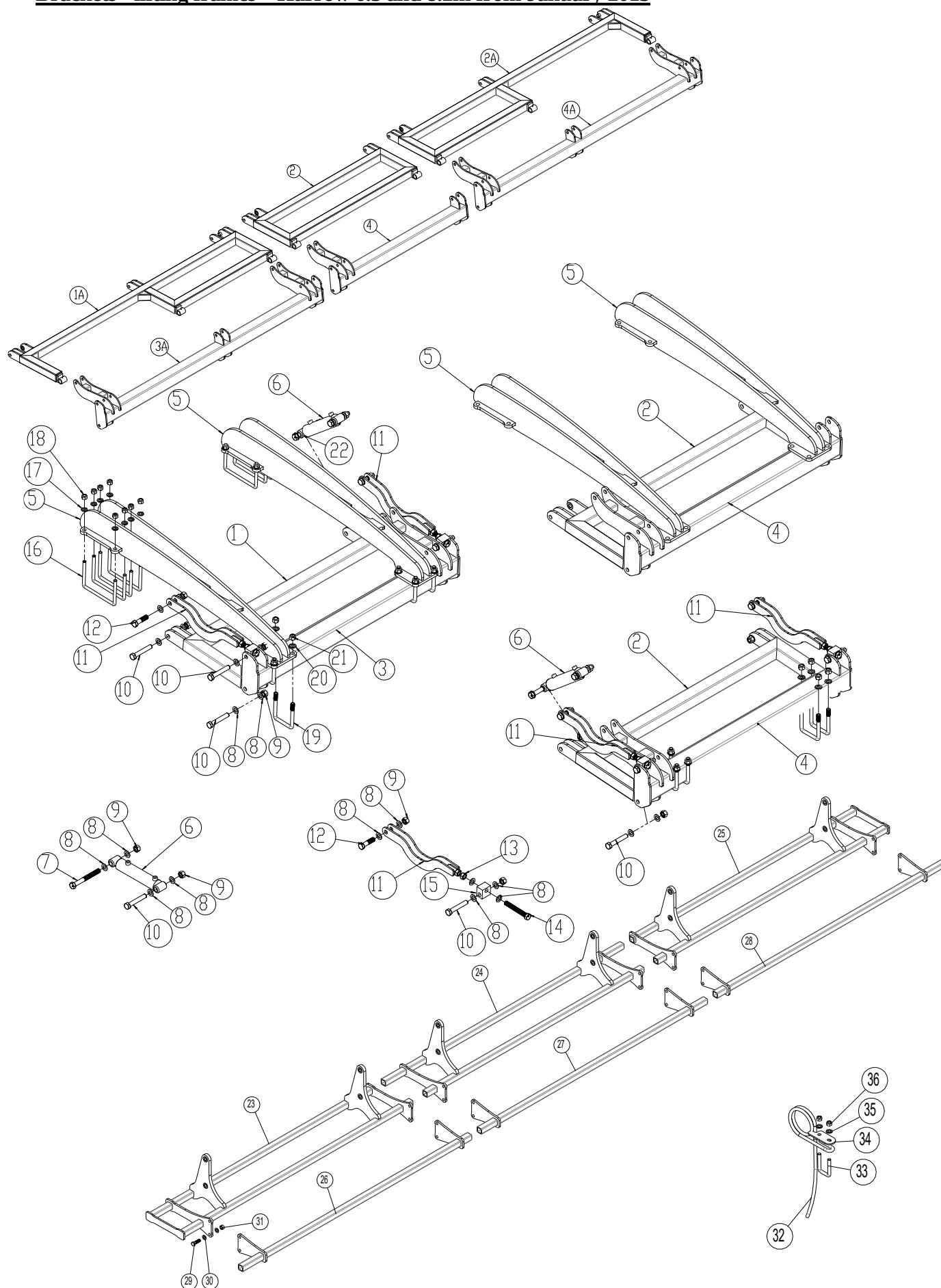
Pos.	Item no.	Designation	6.3m	8.2m
1	630327182	Lifting frame left + middle front harrow	1	0
1	630327181	Lifting frame right	1	0
1	630327221	Lifting frame left	0	1
1	630327220	Lifting frame right	0	1
2	630327177	Harrow frame left	1	0
2	630327176	Harrow frame right	1	0
2	630327228	Harrow frame left	0	1
2	630327227	Harrow frame right	0	1
3	0272310	Faceted washer Ø20	20	30
4	0264110	Self-locking nut M20	8	12
5	0236180	Bolt M20x90 8.8	2	3
6	690113013	Self-locking nut M12 (all-metal)	48	62
7	0272270	Faceted washer Ø12	76	88
8	1012520	Clamp, M12	24	31
9	0426110	Long finger tine ø12 x 100 curved	24	31
10	690110050	U-bolt M12 40x40x40	24	31
11	630327192	Height adjustment f/levelling board	2	3
12	0235380	Bolt M12x50 8.8	10	15
13	690113019	Self-locking nut M12 (all-metal)	16	16
14	630327191	Clamp for height adjustment	2	3
15	630327193	Clamp with bar for height adjustment	2	3
16	630327199	Threaded block for height adjustment of levelling board	2	3
17	0248680	Bolt (carrier bolt) M12x50	4	6
18	630327217	Threaded rod for levelling board	2	3
19	0422145	Spring-Board tine 80x10 mm	2	3
20	0422390	Clamp for Spring-Board tine	2	3
21	690103098	Bolt M12x110 8,8	2	3
22	630327195	Levelling board, left	1	0
22	630327194	Levelling board, right	1	0
22	630327236	Levelling board, left	0	1
22	630327235	Levelling board, right	0	1
24	630327180	Parallel rod f/front harrow	2	3
24	630327252	Parallel rod (discontinued model) From machine no 341717	2	3
24	630327521	Parallel rod (new curved model) From machine no 341717	2	3
24a	690112015	Bolt M20 x 150 Set bolt 8 From machine number 341717	2	3
25	630327179	Toggle joint at bracket on the harrow	2	3
25	630327251	Angle block for parallel rod From machine number 341717	2	3
26	0236210	Bolt M20x120 8.8	4	6
27	630327185	Left cylinder bracket f/side sections	1	1

The tabel continues →



27a	630327186	Right cylinder bracket f/side sections	1	1
27b	630327277	Middle cylinder bracket, left side section	0	1
27c	630327279	Middle cylinder bracket, right side section	0	1
28	630327184	Mounting bracket on side sections without cylinder	2	2
29	690110106	U-bolt M16x200x100x200	4	6
30	0264090	Self-locking nut M16	8	12
31	0272290	Faceted washer Ø16	8	12
32	0261410	Nut M20	4	6
33	690200040	Cylinder 50/30x155mm Ø20/Ø20 mm	1	2
33a	690200045	Gasket set 50/30		
34	69520087F	Pin Ø20 L=87	1	2
35	0378200	Ring pin Ø4,5 mm	1	2
36	0236265	Bolt M20x180 8.8	1	2

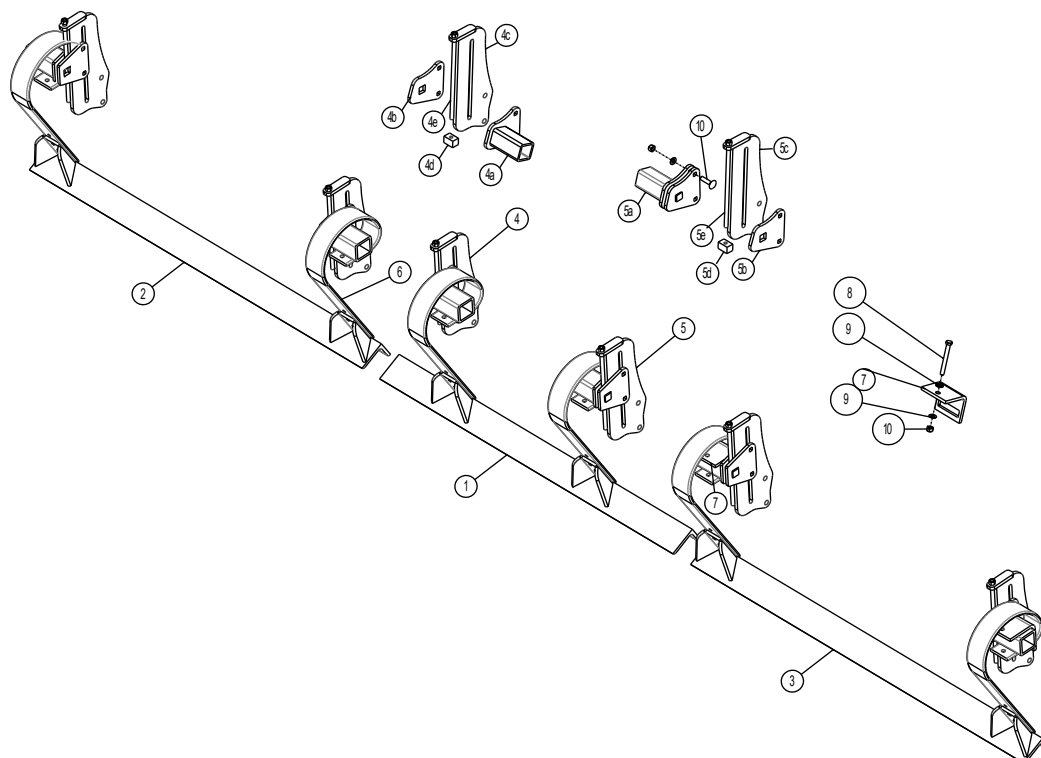
Brackets - lifting frames – Harrow 6.3 and 8.2m from January 2015



Pos.	Vare nr.	Betegnelse	6,3m	8,2m
1	630327181	Lifting frame, right	1	
1A	630367105	Lifting frame, right		1
2	630327182	Lifting frame, left - middle	2	1
2A	630367124	Lifting frame, left		1
3	630330032	Bracket, right	1	
3A	630367103	Bracket, right		1
4	630330059	Bracket, left - middle	2	1
4A	630367125	Bracket, left		1
5	630330012	Horn	4	6
6	690200040	Cylinder 50/30x155mm Ø20/Ø20 mm	3	3
	690200045	Gasket set 50/30		
7	690103160	Bolt M20x180 8.8	3	3
8	0272310	Faceted disc Ø20	12	12
9	0264110	Self locking nut M20	18	20
10	0236210	Bolt M20x120 8.8	18	20
11	630327521	Parallelarms	6	8
12	0236265	Bolt M20x180 8.8	6	8
13	0261410	Nut M20	12	16
14	690112015	Bolt M20x150 8.8 Sætbolt	6	8
15	630327251	Angle block with parallel bar	6	8
16	690110105	U-bolt M16x100x200x100	16	24
17	0272290	Faceted disc Ø16	32	48
18	0264090	Self locking nut M16	32	48
19	690110404	U-bolt M18x100x100x100	8	12
20	0272300	Faceted disc Ø18	16	24
21	0264100	Self locking nut M18	16	24
22	0432100	Lubricating nipple M6	6	6
23	1200066	Harrow frame, right	1	
23	630367161	Harrow frame, right		1
24	1200060	Harrow frame, center	1	
24	630367157	Harrow frame, center		1
25	1200063	Harrow frame, left	1	
25	630367160	Harrow frame, left		1
26	1200080	Harrow 1 row, right	1	
26	1200756	Harrow 1 row, right		1
27	1200079	Harrow 1 row, center	1	
27	1200760	Harrow 1 row, center		1
28	1200081	Harrow 1 row, left	1	
28	1200758	Harrow 1 row, left		1
29	0235810	Bolt M16x50mm, 8.8 fzg	12	
30	0272290	Faceted disc 16mm, fzb	24	
31	0264090	Self locking nut M16 DIN985	12	
32	0426110	Tine Ø12 x 100 buet		
33	690110050	U-BoltM12x40x40x40 (pr.tine)	1	1
34	1012521	Bracket for tine (pr. tine)	1	1
35	0272270	Faceted disc Ø12 pr. tine)	2	2
36	0264070	Self locking nut M12 DIN985 (pr.tine)	2	2

Levelling bar 4,5 – 6,3 – 8,2m

4,5m shown

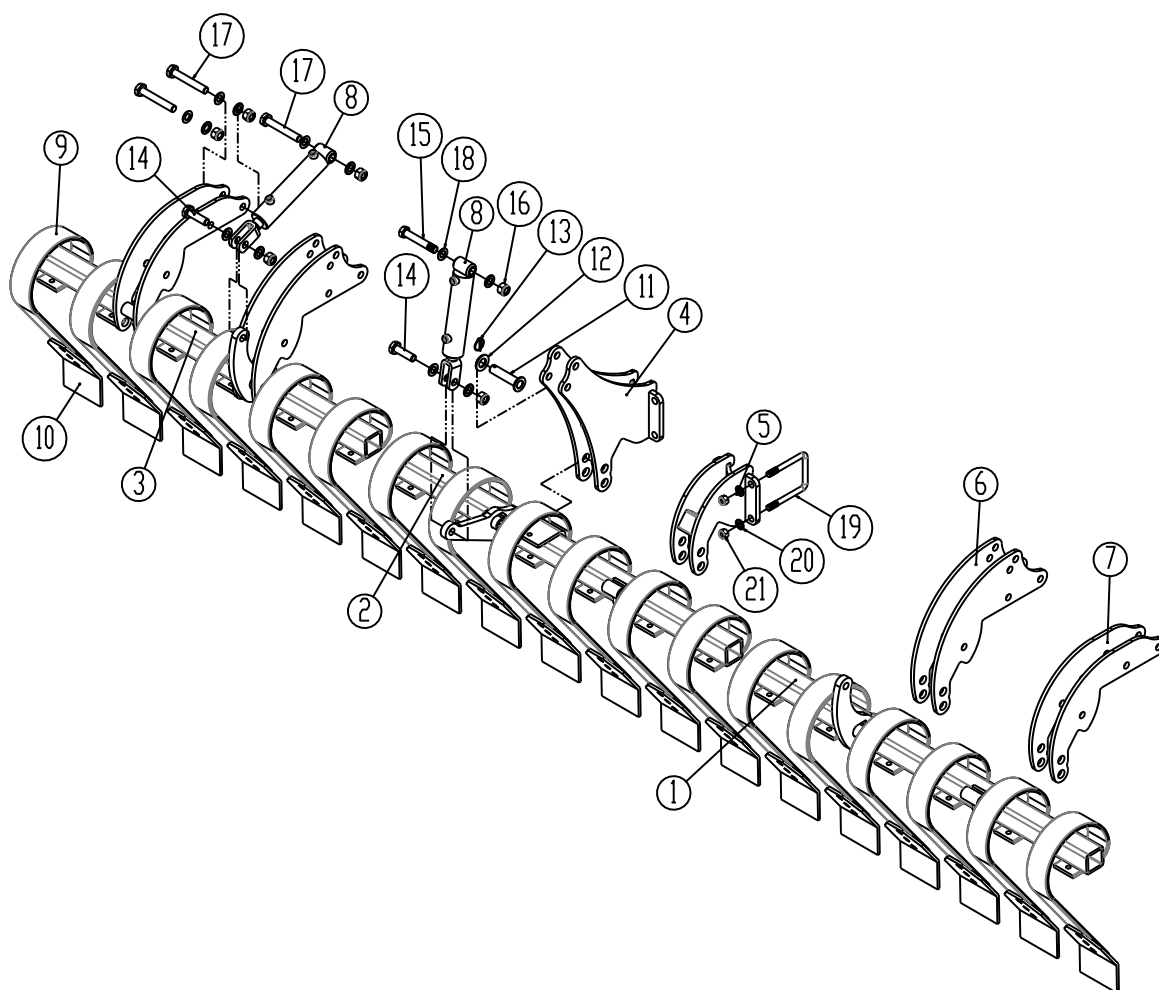


Pos.	Vare nr.	Betegnelse	4,5m	6,3m	8,2m
1	630286177	Levelling bar, center	1		
1	1200058	Levelling bar, center		1	
1	630367173	Levelling bar, center			1
2	630286179	Levelling bar, right	1		
2	1200068	Levelling bar, right		1	
2	630367174	Levelling bar, right			1
3	630286179	Levelling bar, left	1		
3	1200068	Levelling bar, left		1	
3	630367172	Levelling bar, left			1
4	630286185	Bracket for levelling bar	3	3	4
4a	630327167	Clampingplate with tube	3	3	4
4b	630317165	Clampingplate without tube	3	3	4
4c	630367171	Leftturned bracket	3	3	4
4d	630327199	Threaded block	3	3	4
4e	630327217	Threaded rod	3	3	4
5	630367185	Bracket for levelling bar	3	3	4
5a	630367169	Clampingplate with tube	3	3	4
5b	630317165	Clampingplate without tube	3	3	4
5c	630367170	Rightturned bracket	3	3	4
5d	630327199	Threaded block	3	3	4
5e	630327217	Threaded rod	3	3	4
6	0422146	Spring-Board tine 90x14mm		6	8
6	0422145	Spring-Board tine 80x10mm	6		
7	0422395	Tandholder, tand 90x14		6	8
7	0422390	Tandholder, tand 80x10	6		
8	0235470	Bolt M12x110 8.8	12	12	16
9	0272270	Faceted disc 12mm, fzb DIN 125B	24	48	48
10	690113019	Self-locking nut M12 (all-metal)	12	24	48
11	0248680	Carriage bolt M12x50 8.8	12	12	16
12	0235380	Bolt M12x50mm, 8.8 fzb	12	24	48



Spare parts list Spring-Board

Middle and side section to suit harrow mounting 4,5m



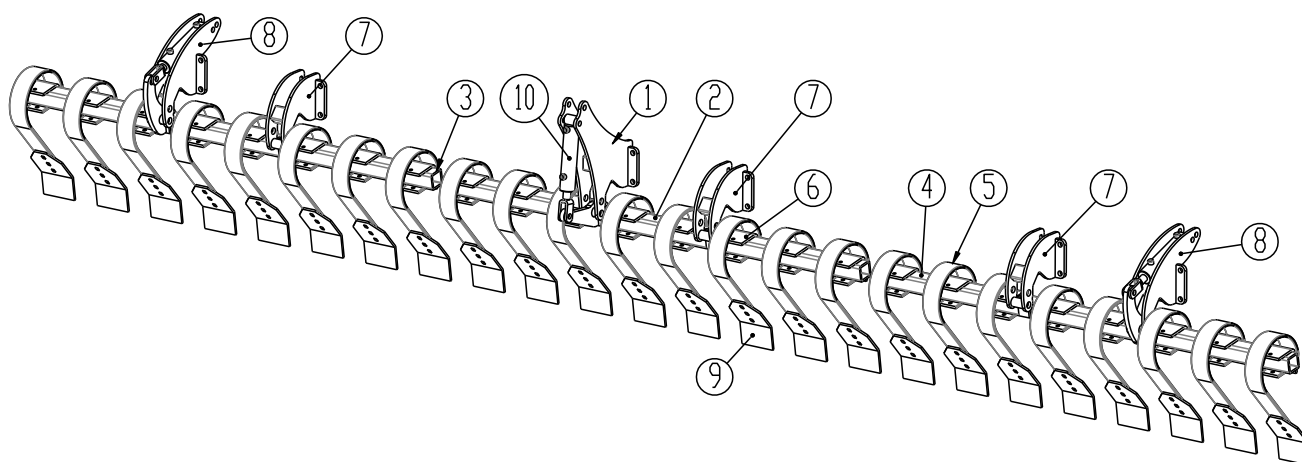
Pos.	Item no.	Designation	4,5m
1	630286173	Spring-Board bar left	1
2	630286169	Spring-Board bar middle	1
3	630286176	Spring-Board bar right	1
4	630330022	Suspention middle frame for cylinder	1
5	630330021	Suspention middle where non cylinder	1
6	630286172	Suspention Spring-Board side frame for cylinder	4
7	630286171	Suspention Spring-Board side frame where non cylinder	4
8	690200160	Cylinder 50/30x155 Ø20,25/clevis	3
8a	690200045	Gasket set 50/30	
9	0422145	Tine 10x80	18
10	0422143	Wearing point 8x150	18
11	69525095F	Pin Ø25 L=95	6
12	0272340	Faceted washer Ø27	6

The table continues →



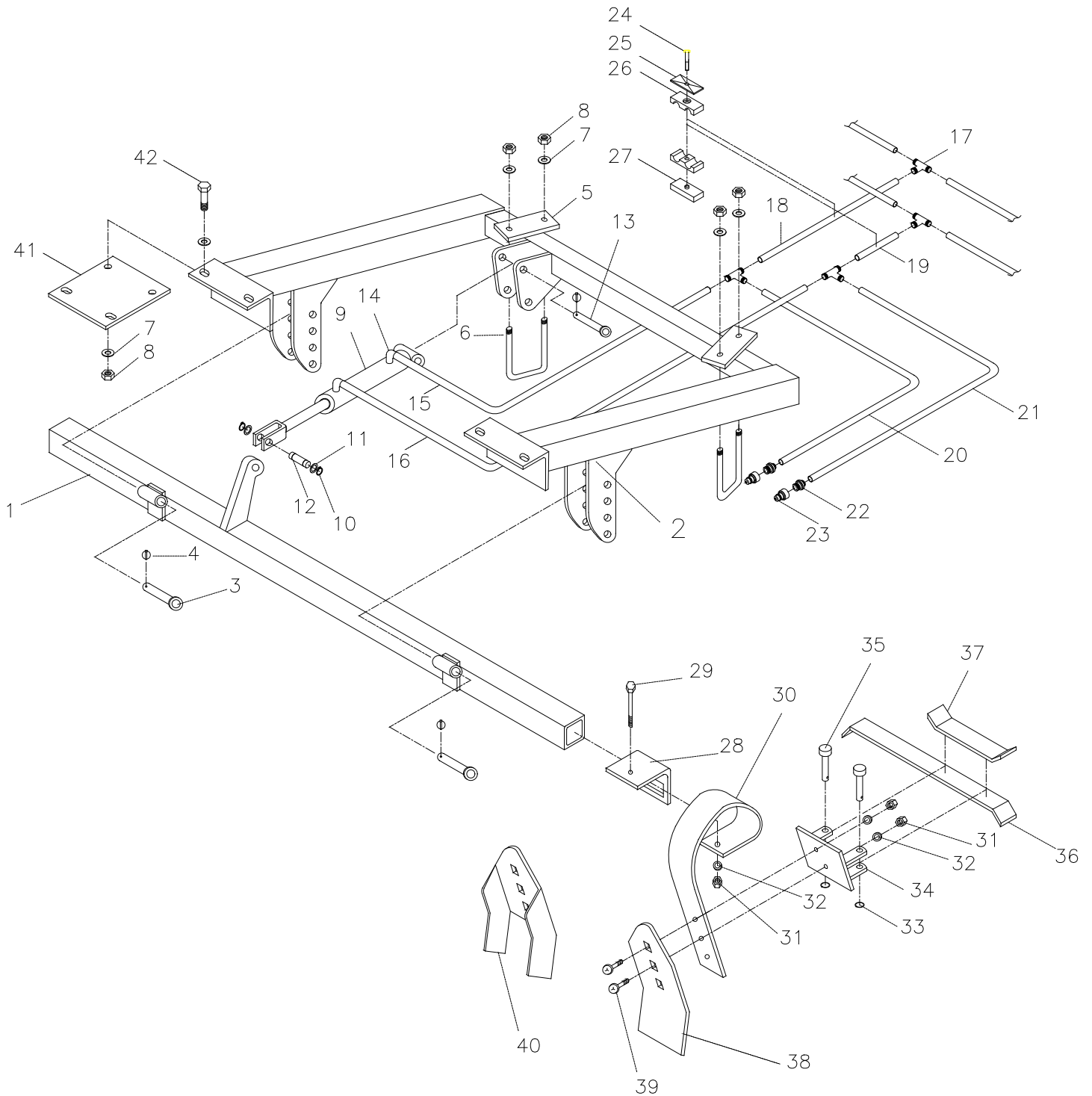
13	0378200	Ring clip Ø4,5	6
14	0236150	Bolt M20x70 8.8 fzb DIN931	3
15	0236210	Bolt M20x120 8.8 fzb DIN931	1
16	0264110	Self locking nut M20	14
17	0236220	Bolt M20x130 8.8 fzb DIN931	10
18	0272310	Faceted washer Ø20	28
19	690110101	U-bolt M16 100x100x100	4
20	0272290	Faceted washer Ø16	8
21	0264090	Self locking nut M16	8

Middle and side section to suit harrow mounting 6,3 - 8,2m



Pos.	Item no.	Designation	6,3m	8,2m
1	630330022	Suspension middle section for cylinder	1	
2	630330023	Spring-Board bar middle	1	
2	630367117	Spring-Board bar middle		1
3	630330025	Spring-Board bar right	1	
4	630330024	Spring-Board bar left	1	
3+4	630367116	Spring-Board bar right / left		2
5	0422145	Spring-Board tine 80x10 - long	24	32
6	0422390	Clamp for Spring-Board tine, 70x70 mm bar	24	32
7	630330021	Suspension middle/side sections without cylinder	3	3
8	630367120	Suspension side sections with cylinder	2	5
9	633052100	Wearing point Spring-Board 150x8	24	32
10	690200160	Cylinder 50/30x155 Ø20,25/clevis	3	3
	690200045	Gasket set 50/30		

Middle section incl. hydraulics, when only Spring-Board 6.3 – 8.2m



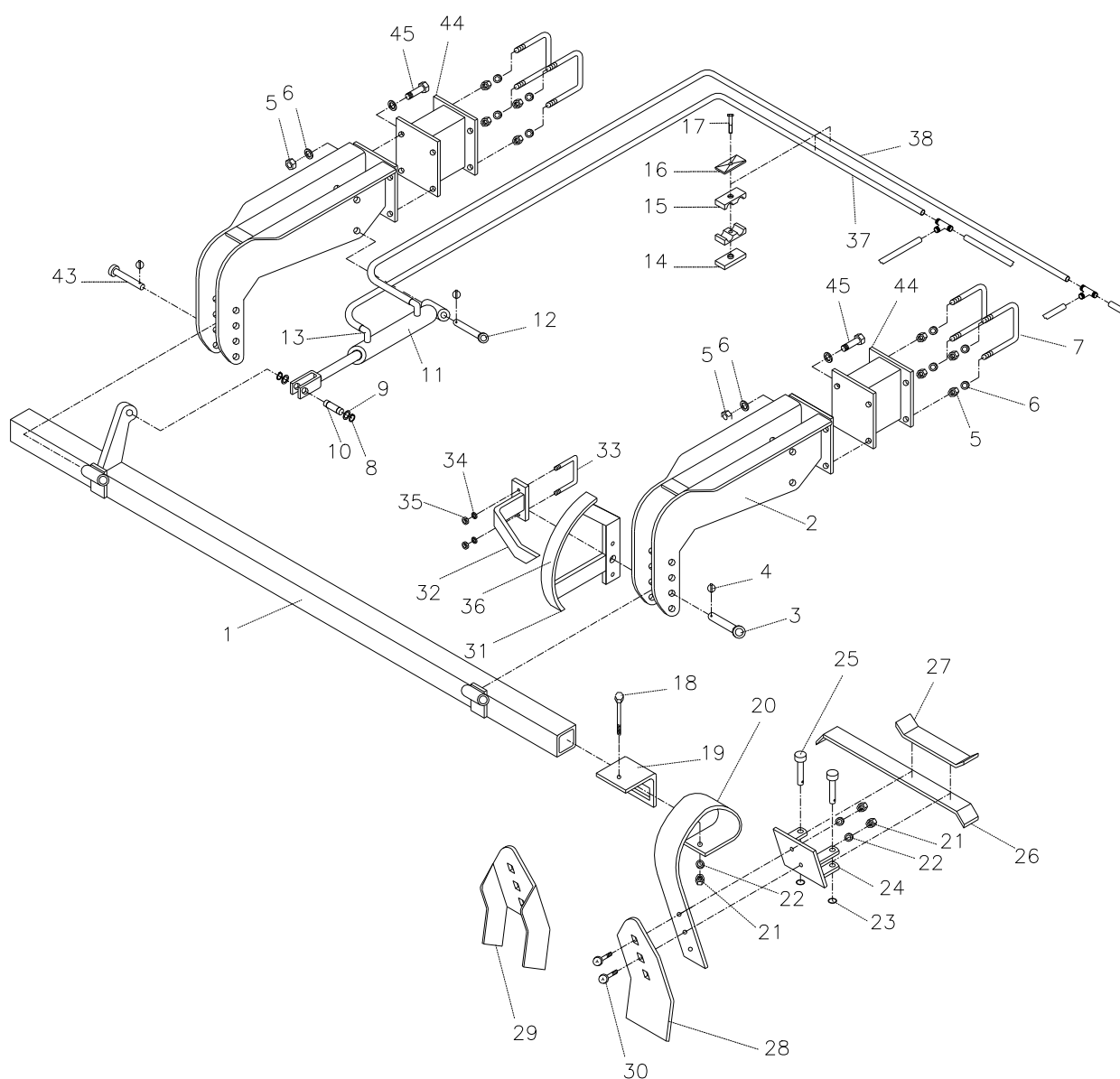
Pos.	Item no.	Designation	6.3m	8.2m
1	635053020	Bar for tines	1	0
1	633073020	Bar for tines	0	1
2	635051000	Suspension for middle section	1	0
2	633061000	Suspension for middle section	0	1
3	69525087F	Pin Ø25 L=87	2	2
4	0378200	Ring pin Ø4,5	3	3
5	670861100	Flange	2	2
6	690110101	U-bolt M16x100x100x100	2	2
7	0272290	Faceted washer Ø16	8	8
8	0264090	Self-locking nut M16	6	6
9	690200160	Cylinder 50/30x155	1	1
9e	690200045	Gasket set 50/30 mm	1	1
10	691372020	Seeger circlip ring Ø20 Din 471	2	2
11	690115010	Washer Ø20/Ø28x1mm	2	2
12	69520046D	Pin Ø20 L=46	1	1
13	69520087F	Pin Ø20 L=87	1	1
14	690203006	Fitting 90angle 10 x 3/8" BSP	2	2
15	690201051	Hydraulic hose 1/4" L=250 mm	1	1
16	690201059	Hydraulic hose 1/4" L=350 mm	1	1
17	690203015	Fitting T10	4	4
18	690201032	Hydraulic hose 1/4" L=1130 mm	1	1
19	690201053	Hydraulic hose 1/4" L=1260 mm	1	1
20	690201038	Hydraulic hose 1/4" L=4000 mm	1	0
20	690201047	Hydraulic hose 1/4" L=4610 mm	0	1
21	690201006	Hydraulic hose 1/4" L=3800 mm	1	
21	690201047	Hydraulic hose 1/4" L=4610 mm		1
22	690203003	Fitting, straight 10 x 1/2" BSP	2	2
23	690203001	Quick coupling (male) E402 1/2"	2	2
24	690210213	Screw for tube-support double	5	5
25	690210211	Top plate for tube-support double	5	5
26	690210210	Tube-support double ø14/ø14	10	10
27	690210212	Welding plate for tube-support double	5	5
28	0422390	Clamp for tine	8	6
29	690103098	Bolt M12x110	8	6
30	0422145	Tine (10x80)	8	6
30a	633052000	Tine complete	8	6
31	0264070	Self-locking nut M12	24	18
32	0272270	Facet washer ø12	24	18
33	0431975	Locking ring 30xø3	16	12

The table continues →

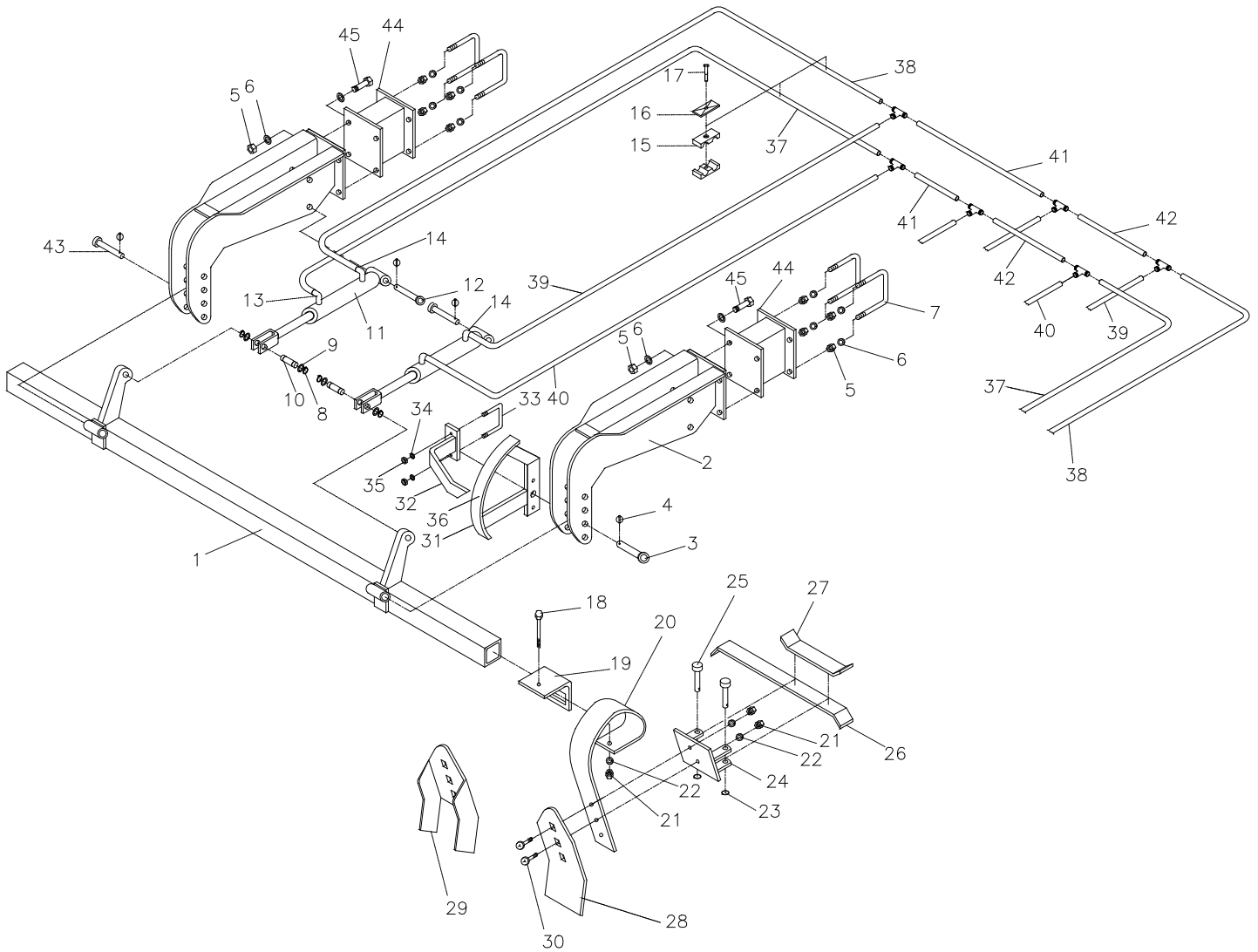


Pos.	Item no.	Designation	6.3m	8.2m
34	633055500	Tine bracket for transverse locking system	8	6
35	69512040K	Pin Ø12,5x40	16	12
36	633055710	Long locking bar for transverse locking system	7	5
37	633055700	Short locking bar for transverse locking system	2	2
38	0422143	Tine point (8x150)	8	6
39	0248670	Bolt (carrier bolt) M12x45	16	12
40	633052150	Tine point (slicing plates)	8	6
41	635055010	Distance plate for mounting	2	2
42	690103126	Bolt M16x45	4	4

Side section incl. hydraulics, when only Spring-Board (left shown) 6.3m



Side section incl. hydraulics, when only Spring-Board (left shown) 8.2m

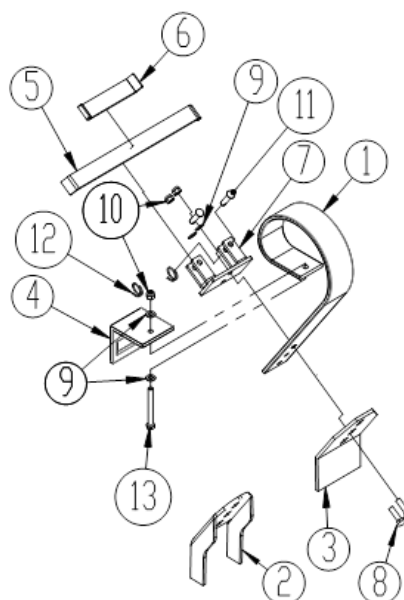


Pos.	Item no.	Designation	6.3m	8.2m
1	635053010	Bar for tines (right)	1	
1	635053030	Bar for tines (left)	1	
1	633063010	Bar for tines (right)		1
1	633063030	Bar for tines (left)		1
2	635054500	Horn	4	4
3	69525095F	Pin Ø25 L=95	1	1
4	0378200	Ring pin Ø4,5	6	6
5	0264090	Self-locking nut M16	32	32
6	0272290	Faceted washer Ø16	48	48
7	690110106	U-bolt M16x200x100x200	8	8
8	691372020	Seeger circlip ring Ø20 Din 471	4	8
9	690115010	Washer Ø20/Ø28x1mm	4	8
10	69520046D	Pin Ø20 L=46	2	4
11	690200160	Cylinder 50/30 x 155	2	4
11e	690200045	Gasket set 50/30 mm	2	4
12	69520087F	Pin Ø20 L=87	2	4
13	690203006	Fitting, 90angle 10 x 3/8" BSP	2	4
14	690203002	Fitting, straight 10 - 3/8" BSP	2	4
15	690210210	Tube bracket double ø14/ø14	16	20
16	690210211	Top plate for tube-support double	8	10
17	690210213	Screw for tube-support double	8	10
18	690103098	Bolt M12x110	16	26
19	0422390	Clamp for tine	16	26
20	0422145	Tine (10x80)	16	26
20a	633052000	Tine complete	16	26
21	690112011	Binding nut 12mm	32	52
22	0272270	Faceted washer Ø12	48	78
23	0431975	Locking ring 30xø3	32	52
24	633055500	Tine bracket for transverse locking system	16	26
25	69512040K	Pin ø12,5x40	32	52
26	633055710	Long locking bar for transverse locking system	14	24
27	633055700	Short locking bar for transverse locking system	4	4
28	0422143	Tine point (8x150)	16	26
29	633052150	Tine point (slicing plates)	16	26
30	0248670	Bolt (carrier bolt) M12x45	32	52
31	635151000	Scale f/depth control	1	1
32	635152000	Pointer f/depth control	1	1
33	690110020	U-bolt M10x70x70x70 mm	1	1
34	0272260	Faceted washer Ø10	2	2
35	0264060	Self-locking nut M10	2	2
36	698500018	Label for scale for depth control	1	1
37	690201048	Hydraulic hose 1/4" L= 3610 mm (right side section)	1	0
The tabel continues →				



Pos.	Item no.	Designation	6.3m	8.2m
37	690201006	Hydraulic hose 1/4" L= 3800 mm (left side section)	1	0
37	690201022	Hydraulic hose 1/4" L= 3140 mm	0	2
38	690201044	Hydraulic hose 1/4" L= 3460 mm (right side section)	1	0
38	690201048	Hydraulic hose 1/4" L= 3610 mm (left side section)	1	0
38	690201060	Hydraulic hose 1/4" L= 3000 mm	0	2
39	690201009	Hydraulic hose 1/4" L= 355 mm	0	2
40	690201069	Hydraulic hose 1/4" L= 450 mm	0	2
41	690201063	Hydraulic hose 1/4" L= 1600 mm	0	2
42	690201016	Hydraulic hose 1/4" L= 1830 mm	0	2
43	69525087F	Pin Ø25 L=87	3	3
44	635055000	Connecting link	4	4
45	690103197	Bolt M16x50	16	16

Spring-Board tine with traverse locking system

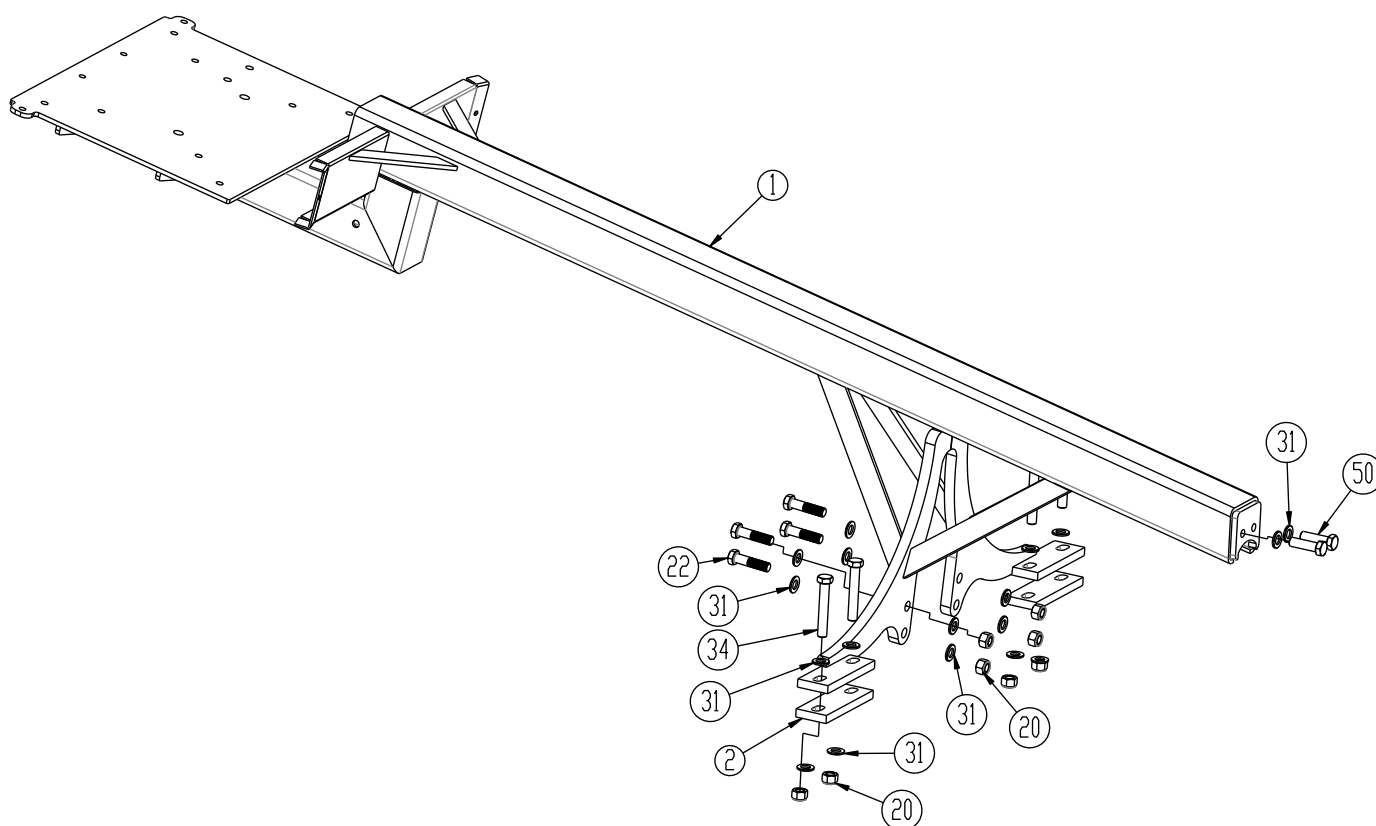


Pos.	Item no.	Designation	Pcs.
1	0422145	Springboard tine 80x10 - lang	1
2	633052150	Slicing point (crust breaker)	1
3	0422143	Wearing point for Spring-Board tine	1
4	0422390	Clamp for Spring-Board tine	1
5	633055710	Traverse bar (long) for traverse locking system	1
6	633055700	Traverse bar (short) for traverse locking system	1
7	633055500	Bracket for traverse locking system	1
8	0248670	Carriage bolt M12x45 8.8	2
9	0272270	Faceted washer Ø12	4
10	0264070	Self locking nut M12	3
11	69512040K	Pin Ø12,5 L = 40 St 52 Yellow Zink Plated	2
12	690134000	Ring clip 30xø3 Galvanized	2
13	690103098	Bolt M12x110 10.9	1

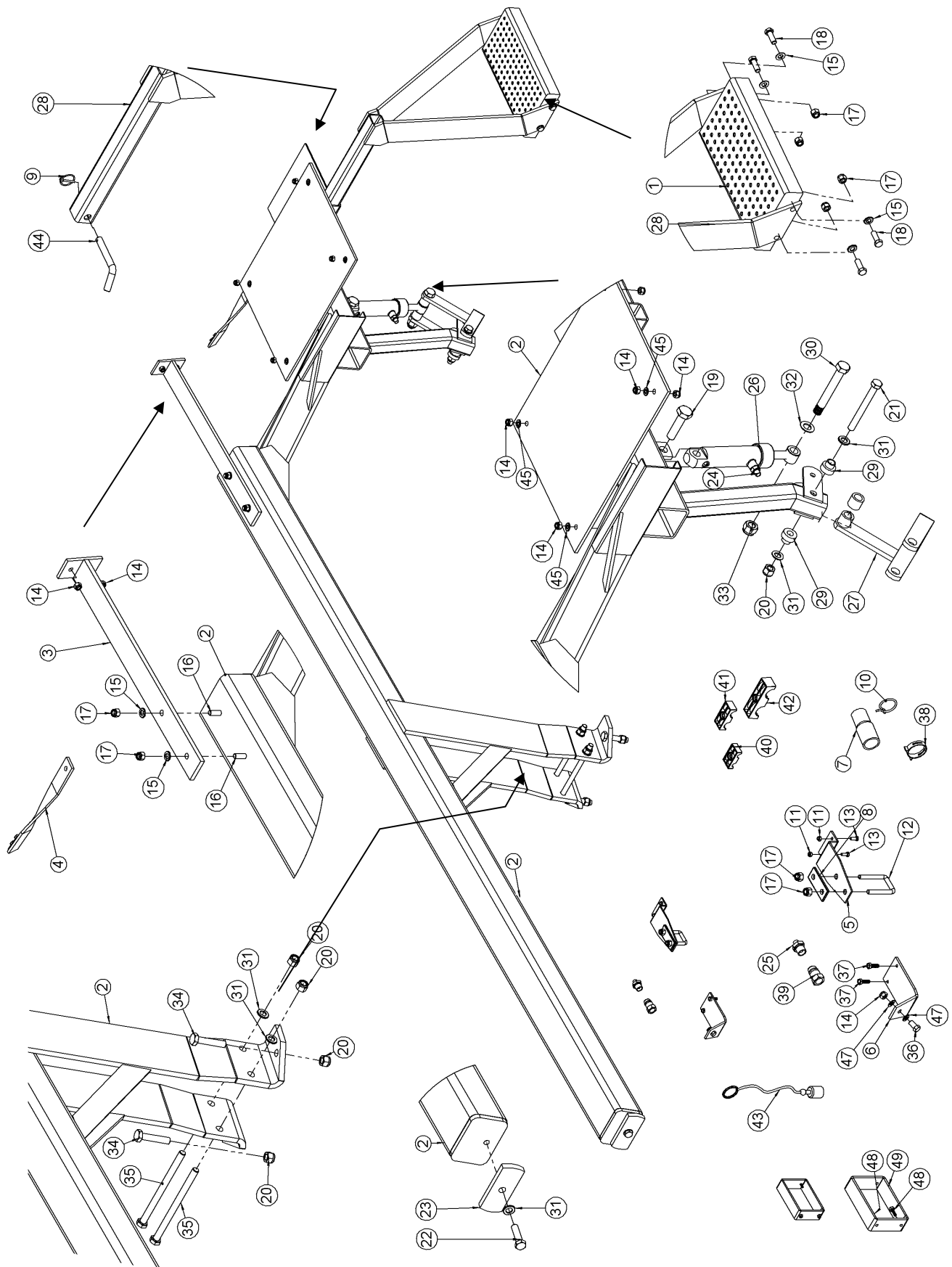
Spare parts list – mounting of Multi-Seeder

Spare parts and wearing parts for HE-VA Multi-Seeder can be found in a separate operation instruction which also contains a spare parts list.

4,5 meter



6,3 and 8,2 meter



Pos.	Item no.	Designation	4,5m	6.3m	8.2m
1	0487007	Step panel 200 x 400 x 45 mm	1	1	1
2	1132998	Mounted frame for Grass-Roller	1		
2	1131850	Mounted frame for Grass-Roller			1
2	1131470	Mounted frame for Grass-Roller		1	
3	1131960	Mounted fan bracket			1
3	1131950	Bracket for fan		1	
4	1131840	Mounted cable bracket		1	1
5	1131780	Bracket for distribution plate	8	8	16
6	1131770	Wide holder short			8
7	0489020	Rubber bellow for drill hose			8
8	1012520	Clamping plate M12	8	8	16
9	0378200	Ring split, ø4.5 mm, galv. No.2045321	1	1	1
10	0435100	Clamp for drilling tube 38/12			8
11	0264040	Self-locking nut M6, fzb DIN985	16	16	32
12	0382120	U-bolt M12	8	8	16
13	0234280	Steel set screw M6x16mm 8.8 fzb	16	16	32
14	0264060	Self-locking nut M10, fzg DIN985	4	6	6
15	0272270	Facet plate 12mm, fzg	8	12	12
16	0235360	Steel set screw M12x40mm,8.8 fzg		2	2
17	0264070	Self-locking nut M12, fzb DIN985	20	21	37
18	0235350	Steel set screw M12x35mm, 8.8 fzb	4	4	4
19	0236170	Steel bolt M20x80mm, 8.8 fzg		1	1
20	0264090	Self-locking nut M16, fzb DIN985	8	5	5
21	0235950	Steel bolt M16x150mm, 8.8 fzb		1	1
22	0235840	Steel bolt M16x60mm, 8.8 fzb	4	1	1
23	1131120	Clamping flange		1	1
24	0444500	Hexagon nipple 1/4" Kon 01BK04		2	2
25	0444490	Hexagon nipple 1/2"x1/4" 02BP0804		2	2
26	0468200	Hydraulic cylinder 40/20 x99mm 2x1/4"		1	1
26a	0468270	Gasket set 40/20			
27	1131130	Mounted lifting bracket for wheel, short		1	1
28	30551200	Mounted bracket for step panel	1	1	1
29	1130290	Bush		2	2
30	0236240	Steel bolt M20x150mm, 8.8 fzb		1	1
31	0272290	Facet plate 16mm, fzb	18	11	11
32	0272310	Facet plate 20mm, fzb		4	4
33	0264110	Self-locking nut M20, fzb DIN985		2	2
34	0235880	Steel bolt M16x80mm, 8.8 fzb			2
34	0235900	Steel bolt M16x100mm, 8.8 fzb		4	

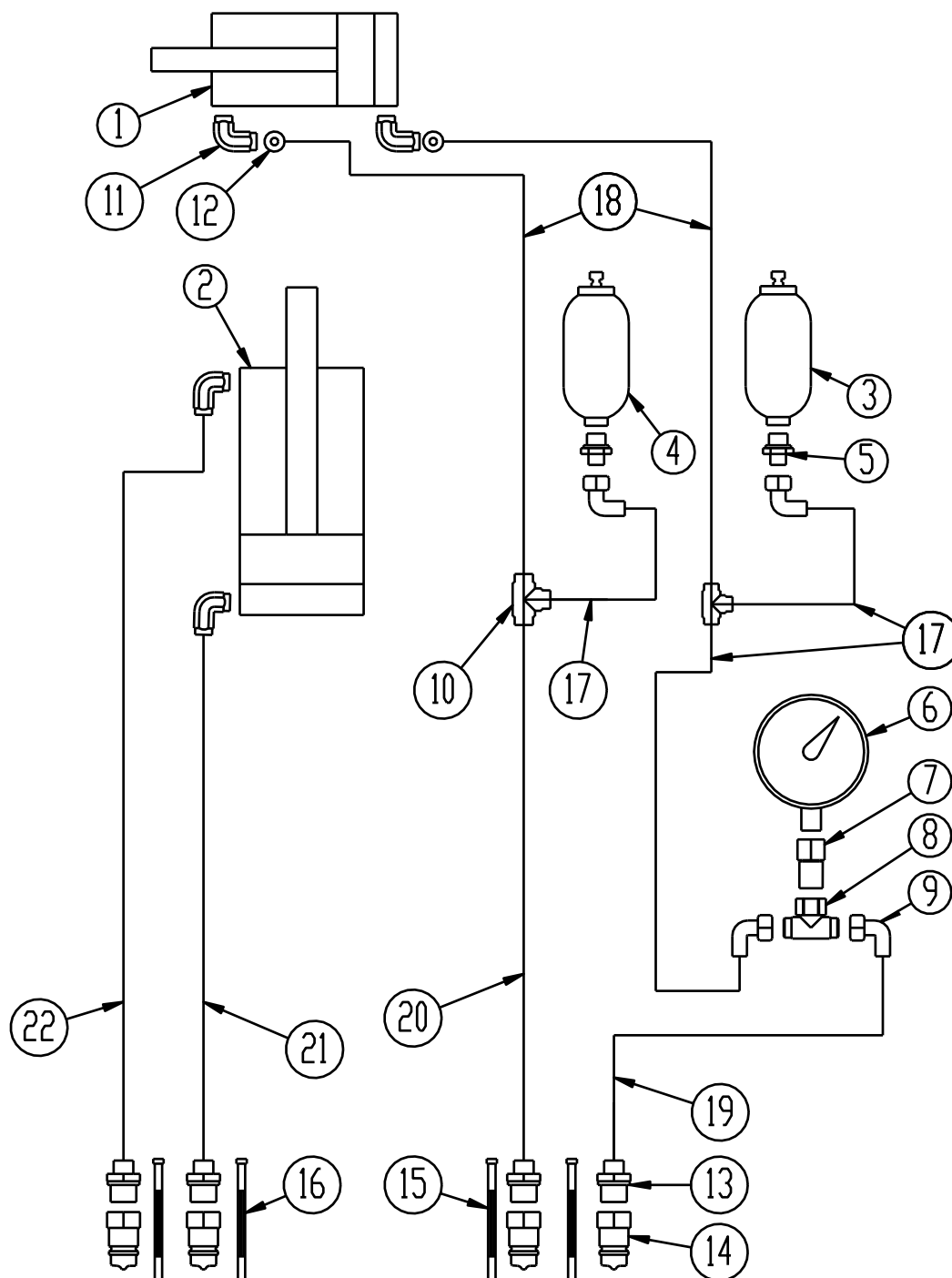
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Pos.	Item no.	Designation	4,5m	6.3m	8.2m
35	0242760	Machine bolt M16x240mm, 4.6 fzb			2
36	0235030	Steel set screw M10x20mm, 8.8 fzb		8	8
37	0230825	Screw Tapetite M8x25 6k.hov 211-08-025			16
38	0435110	Clamp for tube 46/12			8
39	0444020	Quick-coupling ½" Hanpart-kegle Sterling		2	2
40	0449430	Tube-support double ø14-14mm green		1	1
41	0449700	Tube-support double ø22-22mm green (at hydraulic fan)		1	1
42	0449730	Tube-support double ø32-32mm green		2	5
43	0449020	Dust cap 1/2" Std., 1/2" C51		2	2
44	1030280	Pin for wing, ø16x150mm		1	1
45	0235430	Steel bolt M12x75mm, 8.8 fzb	4	4	4
46	0230320	Screw Tapetite M6x50 6k.hov 211-06-050		2	7
47	0272260	Facet plate 10mm, fzb DIN125B		8	18
48	0230290	Screw Tapetite M6x20 6k.hov 211-06-020		4	4
49	630327242	Hose bracket square		2	2
	0455160	Hydr. hose 1/4"x8000 mm			1
	0455060	Hydr. hose 1/4"x6900 mm		1	
	0454490	Hydr. hose 1/2" x 1550mm		0	1
	0434450	Clamp Ø22-32mm, 9 mm wide		8	32
	0434531	Clamp Ø68-85mm, 9 mm wide			2
	0434531	Clamp Ø68-85mm, 9 mm wide (at hydraulic fan)		2	
50	0235830	Bolt M16x55 8.8	2	2	

Spare parts list Hydraulics

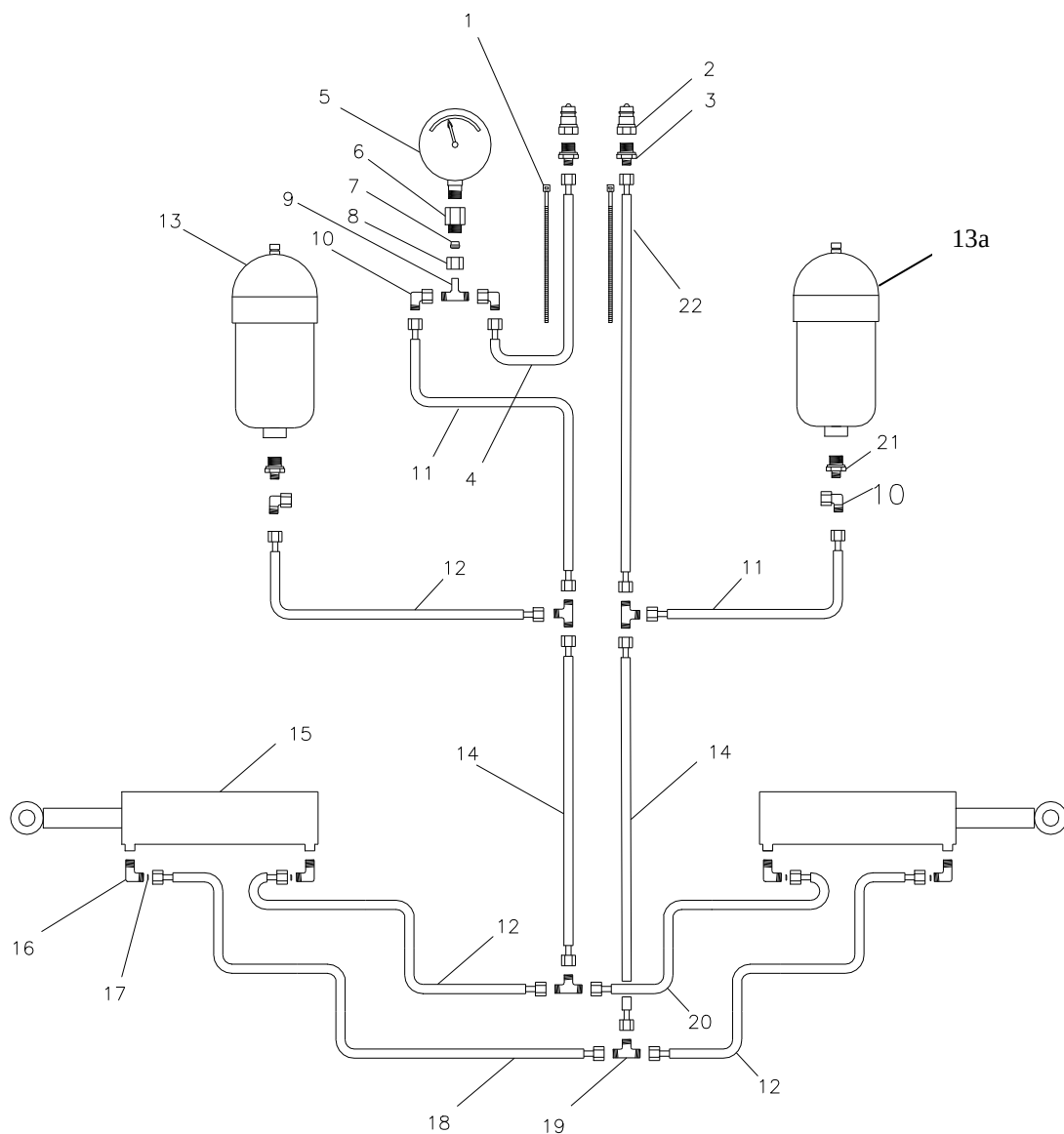
Tip, Folding & weight transfer system red and blue 4,5m



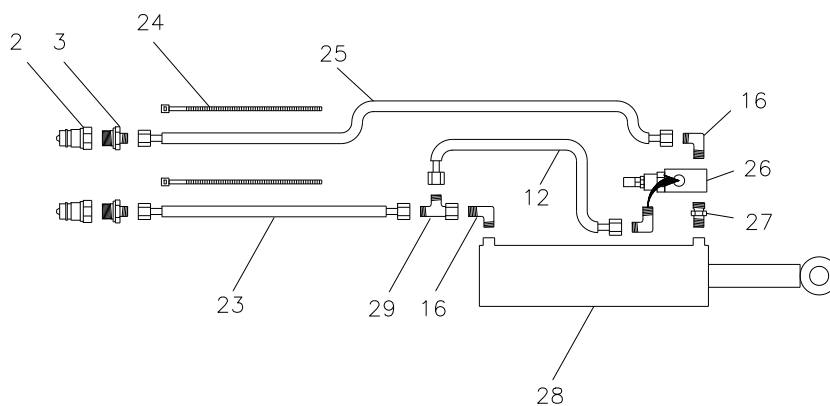
Pos.	Item no.	Designation	4,5 m
1	630286167	Cylinder folding 70/40 x 600	1
1a	690200068	Gasket set 70/40	1
2	690200109	Cylinder tip 100/50 x 500	1
2a	690200284	Gasket set 100/50 Hydraflex	1
3	690206410	Accumulator H700R. 40 bar	1
4	690206403	Accumulator H700R 15 bar	1
5	690203096	Fitting straight M18x1,5 / ø10	2
6	690206822	Manometer 250 bar Ø100mm	1
7	690206823	Manometer fitting 10- ½"	1
8	690203014	Fitting T - 10 with union nut	1
9	0446678	Fitting 90° Ø10	4
10	690203015	Fitting T - 10	2
11	690203006	Fitting, 90angle 10-3/8" Bsp	4
12	690207901	Restrictor 1mm	2
13	690203003	Fitting, straight 10- ½" BSP	4
14	690203001	Quick coupling, male E402 ½"	4
15	690119202	Cable straps (blue)	2
16	690119203	Cable straps (red)	2
17	690201042	Hydraulic hose L = 500 1/4" st/st	3
18	690201021	Hydraulic hose L = 2300 1/4" st/st	2
19	690201237	Hydraulic hose L = 2800 1/4" st/st	1
20	690201022	Hydraulic hose L = 3140 1/4" st/st	1
21	690201006	Hydraulic hose L = 3800 1/4" st/st	1
22	690201029	Hydraulic hose L = 4300 1/4" st/st	1



Hydraulics for folding & weight transfer system (blue) 6.3m

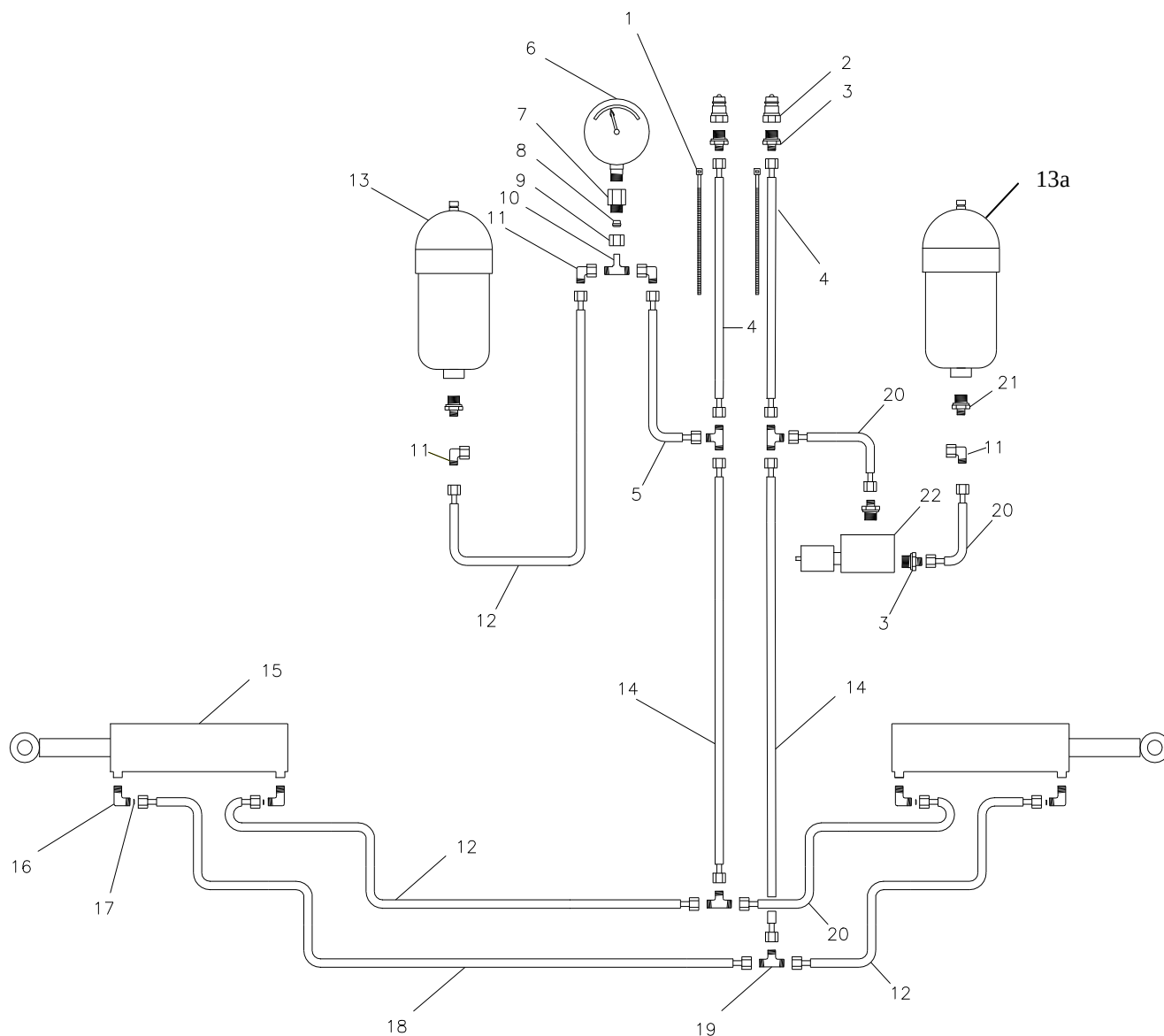


Tip cylinder for middle section (red) 6.3m

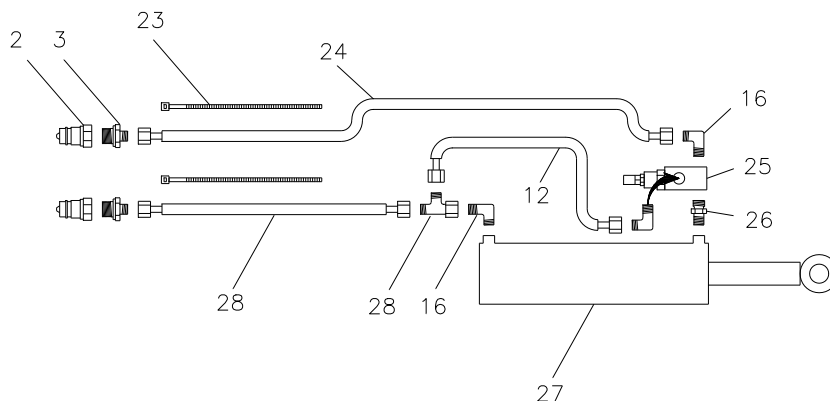


Pos.	Item no.	Designation	6.3 m
1	690119202	Cable straps (blue)	2
2	690203001	Quick coupling, male E402 ½"	4
3	690203003	Fitting, straight 10- ½" BSP	4
4	690201006	Hydraulic hose 3800mm ¼" st/st	1
5	690206822	Manometer 250 bar Ø100mm	1
6	690206823	Manometer fitting 10- ½"	1
7	690203010	Cutting ring Ø10	1
8	690203011	Union nut Ø10	1
9	690203020	Fitting EVT 10 L without union nut/cutting ring	1
10	690203016	Fitting 90angle 10mm	4
11	690201042	Hydraulic hose 500mm ¼" st/st	2
12	690201015	Hydraulic hose 710mm ¼" st/st	4
13	690206410	Accumulator H700R. 40 Bar	1
13a	690206403	Accumulator H700R 15 bar	1
14	690201016	Hydraulic hose 1830mm ¼" st/st	2
15	630762047	Cross cylinder 90/40x280mm (right + left)	2
15A	690200274	Gasket set 90/40	
16	690203006	Fitting, 90angle 10-3/8" Bsp	7
17	690207901	Restrictor 1mm	4
18	690201055	Hydraulic hose 1010mm ¼" st/st	1
19	690203015	Fitting T10	4
20	690201059	Hydraulic hose 350mm ¼" st/st	1
21	690203012	Fitting, straight M18x1,5x12mm w/joint ring	2
22	690201038	Hydraulic hose 4000mm ¼" st/st	1
23	690201029	Hydraulic hose 4300mm ¼" st/st	1
24	690119203	Cable straps (red)	2
25	690201045	Hydraulic hose 4800mm ¼" st/st	1
26	690207104	Adjustable pressure control valve 3/8"	1
27	690202810	Hexagon nipple 3/8"x 3/8" BSP-T	1
28	690200020	Tip cylinder Ø100/50 x 700mm, Ø35 mm	1
28a	690200028	Gasketset 100/50	
29	690203004	Fitting T10V	1

Hydraulics folding & weight transfer system (blue) 8.2m (Before machine no. 352600)



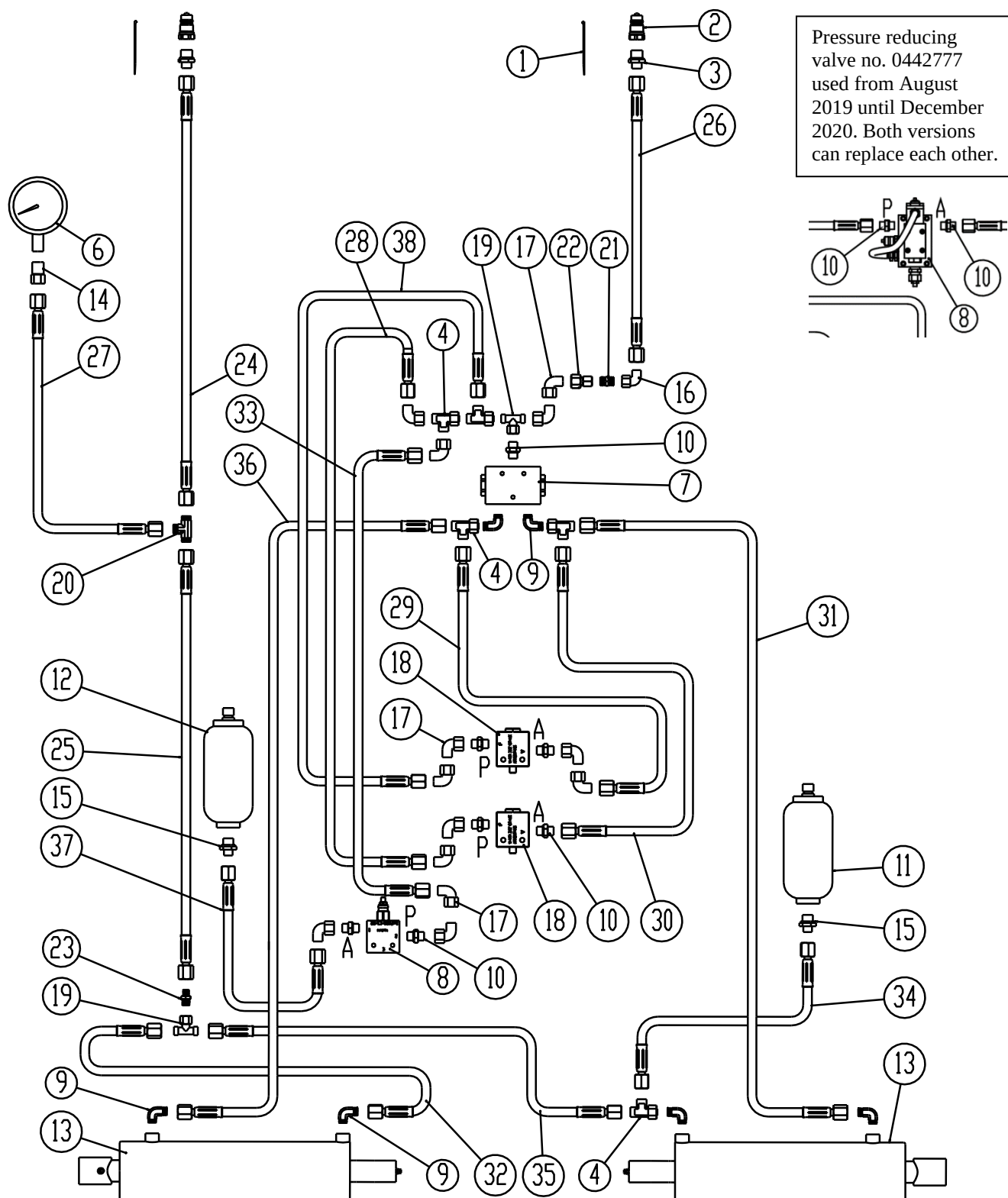
Tip cylinder for middle section (red) 8.2m



Pos.	Item no.	Designation	8.2m
1	690119202	Cable straps (blue)	2
2	690203001	Quick coupling, male E402 ½"	4
3	690203003	Fitting, straight 10- ½" BSP	4
4	690201048	Hydraulic hose 3610mm 1/4" st/st	2
5	690201051	Hydraulic hose 250mm ¼ " st/st	1
6	690206822	Manometer 250 bar Ø100mm	1
7	690206823	Manometer fitting 10- ½"	1
8	690203010	Cutting ring Ø10	1
9	690203011	Union nut Ø10	1
10	690203020	Fitting EVT 10 L without union nut / cutting ring	1
°11	690203016	Fitting 90° angle 10mm	4
12	690201055	Hydraulic hose 1010mm 1/4" st/st	3
13	690206410	Accumulator H700R. 40 Bar	1
13a	690206403	Accumulator H700R 15 bar	1
14	690201022	Hydraulic hose 3140mm 1/4" st/st	2
15	630762047	Cross cylinder 90/40x280mm (right)	2
15a	690200274	Gasket set 90/40	
16	690203006	Fitting, 90angle 10-3/8" Bsp	4
17	690207901	Restrictor 1mm	4
18	690201055	Hydraulic hose 1010mm 1/4" st/st	2
19	690203015	Fitting T10	4
20	690201059	Hydraulic hose 350mm 1/4" st/st	3
21	690203012	Fitting, straight M18x1,5x12mm w/joint ring	2
22	690209453	Depth stop valve, electric	1
23	690119203	Cable straps (red)	2
24	690201025	Hydraulic hose 5640mm 1/4" st/st	1
25	690207104	Adjustable pressure control valve 3/8"	1
26	690202810	Hexagon nipple 3/8"x 3/8" BSP-T	1
27	690200014	Tip cylinder Ø100/60 x 1000mm, Ø35 mm	1
27a	690200019	Gasket set 100/60	
28	690203004	Fitting T10V	1
29	690201047	Hydraulic hose 4610mm 1/4" st/st	1



Hydraulics folding & weight transfer system (blue) 8.2m (after machine no. 352600)



Pos.	Item no.	Designation	8,2 m
1	690119202	Straps (red)	2
2	0444020	Quick coupling, male E402 ½"	2
3	690203103	Fitting, straight 10- ½" BSP	2
4	690203017	Fitting T12, w/O-ring	6
5	690203115	Fitting T12	2
6	690206822	Manometer 250 bar, Ø100	1
7	0442775	Flowdivider 3/8" 50/50% 10-20 l/min	1
8	0442777	Pressure reducing valve 3/8" From August 2019 - December 2020	1
8a	0442776	Pressure reducing valve 3/8", set to 30 bar, Port 1 = A, Port 2 = P, Notice: Can replace pos. 8 no. 0442777 From January 2021	1
9	690203106	Fitting 90° 12-3/8" BSP	6
10	0446754	Fitting straight, Ø12 x 3/8"	7
11	690206410	Accumulator H700R 40 bar	1
12	690206403	Accumulator H700R 15 bar	1
13	690200340	Cylinder Ø100/40x285	2
14	690206825	Manometer Fitting Ø12 x ¼"	1
15	690203097	Fitting straight M18x1,5x10 mm	2
16	0446678	Fitting 90° adjustable Ø10	1
17	0446679	Fitting 90° adjustable Ø12	13
18	690207108	End stop valve V-101 3/8" DT NC	2
19	690203125	Fitting T12 L adjustable w/O-ring	2
20	690203015	Fitting T10	1
21	690203018	Fitting straight ø10-ø10	2
22	0447529	Fitting straight ø12-ø10 w/2 x O-rings	2
23	0446755	Fitting straight ø12-ø10	1
24	690201048	Hydraulic hose 1/4" L = 3610 mm st/st	1
25	690201022	Hydraulic hose 1/4" L = 3140 mm st/st	1
26	690201028	Hydraulic hose 1/4" L = 6700 mm st/st	1
27	690201009	Hydraulic hose 1/4" L = 355 mm st/st	1
28	0454172	Hydraulic hose 3/8" L = 500 mm st/st	1
29	0454172	Hydraulic hose 3/8" L = 500 mm st/st	1
30	0454172	Hydraulic hose 3/8" L = 500 mm st/st	1
31	0454182	Hydraulic hose 3/8" L = 600 mm st/st	1
32	0454182	Hydraulic hose 3/8" L = 600 mm st/st	1
33	0454172	Hydraulic hose 3/8" L = 500 mm st/st	1
34	1454160	Hydraulic hose 3/8" L = 400 mm st/st	1
35	0454130	Hydraulic hose 3/8" L = 310 mm st/st	1
36	0454234	Hydraulic hose 3/8" L = 870 mm st/st	1
37	0454140	Hydraulic hose 3/8" L = 350 mm st/st	1
38	0454182	Hydraulic hose 3/8" L = 600 mm st/st	1



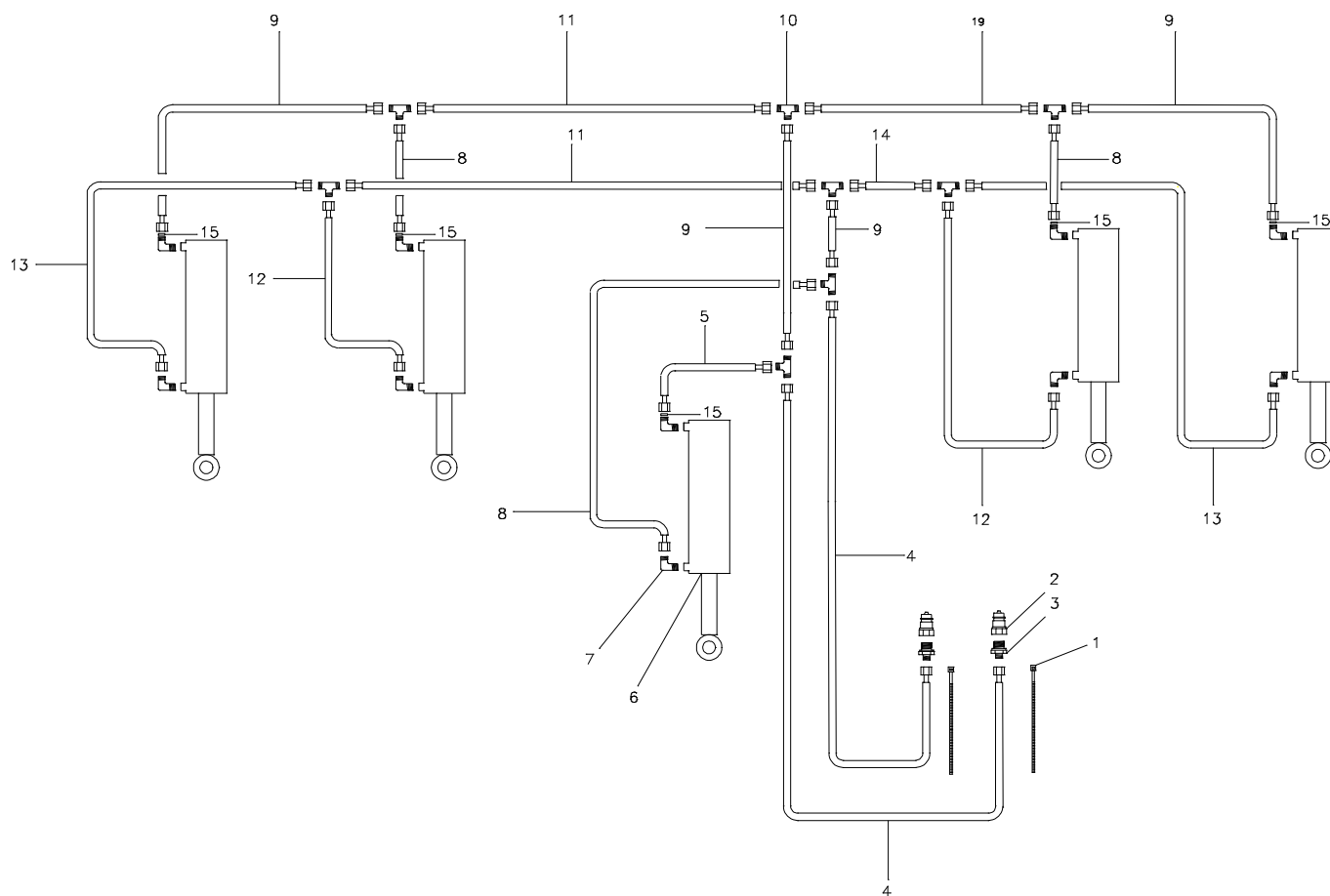
This technical drawing illustrates a three-circuit gas boiler system, including a central boiler unit and three radiators. The components are numbered as follows:

- 1:** Gas inlet pipe with a pressure-reducing valve.
- 2:** Gas valve assembly.
- 3:** Gas control valve.
- 4:** Main gas supply line.
- 5:** Cold water supply line to the heating circuit.
- 6:** Cold water supply line to the domestic hot water (DHW) circuit.
- 7:** Cold water return line from the heating circuit.
- 8:** Cold water return line from the DHW circuit.
- 9:** Heating circuit supply line.
- 10:** Heating circuit return line.
- 11:** DHW circuit supply line.
- 12:** DHW circuit return line.
- 13:** Ventilation/Exhaust gas outlet.
- 14:** Radiator or heat exchanger.

The diagram shows the complex piping and valve arrangement required for the boiler to operate efficiently, ensuring proper gas flow, water circulation, and exhaust removal.

Pos.	Item no.	Designation	4,5m	6,3 m
1	690119204	Straps (grøn)	2	2
2	690203001	Quick coupling, male E402 ½"	2	2
3	690203003	Fitting Straight 10- 1/2" BSP	2	2
4	690201005	Hydraulic hose 3300 mm 1/4" st/st	2	
4	690201038	Hydraulic hose 4000mm 1/4" st/st		2
5	690201033	Hydraulic hose 2500 mm	1	
5	690201044	Hydraulic hose 3460mm 1/4" st/st		1
6	690201042	Hydraulic hose 500mm ¼ " st/st	1	
6	690201064	Hydraulic hose 820mm 1/4 " st/st		1
7	690200040	Cylinder 50/30x155 Ø20,25/20,25	3	
7	690200040	Cylinder 50/30x155mm ø20/ø20		3
7a	690200045	Gasket set 50/30		
8	690203006	Fitting straight 10-3/8" Bsp	6	6
9	690201040	Hydraulic hose 625mm	1	
9	690201055	Hydraulic hose 1010mm 1/4" st/st		1
10	690201020	Hydraulic hose 1625 mm 1/4" st/st	2	
10	690201068	Hydraulic hose 1950mm 1/4" st/st		2
11	690201237	Hydraulic hose 2800mm ¼ " st/st	1	
11	690201006	Hydraulic hose 3800mm 1/4" st/st		1
12	690201060	Hydraulic hose 3000 mm 1/4" st/st	2	
12	690201048	Hydraulic hose 3610mm 1/4" st/st		2
13	690203015	Connector T10	4	4
14	690207901	Restrictor 1mm	3	3

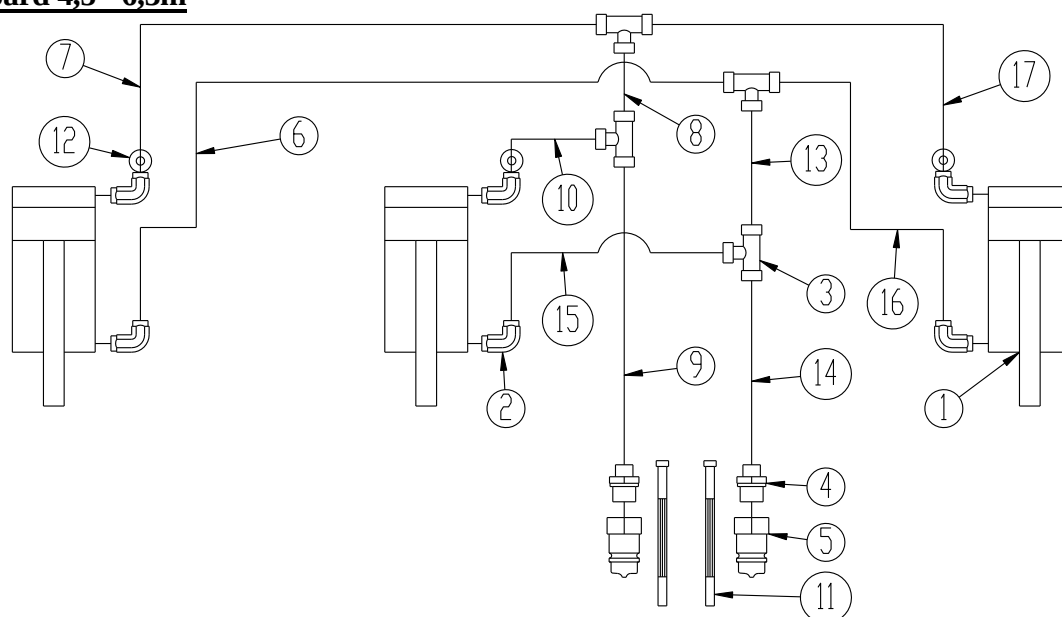
Hydraulics, front harrow (green) 8.2m



Pos.	Item no.	Designation	8.2m
1	690119204	Cable straps (green)	2
2	690203001	Quick coupling, male E402 1/2"	2
3	690203003	Fitting, straight 10- 1/2" BSP	2
4	690201045	Hydraulic hose 4800mm 1/4 " st/st	2
5	690201042	Hydraulic hose 500mm 1/4 " st/st	1
6	690200040	Cylinder 50/30x155mm ø20/ø20	5
6a	690200045	Gasket set 50/30	
7	690203006	Fitting, 90angle 10-3/8" Bsp	10
8	690201015	Hydraulic hose 710mm 1/4 " st/st	3
9	690201068	Hydraulic hose 1950mm 1/4 " st/st	4
10	690203015	Fitting T10	8
11	690201237	Hydraulic hose 2800mm 1/4 " st/st	2
12	690201052	Hydraulic hose 935mm 1/4 " st/st	2
13	690201021	Hydraulic hose 2300mm 1/4 " st/st	2
14	690201060	Hydraulic hose 3000mm 1/4 " st/st	2
15	690207901	Restrictor 1mm	5



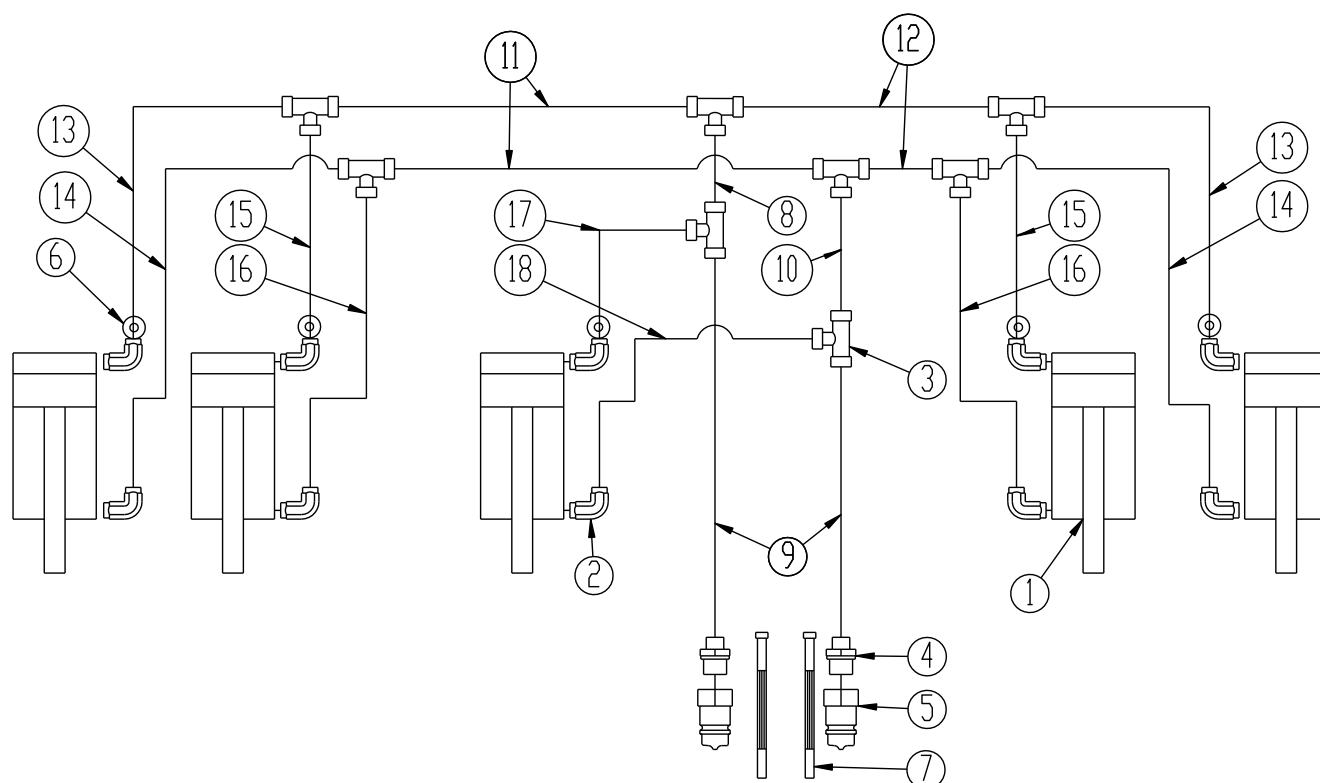
Spring-Board 4,5 - 6,3m



Pos.	Item no.	Designation	4,5m	6,3m
1	690200160	Cylinder 50/30x155 Ø20,25/Clevis	3	3
1a	690200046	Gasket set 50/30 Laizhou		
2	690203006	Fitting, 90° 10-3/8" Bsp	6	6
3	690203015	Fitting T10	4	4
4	690203003	Fitting straight 10- 1/2" BSP	2	2
5	690203001	Quick coupling, male E402 1/2"	2	2
6	690201023	Hydraulic hose 3160 mm 1/4" st/st (right section)	2	
6	690201048	Hydraulic hose 3610 mm 1/4" st/st (right section)		1
7	690201060	Hydraulic hose 3000 mm 1/4" st/st (right section)	1	
7	690201044	Hydraulic hose 3460 mm 1/4" st/st (right section)		1
8	690201020	Hydraulic hose 1625 mm 1/4" st/st	1	
8	690201032	Hydraulikslange 1130 mm 1/4" st/st		1
9	690201005	Hydraulic hose 3300 mm 1/4" st/st	1	
9	690201038	Hydraulikslange 4000 mm 1/4" st/st		1
10	690201055	Hydraulic hose 1010 mm 1/4" st/st	1	
10	690201051	Hydraulikslange 250 mm 1/4" st/st		1
11		Straps, yellow	2	
12	690207901	Restrictor Ø1mm	3	
13	690201020	Hydraulic hose 1625 mm 1/4" st/st	1	
13	690201053	Hydraulic hose 1260 mm 1/4" st/st		1
14	690201005	Hydraulic hose 3300 mm 1/4" st/st	1	
14	690201006	Hydraulic hose 3800 mm 1/4" st/st		1
15	690201055	Hydraulic hose 1010 mm 1/4" st/st	1	
15	690201059	Hydraulic hose 350 mm 1/4" st/st		1
16	690201005	Hydraulic hose 3300 mm 1/4" st/st (left section)	1	
16	690201006	Hydraulic hose 3800 mm 1/4" st/st (left section)		1
17	690201023	Hydraulic hose 3160 mm 1/4" st/st (left section)	1	
17	690201048	Hydraulic hose 3610 mm 1/4" st/st (left section)		1

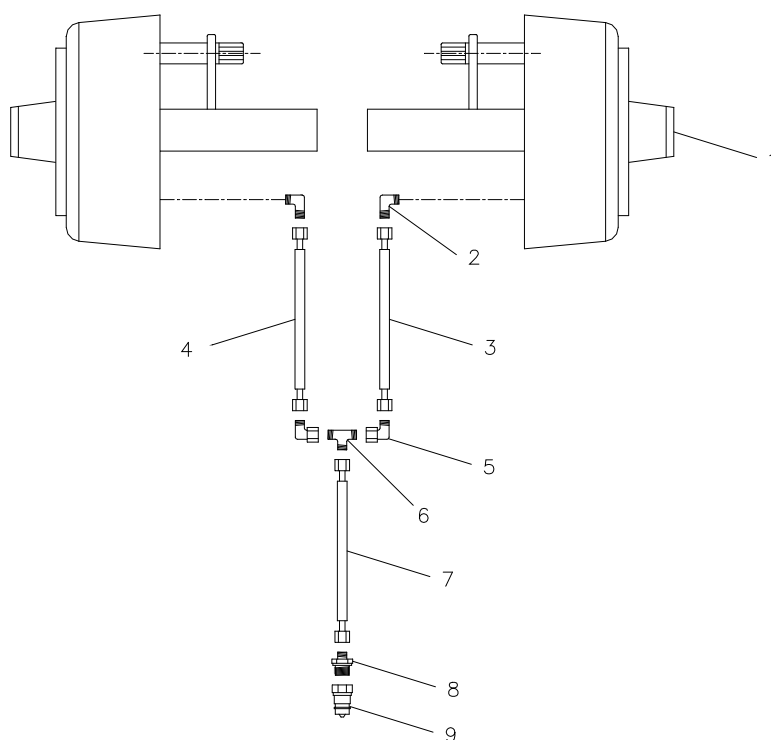


Spring-Board 8,2m



Pos.	Item no.	Designation	8,2m
1	690200160	Cylinder 50/30x155 Ø20,25/Clevis	5
1a	690200046	Gasket set 50/30 Laizhou	
2	690203006	Fitting, 90° 10-3/8" Bsp	10
3	690203015	Fitting T10	8
4	690203003	Fitting straight 10- 1/2" BSP	2
5	690203001	Quick coupling, male E402 1/2"	2
6	690207901	Restrictor ø1mm	5
7		Straps	2
8	690201032	Hydraulic hose 1130 mm 1/4" st/st	1
9	690201047	Hydraulic hose 4610 mm 1/4" st/st	2
10	690201053	Hydraulic hose 1260 mm 1/4" st/st	1
11	690201063	Hydraulic hose 1600 mm 1/4" st/st	2
12	690201016	Hydraulic hose 1830 mm 1/4" st/st	2
13	690201060	Hydraulic hose 3000 mm 1/4" st/st	2
14	690201022	Hydraulic hose 3140 mm 1/4" st/st	2
15	690201009	Hydraulic hose 355 mm 1/4" st/st	2
16	690201069	Hydraulic hose 350 mm 1/4" st/st	2
17	690201051	Hydraulic hose 250 mm 1/4" st/st	1
18	690201059	Hydraulic hose 350 mm 1/4" st/st	1

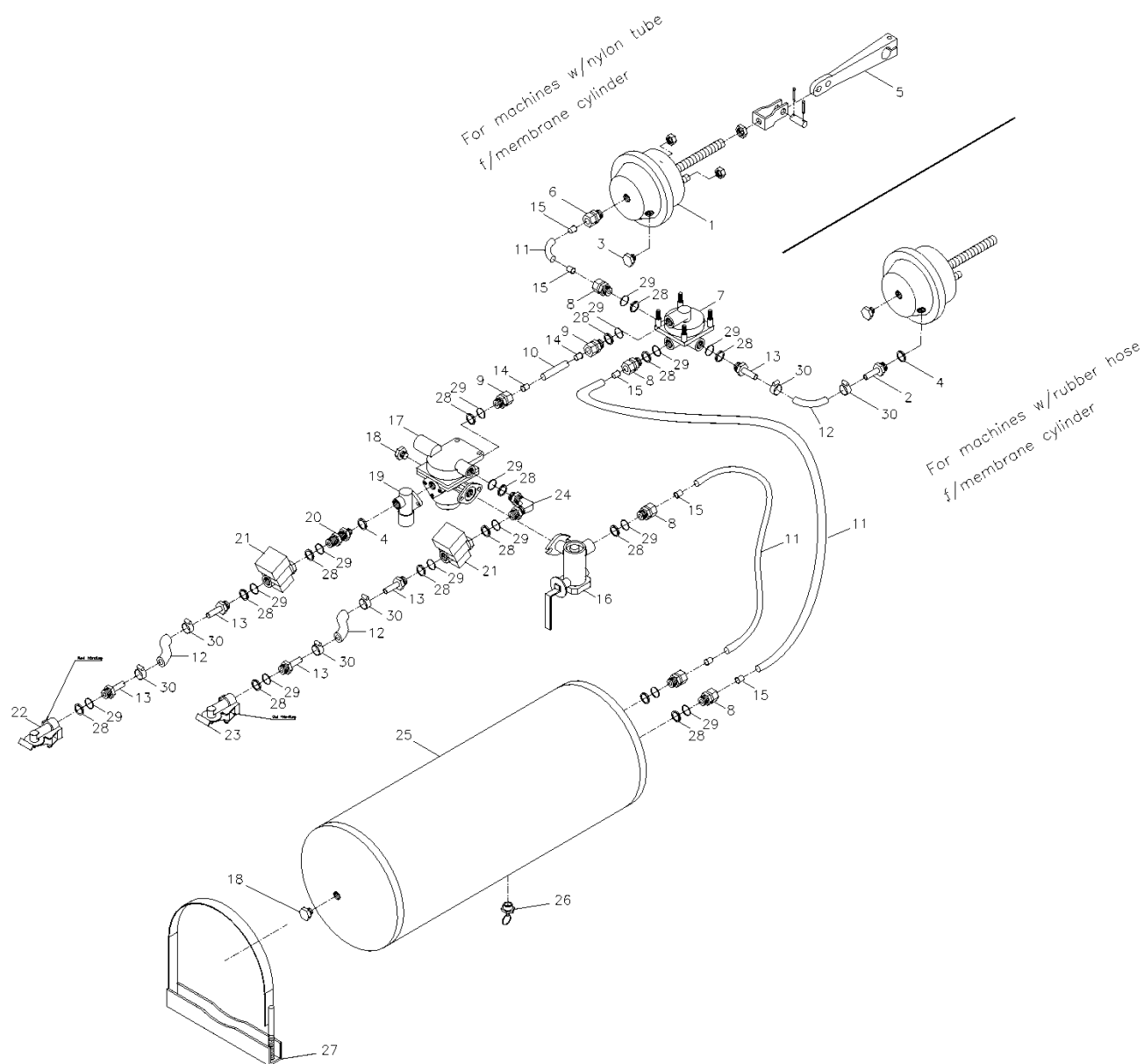
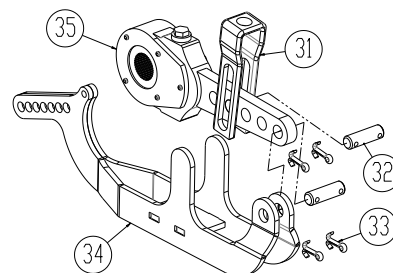
Hydraulic brakes



Pos.	Item no.	Designation	Pcs.
1		Look at pos. 4 page 24	2
2	690202921	Fitting, 90angle 1/4"x 10 w/union nut	2
3	690201018	Hydraulic hose 1480mm 1/4" st/st	1
4	690201053	Hydraulic hose 1260mm 1/4" st/st	1
5	690203016	Fitting 90angle 10mm	2
6	690203015	Fitting T10	1
7	690201012	Hydraulic hose 6000mm 1/4" st/st	1
8	690203003	Fitting, straight 10-1/2" BSP	2
9	690203013	Quick coupling 1/2" female BSP ISO567	2

Air brakes all models

New model brake arm and belongings
See pos. 31 - 35



Pos.	Item no.	Designation	w/artificial tube f/membrane cyl.	w/rubber hose f/membrane cyl.
1	690190001	Membrane cylinder 16"	2	2
2	690190070	Hose fitting M16x1,5 m/ Ø12 fitting	0	2
3	690190005	Test fitting, straight M16x1,5	2	2
4	690208102	Bonded seal PP 45-12	1	3
5	690190010	Mounting set, short yoke	2	2
6	690202930	Fitting, straight M16x1,5, Ø15 hose	2	0
7	690190015	Relay valve M22x1,5	1	1
8	690202941	Fitting, straight M22x1,5, Ø15 hose	6	4
9	690202940	Fitting, straight M22x1,5, Ø10 hose	2	2
10	690190080	Artificial tube Ø10x1mm	1	1
11	690190085	Artificial tube Ø15x1,5mm	4	2
12	690190105	Hose Ø14,5x5mm	2	4
13	690190073	Hose fitting M22x1,5, m/Ø12 fitting	4	6
14	690190090	Support bushing for tube Ø10x1,5mm	2	2
15	690190095	Support bushing for tube Ø15x1,5mm	8	4
16	690190020	Brake power regulator M22x1,5	1	1
17	690190025	Trailer air brake valve M22x1,5	1	1
18	690190026	Plug	2	2
19	690190035	Relief valve	1	1
20	690203420	Fitting straight M16x1,5+M22x1,5	1	1
21	690190040	Filter M22x1,5	2	2
22	690190045	Hose coupling M22x1,5 (red)	1	1
23	690190046	Hose coupling M22x1,5 (yellow)	1	1
24	690190030	V-Fitting M22x1,5	1	1
25	690190050	Air receiver 40ltr	1	1
26	690190051	Drainage valve	1	1
27	690190052	Suspension for air receiver	2	2
28	690190060	Pressure ring M22x1,5	15	15
29	690190065	O-ring M22x1,5	15	15
30	690109305	Clamp 15-24 mm	4	8
31	7297510	Connection clamp, new model		2
32	690190010-003	Pin ø14x45		4
33	690190010-002	Split pin ø4x40 galvanized		8
34	7297582	Brake arm adjustable, new model		2
35	7297597	Brake arm for handbrake, new model		2





as it looks

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The design is subject to modification without notice.