

INSTRUCTION BOOK

NIAB

SERVICE AND SPARE PARTS

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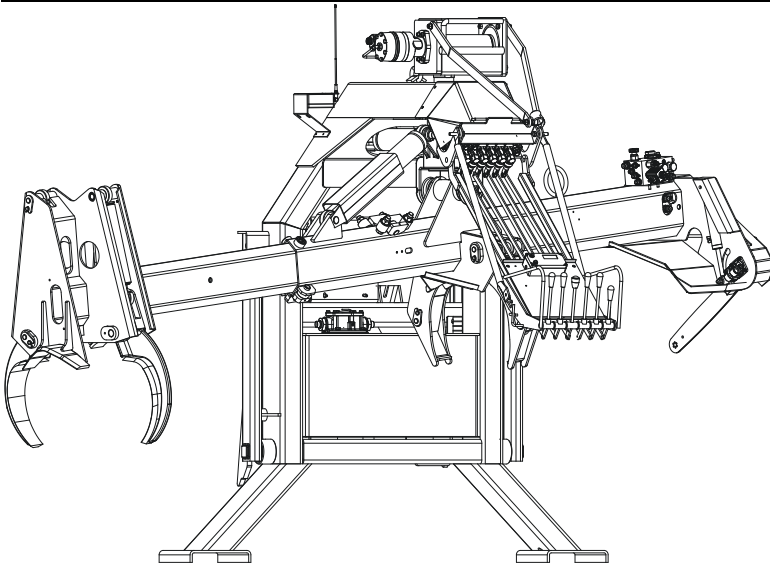
Note! Read carefully through the security instructions before that any action is taking place with the machine.

Product description:

NIAB 5 – 15 is a stroke fed processor that is intended to be used together with a three – point linkage on an agricultural tractor. The machine is driven by the tractors PTO system. The input voltage to the electric system is connected to the trailer socket. The method entails that manually felled trees are winched in to the machine with a radio – guided winch. The trees are handled and processed with the combined griffin – and delimiting aggregate and are adapted by the built – in saw. The machines movement zone admits sorting of lumber in to separate piles.

Technical data

Width	2,45 m
Height	2,3 m
Length	2 m
Weight	1050 kg
Chain bar	18"
Saw capacity	18/25 kW/hk
Chain partition	0,404"
Chain speed	40 m/sec
Working angle	75°
Length winch wire	40 m
Diameter winch wire	8 mm
Max. Pulling power hydraulic winch	2,5 ton
Max. Lumber diameter	500 mm
Stroke length stroke feeder	1520 mm
Average speed stroke feeder	1,3 m/sec
Delimiting pressure	11/110 Mpa/bar
Nominal hydraulic oil flow	60 l/min
Nominal PTO speed	400 r/min
Power need	30/ 40 kW/ hk
Volume hydraulic oil tank	65 l
Electrical provision	12 V – 6 A
Type of oil – Hydraulic oil	32
Type of oil – Gearbox	Hypoid oil 80/90 0,4 l



General technical description

The NIAB 5 – 15 processor operates via a hydraulic pump with a gearbox connected to the tractor's PTO system. The hydraulic oil from the pump travels directly to a valve chest situated under cover above the operating lever control panel. The operating lever control panel can be adjusted to a comfortable working position, raised by lifting the control panel and lowered by pressing down the rod going through the control panel.

The valve chest inlet section has a relief valve that ensures maximum pressure to the differing functions. A pressure gauge connection is fitted for testing the main pressure.

The first section of the valve chest feeds both the saw as well as the winch with pressure oil. The winch position has a locking device, when this first section is engaged all other functions are cancelled out. Oil from the valve chest and limbing control valve travel via a filter back to the tank.

The height of the levers can be adjusted by lifting the lever console. To lower it, press the strut – ends on the side of the lever console.

The limbing pressure control valve contains valves for the use of differential operation, which means that then the boom extension goes out the oil goes from the minus side to the plus side, which increases the speed of the cylinder. Further one there are equal valves to release the oil from the plus side directly to the tank (the flow duplicates).

An electrical maneuvered tree way direction valve directs the pressure to the limbing knives, so that either the cylinder works with the full potential of the piston area or only the rod area. This is done so that you can receive both the retract force as well as limbing - pressure. A pilot steered tree way valve controls the chain saw cylinder. The spring camber of the valve is used as a grease pump.

Further on the limiting pressure control valve contains a smoother to build up the pressure towards the saw cylinder as well as a tap that can be opened to be able to fade the sword manually.

Within the frame at the front edge there is situated a valve plate holding a pressure reducing valve and also an electrical manoeuvred direction valve for the manoeuvring of the saw and winch valve. The pressure reducing valve supplies the direction valve and the measuring wheel cylinder with a pressure of 25 bar. At the same location at the front edge of the frame is also situated the valve plate that steers the automatic function.

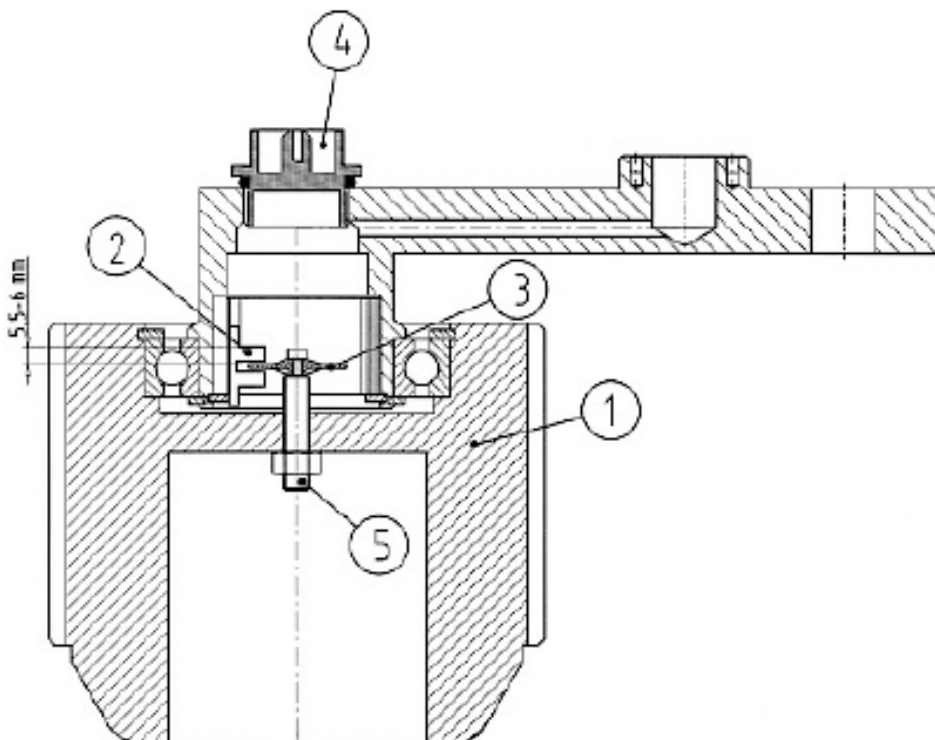
The winch is driven directly by a hydraulic engine that will disconnect then it's not under pressure. The electrical direction valve is mounted directly on the winch engine. To receive oil for the winch you press the saw - lever forward until locked position.

Enclosed you will find separate descriptions of the different hydraulic functions, the digital length – and diameter meter and electric and hydraulic circuits.

Notice! The lever will work as an emergency stop

Description of length measure

Within the measuring wheel (1) is mounted a slotted disc (3). The slotted disc rotates inside the optical read sensing (2). The read sensing registers pulse and direction that are forwarded to the display, which convert this data to cm. One rotation on the measuring wheel correspond to 48 cm. The plug (4) is intended for mounting of the slotted disc and also for inspecting and realise condensate, which can originate high air humidity in combination of temperature variations and cause wrongful measuring result.



Instruction for calibration of diameter measuring

To obtain the optimal accurate calibration should take place every time the actual dimension is changed. The optimal accurate is obtained if one measures two diameters, one lower limit and one present upper limit for example if the assortment limit is situated at 16 cm one calibrates on 10 and 20 cm. Another reason for calibrating is when one changes the felling of trees, when the measuring point and the gap are situated around 1 m from each other and in which the taper off can vary in different sorts of areas.

Programming

The manovering panel is equipped with 13 different menus' that all activates through the menu tangent. On the lower display the actual menu is presented. The upper display shows the present value which can be altered with + or – when needed.

The menus' 1 – 9 are intended for pre - selection lengths. For manoeuvring, approach as follows;

- Push the menu button so that number one occurs and starts to flash.
- Thereafter set the length of your wishes by pressuring + or -. For example, for three meter the number 300 should be displayed in the upper display window.
- Then push the second number and number two starts to flash.
- Proceed as presented above for number one.
- Continue like this until all of the nine pre - selections are done.

Menu number ten is the setting for the length measuring and it shall be at 500. (Note! – Earlier 250)

Diameter setting

Menu 11: Calibration point 1 for diameter setting.

- The grippers shall be closed for the lesser calibration diameter. Measure the diameter directly at the intended place of cutting and choose the right value at the display with the help of + and – tangents.

Menu 12: Calibration point 2 for diameter setting.

- The grippers shall be closed for the major calibration diameter. Measure the diameter directly at the intended place of cutting and choose the right value at the display with the help of + and – tangents.

Menu 13: This menu is an offset value to eliminate the brake distance.

- If one for example programmes 10 cm. That will activate the stop 10 cm before marking for cross cutting.
- To end the programme push the menu button until menu 13 has passed. That sets you forwarded to working position.
- If you by accident would touch the menu button there is no other choice then to push the menu button until number 13 has passed.
- To choose pre – programmed marking for cross cutting use the + or – buttons. Press start and the saw is ready.

Starting instructions

IMPORTANT – Read before operating processor

Before operating check following:

- ✓ That the processor is securely attached to the tractor, ALWAYS use the safety chain, along with the top link.
- ✓ PTO connection
- ✓ Lack of restricting obstructions to the tractor.
- ✓ See to condition and adjustment of limbing arm rollers
- ✓ Tension and cutting edge of chain
- ✓ Fold up the parking supports. (Remove the red transport bracket)

In cold weather the hydraulic system needs to be warmed up prior to starting operations. All functions of the processor should be tested including the winch; the oily supply lever can be used emergency switch – off.

Operating instruction

The NIAB 5 – 15 tractor-mounted processor is easily employed for work on extraction tracks the tractor can reverse along the track.

When in operation, the tractor and processor should be placed on the same level so as to avoid unnecessary strain on the tractors three-point linkage.

Winching:

The process is dangerous unless the following points are adhered to:

- ✓ When winching, the limbing head should be placed on the ground beside the tractors rear wheel.
- ✓ Reduce the pulling power of the winch by easing the knob on the side of winch valve. The pulling power can thereafter be adjusted according to the stability of the tractor.
- ✓ Move control lever for the winch forward to locking position. This activates the oil to the winch hydraulics (this lever can also be used as an emergency switch).
- ✓ Pick up the timber hook and release the winch rope arm from its parked position and approach the tree to be winched in.

Damage Hazard!

Before starting to connect the wire to the tree it is important that sufficient wire is pulled out, so that the connection can be completed without having to stretch the wire.

If the wire is loosely wound up on the drum it can be withdrawn in – between intermediate turns and get stuck there, with the consequence that the wire begins to pull when fed. If the wire is then slack, the arm fall down and the winch stops, if the wire however is tense the winch continues to pull. To stop it push in the transmitting button until the wire is slack and the arm is down. Then the winch can be stopped and the wire can be corrected.

To avoid problems with loosely wound wire it is important to;

- ✓ Never lift the steering arm except by pulling the wire,
- ✓ Have the wire-feeding valve correctly adjusted so that wire is not fed out when the arm is not lifted,
- ✓ Winch a tree from the distance once in a while so that almost the entire wire is used.

When the whole wire is been pulled out it comes loose from the cord drum. NOTE that this is a security function. It is only to reattach the wire loop on the drum again.

Attach the wire rope to the butt end of the tree. It is possible to winch than one tree at the same time. Activate the remote control to commence winching. Always walk behind the tree being winched in. Stop the process once the tree comes inside the working area the processor.

Release the wire rope and recoil leaving, approximately 50 centimetres out. Place the winch control lever in its neutral position before replacing the winch rope arm in its parked position.

Once inside the processors working area, the left hand button can operate the winch on the controls lever panel instead of using the remote control.

Grab the tree with the limbing knives and pull the tree to the clamp. There are two systems of switching to limbing low pressure to choose from.

1. The process is operated with the limbing lever on the control panel. Limbing pressure is engaged when the limbing arm is going out and the high pressure is engaged when the limbing arm is pulled in.
2. Limbing pressure is engaged manually by pressing down on the knob of the limbing arm lever. The later method is to be prepared when dealing with thick and awkward branch.

The choice between the two systems is made possible by the right hand button on the control lever panel. A light on the limbing pressure control valve will light up when limbing low pressure is engaged.

Limbing is performed with the left hand operating the turn and tilt levers and the right hand on the limbing arm and clamp levers. The limbing arm has a stroke length of 1,52 meters. The end of the stroke is fitted with a damper, which reduces the speed towards the end of the stroke to protect the machine. It is possible to judge the length of timber to be cut by the length of the limbing stroke. Fore a more accurate cut, use the electronic measuring device.

Lay down butt end to prevent splitting when sawing, move the saw lever smoothly fully backwards. Check that the saw ram is fully retracted before recommencing limbing. Withdrawing the lever using delimiting head will loop off the treetops. Brush and debris can be pushed out of the way by using the limbing head.

When using the automatic system the basics are the same all for one difference that the processor can move by itself into pre - choice length. This is handled accordingly;

Choose length (for programming see page *) with the + or – buttons, press start or simply start the saw to start the sequence, press the right button on the boom extension lever at the same time as the lever is pulled forwards. This will move the processor to pre-selected length. When it stops, push the saw button and start to cut. If the same length shall be cut again keep the grip on the boom extension lever, this will keep the processor moving after the cut has been made. If the setting manual marking for cross cutting has been chosen, with the tilt switch on the manoeuvring box, the processor will work until the boom extension lever is realised or the sawing button will be pressed. The method can be used on different lengths. In normal circumstances the machine starts when the boom extension is on its way out however if the machine has been stopped in outer position the machine might start to work its way inwards. Note! Then you need to be observant and look for so that the saw had time to go up.

The grippers contact diameter when retracting is adjusted with the wheel on the bottom of the valve automatic block.

Maintenance

Daily checks:

- ✓ Wear on hoses
- ✓ Oil leaks
- ✓ Wear and tear of saw chain and bar
- ✓ Condition of rollers of the limbing head
- ✓ Wire rope wear and tear
- ✓ PTO attachment
- ✓ Grease all moving parts daily, twice daily in hot weather

Every 30 hours:

- ✓ Tighten bolts cover plate winch 90 Nm
- ✓ Tighten bolts winch motor 45 Nm
- ✓ Thorough greasing, oiling and slearing
- ✓ Tighten loose pipes and attachments
- ✓ With fully extend limbing arm, clean and apply a thin layer of grease on the roller lanes.

After 250 hours:

- ✓ Change return filter after 250 h or once a year
- ✓ Change oil gearbox (hypoid oil 80/90 0,4l)

Safety Precautions

IMPORTANT – Never use the NIAB 5 – 15 unless the tractor three – point linkage and top link are in perfect working order.

- ✓ Always use the safety chain in conjunction with the top link.
- ✓ Ensure that the gearbox and oil pump are securely fastened to the tractor. Check the gearbox and oil pump for leaks. If shaft extension is used, it should be properly fitted and secured to the PTO shaft.
- ✓ Always fold up the parking support when the machine is in use.
- ✓ Always use the boom as a support when winching.
- ✓ Release sufficient wire rope to prevent stretching, when attaching the tree.
- ✓ Never use a worn wire rope.
- ✓ Always walk behind the tree being winched in.
- ✓ Adjust the pulling power of winch in accordance with the stability of the tractor.
- ✓ During delimiting the operator must remain behind the operating control panel. It is forbidden to reach across the delimiting boom when the processor is working.
- ✓ When in transit or stationary the delimiting head should remain in its upper front position.
- ✓ It is forbidden to perform repairs or adjustments on the machine with PTO running.

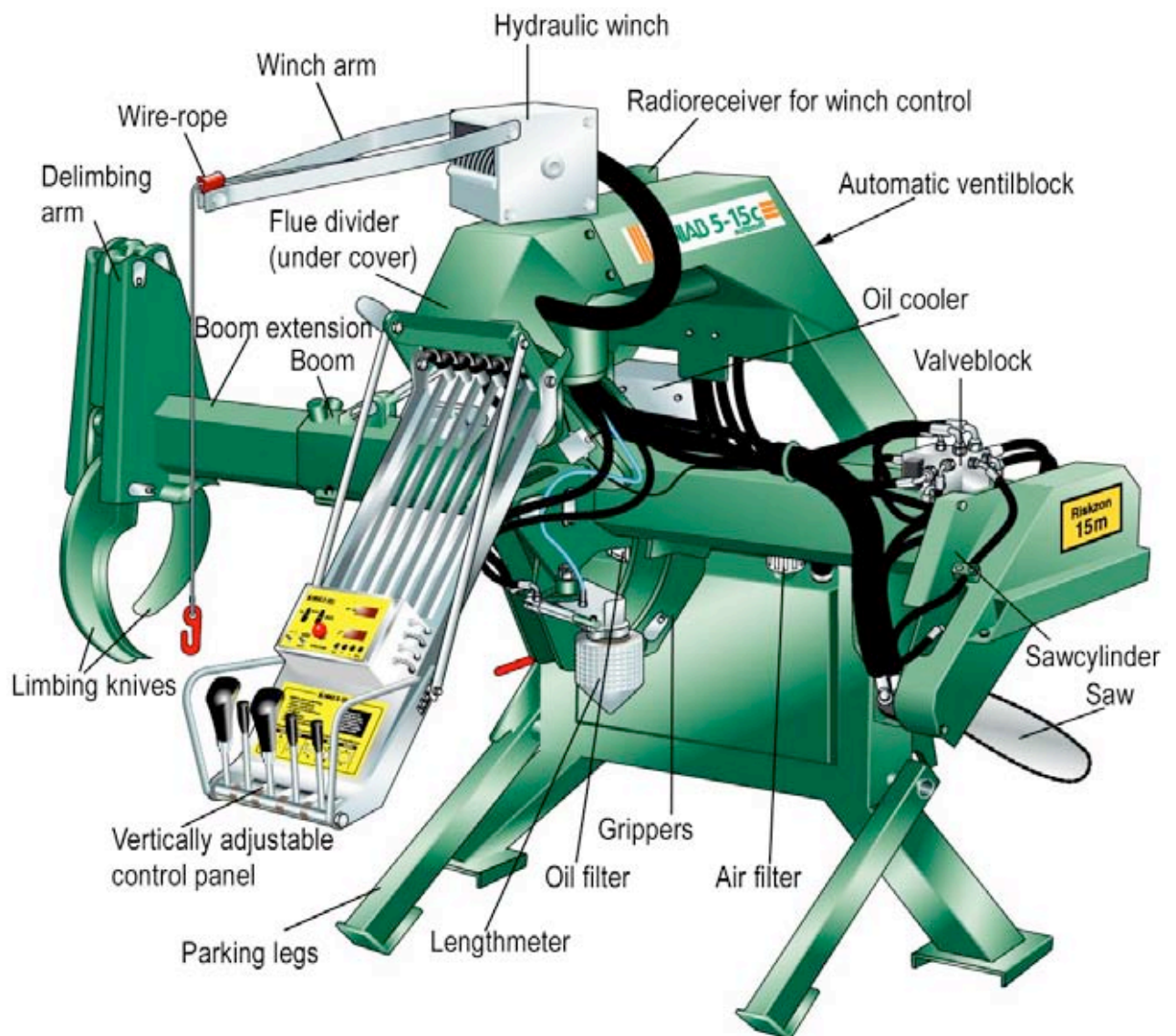
Keep people outside the 15 meters operational area of the processor.

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- Control valve saw
- Valve plate
- Gearbox
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- Saw cylinder

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- Cooler
- Display box & cables
- List of hoses

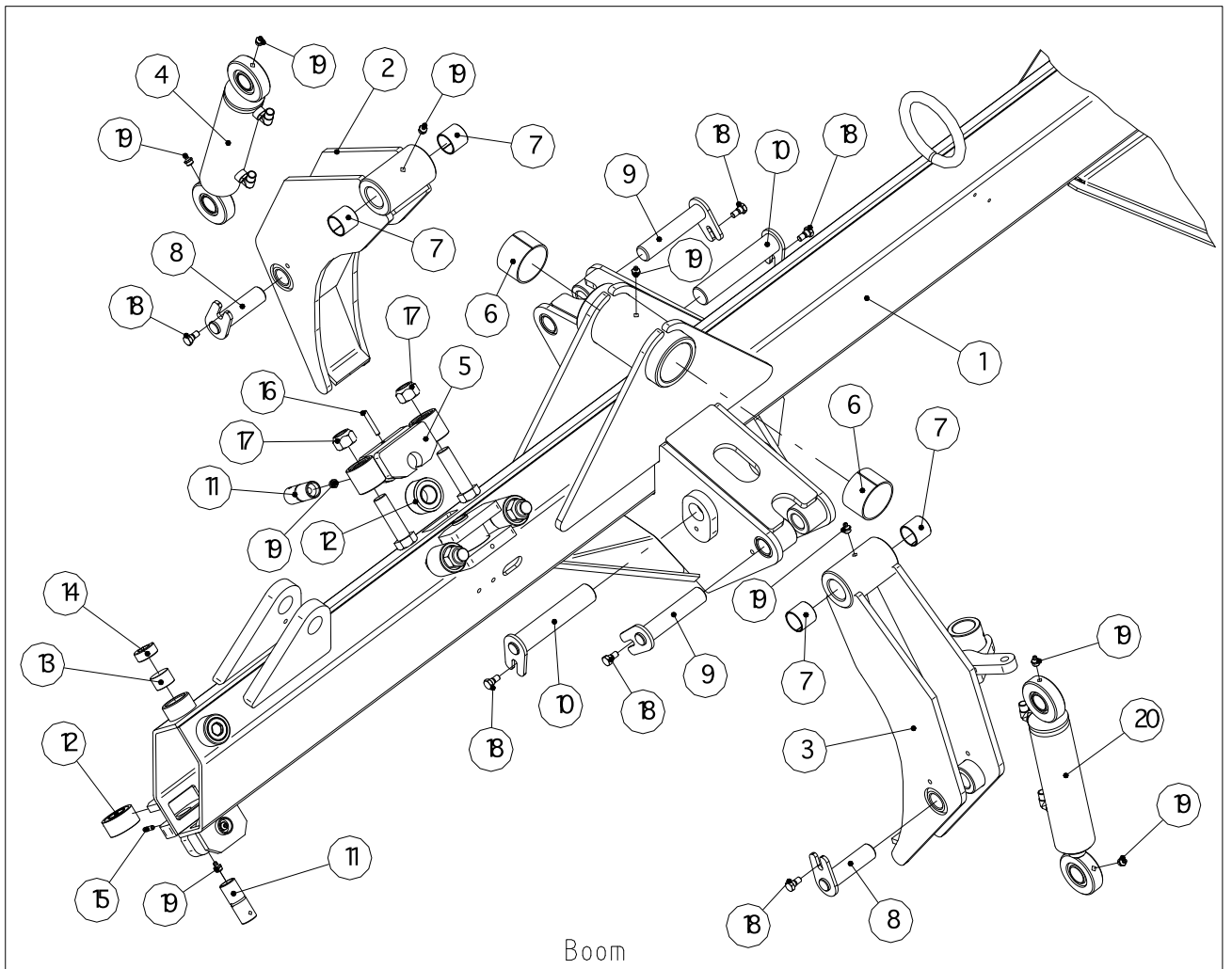
Terms



Boom

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390075	Boom		1
2	390076	Clamp		1
3	390077	Clamp		1
4	313107	Clamp cylinder		1
5	390079	Bracket		2
6	909160	Glide bearing	60x65x40	2
7	909140	Glide bearing	30x34x30	4
8	390080	Axle bolt		2
9	390081	Axle bolt		2
10	390082	Axle bolt		2
11	390083	Axle bolt		4
12	37910225	Roller with glide bearing		4
13	390084	Slide plate		2
14	906960	Plug	R1" DIN 906	2
15	907620	Spring pin	6x24 DIN1481	2
16	907625	Spring pin	6x40 DIN1481	2
17	907246	Locknut	M20 DIN 985	4
18	390085	Bolt		6
19	930105	Grease nipple	R1/8"	11
20		Clamp cylinder with sensor		1

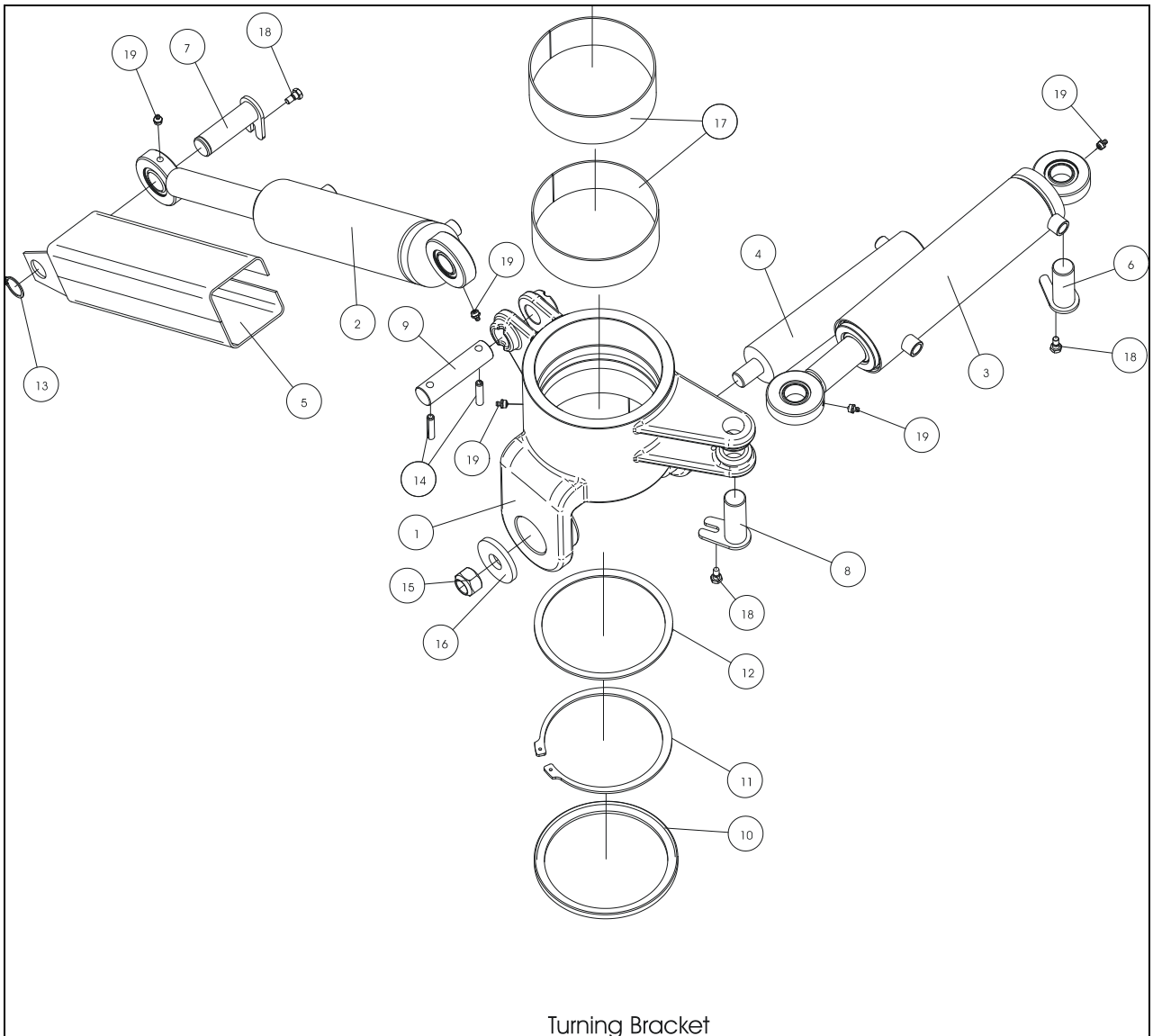
Boom



Turning bracket (920295)

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	920295	Turning bracket		1
2	3131331	Tilt cylinder		1
3	313133	Turning cylinder		1
4	390090	Axle bolt		1
5	390091	Syl. cover		1
6	390092	Axle bolt		1
7	390093	Axle bolt		1
8	390094	Axle bolt		1
9	390095	Axle bolt		1
10	390096	Safety ring		1
11	911290	Lockring	SGA 170	1
12	908245	Washer	200x170x3,5	1
13	911260	Lock ring	SGA 30	1
14	907630	Spring pin	10x45 DIN1481	2
15	907246	Locknut	M20 DIN985	1
16	908450	Washer	70x25x8	1
17	390097	Glide plastic		2
18	390098	Bolt		3
19	930105	Grease nipple	R1/8"	5

Turning bracket (920295)

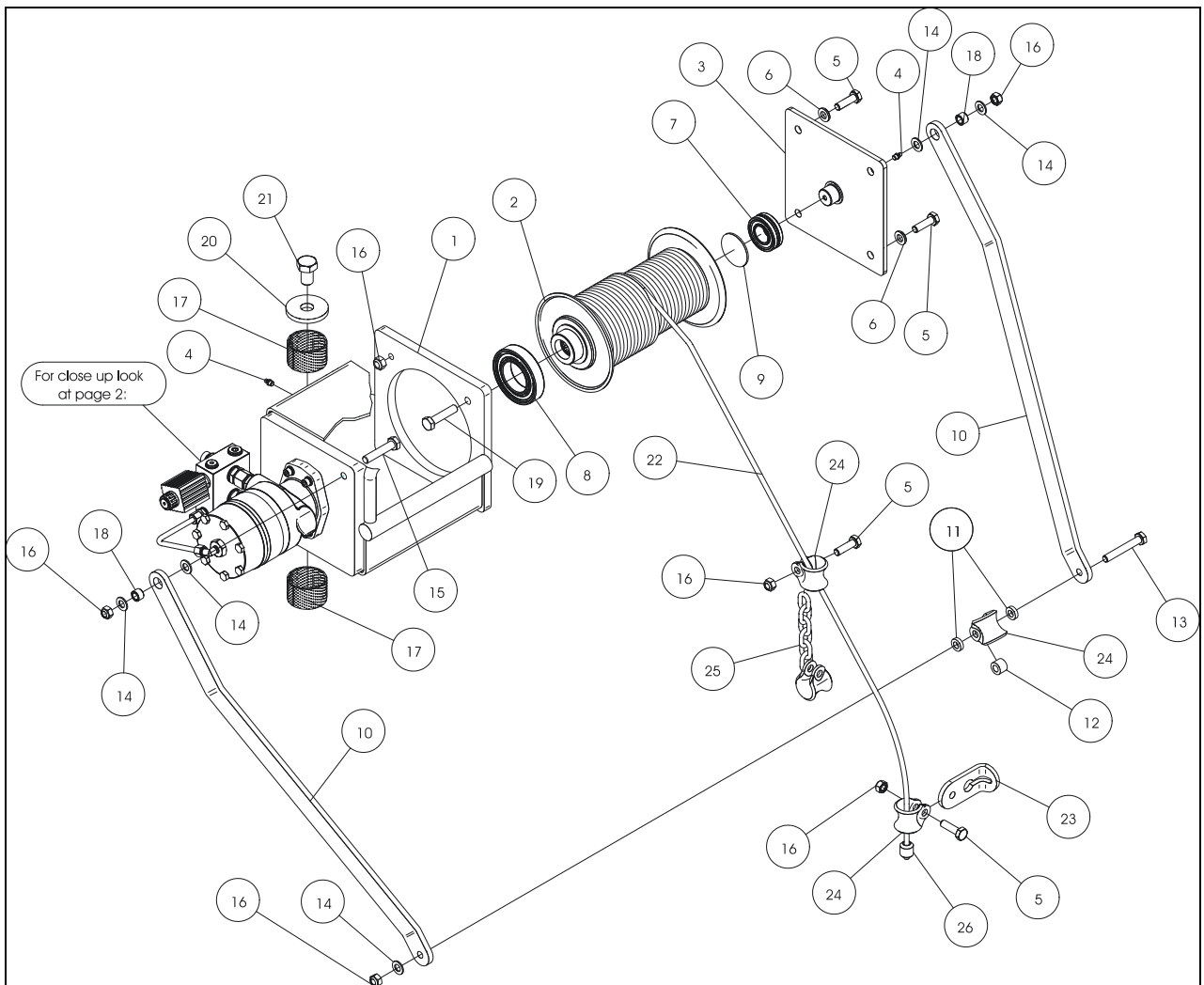


Turning Bracket

Winch part 1

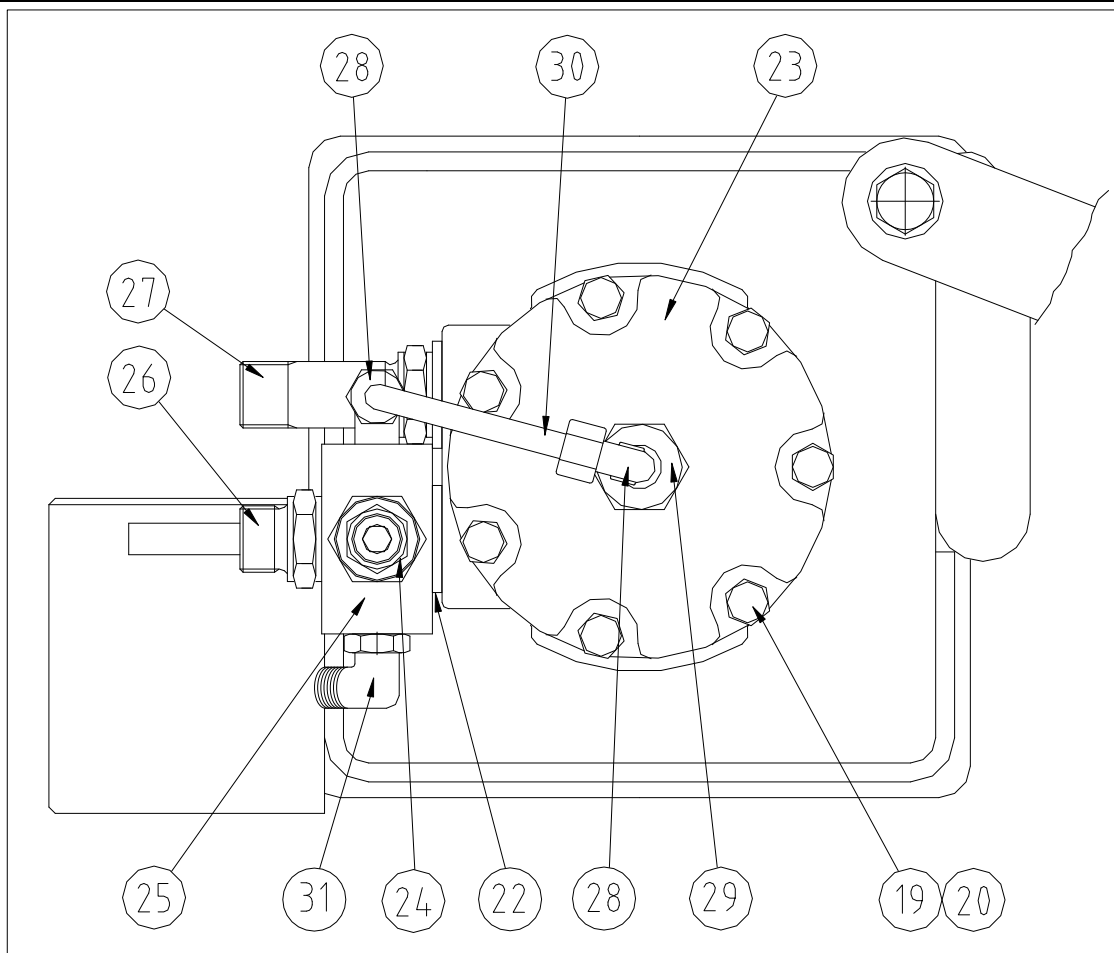
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390105	Winch sassy		1
2	390106	Winch barrel		1
3	390107	End cover		1
4	930105	Grease nipple	R1/8"	2
5	906201	Bolt	M12x40 DIN931	4
6	908230	Washer	TBRB 13x24x4	3
7	910215	Bearing	22206CC	1
8	910220	Bearing	6211-2RS1	1
9	390108	Washer		1
10	390109	Rope arm		2
11	390110	Distance ring		2
12	390111	Distance ring		1
13	906213	Bolt	M12x80 DIN931	1
14	908229	Washer	13 DIN125	5
15	906210	Bolt	M12x60 DIN931	1
16	907228	Locknut	M12 DIN985	7
17	909160	Glide bearing	60x65x40	2
18	909129	Glide bearing	12x18x12	2
19	906210	Bolt	M12x60 DIN931	1
20	908450	Washer	70x25x8	1
21	906238	Bolt	M20x30 DIN931	1
22	920245	Wire	Ø8, L=4 m	1
23	390112	Wire brakett		1
24	390113	Hook		3
25	390114	Couple		1
26	390115	Wire end		1

Winch part 1



Winch part 2

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
19		Socket head cap screw MC6S 8x35		7
20		Washer TBRB 8,4x16		7
22		Tredo sealing R1/2"		1
23		Hydraulic motor		1
24		Sequence valve		1
25		Valve block		1
26		Adapter		1
27		Adapter		1
28		Angle adapter		2
29		Adapter		1
30		Line pip		1
31		Angle adapter		1

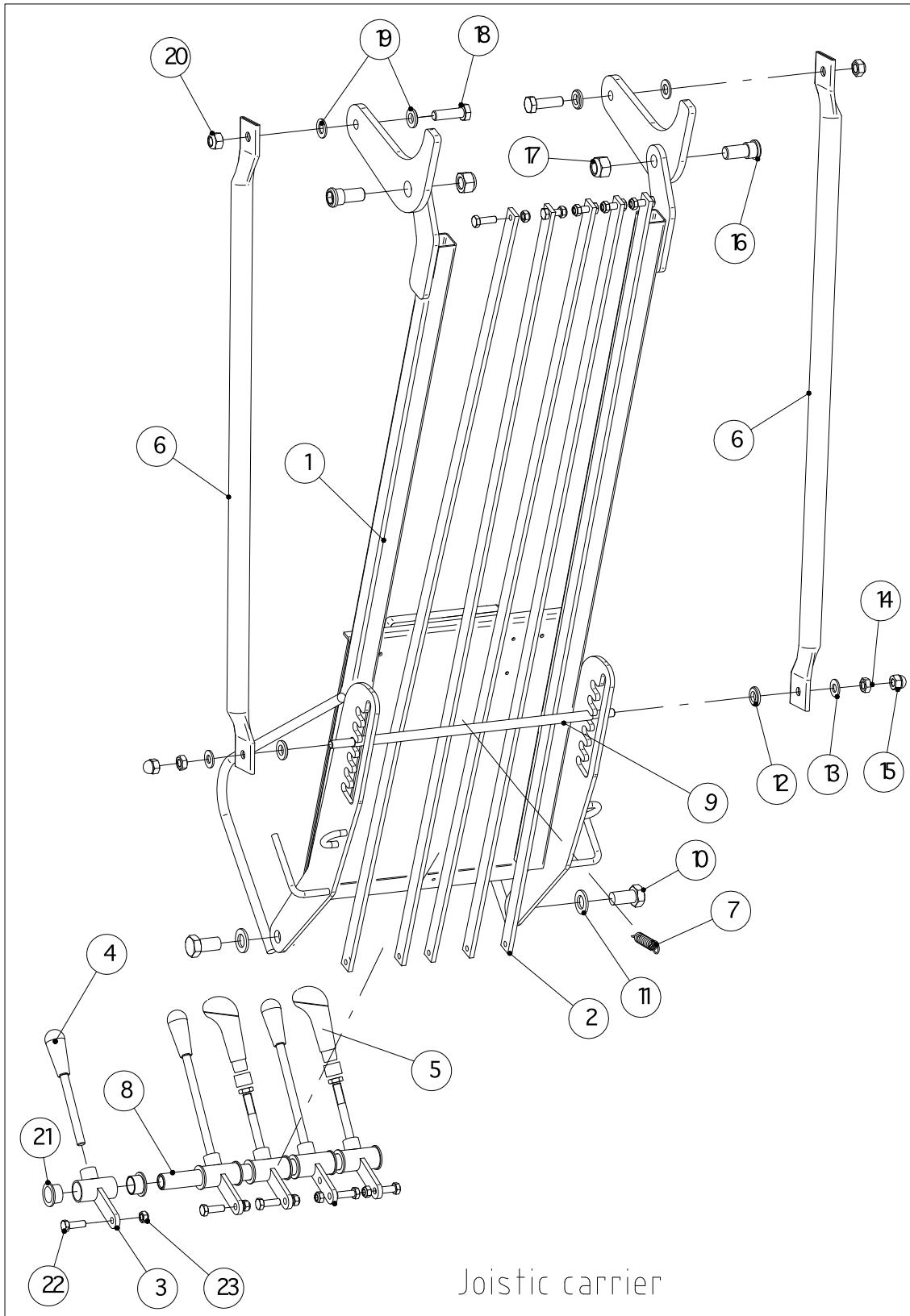


Joystic carrier

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390210	Joystic carrier		1
2	390211	Joystic rod		5
3	390212	Handle bracket		5
4	390213	Handle		3
5		Handle with switch		2
6	390215	Stay		2
7	920255	Spring	10x13x38	1
8	390216	Shaft		1
9	390217	Shaft		1
10	906222	Bolt	M16x30 DIN 933	2
11	908267	Washer	17 DIN125	2
12	908240	Washer	TBRB 10,5x28x6	2
13	908260	Washer	10,5 DIN125	2
14	907215	Nut	M10 DIN 934	2

15	907216	Nut	M10 DIN1857	2
16	390218	Bolt		2
17	907237	Locknut	M16 DIN 985	2
18	906204	Bolt	M12x45 DIN 931	2
19	908230	Washer	TBRB 13x24x4	4
20	907228	Locknut	M12 DIN 985	2
21	909132	Plastic bush	20x23x30x15	12
22	906163	Bolt	M8x30 DIN 933	12
23	907213	Locknut	M8 DIN985	12

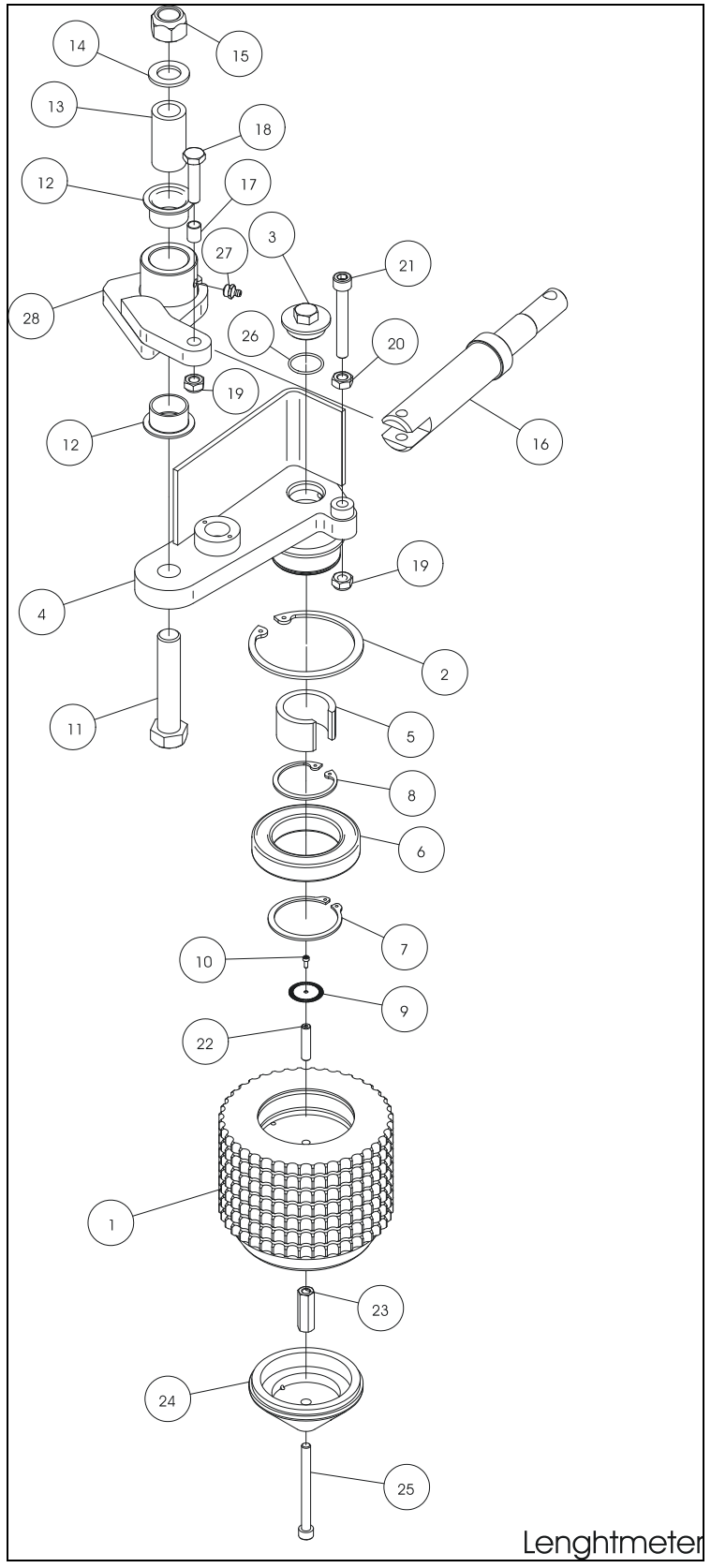
Joystick carrier



Lenght meter (3900910)

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390260	Wheel		1
2	911137	Lock ring	SGH 95	1
3	390261	Plug (plastic)	R1“	1
4	390262	Bracket		1
5	390263	Holder		1
6	910217	Bearing	6012-2RS	1
7	911272	Lockring	SGA 60	1
8	911125	Lockring	SGH 52	1
9	390264	Slit roller		1
10	906508	Bolt	M3x8 DIN 912	1
11	906248	Bolt	M20x100 DIN 931	1
12	909142	Bronze bush	30x34x45x20	2
13	390265	Distance		1
14	908270	Washer	21 DIN125	1
15	907246	Locknut	DIN985 M20	1
16	390266	Cylinder		1
17	909127	Bronze bush	10x12x15	1
18	906182	Bolt	M10x50 DIN 931	1
19	907219	Locknut	M10 DIN 985	2
20	907215	Nut	M10 DIN 934	1
21	906529	Bolt	M10x75 DIN 912	1
22	390267	Pin bolt		1
23	390268	Nut		1
24	390269	Taper		1
25	906530	Bolt	M10x90 DIN912	1
26	390270	O-ring	27x3	1
27	930105	Grease nipple	R1/8“	1
28	390271	Clamp		1

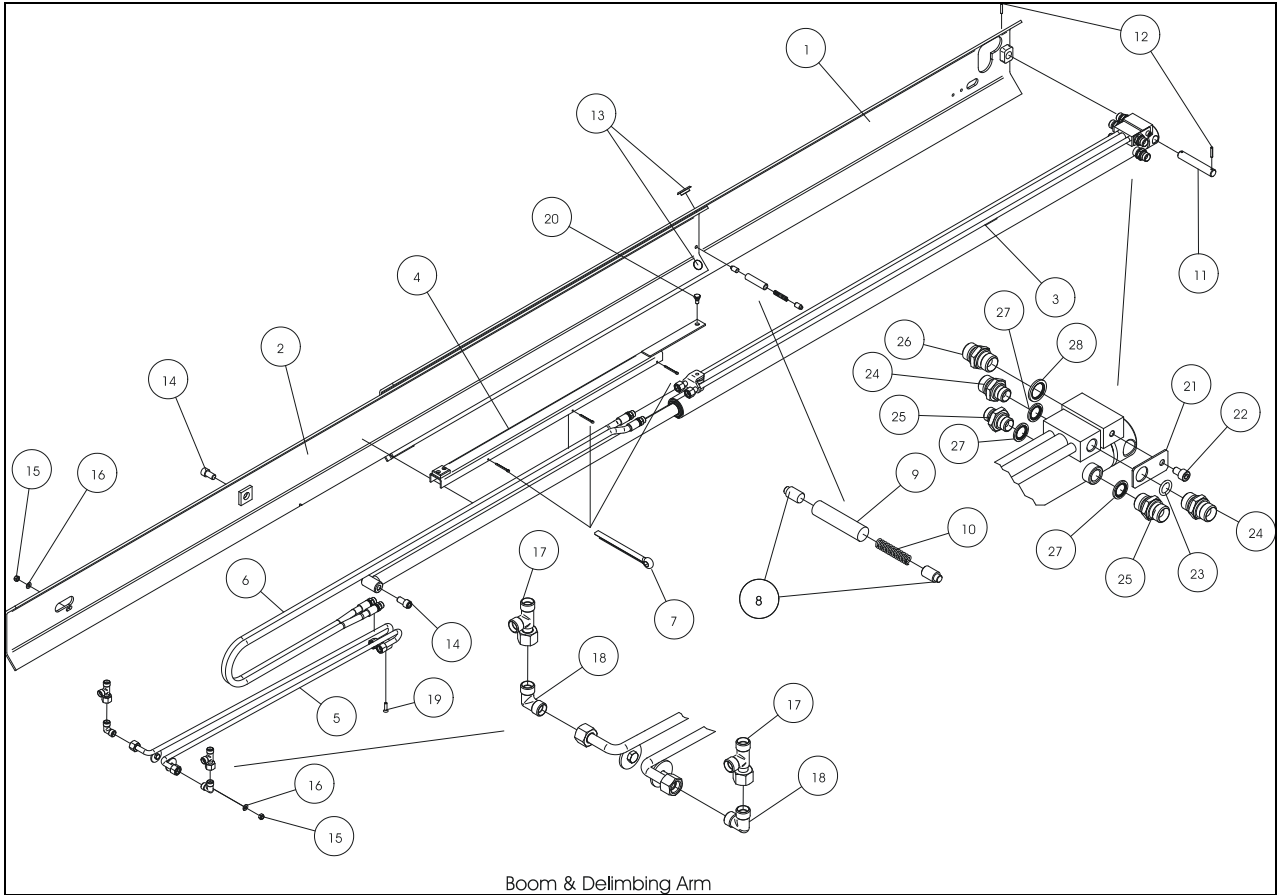
Lenght meter (3900910)



Boom & delimiting arm

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390075	Boom		1
2	390060	Delimiting arm		1
3	390240	Extension cylinder		1
4	390225	Guide rail		1
5	390226	Tubing		1
6	390382	Termoplast hose	Hose nr. 24	2
7	908110	Spring pin	4x45 DIN 94	3
8	390228	Roller		2
9	390229	Tube	12x16x66	1
10	920510	Spring	7x10x45	1
11	390230	Axle bolt		1
12	907610	Spring pin	5x30	2
13	390231	Plastic bush		4
14	390232	Bolt		2
15	907213	Locknut	M8 DIN 985	2
16	908220	Washer	8,4 DIN 125	2
17	914615	T-adapter		2
18	914610	Angle adapter		
19	906512	Bolt	M6x20 DIN 7991	1
20	906169	Bolt	M10x14 DIN 933	1
21	390233	Plate		1
22	906150	Bolt	M8x12 DIN 933	1
23	390234	O-ring	15x2,5	1
24	914716	Adapter		2
25	914718	Adapter		2
26	914720	Adapter		1
27	914582	Rubber steel ring	R3/8"	3
28	914584	Rubber steel ring	R1/2"	1

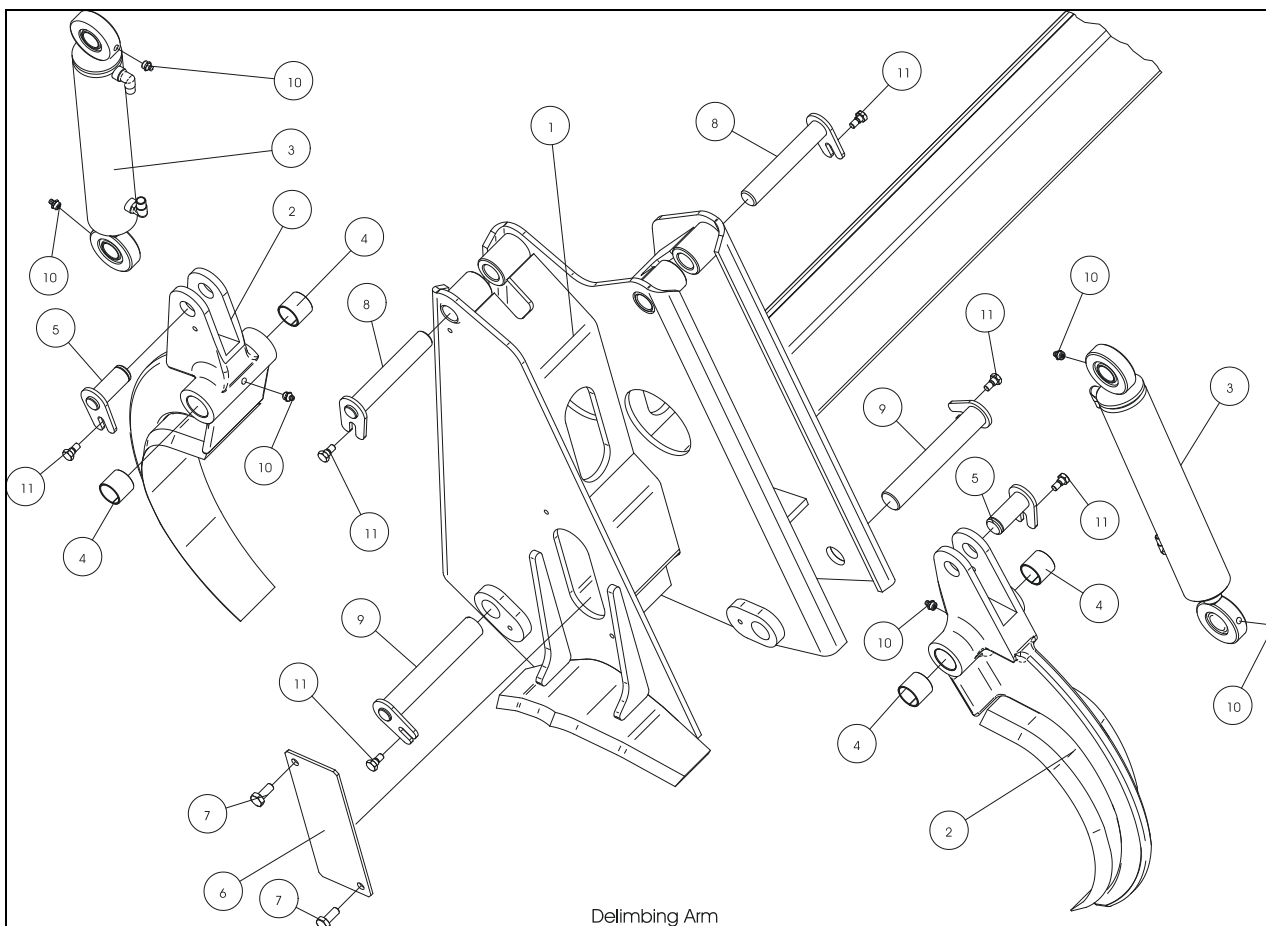
Boom & delimiting arm



Boom & Delimiting Arm

DELIMITING ARM (390060)

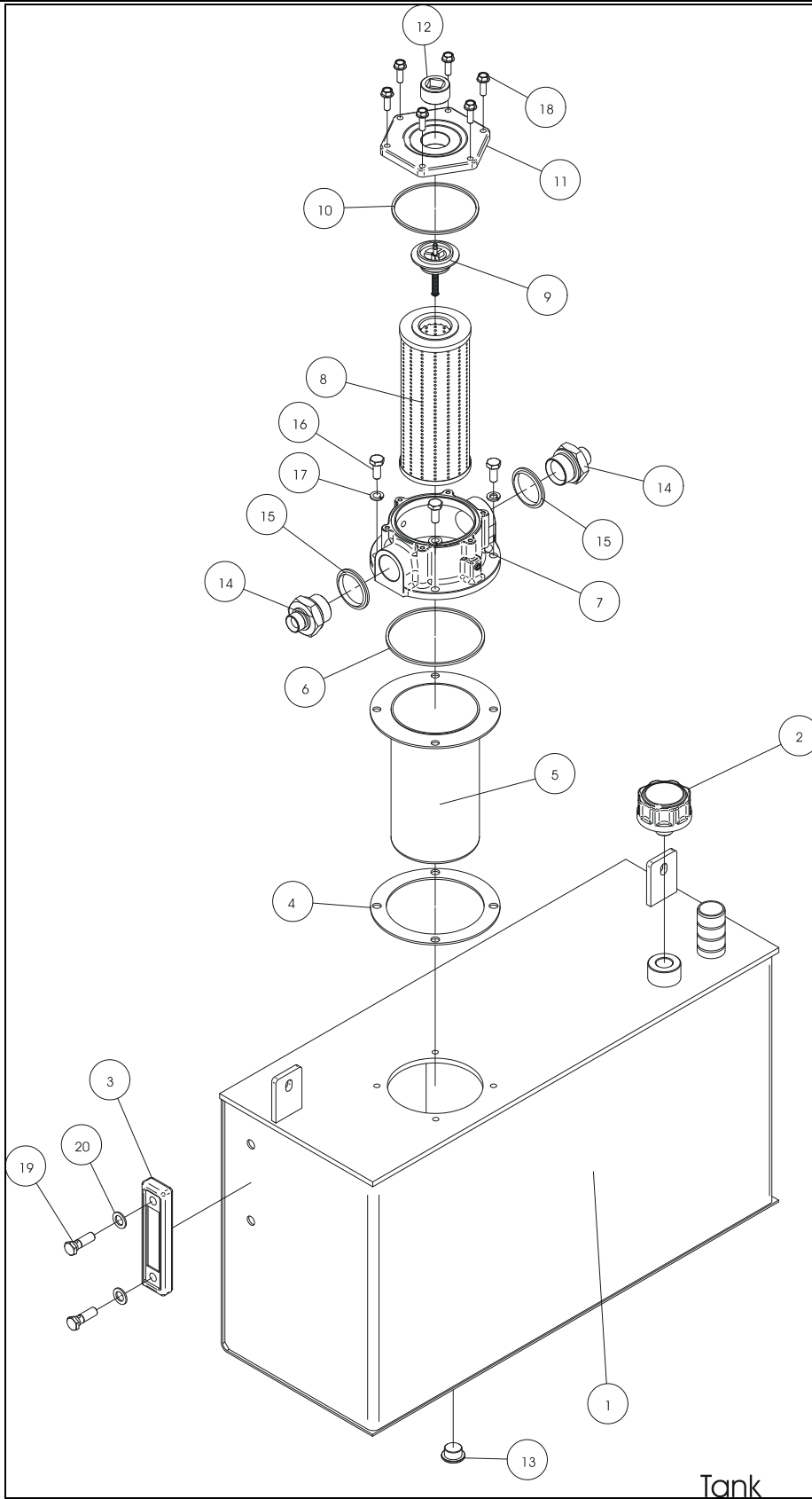
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390060	Delimiting arm		1
2	390061	Delimiting knife		2
3	313108	Delimiting cylinder		2
4	909140	Glide bearing	30x34x30	4
5	390063	Axle bolt		2
6	390064	Closing plate		1
7	906173	Bolt	M10x25 DIN933	2
8	390065	Axle bolt		2
9	390066	Axle bolt		2
10	930105	Grease nipple	R1/8"	6
11	390067	Bolt		6



Tank (390280)

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390280	Tank		1
2	390281	Oil filling plug		1
3	390282	Oil temp. indicator		1
4	390283	Gasket		1
5	390284	Element housing		1
6	390285	Housing flange gasket		1
7	390286	Port body		1
8	390287	Filter element		1
9	390288	By-pass valve		1
10	390289	Cover gasket		1
11	390290	Housing cover		1
12	390291	Plug	1 1/4"	1
13	914798	Plug	1"	1
14	914728	Adapter		2
15	914590	Rubber steel ring		2
16	906173	Bolt	M10x25 DIN 933	4
17	908620	Washer	M10 DIN127B	4
18	906160	Bolt	M8x25 DIN 933	6
19	390292	Bolt		2
20	390293	Plastic washer		2

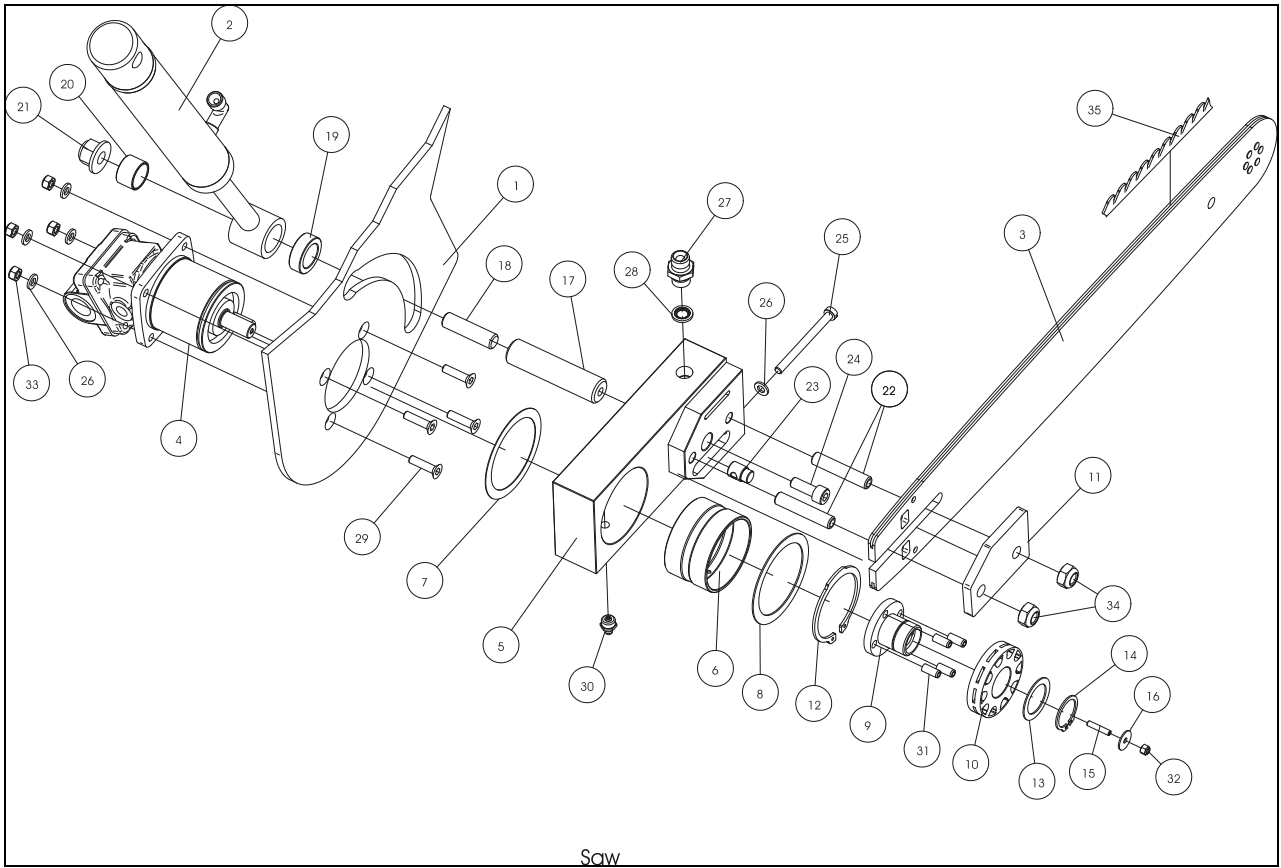
Tank (390280)



Saw

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390175	Boom		1
2	390195	Saw cylinder		1
3	920302	Sword		1
4	390177	Saw motor		1
5	390178	Saw bracket		1
6	390179	Plastic bush		1
7	390180	Washer	75x60x0,5	1
8	390181	Washer	75x60x1	1
9	390182	Driver		1
10	920304	Drive sprocket		1
11	390184	Plate		1
12	911270	Lock ring	SGA 58	1
13	390185	Washer	35x25x1	1
14	911255	Lockring	SGA 25	1
15	905122	Screw	M4x20 DIN 916	1
16	390186	Washer	16x4,3x1	1
17	390187	Shaft		1
18	390188	Pin bolt	M12x45	1
19	390189	Distance		1
20	909130	Bronze bush	20x23x15	1
21	907225	Nut	M12 DIN 6926	1
22	907520	Screw	M10x50 DIN 916	2
23	390190	Chain tensioner		1
24	906516	Bolt	M8x22 DIN 912	1
25	906142	Screw	M6x70 DIN84	1
26	908218	Washer	6,4 DIN125	1
27	914710	Adapter		1
28	914580	Rubber steel ring	R1/4"	1
29	906514	Bolt	M6x25 DIN 7991	4
30	930105	Grease nipple	R1/8"	1
31	907614	Spring pin	6x14 DIN 1481	4
32	907540	Locknut	M4 DIN 985	1
33	907210	Locknut	M6 DIN 985	4
34	907219	Locknut	M10 DIN 985	2
35	920300	Saw chain		1

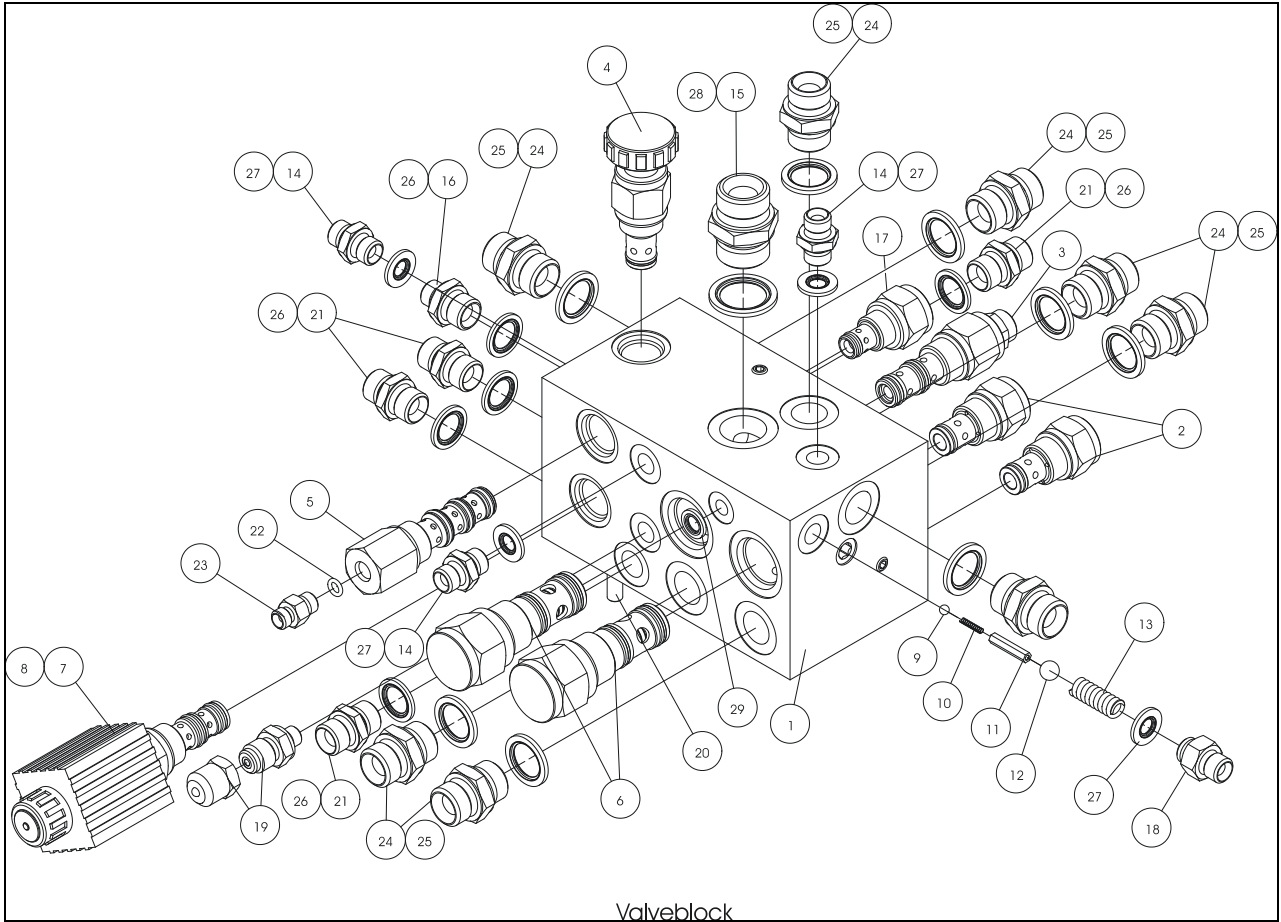
Saw



Valve block (390155)

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390155	Valve block		1
2	390156	Check valve		2
3	390157	Pressure reducing valve		1
4	390158	Needle valve free reverse		1
5	390159	Tree way valve		1
6	390160	Differential sensing valve		2
7	390161	Electric valve		1
8	390162	Coil 12V		1
9	390163	Ball	RB5	1
10	390164	Spring	0,25x2,5x15	1
11	390165	Spacer	1/4"	1
12	390166	Ball	RB10	1
13	390167	Spring	2x7x30	1
14	914710	Adapter		2
15	914726	Adapter		1
16	914712	Adapter		1
17	390168	Check valve		1
18	390169	Adapter		1
19	914660	Pressure gauge connection	1/4"	1
20	390170	Pin bolt	M8x30	2
21	914716	Adapter		4
22	914810	O-ring	8x2	1
23	390171	Adapter		1
24	914720	Adapter		8
25	914584	Rubber steel ring	R1/2"	8
26	914582	Rubber steel ring	R3/8"	5
27	914580	Rubber steel ring	R1/4"	4
28	914586	Rubber steel ring	R3/4"	1
29	914578	Rubber steel ring	R1/8"	1

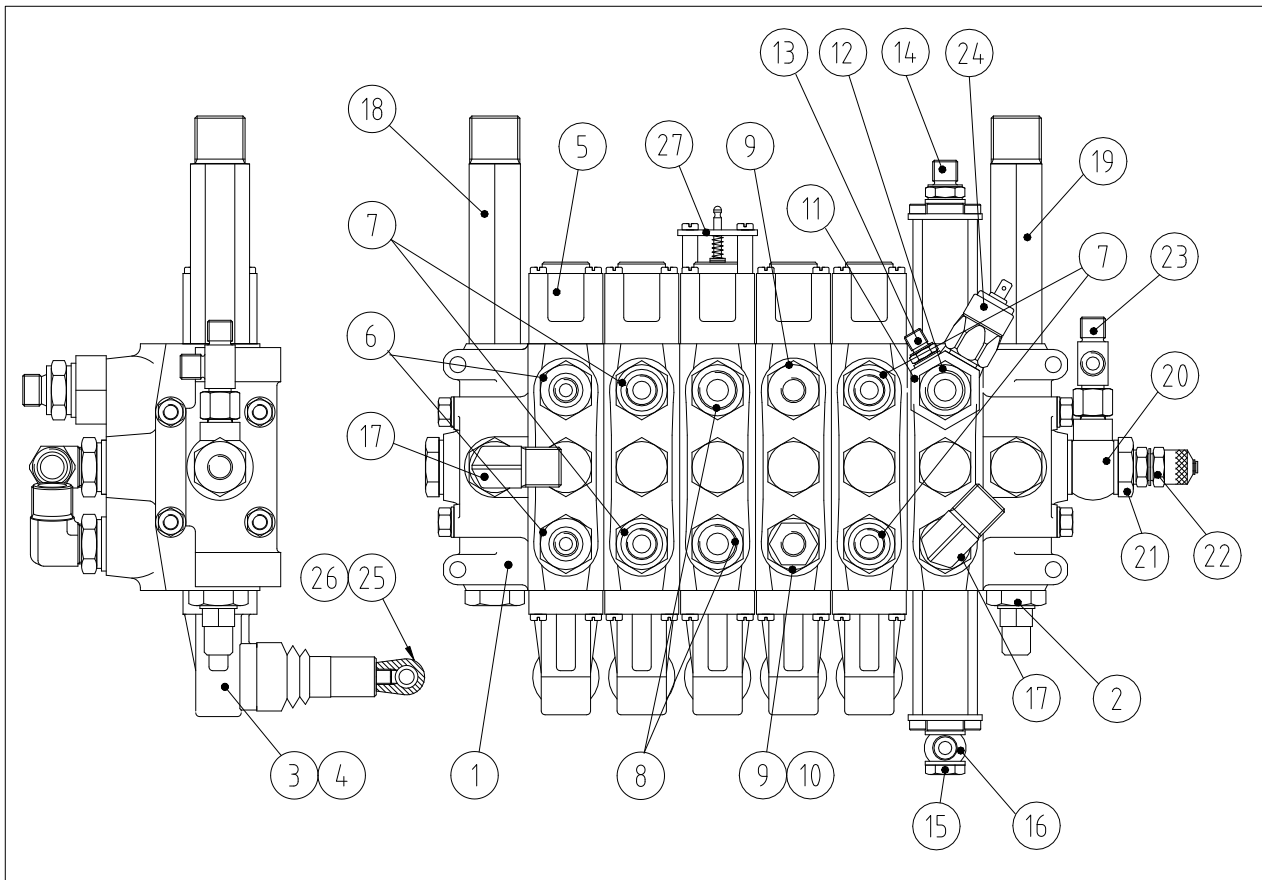
Valve block (390155)



Flue divider

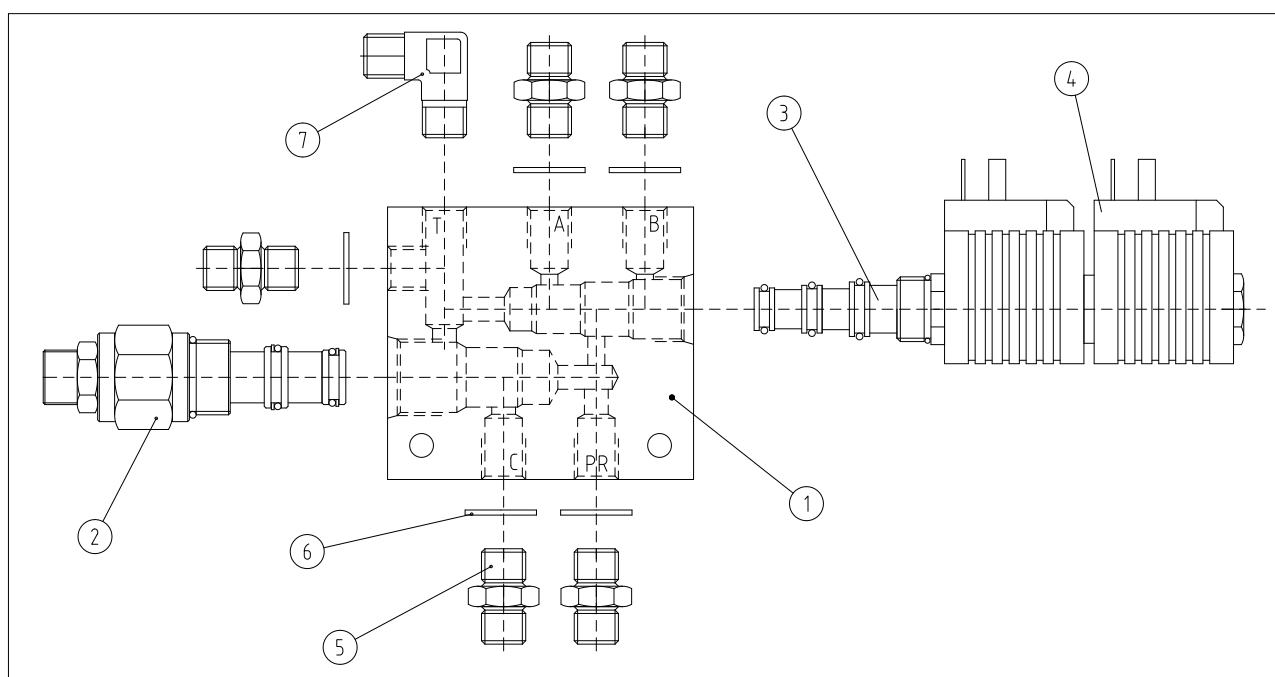
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390135	Valve chest		1
2	390136	Safety valve		1
3	390137	Joystick fastening		5
4	390138	Joystick fastening compl.		5
5	390139	Spring housing		5
6	914714	Adapter		2
7	914718	Adapter		4
8	914720	Adapter		2
9	914744	Adapter		2
10	914790	Adapter		1
11		Pressure control valve		1
12		Adapter		1
13		Adapter		1
14		Adapter		1
15		Banjo screw		1
16		Banjo adapter		1
17	390140	Angle adapter		2
18	390141	Outlet adapter		1
19	390142	Inlet adapter		1
20	390143	Banjo adapter		1
21	390144	Adapter		1
22	914660	Pressure gauge connection	1/4"	1
23		T- pipe		1
24		Pressure control valve		1
25	390145	Joint		5
26	390146	Pin bolt		5
27		Switcher. (not automatic)		1

Flue divider



Control valve for saw

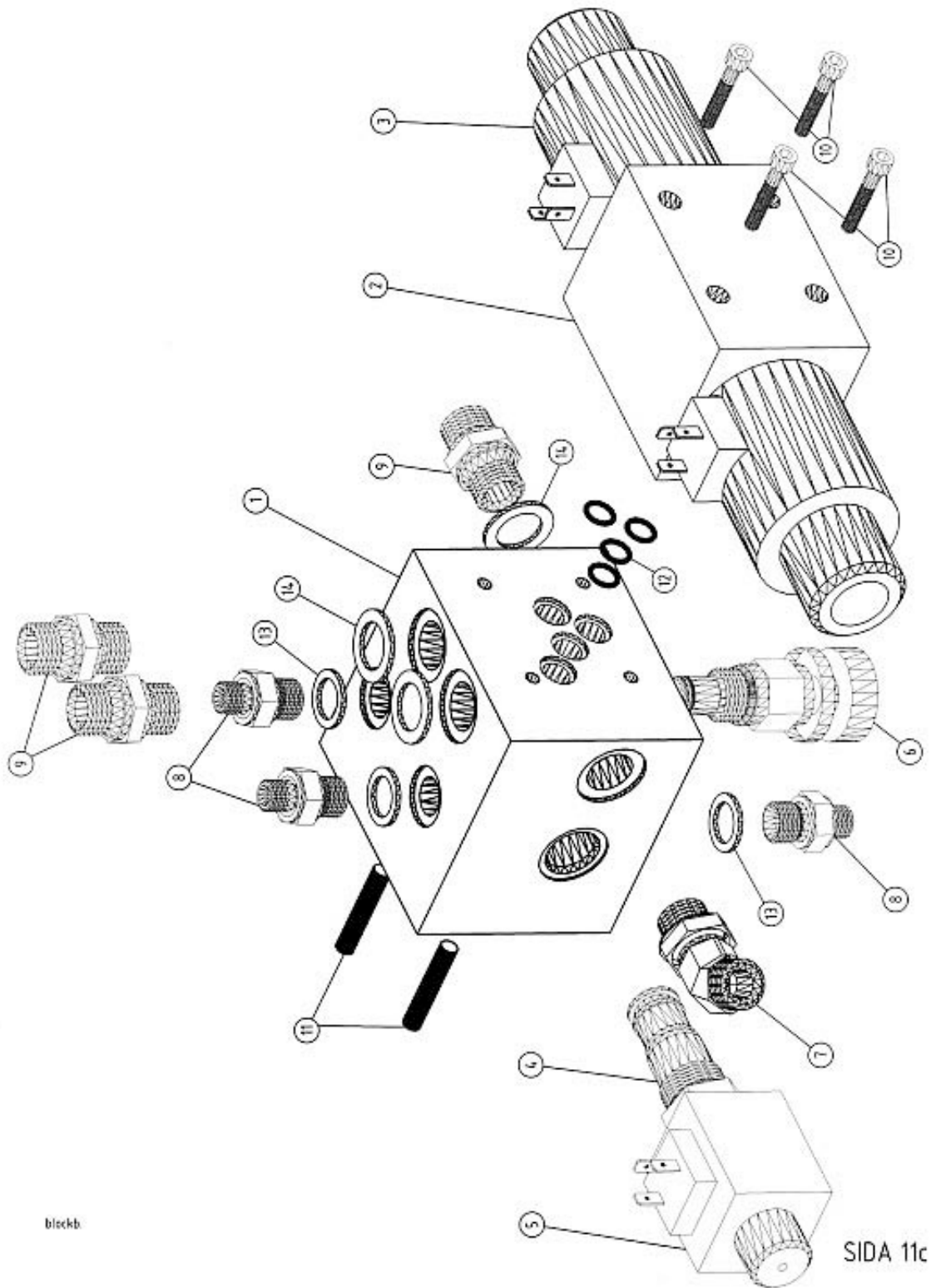
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1		Valve block		1
2		Pressure reducing valve		1
3		Direction valve		1
4		Magnetite		2
5		Adapter		5
6		Rubber sealing R1/4"		5
7		Angle adapter		1



Valve block

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1		Valve block		1
2		Direction valve		1
3		Magnetite		2
4		4-way valve el. steered		1
5		Magnetite		1
6		Pressure reducing valve		1
7		Angle adapter		1
8		Adapter		3
9		Adapter		3
10		Screw MC6S 6x40		4
11		Pin bolt MSK6SS 10x50		2
12		O-ring 12,7x1,78		4

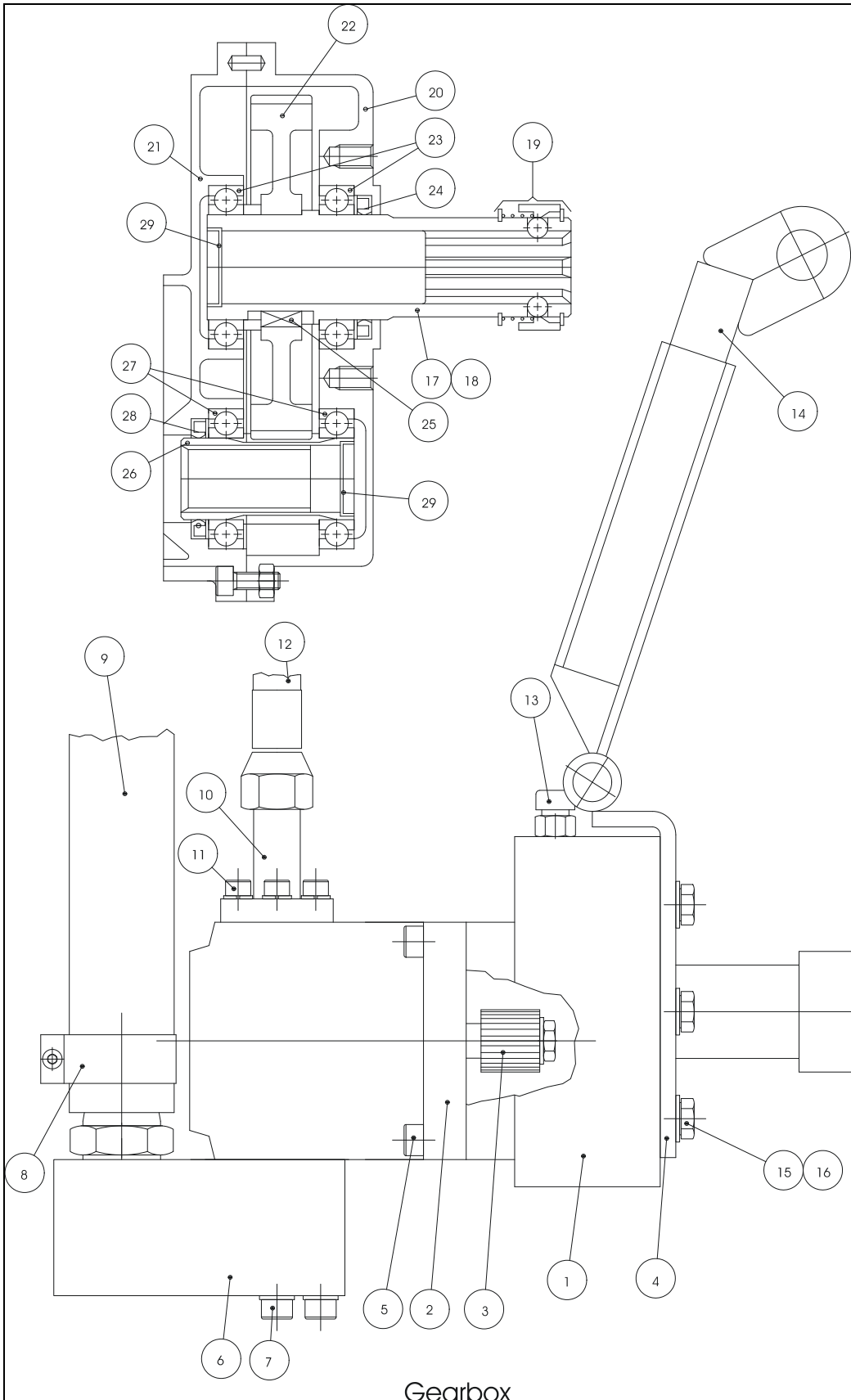
Valve block



Gearbox (390300)

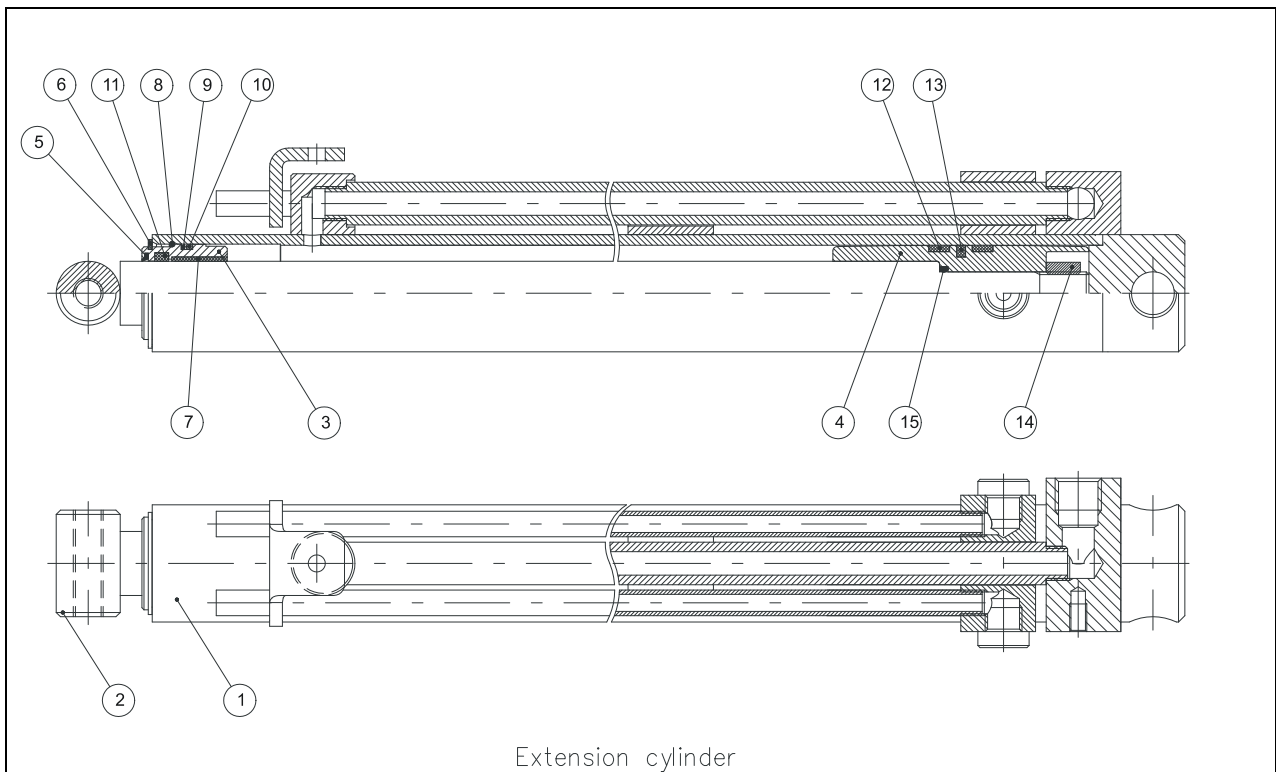
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390300	Gearbox		1
2	390301	Pump		1
3	390302	Splinted coupling		1
4	390303	Bracket		1
5	906528	Bolt	M10x35-12,9 DIN 912	4
6	390304	Suction connection		1
6a	914820	O-ring	29,7x3,5	1
7	906530	Bolt	M10x90-12,9 DIN 912	3
8	914568	Clip		1
9	390305	Suction hose	Hose nr. 58	1
10	390306	Pressure connection		1
11	906517	Bolt	M8x25 DIN 912	4
12	390307	Pressure hose	Hose nr. 32	1
13	390308	Breathing filter		1
14	390309	Fastening		1
15	906192	Bolt	M12x25 DIN 933	4
16	908625	Washer	M12 DIN 127B	4
17	390310	Shaft long		1
18	390311	Shaft short		1
19	390312	Locking device		1
20	390313	Gearbox body		1
21	390314	Gearbox body		1
22	390315	Gear wheel		1
23	390316	Bearing		2
24	390317	Sealing		1
25	390318	Shock		1
26	390319	Outgoing axle		1
27	390320	Bearing		2
28	390321	Sealing		1
29	390322	Cover		1

Gearbox (390300)



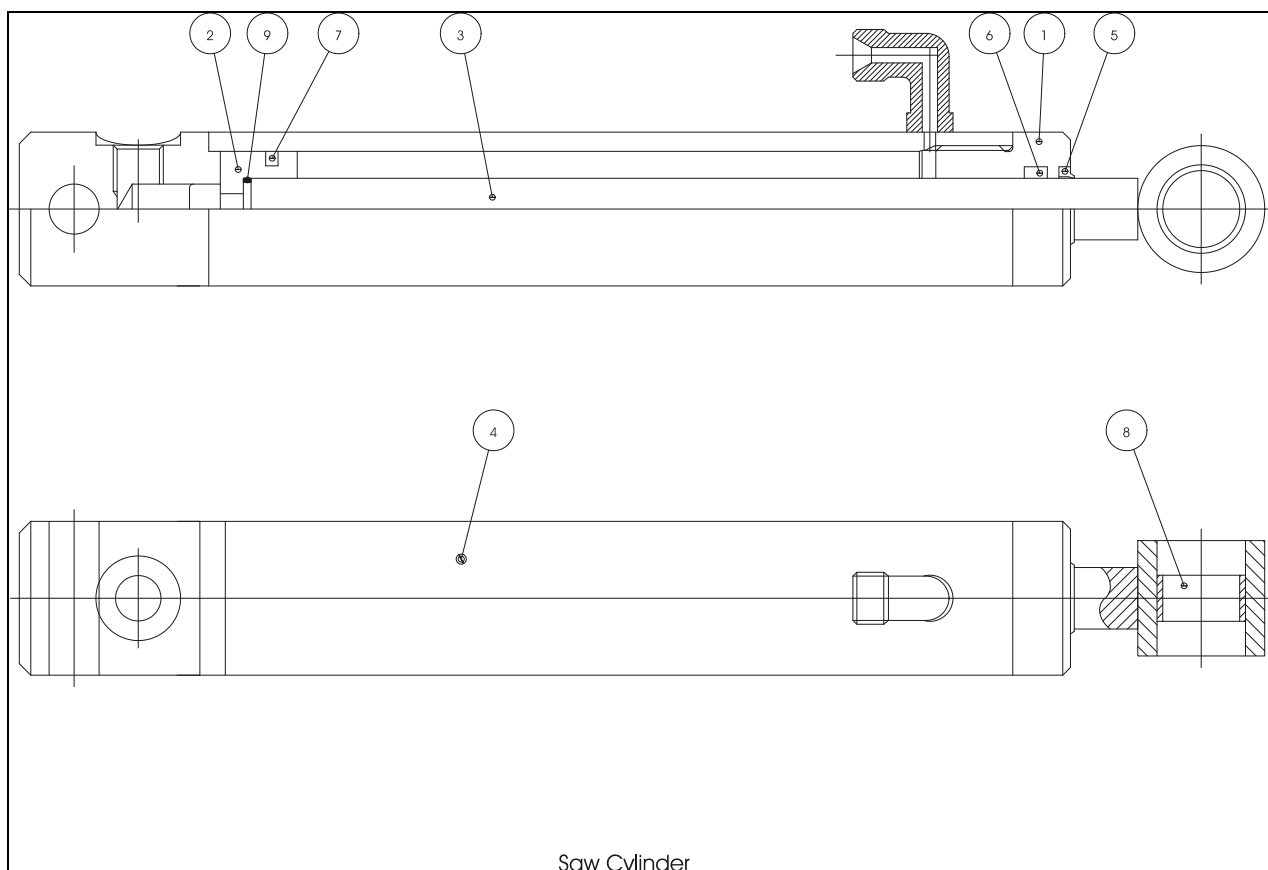
Extension cylinder

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390241	Tube assy		1
2	390242	Rod		1
3	390243	Front bush		1
4	390244	Piston		1
5	390245	Scrape ring	30	1
6	390246	Lock ring	SGA 44	1
7	390247	Sealing	3025	1
8	390248	Lockring	SRH 48	1
9	390249	Protection ring	40/45	1
10	390250	O-ring	39,2x3	1
11	390251	Sealing	30-38x6	1
12	390252	Sealing	45/39x9,6	2
13	390253	Sealing	45/34x4	1
14	390254	Locknut	M20 DIN 985	1
15	390255	O-ring	19,2x3	1



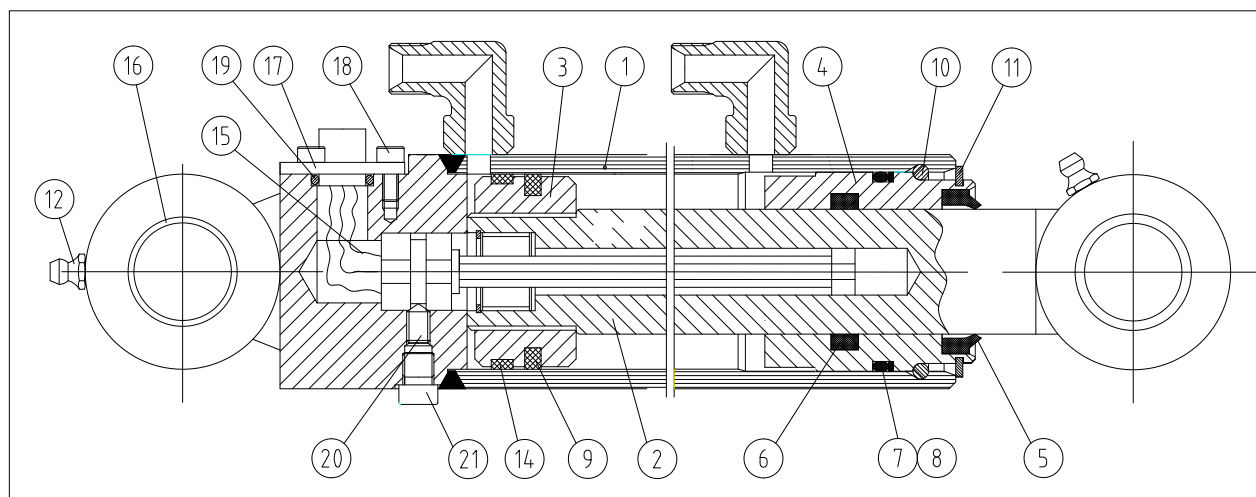
Saw cylinder

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390196	Front bush		1
2	390197	Piston		1
3	390198	Rod		1
4	390199	Tube assy		1
5	390200	Scrape ring	16-22x3/4	1
6	390201	Sealing	16-22x5	1
7	390202	Sealing	30-22,5x3	1
8	909130	Bronze bush	20x23x15	1
9	390203	O-ring	12x2	1



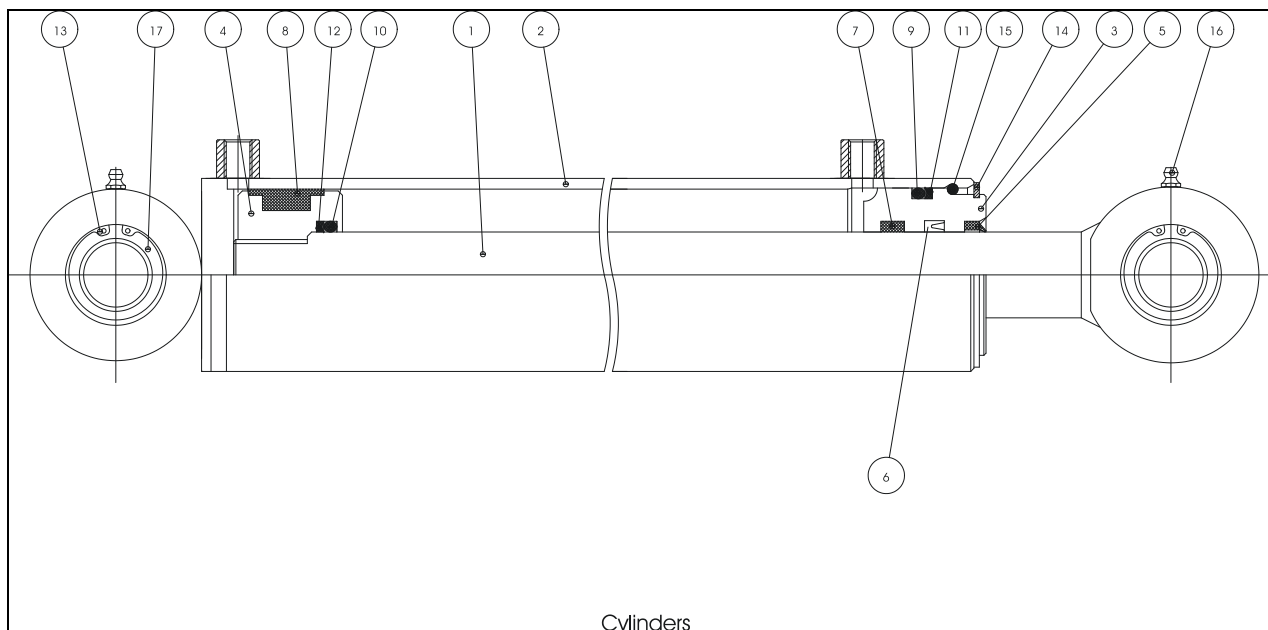
Clamp cylinder with sensor

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1		Cylinder pipe		1
2		Rod piston		1
3		Piston		1
4		Top nut		1
5		Stripper	25/35x7/10	1
6		Piston sealing	25/33x6,5	1
7		Back – up ring	45-50	3
8		O-ring	44,2x3	2
9		Sealing	50/49x4,2	1
10		Lock ring	Ø4	1
11		Lock ring	AV47	1
12		Grease nipple	¼" UNF	2
14		Steering	50x45x5,4	1
15		Potentiometer		1
16		Glide bearing	2520	2
17		Connector		1
18		Screw		5
19		O-Ring	12x2	1
20		Stop screw	M6	1
21		Plug	M8x1	1
		Cylinder assy		



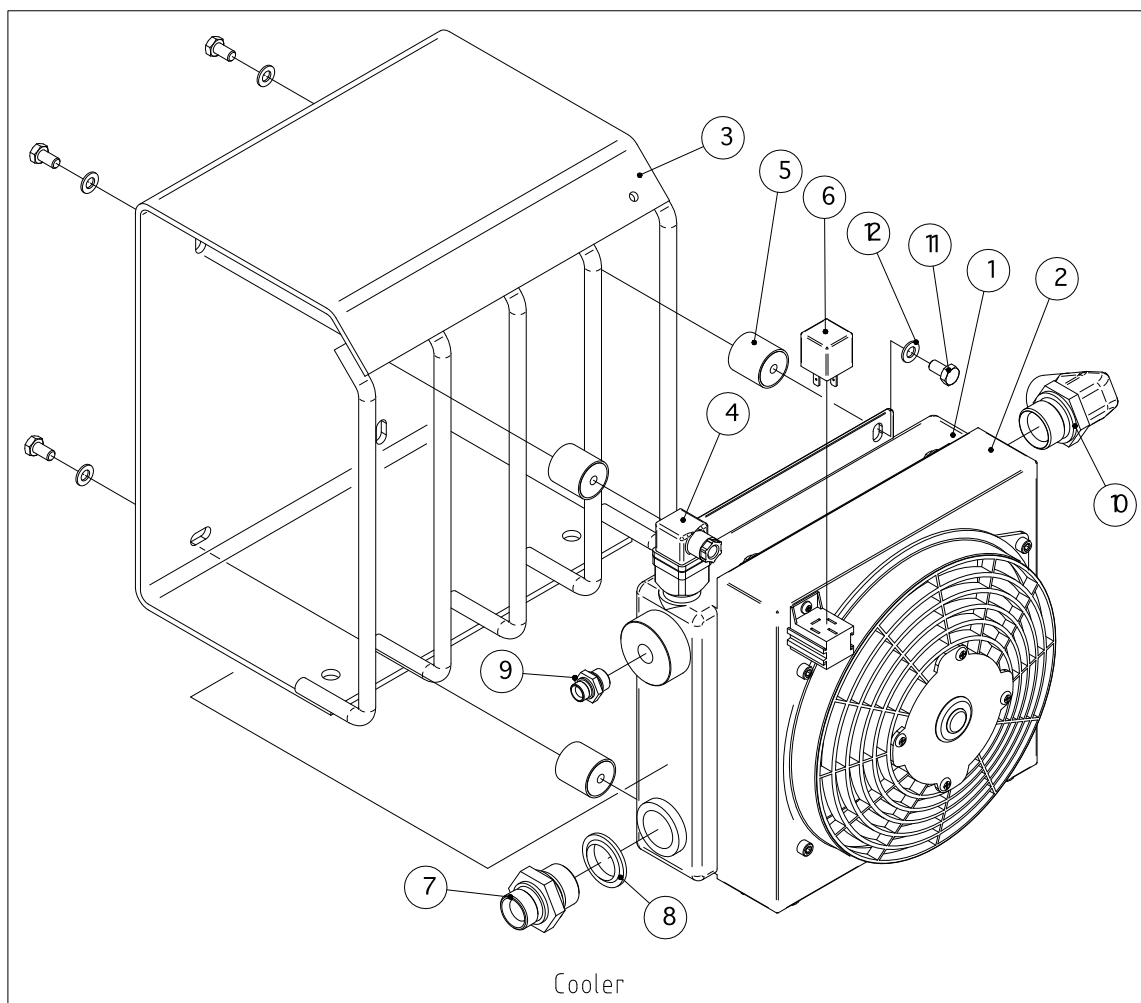
Cylinders

Pos. nr.	Sparepart	Tilt-cylinder	Turning cylinder	Clamp cylinder	Delimiting cylinder
	Cylinder assy	3131331	313133	313107	313108
1	Piston rod	390001	390020	390025	390043
2	Tube assy	390002	390021	390026	390044
3	Front bush	390003	390003	390027	390045
4	Piston	390004	390004	390028	390046
5	Scrape ring	390005	390005	390029	390029
6	Sealing	390006	390006	390030	390030
7	Bush	390007	390007	390031	390031
8	Sealing	390008	390008	390032	390047
9	O-ring	390009	390009	390033	390048
10	O-ring	390010	390010	390034	390034
11	Sealing	390011	390011	390035	390049
12	Sealing	390012	390012	390036	390036
13	Locking ring	911120	911120	911115	911115
14	Locking ring	390013	390013	390037	390050
15	Locking ring	390014	390014	390038	390051
16	Grease nipple	930105	930105	930105	3930105
17	Spherical plain bearing	910315	910315	910310	910310



Cooler

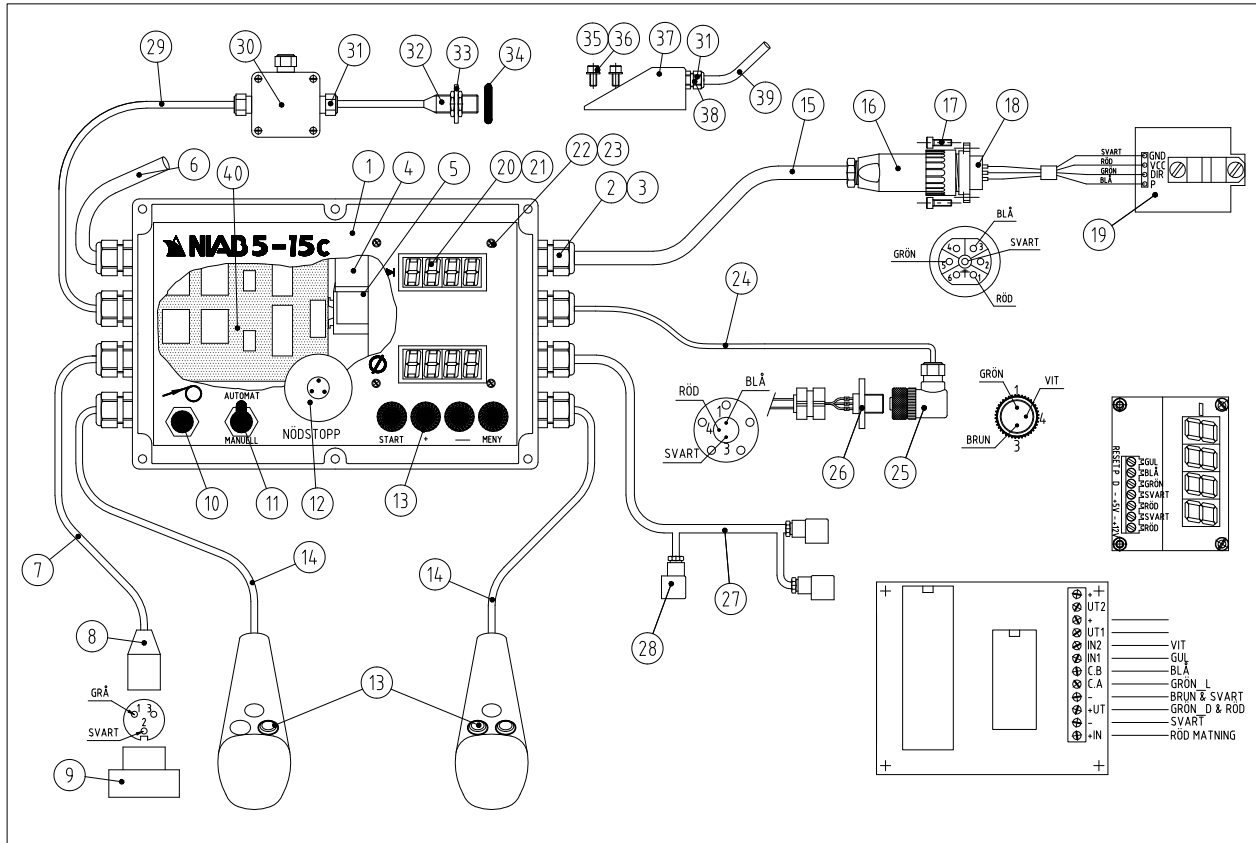
Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1	390330	Cooler		1
2	390331	Fan		1
3	390332	Cover		1
4	390333	Thermostat		1
5	390334	Rubber amortisator		4
6	390335	Relay		1
7	914727	Adapter		1
8	914798	Rubber steel ring	R1“	1
9		Adapter		1
10	914762	Angle adapter		1
11	906154	Bolt	M8x16 DIN933	8
12	908221	Washer	8,4 DIN 125	8



Display box & cables

Pos. nr.	Art. nr.	Sparepart	Dimension	Pcs.
1		Manoeuvre box compl.		
2		Conduit entry		
4		Circuit breaker		
5		Socket		
6		Cable		
7		Main cable		
8		Plug contact		
9		Plug socket		
10		Push bar type		
11		Tilting switch		
12		Stop push button		
13		Push bar type		
14		Cable (bar)		
15		Cable		
16		Bushing 7 pol		
17		Screw MLC6S 4x12		
18		Contact 7 pol		
19		Measure card		
20		Display card		
21		Red glass		
22		Screw MSCS-A2 3x10		
23		Washer BRB-A4 3,2-7x,05		
24		Cable		
25		Control contact 4 pol		
26		Control contact 4 pol		
27		Cable automatic		
28		Control contact with diode lamp		
29		Cable		
30		Cladding		
31		Conduit entry		
32		Inductive gauge		
33		Washer BRB 19-34x3		
34		O-Ring 24x5,5		
35		Washer BRB 8,4-16x1,5		
36		Screw MC6S 8x18		
37		Holder inductive gauge		
38		Holder inductive gauge G 10L		
39		Conduit		
40		Steering card automatic		

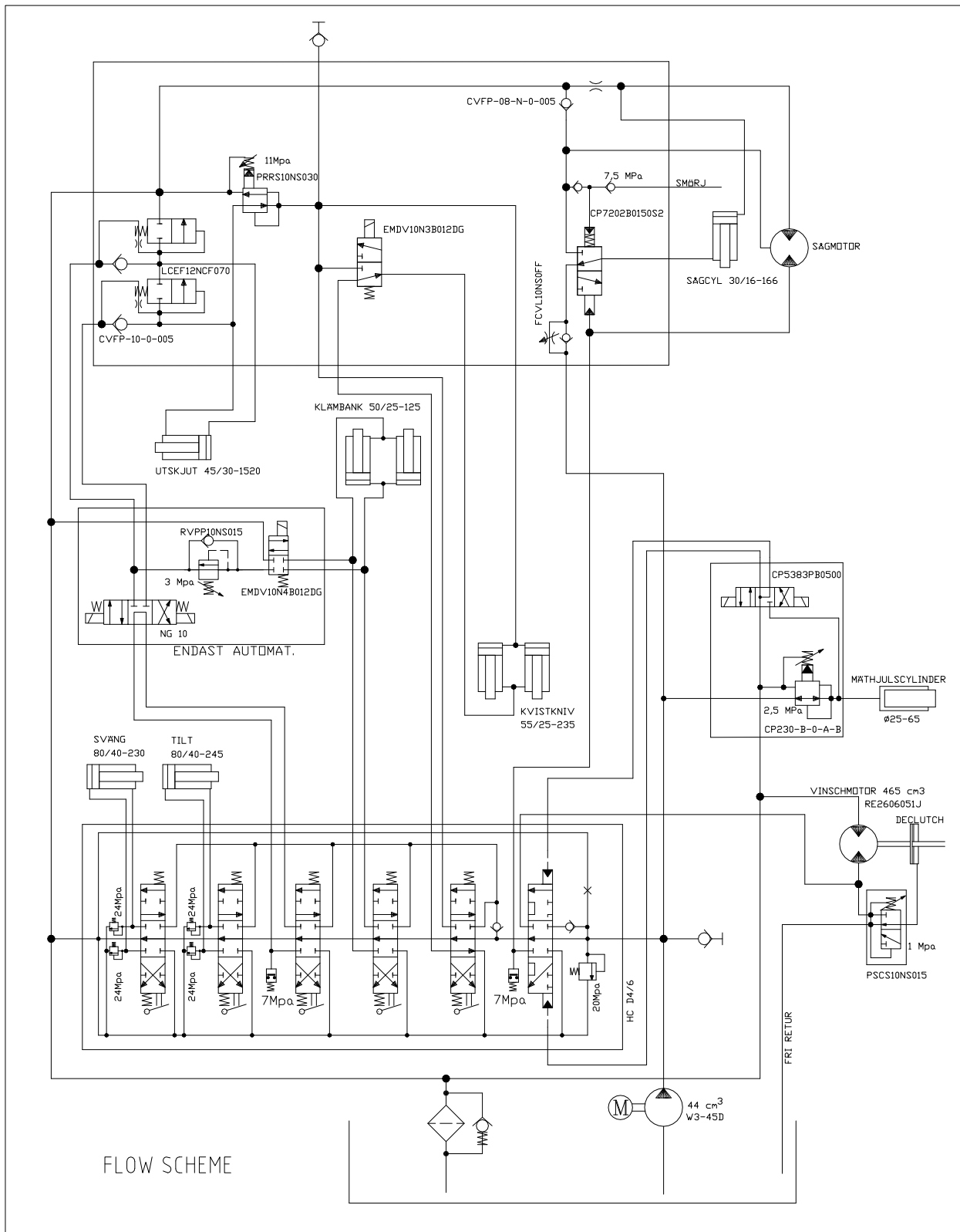
Display box & cables



List of hoses

Hose nr.	Art. nr.	Location	Dim.	Pcs.
7	390370	Valve chest - turning cylinder	1/4"	2
8	390371	Valve chest - tilt cylinder	3/8"	2
9	390372	Valve chest - clamp cylinder +	1/4"	2
10	390373	Valve chest - clamp cylinder -	1/4"	2
16	390376	Delimiting valve - extension cyl. -	1/2"	1
18	390377	Saw motor - delimiting valve return	1/2"	1
19	390378	Saw motor - delimiting valve spill	1/4"	1
20	390379	Delimiting valve - saw cylinder	1/4"	1
22	390380	Delimiting valve - extension cyl. out front	1/2"	1
23	390381	Delimiting valve - filter	3/4"	1
24	390382	Termoplast twinhose inside boom	3/8"	2
25	390383	T-adapter - delimiting cylinder rear -	3/8"	1
26	390384	T-adapter - delimiting cylinder rear +	3/8"	1
27	390385	T-adapter - delimiting cylinder front -	3/8"	1
28	390386	T-adapter - delimiting cylinder front +	3/8"	1
29		Suction pipe	38,1 spiral	1
30	390387	Delimiting valve -extension cyl. out rear	1/2"	1
32	390388	Pump -valve chest	3/4"	1
34	390389	Valve chest - winch block	1/2"	1
35	390390	Winch block - valve chest return.	1/2"	1
37	390391	Delimiting valve - saw motor	1/2"	1
38	390392	Valve chest - delimiting valve knives	3/8"	2
39	390393	Valve chest - delimiting cylinder knives	3/8"	2
40	390394	Greasing hose	1/4"	1
46	390398	Grease pump - delimiting valve	3/16"	1
47		Drainage	3/16"	1
48	390399	Valve chest - cooler	3/4"	1
49	390400	Cooler - filter	3/4"	1
50		Twigg	1/4"	1
51		P Control valve	1/4"	1
52		A Control valve	1/4"	1
53		B Control valve	1/4"	1
54		Winch -tank	1/4"	1
55		T Control valve for cooler	1/4"	1
56		PR Control valve for measuring cylinder	1/4"	1
57	390401	Valve chest - delimiting valve	1/2"	1
58		Automatic block. KLB+ - control	1/4"	1
59		Automatic block. INC - Twigg	1/2"	1
60		Automatic block. UTC -Twigg	1/2"	1
61		Automatic block. INV - control	1/2"	1
62		Automatic block. UTV - control	1/2"	1
63		Automatic block. KLB - control	1/4"	1
64		T Control valve auto block	1/4"	1

Flow scheme



El. schema/ electrical circuit

