

NISULA

285E / 285E+

Safety instructions
Maintenance instructions
Hydraulic schematics
Hose listing
Spare parts book
0612

DECLARATION OF CONFORMITY

Manufacturer: Nisula Forest Oy
Korjaamokuja 3
35600 HALLI
SUOMI – FINLAND

assures that the 285E+ and 285E series energy wood heads
meet machinery directive (directive 2006/42/EC) including
changes according to national statures.

Ali Nisula
Product design

MANUAL FOR ENERGY WOOD HEAD

READ THE MANUAL CAREFULLY BEFORE USING THE ENERGY WOOD HEAD

This manual is important to read for also those who have previous knowledge of harvesting machines.

If you're not familiar with the structure or functions, ask for advice from the manufacturer or salesman before committing repairs or maintenance.

Given values, i.e. weights, lengths etc. are instructional values and they may vary according to settings, equipment etc.

All rights reserved. Settings, equipment, manuals etc. can be changed without further notice.

SAFETY INSTRUCTIONS AND PRECAUTIONS

Instructions given in this chapter are to be obeyed always when using the energy wood head

- If the instructions given in this manual are conflicting the local standards, the operator must obey the local standards.
- Obey also the orders of the base machine- and crane manufacturers.
- Before usage, familiarize yourself with the manual and the structure of the machine.
- Only trained / otherwise qualified personnel are allowed to use or commit maintenance to the energy wood head. Employer's duty is to make sure, that the personnel is qualified for maintenance and usage of the head.
- Adjust the seat, controls, armrests etc. as well as possible. Keep the windows clean for maintaining a good line of sight.
- When starting the machine, make sure that no-one is nearby the crane or the head.

When starting the machine, gathering pads, grapples or cutting blades may close or open, the head may tilt to horizontal or vertical position, depending on the controls.

- Energy wood head is meant only for cutting and loading small energy wood. All other means of usage are absolutely forbidden!
- It is forbidden to be on top of the head or between the grapples, cutting blades or gathering pads when the engine is running.
- Check daily the condition of the hydraulic hoses and the parts in case of any wearing. Make sure that the electric wiring and hydraulic hoses are correctly placed.
- If the operator notices a fault, damage or wearing compromising safety, he must inform the supervisor/ machine owner at once.
- If a pressure washer is used for cleaning the machine, extreme caution must be prevailed, because even the small pressure and temperature may damage the electric devices.
- Well equipped first aid kit must be readily available.

- It is not uncommon to work alone when using forest machines. Work supervisors must be aware of your working places and times, so you can be sought after if necessary. (i.e. in case of emergency)

SAFETY INSTRUCTIONS IN REPAIRS AND MAINTENANCE

Read the safety instructions before committing repairs.

To avoid damage when repairing the machine, make sure you have the right equipment, instructions etc. Don't use jewelry or loosely hanging belts, straps etc. when working with the machine

Work carefully and patiently while committing repairs. Avoid working alone.

Use the needed safety equipment, i.e. gloves, glasses, helmet, safety boots and hearing protection.

Always wear safety gloves when working with chains or blades.

Stop the engine, activate the emergency stop, close the main electric switch and remove the key switch for the duration of the maintenance work, unless the instructions say otherwise. (e.g. measuring pressure)

Lock the head always using e.g. chains if repairs must be committed when the head is upright.

Remove the pressures from the hydraulic system before starting the maintenance/repair work. Cleaning and oiling is forbidden while the engine is running.

Open any of the connectors very carefully.

NEVER SHARPEN THE CUTTING BLADES WHEN THE ENGINE IS RUNNING!

Do not commit repairs / maintenance between cutting blades, grapples or gathering pads when the engine is running → DANGER TO LIFE

When committing maintenance/ repair work to the head, make sure that no-one starts the machine. If the machine is started, cutting blades, gathering pads or grapples may move and the whole head may tilt → DANGER TO LIFE

Some of the machine's pilot operated solenoids have a manual operating option, which usage should be avoided. If the manual operating cannot be avoided when searching for a fault, the operator must be extremely careful. (Possible result may be a movement of the cutting blades, gathering pads, grapples or tilt) → DANGER TO LIFE

Never remove electric connectors when the engine is running (Possible result may be a movement of the cutting blades, gathering pads, grapples or tilt) → DANGER TO LIFE

NEVER WELD OR GRIND THE HEAD IF THERE IS NOT AN APPROVED FIRE EXTINGUISHER NEARBY.

SAFETY INSTRUCTIONS WHILE OPERATING THE MACHINE

Make sure that your clothes don't stick to the controls when entering and exiting the cabin.

Keep the cabin's floor empty and clear of loose objects.

The head affects the stability of the base machine. Other factors affecting it are sloping of the terrain, quality of the terrain, location of the load, position of the loader etc.

If the felling of a tree is already started and the head cannot, because of a fault or damage, complete the procedure, the machine must be moved to a safe place outside the danger zone, because the tree may fall and cause serious damage. Never leave an "almost" felled tree in the forest. When the head is repaired/otherwise working, fell the tree.

Never open pressurised hose connectors or other pressurised hydraulic parts.

In a case of a fire breaking out, use a powder extinguisher.

It is common to work long times alone in the forest. We recommend using a cell phone for increased safety.

If the operator leaves the proximity of the machine, support the head against the ground or lower it to a possible transport rack in the machine.

DANGER ZONE

The operator is responsible for the machine to not cause any physical injuries.

Before starting to work, make sure that no-one is inside the danger zone. Stop working immediately if someone enters the danger zone.

Working near electric cables always poses a dangerous situation. Remember safety distances.

Danger zone of the head is 50 meters. This minimizes the damage from falling trees.

Being near the head is forbidden when the engine is running. This minimizes possible damage from starting functions.

When felling trees, observe the direction and speed of wind and the trees alignment

MAINTENANCE- AND USAGE INSTRUCTIONS

For the head to work perfectly the operator has to commit careful maintenance work. Daily inspections and lubrications can be made by the operator.

Necessary maintenance include e.g. checking tightness of the bolts and nuts and, if needed, checking the adjustments.

Oil or other environmentally hazardous liquids are not to be spilled to the nature. They have to be collected in containers made for this purpose. Take nature in account in everything.

Use only original spare parts.

BASIC MAINTENANCE AND PRESSURE VALUES

The base machine's hydraulic maintenance must be done according to the instructions. Most common reasons for malfunctions are impurities in the hydraulic system. Malfunctions caused by impurities appear as e.g. wearing and malfunctions. Make sure, that in maintenance- or repair work no impurities get to the hydraulic system and change the oil and the oil filters periodically. New hoses must be cleaned before installation.

If the hydraulic functions become powerless, you should first check the amount of oil in the hydraulic system, the base machine's pump pressure and the pressure values in the head. Low pressure may be caused by e.g. oil leaks. Leaks can be caused by e.g. worn-out seals. The pressure relief valve may also leak.

USING DIRECT CONTROL

Some of the directional valves have spools in the end of the pilot-operated solenoid, which may be used for manual control. (So-called direct control)

<p style="text-align: center;">ATTENTION! DO NOT USE DIRECT CONTROL FOR THE HEAD'S TILT FUNCTION → DANGER TO LIFE</p>
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If direct control is used, you must be extremely cautious because of the high risk of accidents. Make sure you use the right valve. **WATCH OUT FOR THE MOVEMENT OF THE CUTTING BLADES, GATHERING PADS, GRAPPLES OR TILT.**

If some of the head's functions don't work, make sure if the valve's solenoid receives electric current. Next, check if the spool of the directional valve has possibly became stuck because of impurities. If so, you must disassemble and clean the valve.

WARRANTY POLICY

NISULA FOREST OY gives their 285E/285E+ energy wood heads this warranty:

1. Warranty time is 6 months or 1000 hours of usage. Warranty time begins when the machine is handed over to the owner. If the owner of the machine changes in the warranty time, the warranty is void unless otherwise is agreed.
2. Warranty covers: raw material- and manufacturing faults, changing a faulty part to a repaired or a new part according to our decision.
3. Warranty doesn't cover:
 - Common wearing parts, like seals, hoses, connectors etc.
 - Equipment, cables, connectors
 - Damage caused by misuse
 - Damage caused by not obeying maintenance instructions
 - Damage caused by accidents
 - Loss of income caused by demurrage days or other indirect losses
 - Work- and travel costs
 - Cargo costs.
4. Warranty procession requires:
 - The client to inform the salesman / manufacturer immediately after the damage has occurred
 - The client to return the damaged parts to the salesman / manufacturer within 2 weeks of the new part being received.
 - Unreturned parts will be charged unless otherwise agreed.

The damaged part must be returned within 2 weeks from the new one being delivered. Otherwise the part will be charged.
5. Parts given by the warranty inside the warranty time have the same warranty time as the whole head.
6. Other repairs and maintenance work are charged according to the current price list.

PERIODIC MAINTENANCE FOR 285E/285E+

C = Check

G = Grease

Number	Object	Time between maintenance Usage hours	
		10	50
1	Greasing the head	G	
2	Sharpness of the cutting blades	C	
3	Tightness of the cutting cylinder attachment bolts	C	
4	Tightness of the tilt's bolts	C	
5	Attachment of the hydraulic block	C	

ATTENTION! Cutting blade cylinder and tilt bolts and nuts should be tightened after first 5 hours of use.

PRESSURE ADJUSTMENTS 285E/285E+

Base machine pressure adjustments must be done before these.

(i.e. adjustments of pump pressure, pressure reducers etc.)

	Maximum pressure 220 bar		
Head pressure values		Recommendation	Range
Gathering pads 285E+		90 bar	80-100 max
Gathering pads 285E		170 bar	150-190 max
Rotator		160 bar	150-165 max
Tilt		85 bar	60-95 max

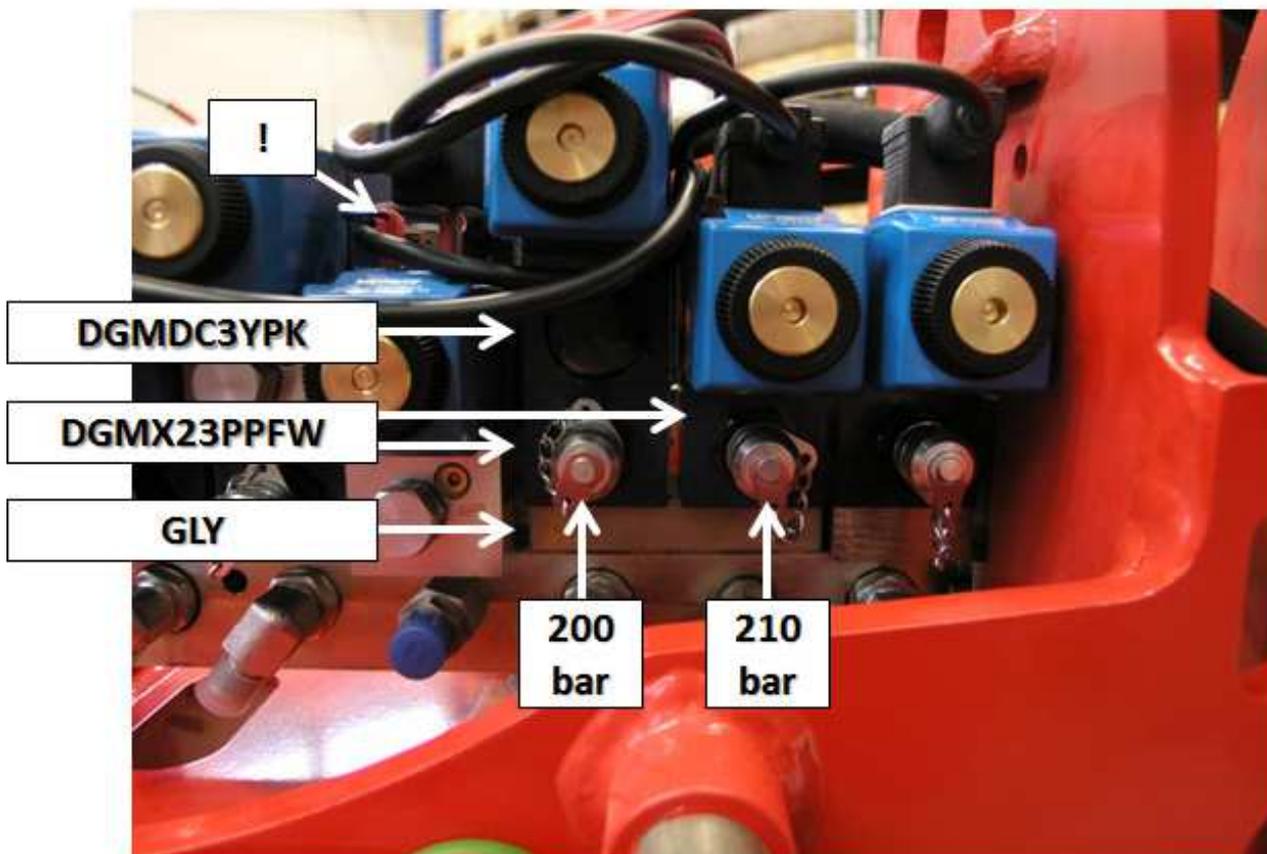
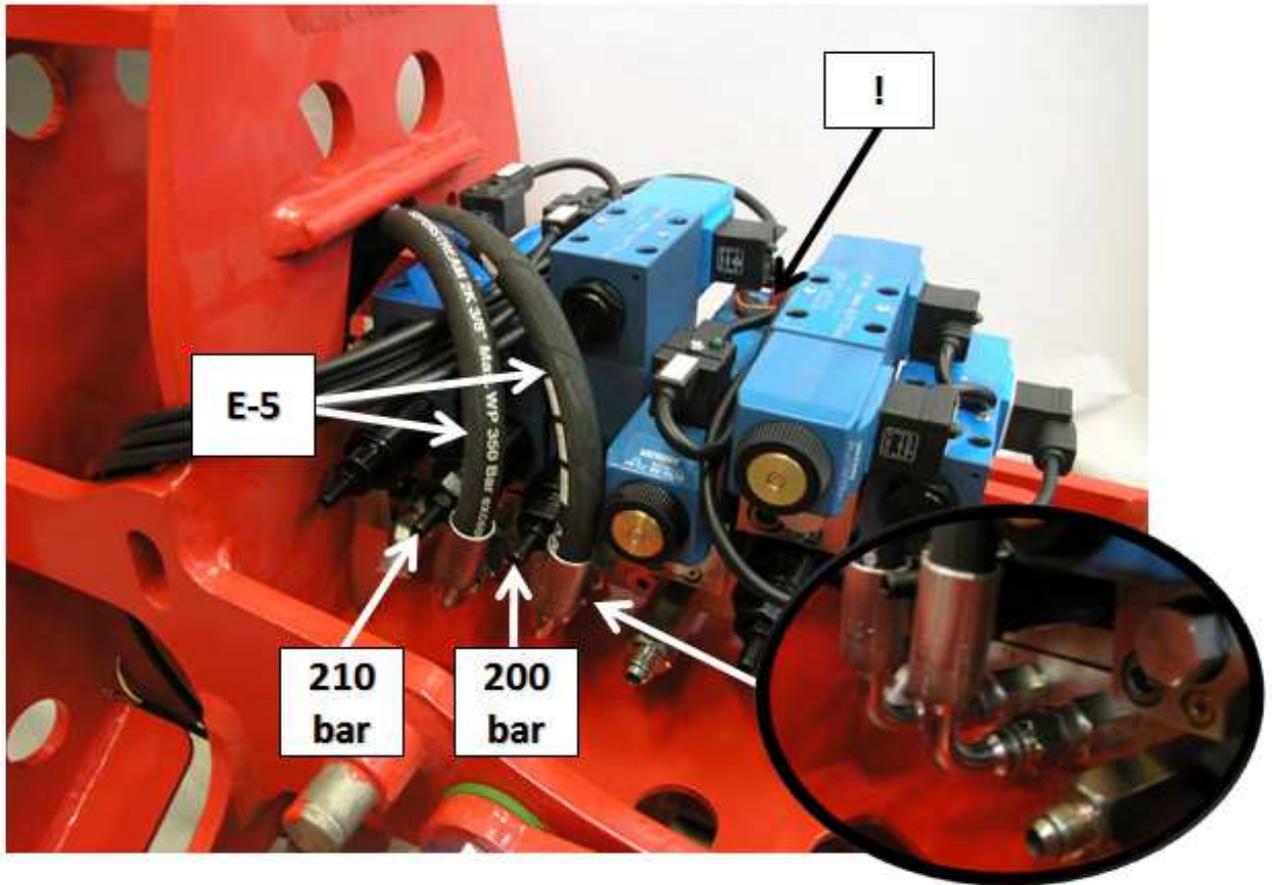
Exceeding the maximum values might result in oil heating or machine failures.

Pressure adjustment.

Individual pressure adjustment

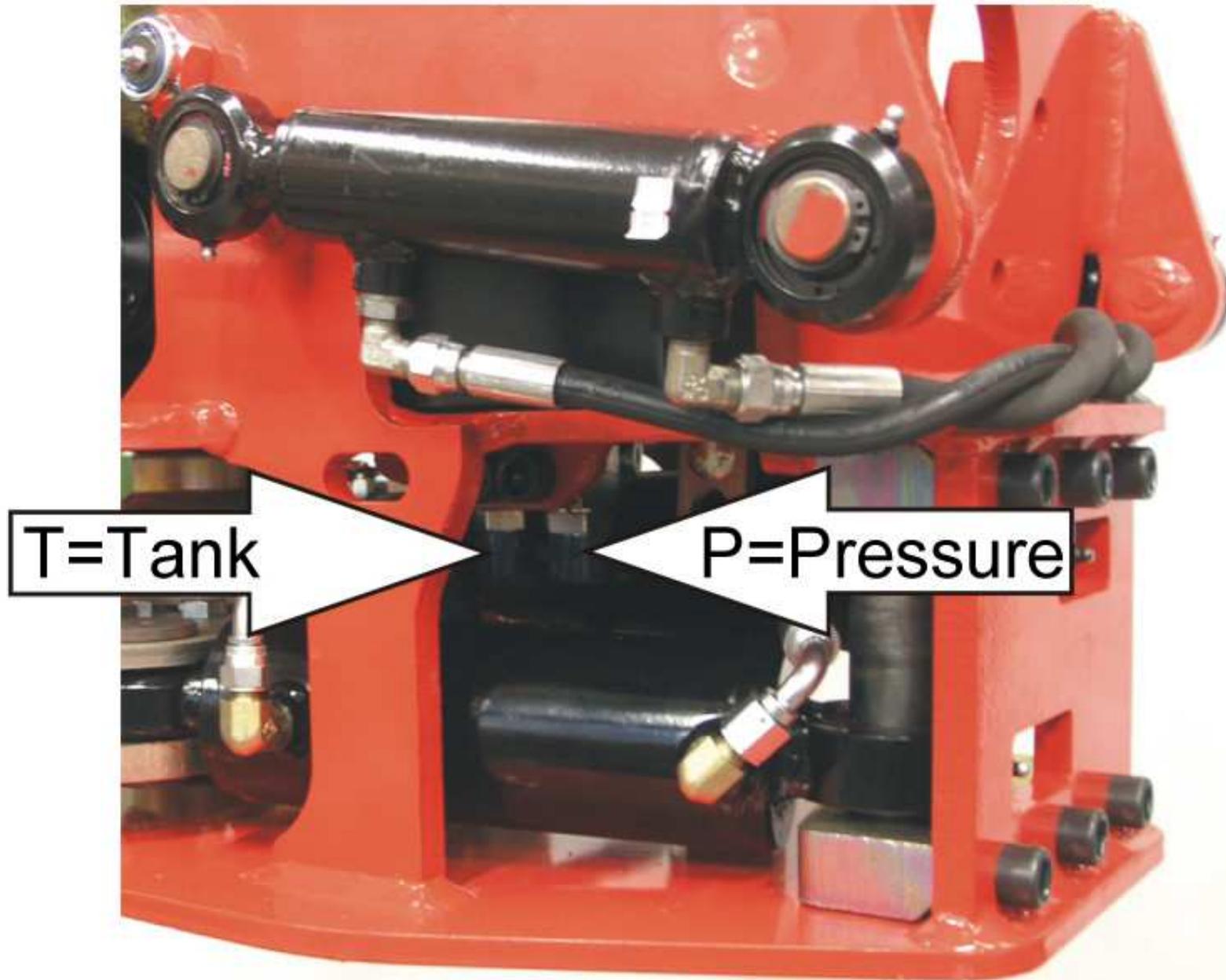
1. Attach the pressure gauge to the function's measurement point
2. Start the engine and toggle the standard pressure on
3. Open the pressure reducer's locking nut (13mm)
4. Adjust the required pressure with a hexagonal wrench (Allen wrench) (4mm)
5. Stop the engine and remove the pressure gauge

Scissors pressure reducers



285E Pressure and Tank lines

On the block's other side are markings T and P



Nisula 285E wiring

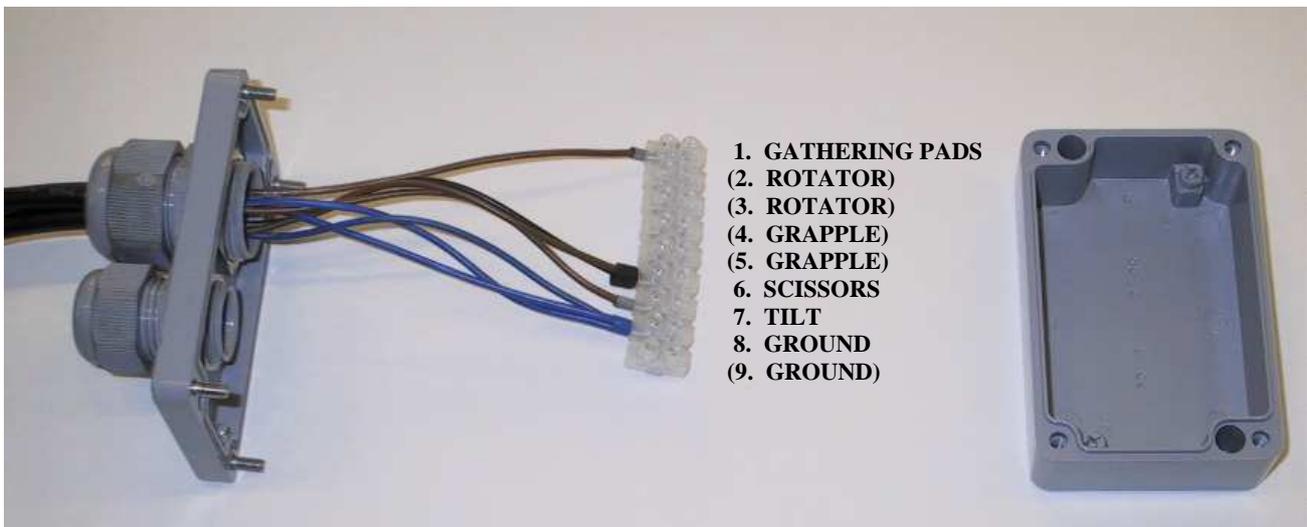
The wiring order:

Number	Function	Color of wire
1	Gathering pads	Brown
2*	Rotator	Black
3*	Rotator	Brown
4*	Grapple	Black
5*	Grapple	Brown
6	Scissors	Brown + Black
7	Tilt	Brown
8	Ground	Blue
9*	Ground	Blue

* - not necessarily in use, depends of the amount of electric valves

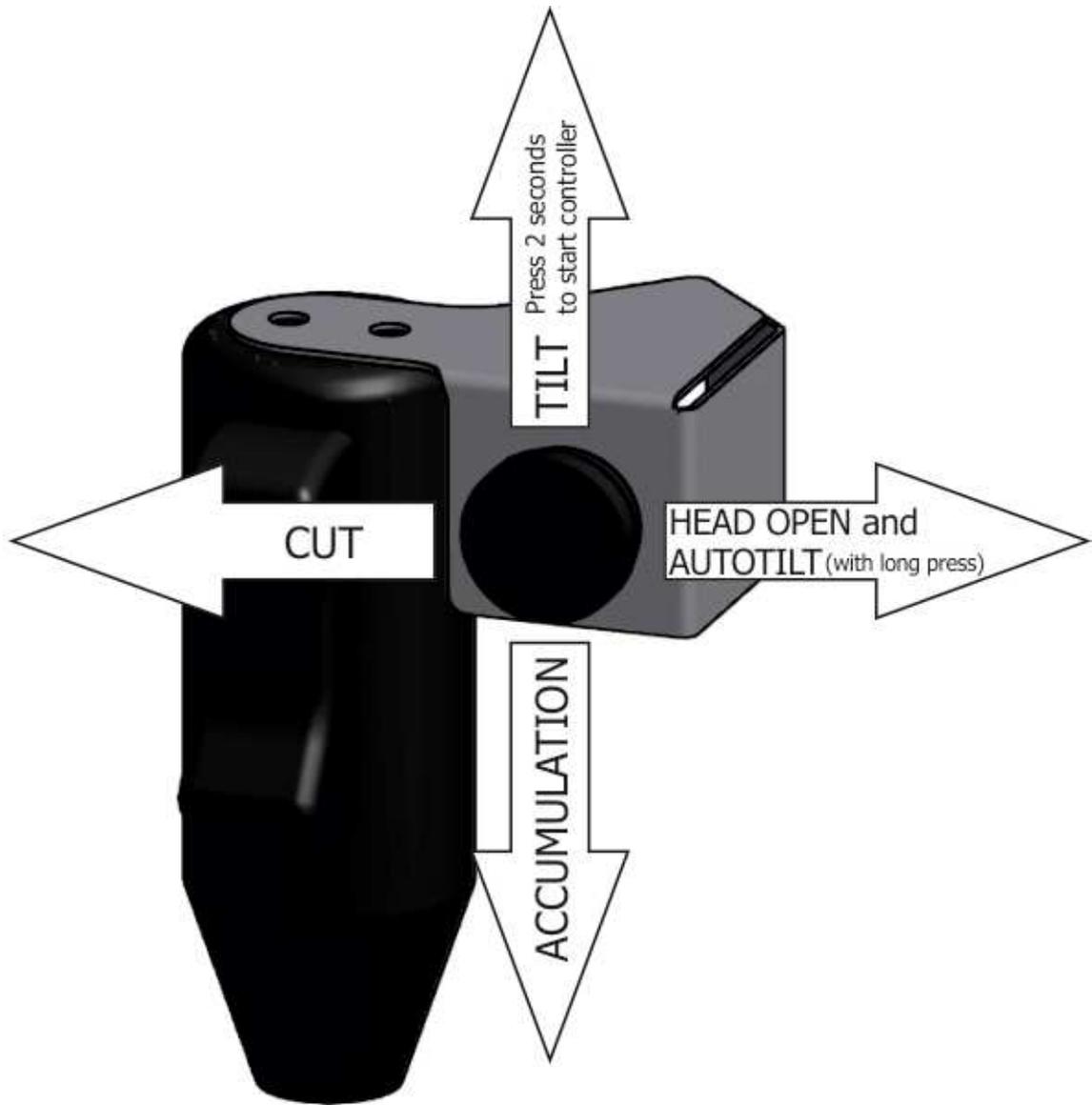
Colors of wires in the plugs:

- 1-plug
-  Blue - (ground)
 -  Brown + (plus)
- 2-plug
-  Blue - (ground)
 -  Black + (plus first plug)
 -  Brown + (plus second plug)
 -  Yellow/green, cutted

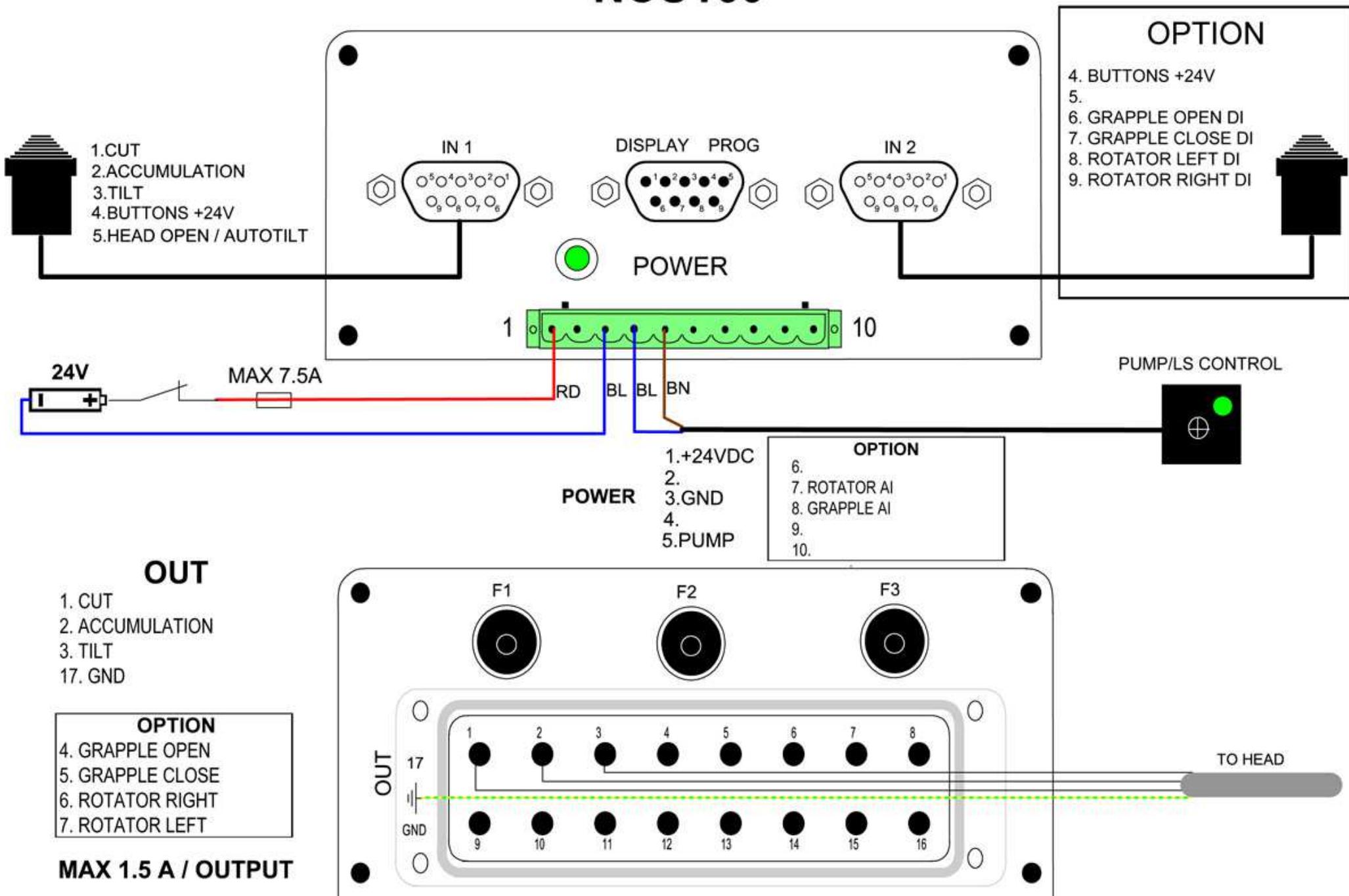


1. Gathering pads, closed when unpowered, open when powered.
2. (Rotator, if valve in the head)
3. (Rotator, if valve in the head)
4. (Grapple, if valve in the head)
5. (Grapple, if valve in the head)
6. Scissors, open when unpowered, cuts when powered.
7. Tilt, loading position when unpowered, felling position when powered.
8. Ground
9. Ground

Button functions



NCU160



- 1. CUT
- 2. ACCUMULATION
- 3. TILT
- 4. BUTTONS +24V
- 5. HEAD OPEN / AUTOTILT

- OPTION**

 - 4. BUTTONS +24V
 - 5.
 - 6. GRAPPLE OPEN DI
 - 7. GRAPPLE CLOSE DI
 - 8. ROTATOR LEFT DI
 - 9. ROTATOR RIGHT DI

- POWER**
- 1. +24VDC
 - 2.
 - 3. GND
 - 4.
 - 5. PUMP

- OPTION**

 - 6.
 - 7. ROTATOR AI
 - 8. GRAPPLE AI
 - 9.
 - 10.

- OUT**
- 1. CUT
 - 2. ACCUMULATION
 - 3. TILT
 - 17. GND

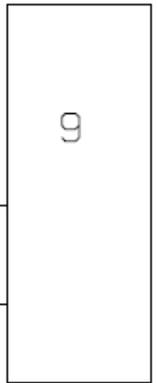
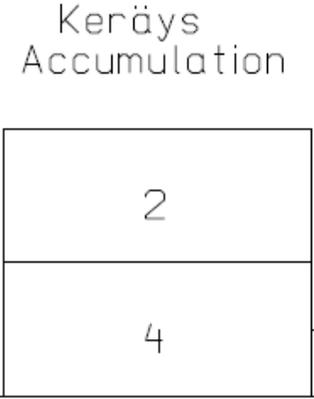
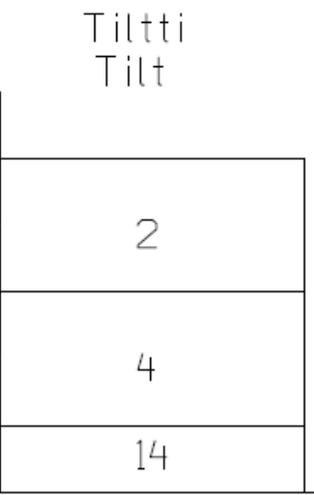
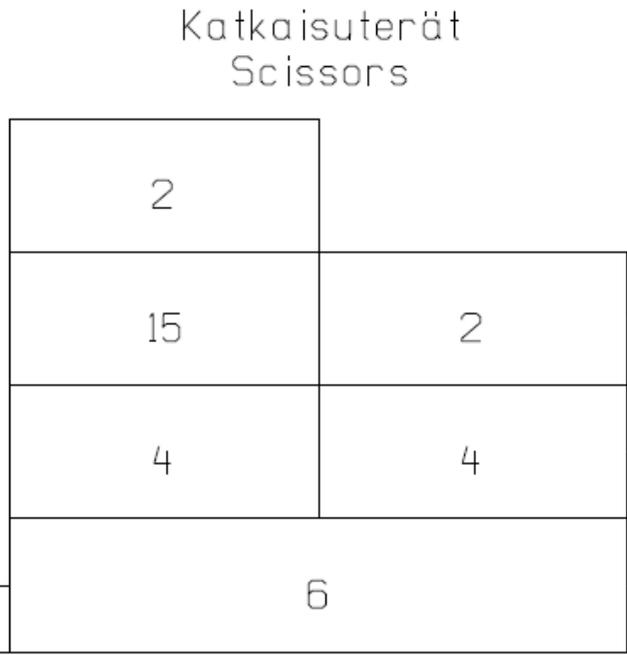
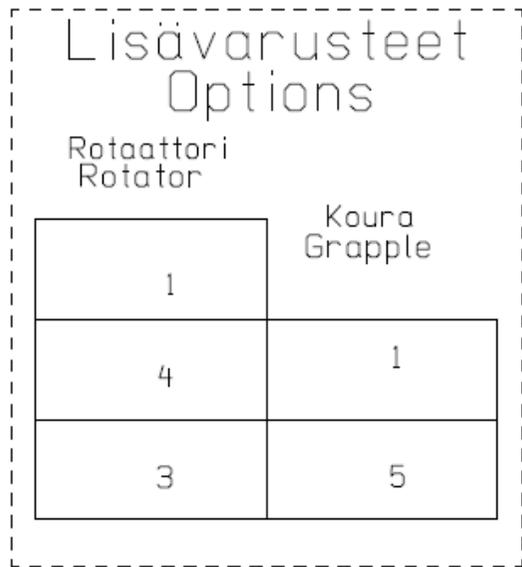
- OPTION**

 - 4. GRAPPLE OPEN
 - 5. GRAPPLE CLOSE
 - 6. ROTATOR RIGHT
 - 7. ROTATOR LEFT

MAX 1.5 A / OUTPUT

TO HEAD

NISULA 285E/285E +



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Lisävarusteet Options

Rotaattori
Rotator

Ø1,5

Koura
Grapple

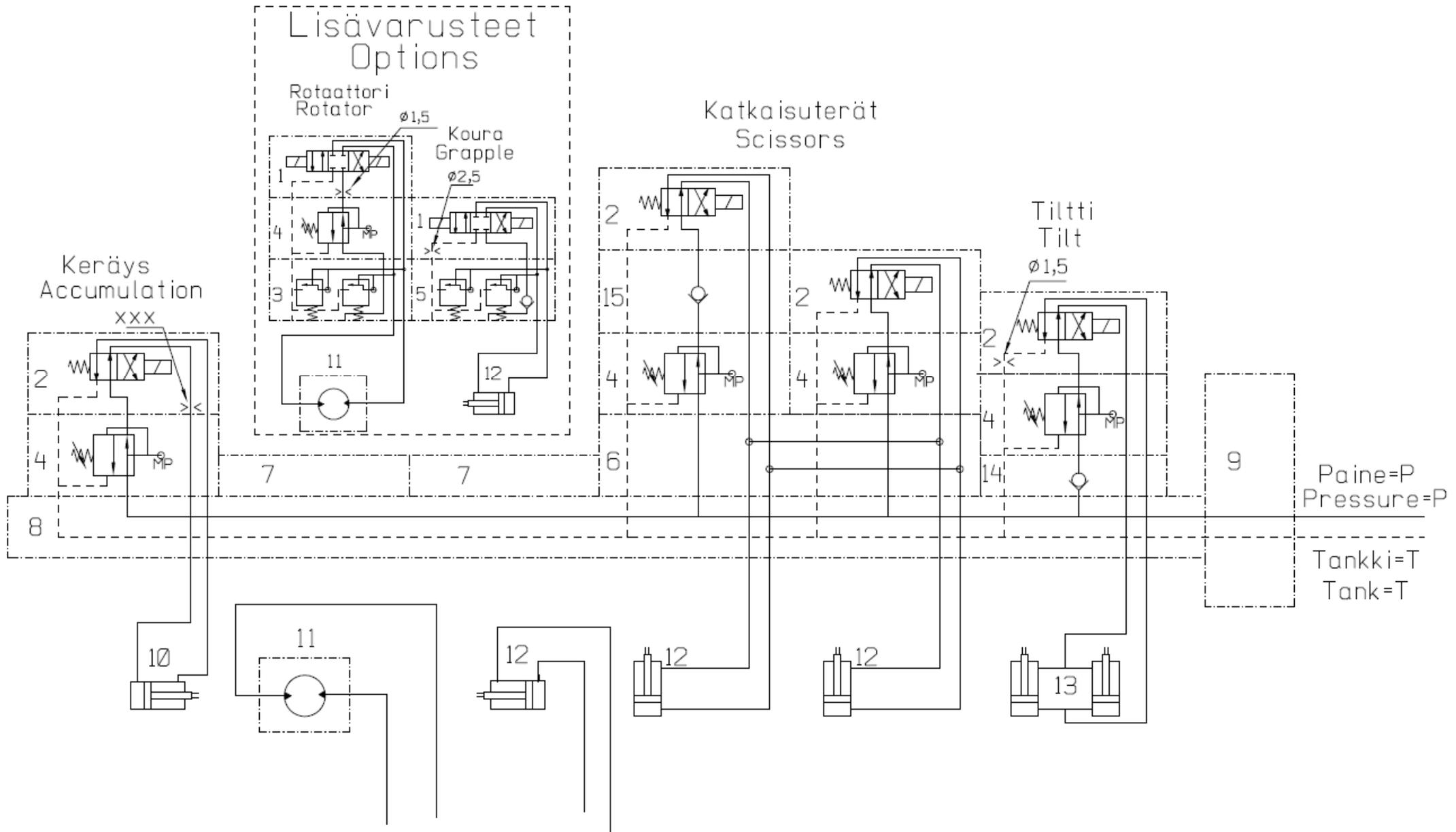
Ø2,5

Katkaisuterät
Scissors

Tiltti
Tilt

Ø1,5

Keräys
Accumulation
xxx



**Nisula 285E
Hydraulic schematic 2012**

	Part number	Code	Name	Notes
	1	V-2CL	Valve	
	2	V-2AL	Valve	
	3	V-M50518	Pressure relief valve 175bar	
	4	V-MXPP	Pressure reducer	
	5	V-M50415	Pressure relief check valve 230bar	
	6	GLY	Connecting block GLY	
	7	GLP	Cover plate GLP	
	8	21509770	Side block	
	9	GL	GL-block	
	10	S1035030Y (285E+)	Cylinder	S0954025 (285E)
	11		Rotator	
	12	S7540153	Cylinder	
	13	S0954025Y	Cylinder	
	14	PVVR	P-check valve	
	15	V-PK	P-check valve	
Kuristimet:	xxx=Gathering pads restrictor: 1,5mm in the A-line of the valve (Note! Not in 285E+)			
	Rotator: 1,5mm in P-line			
	Grapple: 2,5mm in T-line			
	Tilt: 1,5mm in T-line			

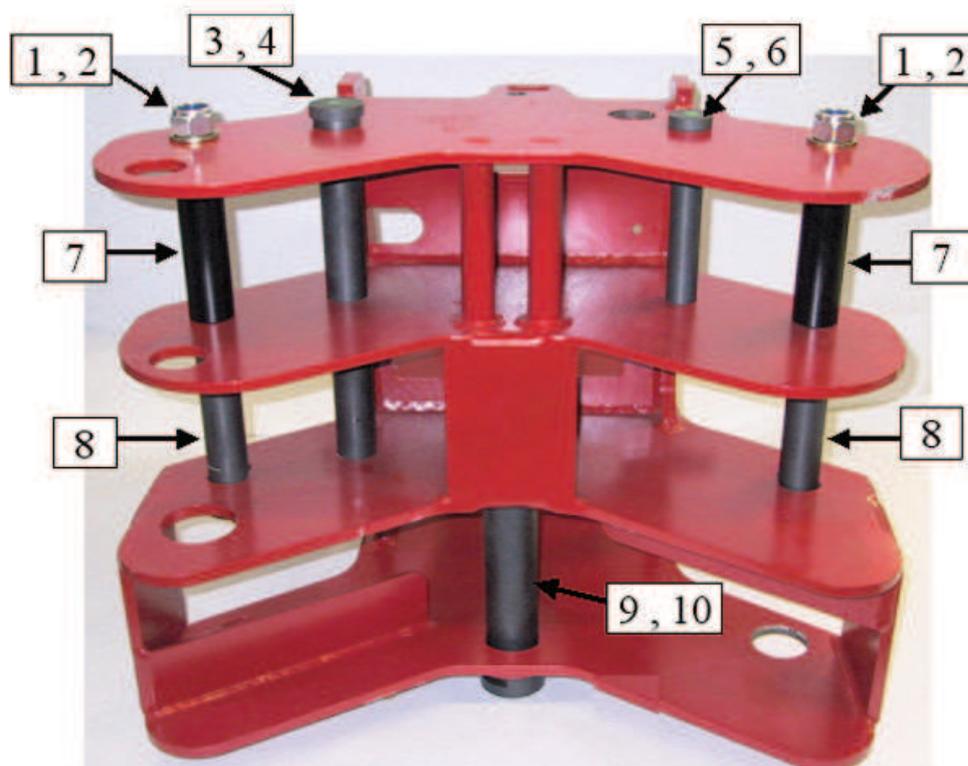
SPARE PARTS BOOK

1.0 Cover



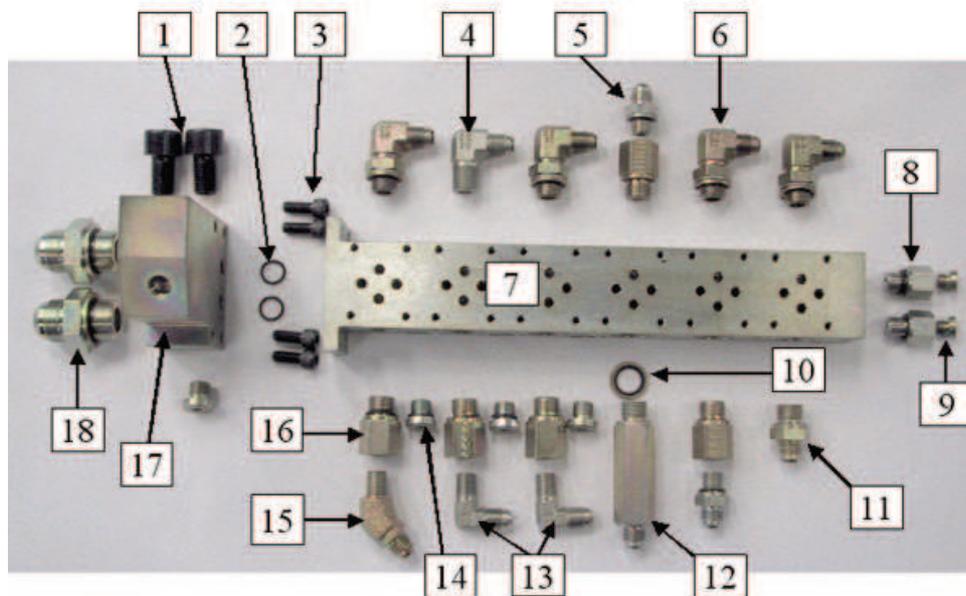
Nr	Code	Part number	Part name	Pcs	Notes
01	280SUOJ	-	280E cover	1	
02	W10571620	-	Hex screw 933/8.8ZN M16x20	1	Do not use a longer screw!

2.0 Chassis parts



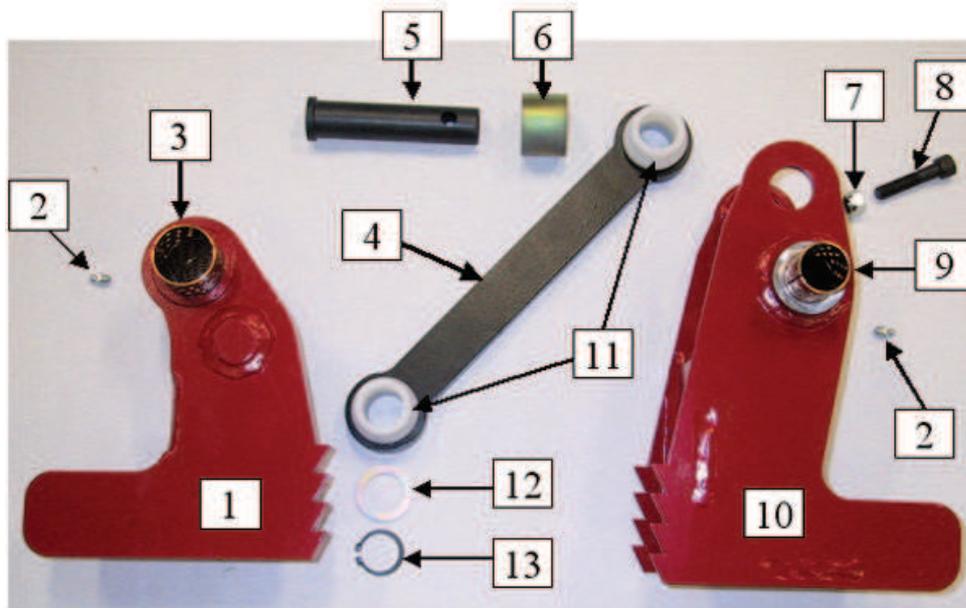
Nr	Code	Part number	Part name	Pcs	Notes
01	W036824	-	Nut-nyloc DIN 985 ZN NM24	2	
02	W040724	-	Washer DIN 125 ZN M24/25	2	
03	GK2	-	Pin	1	
04	LR40X2.5-471	-	External retaining ring 40x2.5	1	
05	GK1	-	Pin	1	Not in 280E+
06	LR30X2-471	-	External retaining ring 30x2	1	Not in 280E+
07	GK3.1	-	Sleeve	2	
08	GK11	-	Main pin	2	
09	GK7	-	Shaft	1	
10	LR55X3-471	-	External retaining ring 55x3	1	

3.0 Valve blocks and couplings



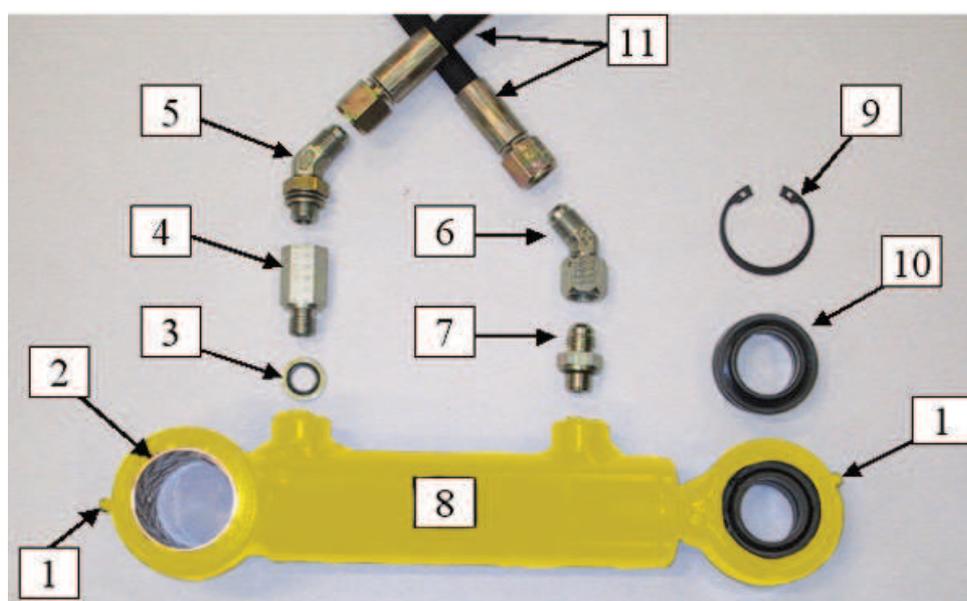
Nr	Code	Part number	Part name	Pcs	Notes
01	W00831625	-	Hex socket screw 912/12.9 M16x25	2	Glued
02	OR11.9X1.98-90	-	O-ring 11.9x1.98 90 shore	2	
03	W0083820	-	Hex socket screw 912/12,9 M8x20	4	Glued
04	H3100606	-	Fitting 90° M JIC 9/16-18 - M BSPT 3/8"	1	
05	H1060604	-	Fitting JIC 9/16-18 BSP 1/4"	2	
06	H3060606	-	Fitting 90° M JIC 9/16-18 - M BSP 3/8"	4	
07	21509770	-	Side block	1	
08	RSI0402	-	RSI fitting M - F 1/4" - 1/8"	2	
09	H02602	-	Hex socket plug 1/8"	2	
10	H21706	-	Usit 3/8"	1	
11	H1060606	-	Fitting JIC 9/16-18 - BSP 3/8"	1	
12	2060606L96	-	Extension fitting	1	
13	H3100604	-	Fitting 90° M JIC 9/16-18 - M BSPT 1/4"	2	
14	H02604	-	Hex socket plug R1/4"	4	
15	H3110604	-	Fitting 45° M JIC 9/16-18 - M BSPT 1/4"	1	
16	RSI0604	-	RSI fitting M - F 3/8" - 1/4"	5	
17	GL	-	Main block	1	
18	H1061212	-	Connector male JIC 1.1/16-12 - BSP 3/4"	2	

4.0 285E Gathering pads



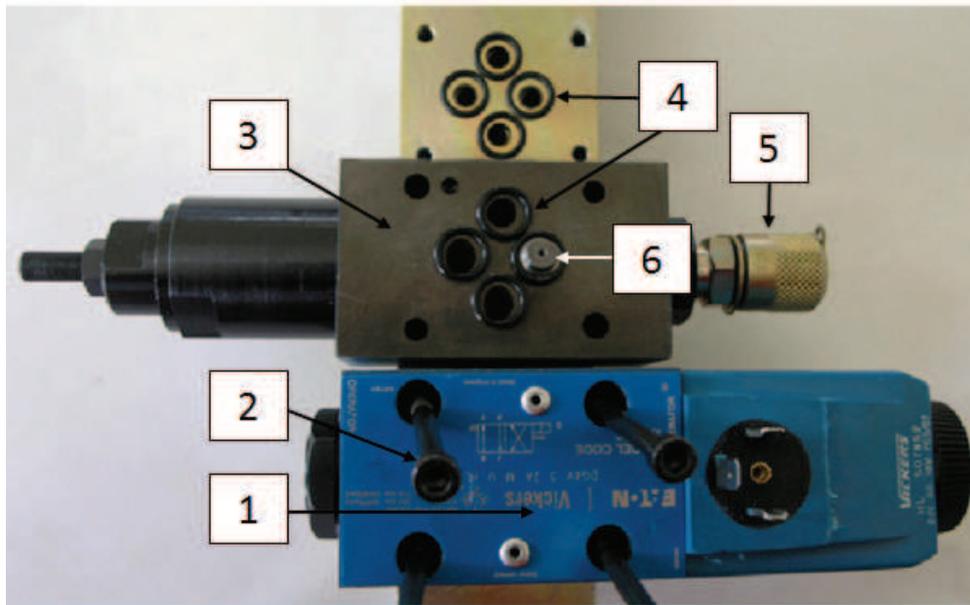
Nr	Code	Part number	Part name	Pcs	Notes
01	G1.1	-	Gathering pad, narrow	1	
02	W0986135	-	Grease fitting M8X1,25 DIN 71412	2	
03	LL40X44X40	-	Bushing 40x44x40	2	
04	G1.3	-	Reaction bar	1	
05	GK1.2	-	Pin	1	
06	GK1.3	-	Sleeve	1	
07	W036812	-	Nut-nyloc DIN 985 ZN NM12	1	
08	W00831260	-	Hex socket screw 912/12.9 M12x60	1	
09	LL30X34X40	-	Bushing 30x34x40	2	
10	G1.2	-	Gathering pad, wide	1	
11	GK6	-	Bushing	2	
12	501-1P	-	Washer	1	
13	LR30X2-471	-	External retaining ring 30x2	1	

4.1 285E Gathering cylinder



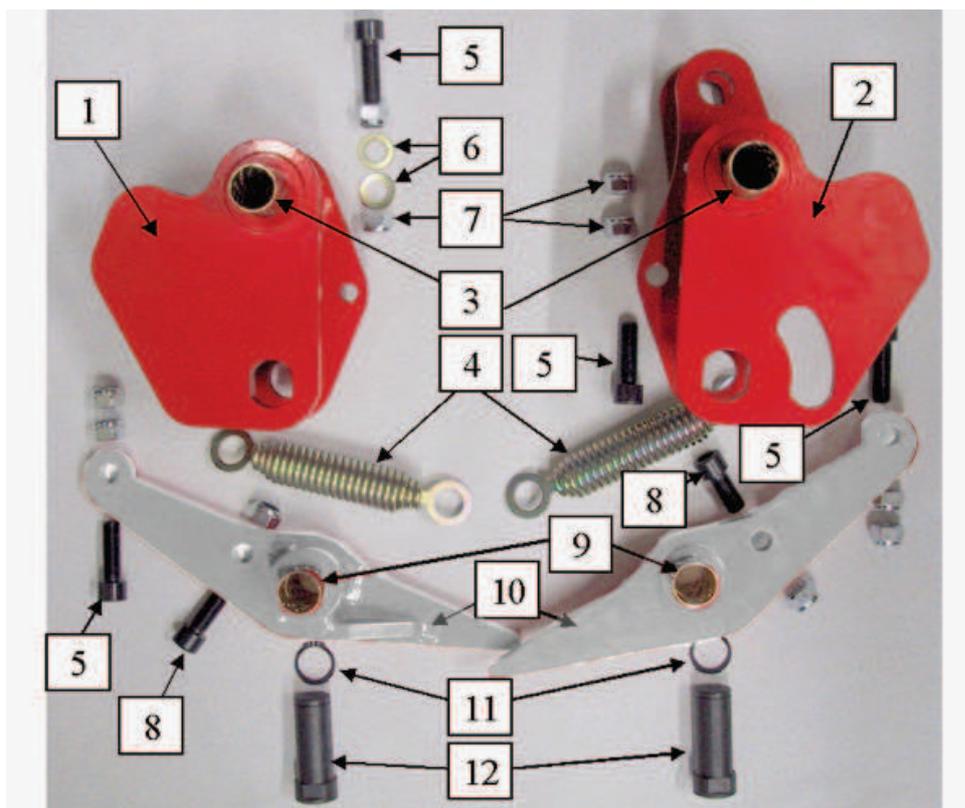
Nr	Code	Part number	Part name	Pcs	Notes
	OKTS4025	-	OK sealing kit 40*25	1	
01	W0986135	-	Grease fitting M8X1,25 DIN 71412	2	
02	LL40x44x30	-	Bushing 40x44x30	2	Sparepart
03	H21704	-	Usit 1/4"	1	
04	PT3008-04	-	Extension fitting 1/4" M - 1/4" F	1	
05	H3060604	-	Fitting 90° M JIC 9/16-18 - M BSP 1/4"	1	
06	H0700606	-	Fitting 45° with nut JIC M - F 9/16 - 18	1	
07	H1060604	-	Fitting JIC 9/16-18 BSP 1/4"	1	
08	S0954025Y-40	-		1	
09	LR47X1.75-472	-	Internal retaining ring 47x1,75	1	
10	GE30	-	Spherical bearing Ø30 (GE 30 ES-2RS)	1	
11	MA-10	-	Hose 1/4"	2	

4.2 285E Gathering cylinder valve



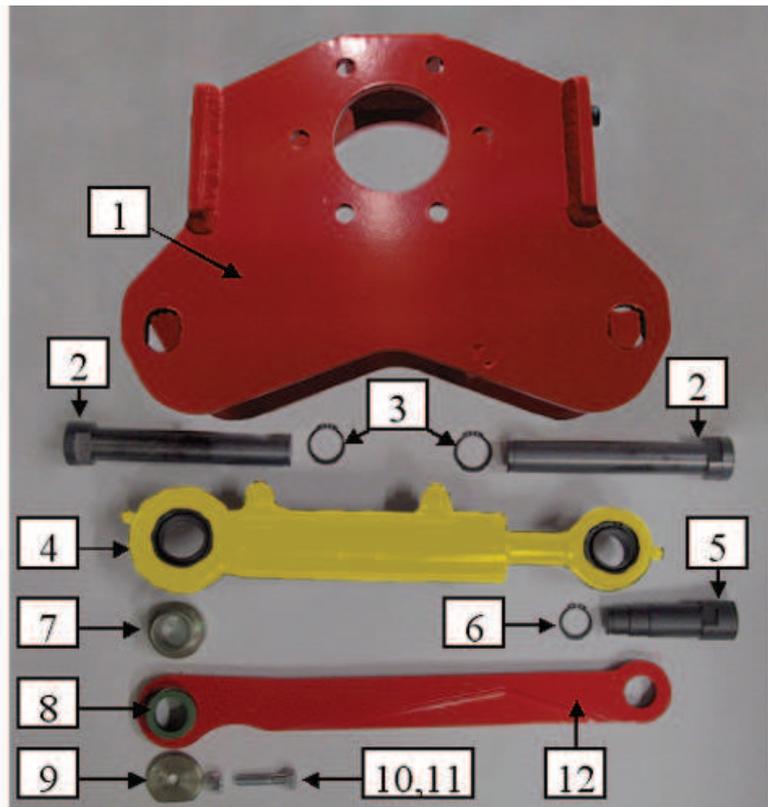
Nr	Code	Part number	Part name	Pcs	Notes
01	DG4V32AMUHL7	-	Directional control valve DG4V-3-2A-MU-HL7-60	1	
02	W0083570	-	Hex socket screw 912/12.9 M5x70	4	
03	DGMX23PPFW	-	Pressure reducer valve DGMX2-3-PP-FW-B-40	1	
04	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	8	
05	MPL-02	-	Pressure measuring fitting 1/8"	1	
06	694346	-	Restrictor Vickers 1,5mm	1	A-line

4.5 285E+ Gathering parts 1



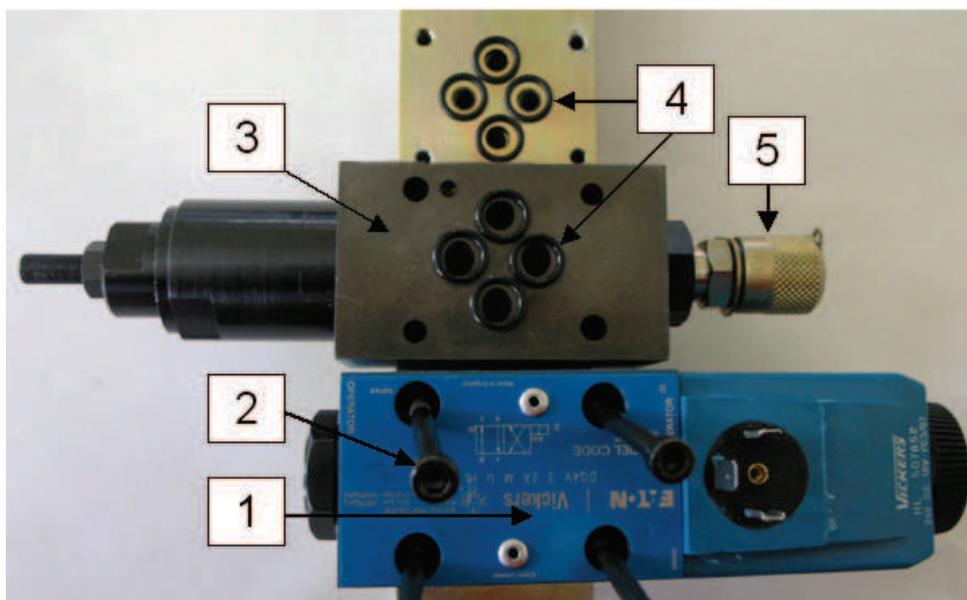
Nr	Code	Part number	Part name	Pcs	Notes
01	MK6	-	Gathering pad frame, saw side	1	
02	MK5	-	Gathering pad frame	1	
03	LL30X34X40	-	Bushing 30x34x40	4	
04	3867	-	Spring SF-DFX 5x35x210	2	
05	W00831650	-	Hex socket screw 912/12.9 M16x50	4	
06	W040616	-	Washer DIN 125 ZNC HV 225 M16	2	
07	W036816	-	Nut-nyloc DIN 985 ZN M16	10	
08	W00831635	-	Hex socket screw 912/12.9 M16x35	2	
09	LL30X34X25	-	Bushing 30x34x25	4	
10	MK9	-	Gathering pad	2	
11	LR30X2-471	-	External retaining ring 30x2	2	
12	MK11	-	Pin	2	

4.6 285E+ Gathering parts 2



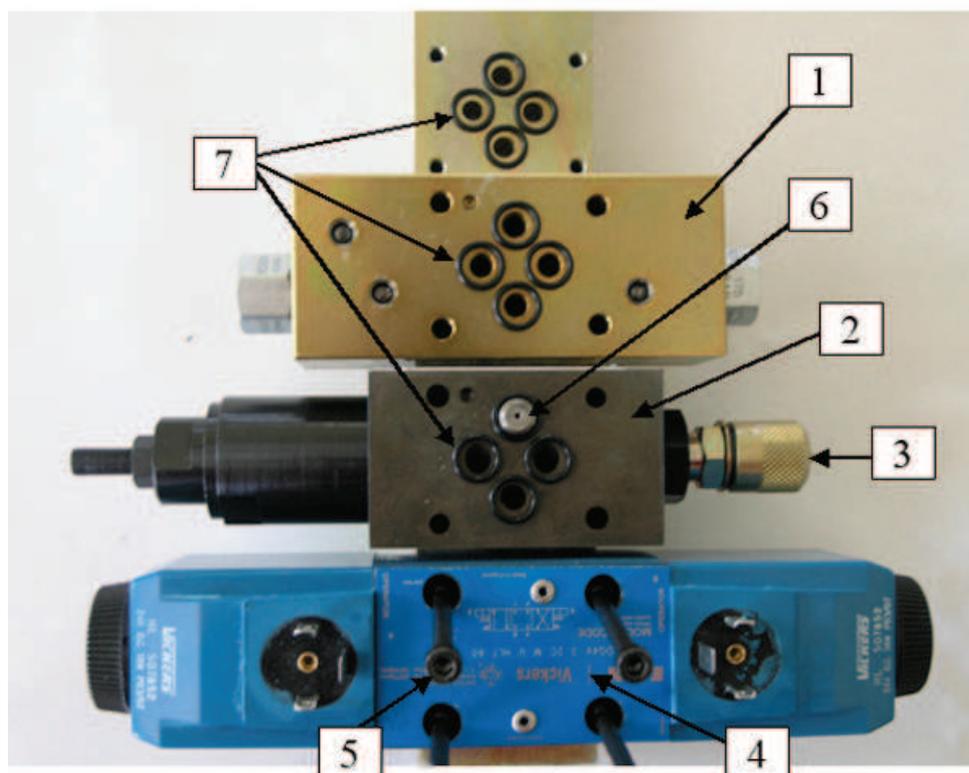
Nr	Code	Part number	Part name	Pcs	Notes
	OKTS5030	-	Sealing kit 50*30	1	
01	280KS	-	Gathering tilt frame	1	
02	GK1	-	Pin	2	
03	LR30X2-471	-	External retaining ring 30x2	2	
04	S1035030Y	-	Cylinder, yellow	1	
05	MK15	-	Pin	1	
06	LR25X2-471	-	External retaining ring 25x2	1	
07	MK14	-	Sleeve	1	
08	MK16B	-	Bushing sleeve	1	
09	MK707	-	Washer	1	
10	W036810	-	Nut-nyloc DIN 985 ZN NM10	1	
11	W00561045	-	Hex screw 933/10.9 M10x45	1	
12	MK4	-	Gathering pad reaction bar	1	

4.7 285E+ Gathering pad cylinder valves



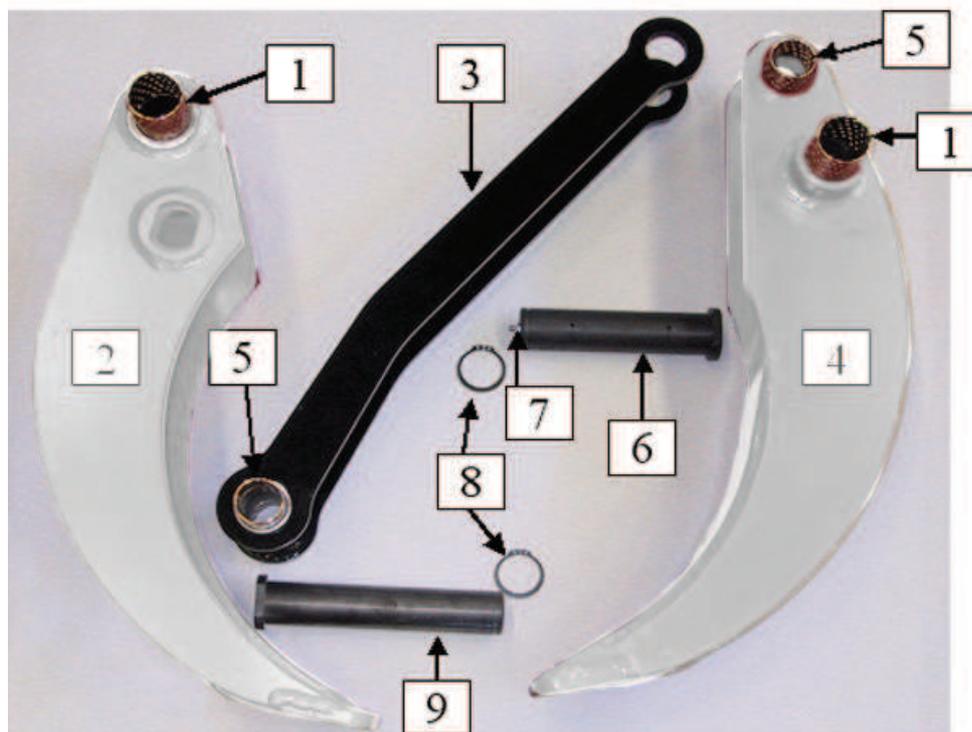
Nr	Code	Part number	Part name	Pcs	Notes
01	DG4V32AMUHL7	-	Directional control valve DG4V-3-2A-MU-HL7-60	1	
02	W0083570	-	Hex socket screw 912/12.9 M5x70	4	
03	DGMX23PPFW	-	Pressure reducer valve DGMX2-3-PP-FW-B-40	1	
04	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	8	
05	MPL-02	-	Pressure measuring fitting 1/8"	1	

5.0 Rotator valves



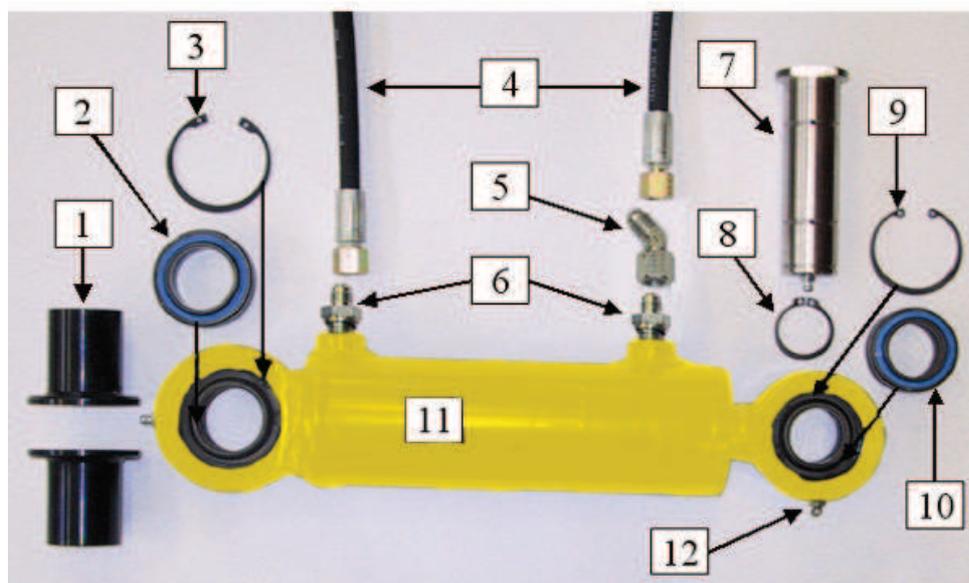
Nr	Code	Part number	Part name	Pcs	Notes
01	V-M50518	-	Relief valve 175bar	1	
02	DGMX23PPFW	-	Pressure reducer valve DGMX2-3-PP-FW-B-40	1	
03	MPL-02	-	Pressure measuring fitting 1/8"	1	
04	DG4V32CMUHL7	-	Directional control valve DG4V-3-2C-MU-HL7	1	
05	W00835110	-	Hex socket screw 912/12.9 M5x110	4	
06	694346	-	Restrictor Vickers 1,5mm	1	P-line
07	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	12	

6.0 Grapple



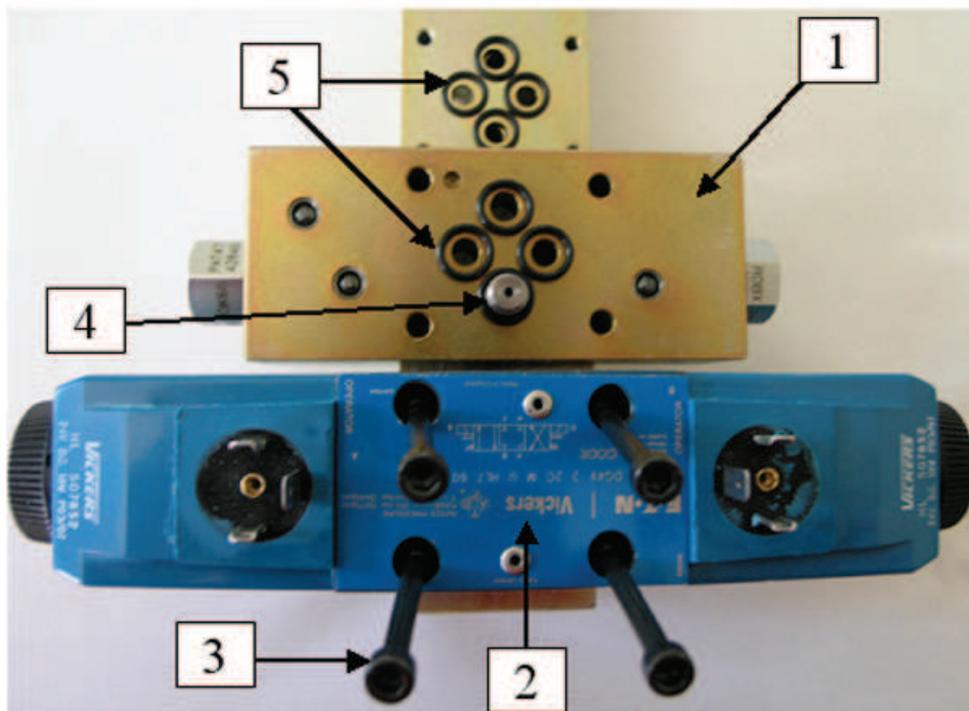
Nr	Code	Part number	Part name	Pcs	Notes
01	LL40x44x50	-	Bushing 40x44x50	4	
02	KL203SP	-	Grapple arm, wide	1	
03	RT203P	-	Reaction bar, grapple	1	10mm pins
03a	1523B	-	Washer	1	
04	KL202	-	Grapple arm, narrow	1	
05	LL35X39X30	-	Bushing 35x39x30	4	
06	205K	-	Grapple pin, short	1	
07	W0986135	-	Grease fitting M8X1,25 DIN 71412	4	
08	LR35X2.5-471	-	External retaining ring 35x2	2	
09	206K	-	Grapple pin, long	1	

6.1 Grapple cylinder



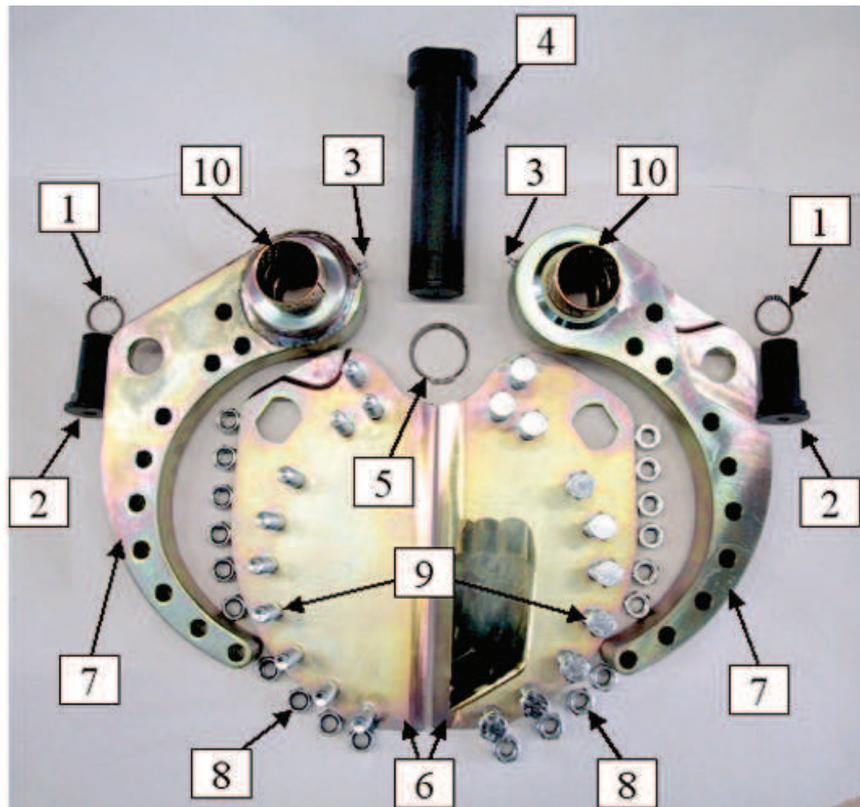
Nr	Code	Part number	Part name	Pcs	Notes
	OKTS7540	-	OK sealing kit 75*40	1	
01	207K	-	Grapple cylinder support sleeve	2	
02	GE40	-	Spherical bearing Ø40 (GE 40 ES-2RS)	1	
03	LR62X2-472	-	Internal retaining ring 62x2	1	
04	E-5	-	Hose 3/8"	2	
05	H0700606	-	Fitting 45° with nut JIC M - F 9/16 - 18	1	
06	H1060606	-	Fitting JIC 9/16-18 - BSP 3/8"	2	
07	205K	-	Grapple pin, short	1	
08	LR35X2.5-471	-	External retaining ring 35x2	1	
09	LR55X2-472	-	Internal retaining ring 55x2	1	
10	GE35	-	Spherical bearing Ø35 (GE 35 ES-2RS)	1	
11	S7540153	-	Cylinder, yellow	1	
12	W0986135	-	Grease fitting M8X1,25 DIN 71412	3	

6.2 Grapple cylinder valve



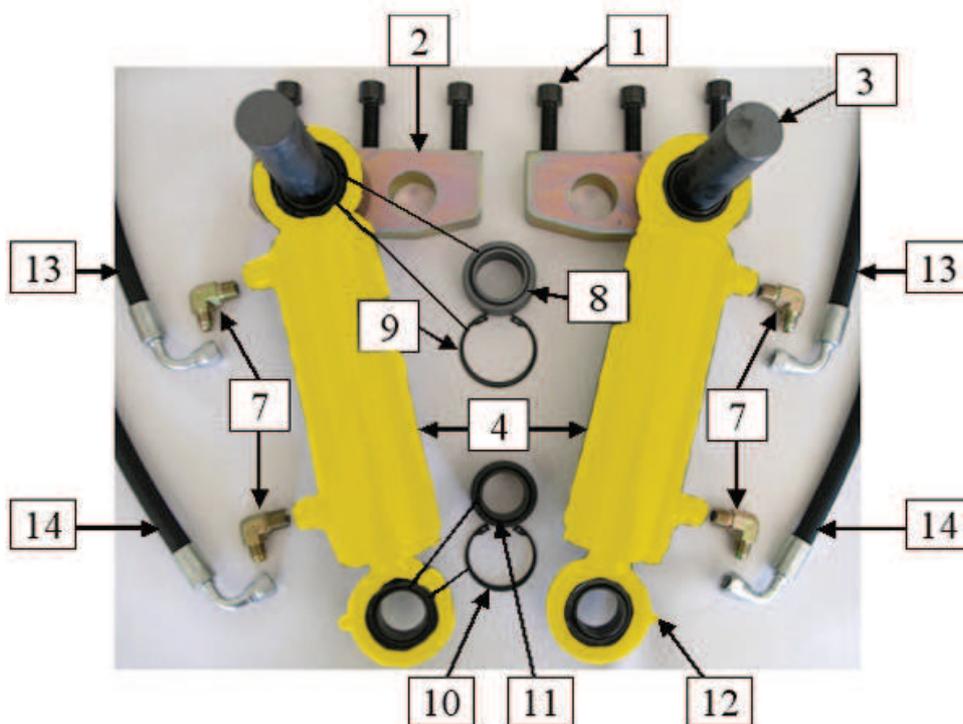
Nr	Code	Part number	Part name	Pcs	Notes
01	V-M50415	-	Relief check valve 230 bar	1	
02	DG4V32CMUHL7	-	Directional control valve DG4V-3-2C-MU-HL7	1	
03	W0083570	-	Hex socket screw 912/12.9 M5x70	4	
04	694349	-	Restrictor Vickers 2,5mm	1	
05	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	8	

7.0 Scissor blades



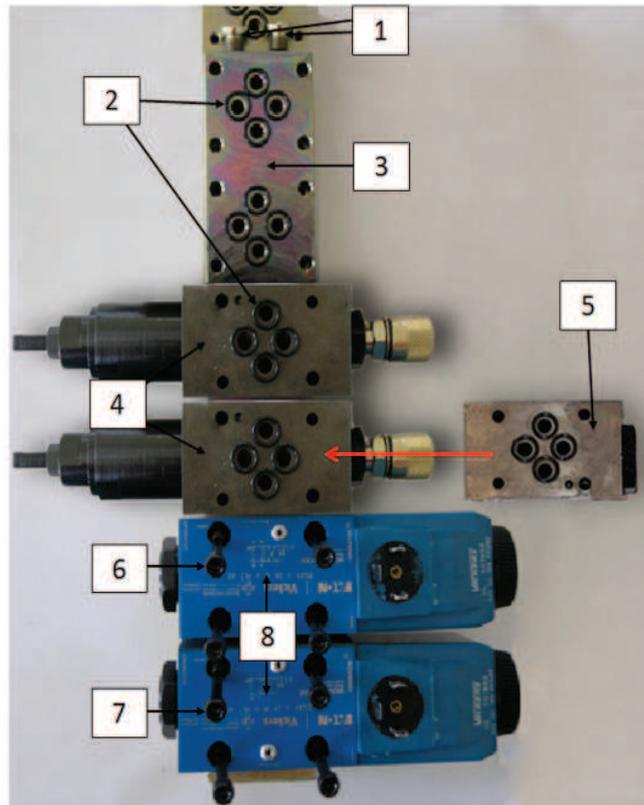
Nr	Code	Part number	Part name	Pcs	Notes
01	LR35X2.5-471	-	External retaining ring 35x2	2	
02	GK13-1	-	Pin	2	
03	W0986135	-	Grease fitting M8X1,25 DIN 71412	2	
04	GK7	-	Shaft	1	
05	LR55X3-471	-	External retaining ring 55x3	1	
06	GS	-	Cutting blade standard	2	
07	G6-S2	-	Cutting blade frame	2	
08	W036816	-	Nut-nyloc DIN 985 ZN M16	20	
09	W10531680	-	Hex screw 931/8.8 ZN M16x80	20	
10	LL55x60x40	-	Bushing 55x60x40	4	

7.1 Scissor cylinders and equipment



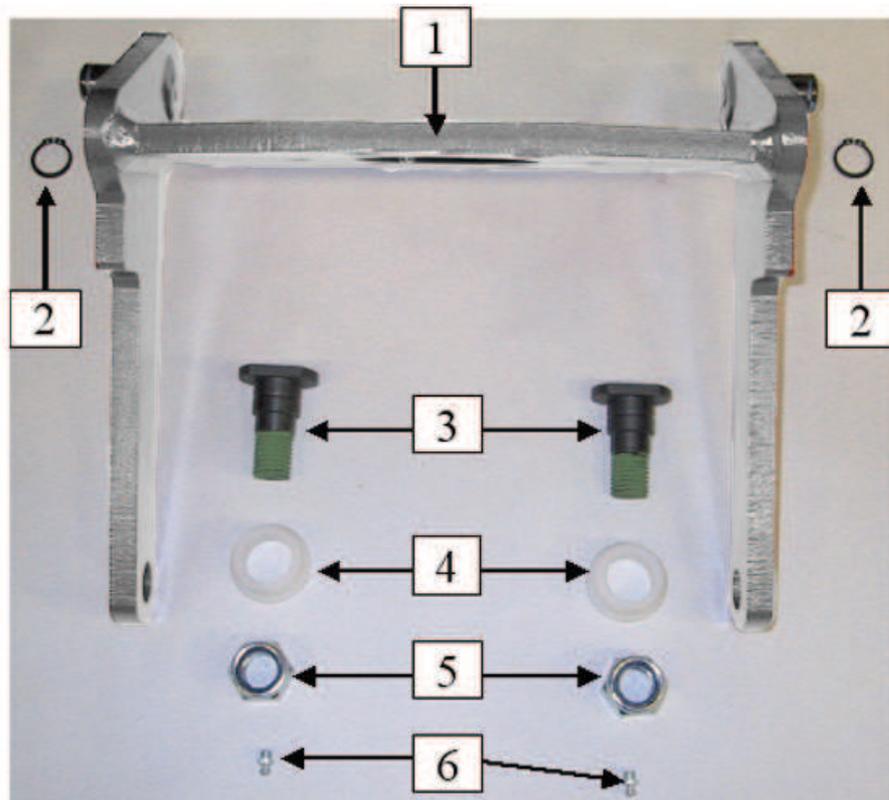
Nr	Code	Part number	Part name	Pcs	Notes
	OKTS7540	-	OK sealing kit 75*40	2	
01	W00831645	-	Hex socket screw 912/12.9 M16x45	6	
02	GK15	-	Attachment plate	2	
03	GK12	-	Pin	2	
04	S7540153	-	Cylinder, yellow	2	
07	H3100606	-	Fitting 90° M JIC 9/16-18 - M BSPT 3/8"	4	
08	GE40	-	Spherical bearing Ø40 (GE 40 ES-2RS)	2	
09	LR62X2-472	-	Internal retaining ring 62x2	2	
10	LR55X2-472	-	Internal retaining ring 55x2	2	
11	GE35	-	Spherical bearing Ø35 (GE 35 ES-2RS)	2	
12	W0986135	-	Grease fitting M8X1,25 DIN 71412	4	
13	E-5	-	Hose 3/8"	2	
14	E-7	-	Hose 3/8"	2	

7.2 Scissor cylinder valves



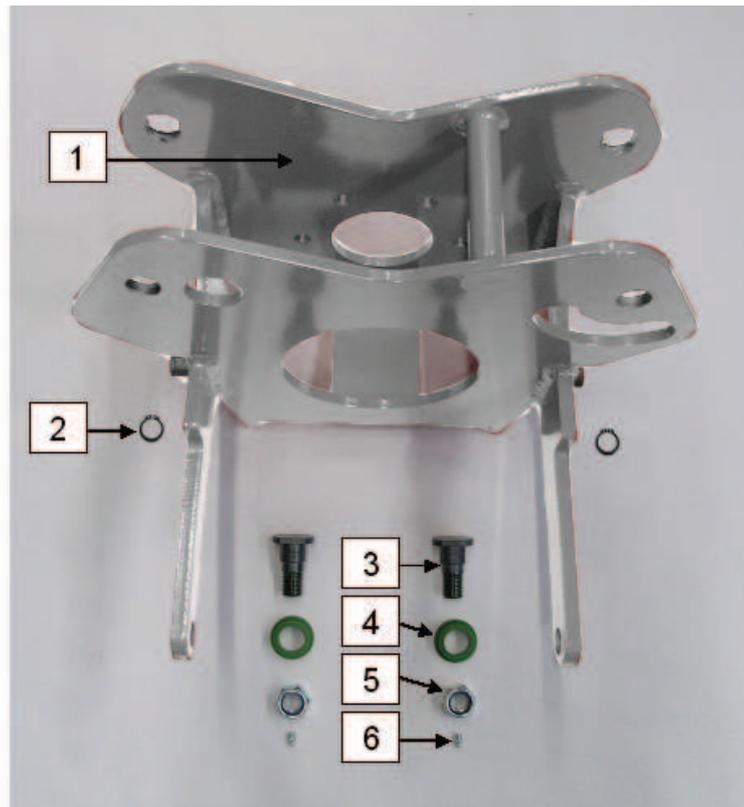
Nr	Code	Part number	Part name	Pcs	Notes
01	H02602	-	Hex socket plug 1/8"	2	Glued
02	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	20	
03	GLY	-	Intermediate block	1	
04	DGMX23PPFW	-	Pressure reducer valve DGMX2-3-PP-FW-B-40	2	
05	DGMDC3YPK	-	Check valve DGMDC-3-Y-PK-41	1	
06	W0083590	-	Hex socket screw 912/12,9 M5x90	4	
07	W00835130	-	Hex socket screw 912/12,9 M5x130	4	
08	DG4V32AMUHL7	-	Directional control valve DG4V-3-2A-MU-HL7-60	2	

8.0 Tilt frame 285E



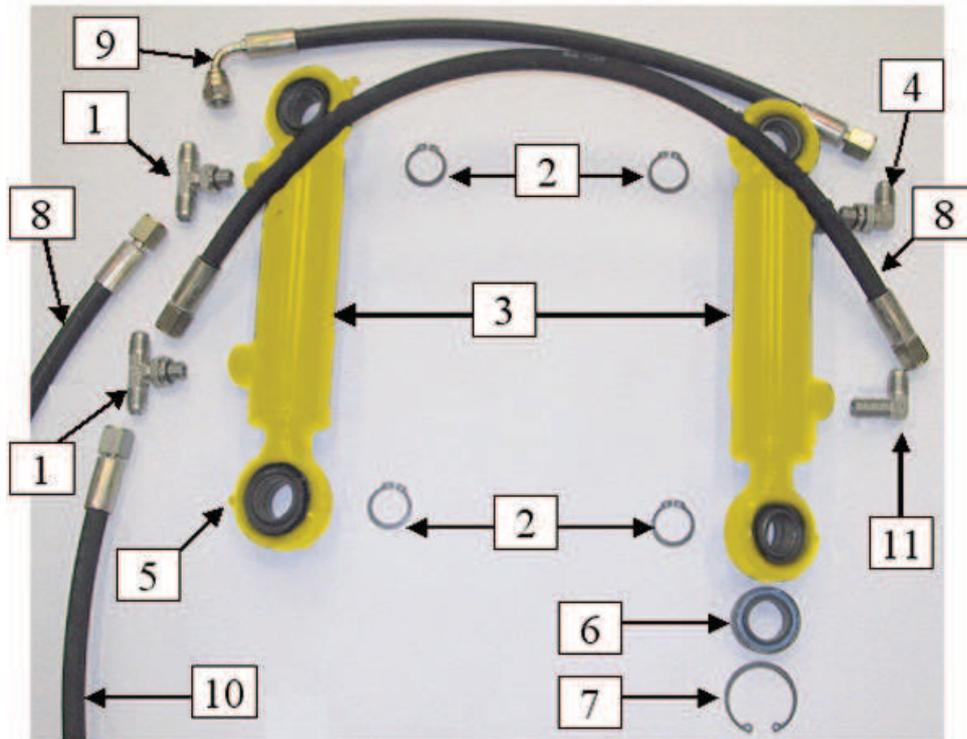
Nr	Code	Part number	Part name	Pcs	Notes
01	G5	-	Tilt frame	1	
02	LR25X2-471	-	External retaining ring 25x2	2	
03	GK5	-	Pin	2	
04	GK6	-	Bushing	2	
05	W036824	-	Nut-nyloc DIN 985 ZN NM24	2	
06	W0986135	-	Grease fitting M8X1,25 DIN 71412	2	

8.05 285E+ Gathering tilt



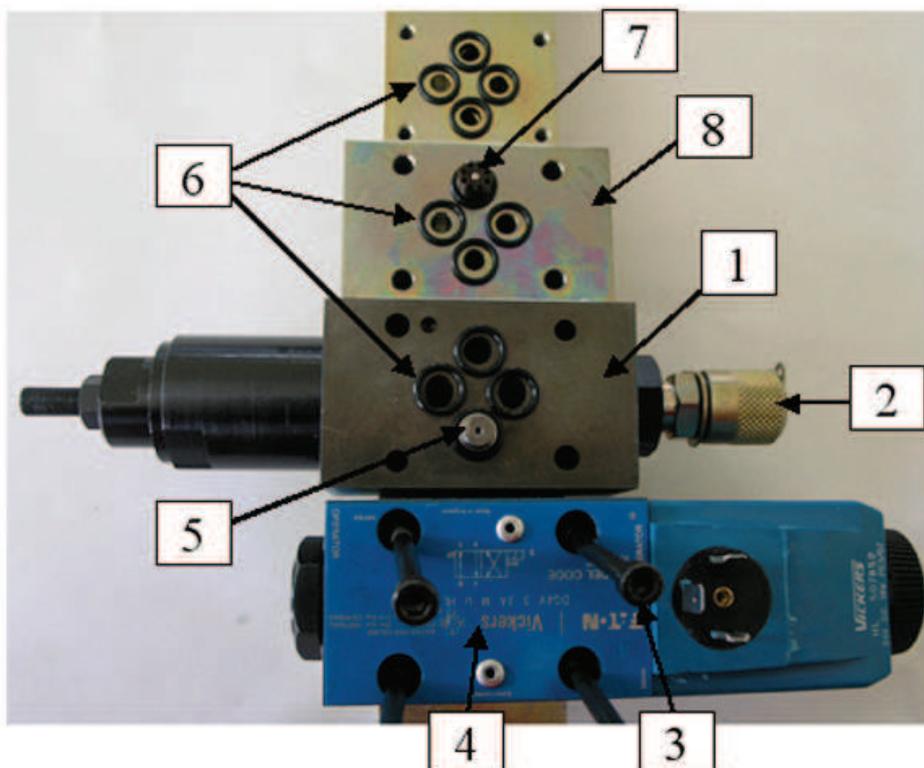
Nr	Code	Part number	Part name	Pcs	Notes
01	280KS	-	Gathering tilt frame	1	
02	LR25X2-471	-	External retaining ring 25x2	2	
03	GK5	-	Pin	2	
04	GK6	-	Bushing	2	
05	W036824	-	Nut-nyloc DIN 985 ZN NM24	2	
06	W0986135	-	Grease fitting M8X1,25 DIN 71412	2	

8.1 Tilt cylinders



Nr	Code	Part number	Part name	Pcs	Notes
	OKTS4025	-	OK sealing kit 40*25	2	
01	H4060604	-	Adjustable T-fitting JIC 9/16-18 - BSP 1/4"	2	
02	LR25X2-471	-	External retaining ring 25x2	4	
03	S0954025Y	-	Cylinder, yellow	2	
04	H3060604	-	Fitting 90° M JIC 9/16-18 - M BSP 1/4"	1	
05	W0986135	-	Grease fitting M8X1,25 DIN 71412	4	
06	GE25	-	Spherical bearing Ø25	4	
07	LR42X1.75-472	-	Internal retaining ring 42x1,75	4	
08	MA-4	-	Hose 1/4"	2	
09	MA-20	-	Hose 1/4"	1	
10	MA-7	-	Hose 1/4"	1	
11	H3100604	-	Fitting 90° M JIC 9/16-18 - M BSPT 1/4"	1	

8.2 Tilt cylinder valves



Nr	Code	Part number	Part name	Pcs	Notes
01	DGMX23PPFW	-	Pressure reducer valve DGMX2-3-PP-FW-B-40	1	
02	MPL-02	-	Pressure measuring fitting 1/8"	1	
03	W0083590	-	Hex socket screw 912/12.9 M5x90	4	
04	DG4V32AMUHL7	-	Directional control valve DG4V-3-2A-MU-HL7-60	1	
05	694346	-	Restrictor Vickers 1,5mm	1	T-line
06	OR9.25X1.78-90	-	O-ring 9.25x1.78 90 shore	12	
07	RK0PYD	-	Check valve 1/8"	1	
08	PVVR	-	P - check valve block	1	

