M A N U A L

O N

TREE SPADE OPTIMAL 36.25

3625039 -

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C O N T E N T S

WARNING **Operator must have read and understood instructions before running the tree spade. Untrained operators can cause injury or death.**

Safety Alert Symbol: This symbol is used for important safety messages. When you see this symbol, follow the message to avoid personal injury or death.

Never use tree spade without instructions. See machine signs (decals), and Operation & Maintenance Manual of tree spade. The operation instructions for power unit must be followed.

Before starting operations, bolts and hydraulic fittings must be checked to make sure they are free of damage and well tightened. Defective or loose hose pipes might cause serious injuries and therefore must be replaced immediately.

The operator is responsible for ensuring that no person is near the tree spade when in operation.

No one should be underneath the raised tree spade or near shearing and pinching areas, or near any hydraulic components. We are advising the user that due to their functional positions and movements the danger areas cannot be furnished with protective guards.

Keep bystanders well away from work area.

Do not perform any manual work on the tree or shrub when it is inside the tree spade. In particular, do not check the position of the tree or shrub by hand or feet when it is inside the tree spade. Do not tie the tree or shrub when it is near or inside the machine.

When sight is limited, an assistant should direct the operator by hand signals.

When driving, the tree spade should be in the lowest possible position.
When moving and working on public roads, the traffic rules and regulations must be adhered to.

Never leave power unit with engine running or with lift arms up.

To park, engage parking brake and put tree spade flat on the ground.

When doing cleaning, maintenance or repair work, lower the tree spade to the ground and stop the engine of the power unit.

Never modify equipment. Use only original spare parts approved by manufacturer for this particular model tree spade.

When digging, it might happen that a stone gets caught between two blades and the blades get bent. This causes tremendous tension in the steel blade. Do not try to release the stone by means of a crow bar or other tools. Place the digging head again into the planting hole and retract the blades. Thereby the stone will come loose and the blades which got a high degree of bending strength will regain their former shape. After that the root ball can be dug again.

The operator must be sure that the ground he is going to dig is free from any underground installations such as cables, pipes or any other utilities or dangerous matter. Damaging such underground installations or matter is dangerous and might result in serious injury or death.

Safety stickers have been placed on the tree spade to warn the user of possible dangers. In case a safety sticker has been worn or destroyed, it must be replaced immediately.
Safety stickers can be ordered with your distributor or the manufacturer. For ordering please use the part numbers listed on page 2A. Fix the stickers on the locations marked on page 2A.

1. Tower:

Part N° 7118000001

Part N° 7118000008

Part N° 7118000015

5. Gate Cylinder:

Part N° 7118000007

2. Tower:

Part N° 7118000001

Part N° 7118000012

Part N° 7118000020

Part N° 7118000018

7. Frame:

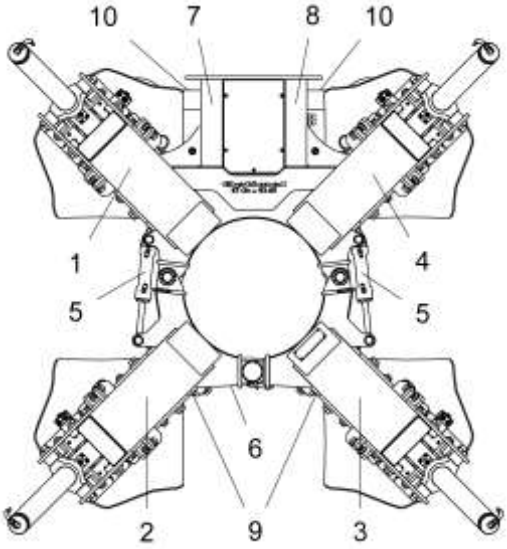
Part N° 7118000044

Part N° 7118000006

Part N° 7118000010

8. Frame

Part N° 7118000068



6. Lock Cylinder:

Part N° 7118000019

9. Tower:

Part N° 1778000003

10. Frame:

Part N° 7118000029

4. Tower:

Part N° 7118000001

Part N° 7118000009

Part N° 7118000016

5. Gate Cylinder:

Part N° 7118000007

3. Tower:

Part N° 7118000001

Part N° 7118000014

Part N° 7118000017

Part N° 7118000013

1. Operating Specifications

Description	**Tree Spade OPTIMAL 36.25**		
serial number	**3625**		
capacity	upper root ball diameter	94 cm	(37")
	root ball depth	80 cm	(31,5")
dimensions of basic machine	height	178 cm	(70")
	width, frame closed	181 cm	(71")
	width, frame open	283 cm	(111")
	clearance between open gate	76 cm	(30")
weight	basic machine, empty	940 kg	(2068 lbs.)
rated type of attachment	attachment by means of back plate to loader or excavator		
	minimum lift capacity	3500 kg	(5000 lbs.)
	the power unit must be equipped with an auxiliary double-acting hydraulic circuit for implements:		
	working pressure	160 - 200 bar	(2300-2900 lbs/in²)
	oil flow rate	40 - 60 l/min.	(11 - 16 GPM)
controls	electro-hydraulic valves, double-acting, individual spade control; actuation by electric control box; max. power input 10 Ampere		
field of application	tree nurseries; gardens; civic greens		

2. Assembly

⚠ **IMPORTANT:** When doing assembly work, heed relevant instructions of manufacturers of power unit!

2.1 Back Plate

The tree spade is attached to the power unit by means of a back plate. The back plate is procured from the manufacturer of the power unit, or it might be fabricated according to the drawings and instructions of the manufacturer of the power unit.

The back plate is to be furnished with borings as per drawing page 16. At these attachment points the tree spade is bolted tightly to the back plate.

2.2 Installation of Electro-Hydraulic Control *(wiring diagram page 17/18)*

2.2.1 Install control box at suitable place in the cabin, e.g. at dashboard

2.2.2 Install 13-pole socket next to the push-on connector for the implement hydraulics. A mounting bracket has been provided.

2.2.3 Run 12-pole cable from control box to 13-pole socket.

2.2.4 The control box must be connected to the power supply (12V) of the power unit.

Important: Electric power should be flowing only when the ignition of the power unit is activated, otherwise the battery may run down.
Maximum power input 10 Ampere !

Now the tree spade is ready for operation.

3. Putting into Service

The tree spade with the back plate is attached and secured to the power unit.

Both the hydraulic connecting hoses of the tree spade are to be connected to the hydraulic disconnect of the auxiliary hydraulic circuit of the power unit.

The plug of the electric control cable is to be plugged into the socket on the power unit (see section 2.2.2).

Make sure that hydraulic working pressure and oil flow of power unit meets the requirements as laid down in the operating specifications on page 5.

⚠ **IMPORTANT:** The hydraulic disconnect of the tree spade and the power unit must match and must be connected properly. Faulty connections are extremely dangerous.

After the first working day, the screws of the tension blocks must be checkedand re-tightened, if necessary.

When operating the power unit, follow the instructions of the operating manual of the power unit !

4. Operating Instructions

IMPORTANT: The Operator must be a reliable person. Before commencing production work, he or she must study these operating instructions thoroughly.

The following safety instructions must be observed:

It is the operator's prime duty to ensure that any persons must stay clear off the danger area. Special care must be taken that no one is ever under the raised tree spade, or near the potential shearing and pinching areas, or near the opened gate, near the spades or near any hydraulic components.

Do not perform any manual work at the tree or shrub when it is inside the tree spade. In particular, do not check the position of the tree or shrub by hand or feet when it is inside the tree spade. Do not bind the tree or shrub when it is near or inside the machine.

When sight is limited, an assistant should direct the operator by hand signals.

Before starting to work with the tree spade, make sure the hydraulic fittings and the bolts are properly tightened and are free from any defects.

4.1 Control Box

The work movements are controlled as follows:

Pre-Selector		Manual Controls (hydraulic)
0 :	control box switched off (LED light indicates when gate is not locked)	
function 1 :	gate lock	unlock / lock
function 2 :	gate	open / close
function 3 :	blades	up / down
function 4 :	stabilizers (optional)	up / down

The control box is installed in the driver's cabin. The function required is preset with the pre-selector of the control box, and it is then activated by means of the manual control lever or pedal respectively.

The tree spade is equipped with individual blade control as standard, i.e. each blade can be controlled individually with toggle switches S1, S2; S3 and S4.
Individual blade control is of particular advantage when soil conditions are difficult.

Pre-Selector

4.2 Operation

4.2.1 Lower the tree spade with the lift arms of the power unit until the blade points are about 20 cm (8") above the ground.

4.2.2 To open the gate, the gate lock must be unlocked first:

pre-selector:	function 1, gate lock
manual control:	unlock

4.2.3 Now the gate can be opened:

pre-selector:	function 2, gate
manual control:	open

4.2.4 With the gate wide open, the tree spade is driven towards the tree to be dug. Position the tree into the centre of the circular frame of the tree spade, then close the gate:

pre-selector:	function 2, gate
manual control:	close

4.2.5 Lock the gate:

pre-selector:	function 1, gate lock
manual control:	lock

It is of utmost importance to lock the gate before digging. It must never be forgotten because digging with an unlocked gate will bend the frame!
A safety switch ensures that the tree spade digs only when the gate is properly locked. Furthermore, a red control lamp will light up to indicate that the gate is not locked.

4.2.6 When having locked the gate, the tree spade is lowered to the ground and brought into a level position by means of the lift arms of the power unit.
Again check if the tree is positioned in the centre of the frame, and correct, if necessary.

4.2.7 In case the power unit had been furnished with rear stabilizers of its own, extend rear stabilizers with the respective control valve of the power unit.
But in case stabilizers have been installed with the tree spade and they are controlled by Optimal control box, extend rear stabilizers by setting

pre-selector:	function 4 (optional), rear stabilizers
manual control:	down

4.2.8 Now proceed with digging:

pre-selector:	function 3, blades (S1-S4)
manual control:	down

The blades are pressed into the soil by means of spade cylinders suspended at the spade towers. When all four blades are activated simultaneously, only the blades which encounter the least soil resistance are moving at a given time.
In the event the tree spade lifts from the ground, retract the blades slightly (manual control: "up") and then dig again, or press the blades down one by one, or by opposite pairs. In either case, the digging movements must be carried out step by step, until all blades are completely pressed into the soil. **When digging, <u>do not</u> rock the tree spade forward and backward by means of the tilting cylinder of the power unit!**

4.2.9 Once all blades have been completely pressed into the soil, the tree spade with the planting material is lifted out of the ground by means of the lift arms of the power unit.

4.2.10 The root ball is lowered by means of the lift arms of the power unit.
Then the gate is unlocked:

pre-selector:	function 1, gate lock
manual control:	unlock

and the gate is opened:

pre-selector:	function 2, gate
manual control:	open

4.2.11 The rear stabilizers are retracted with the control valve of the loader, or with the optional function 4 (up) of the pre-selector.

4.2.12 When work has been accomplished, the pre-selector is set to 0.

⚠ **IMPORTANT:** When moving and working on public roads, the traffic rules and regulations must be adhered to.

When driving, the tree spade should be in the lowest possible position.

When digging, it might happen that a stone gets caught between two blades and the blades get bent. This causes tremendous tension in the steel blade. Do not try to release the stone by means of a crow bar or other tools.
Place the digging head again into the planting hole and retract the blades. Thereby the stone will come loose and the blades which got a high degree of bending strength will regain their former shape. After that the root ball can be dug again.

4.3 Releasing the Tree

When transplanting, or when placing the tree in a basket, lower the tree spade by means of the lift arms, retract spades (function 3 “blades” , control valve “up”) then unlock gate (function 1 "gate lock", control valve "unlock") and open gate (function 2 "gate", control valve "open").

When the work has been finished, set the pre-selector in off-position (function 0).
If the tree spade is controlled by means of a joy stick, the hydraulics are off when no button is being pressed.

5. Care and Maintenance

⚠ **IMPORTANT:** Tree spade must be lowered to the ground and switched off when doing cleaning, maintenance or repair work !

Use original spare parts only !

The tree Spade must be inspected by an expert on operational safety once per year !

Do not alter the design of the tree spade without having consulted the manufacturer !

Check screws regularly on tight fit. Tighten firmly, if necessary !

5.1 Blade Guides

Thanks to the plastic lining the spade guides do not require special care.
Once the plastic lining has been worn, to the point were the heads of the countersunk screws are even with the surface of the plastic linings, they must be replaced to prevent the screws from damaging the blades.

⚠ **IMPORTANT:** Keep the guides cleaned.

5.2 Lubrication

Once per week lubricate all greasing points with lithium-based grease, as per lubrication chart, Page 20

5.3 Hydraulic Oil Supply

Check level of hydraulic oil regularly. For checking, retract all blades “up” and lower the tree spade to the ground. If in that position the oil level is below the mark of the sight glass, oil must be refilled.

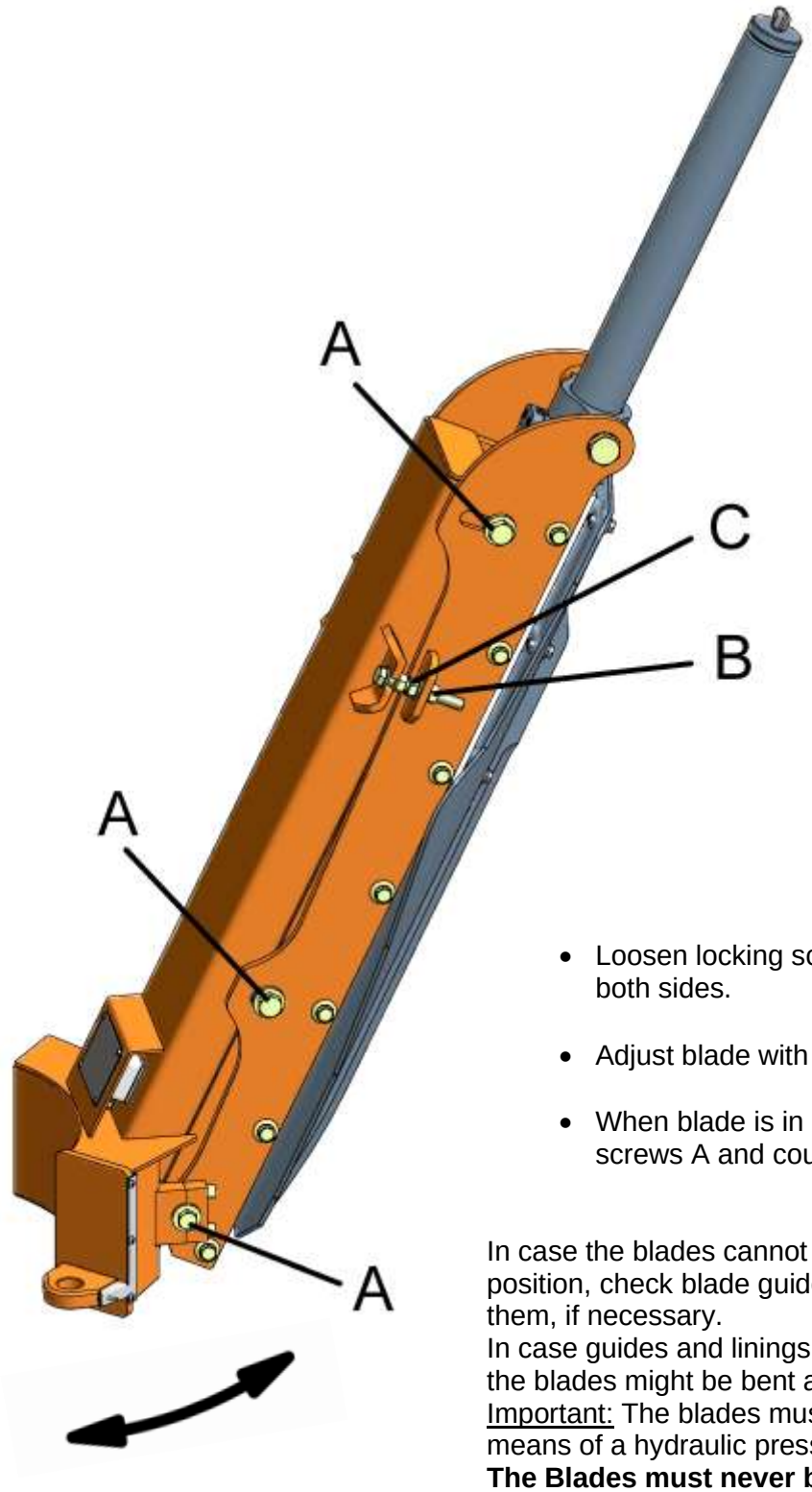
5.4 Hydraulic Hoses

All hydraulic hoses must be inspected at least once per year. Damaged hoses must be replaced. At least after 6 years all hoses must be replaced.

5.5 Cylinders

In case the tree spade is not getting used for two weeks, all piston rods of the hydraulic cylinders must be cleaned and covered with a preserving oil film.

5.6 Adjusting Blades



- Loosen locking screws A and counter nuts B at both sides.
- Adjust blade with nuts C (M16).
- When blade is in proper position, tighten locking screws A and counter nuts B.

In case the blades cannot be adjusted to the required position, check blade guides and plastic linings. Replace them, if necessary.
In case guides and linings are in good condition, the tip of the blades might be bent and must be reshaped.
Important: The blades must be bent in **cold** condition by means of a hydraulic press.
The Blades must never be heated!!!

5.7 Replacing Plastic Bushings at Gate Cylinder

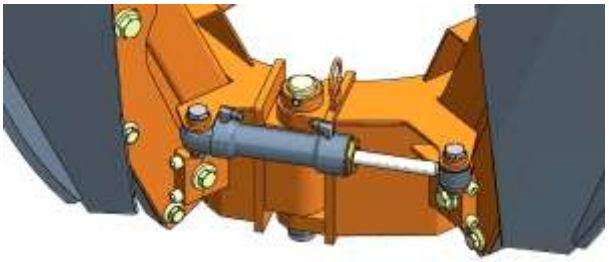


Illustration 6

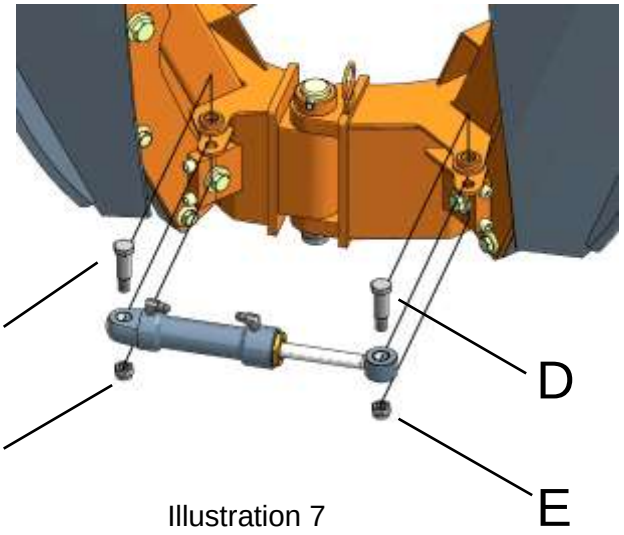


Illustration 7

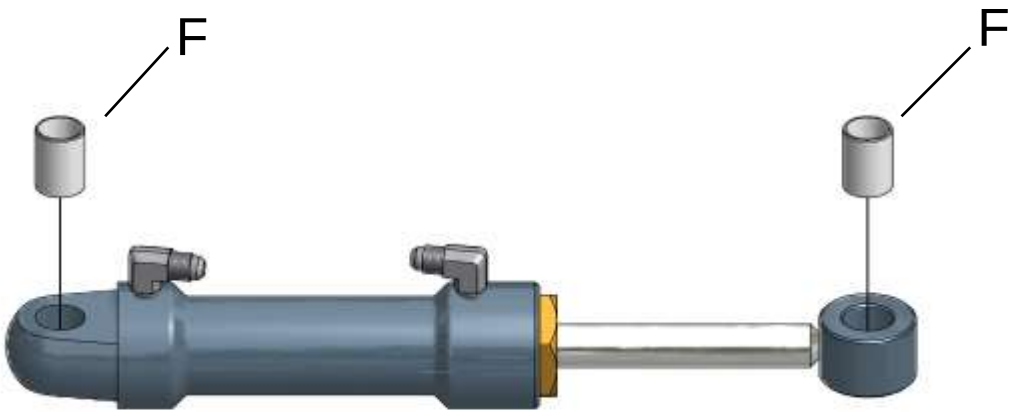


Illustration 8

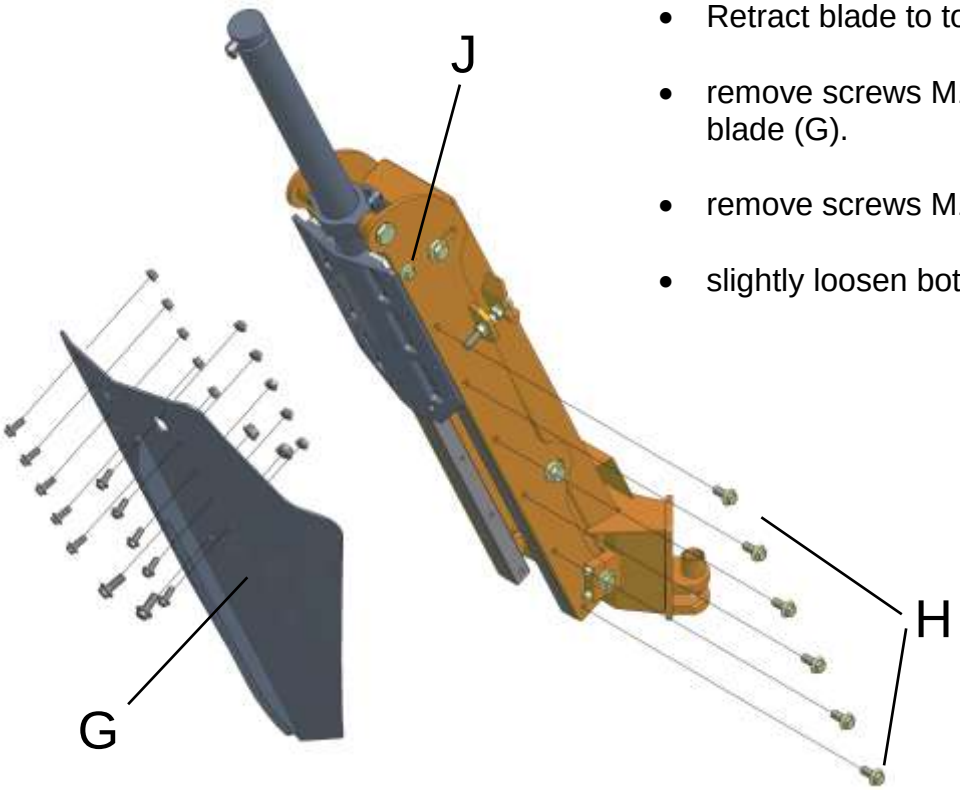
Illustration 6: Overall view of gate cylinder in position.

Illustration 7: Loosen nut M16 (E) and remove shoulder bolt M16 (D). If necessary, remove hydraulic hoses, too.

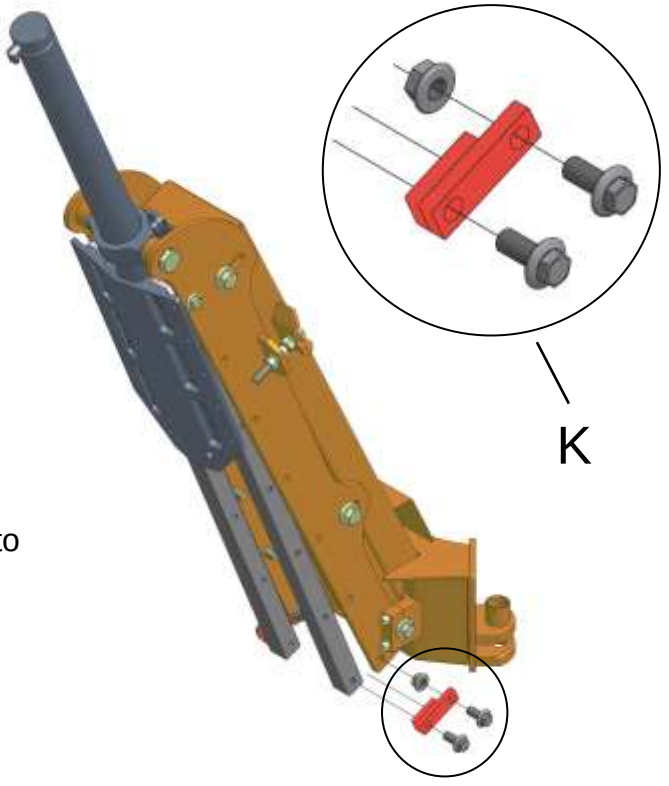
Illustration 8: Remove plastic bushings (F) with suitable object and insert new bushings.

Then reassemble gate cylinder, shoulder bolt, nut and, if applicable, hydraulic hoses.

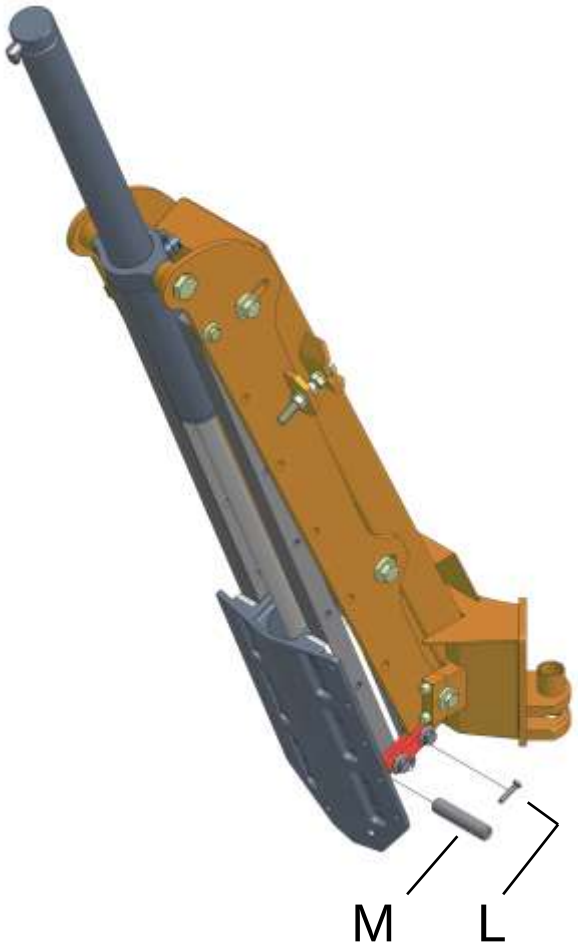
5.8 Replacing Plastic Lining at Blade Guides



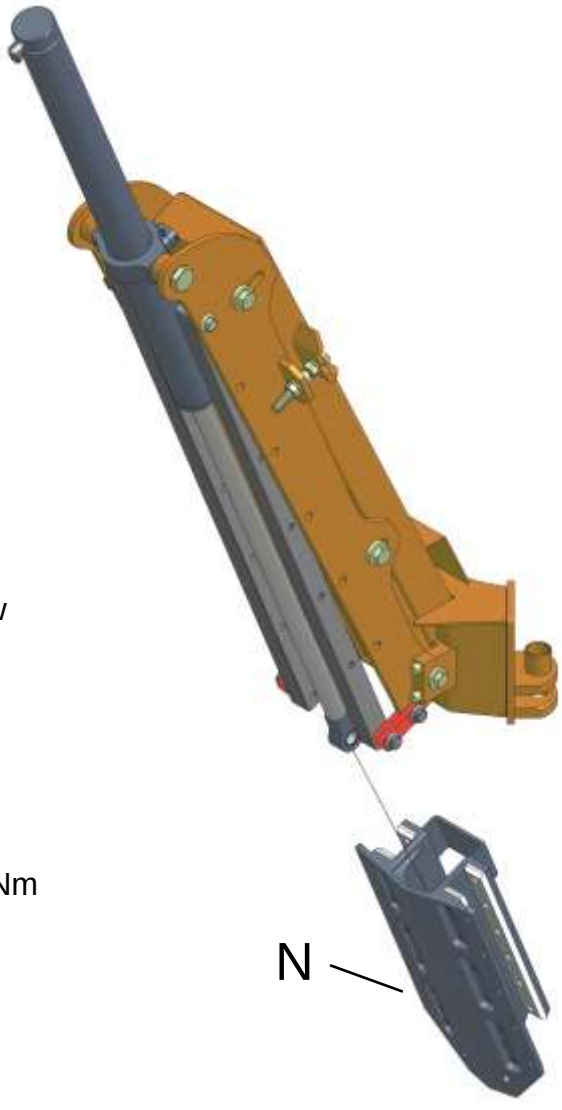
- Retract blade to top position
- remove screws M12 and M16; remove blade (G).
- remove screws M16 (H) at both sides.
- slightly loosen both screws (J) at top.



- Pull guides at bottom a bit offside to be able to install spacer (K).



- move blade guide to lowest bottom position
- remove screw (L) and remove blade pin (M).

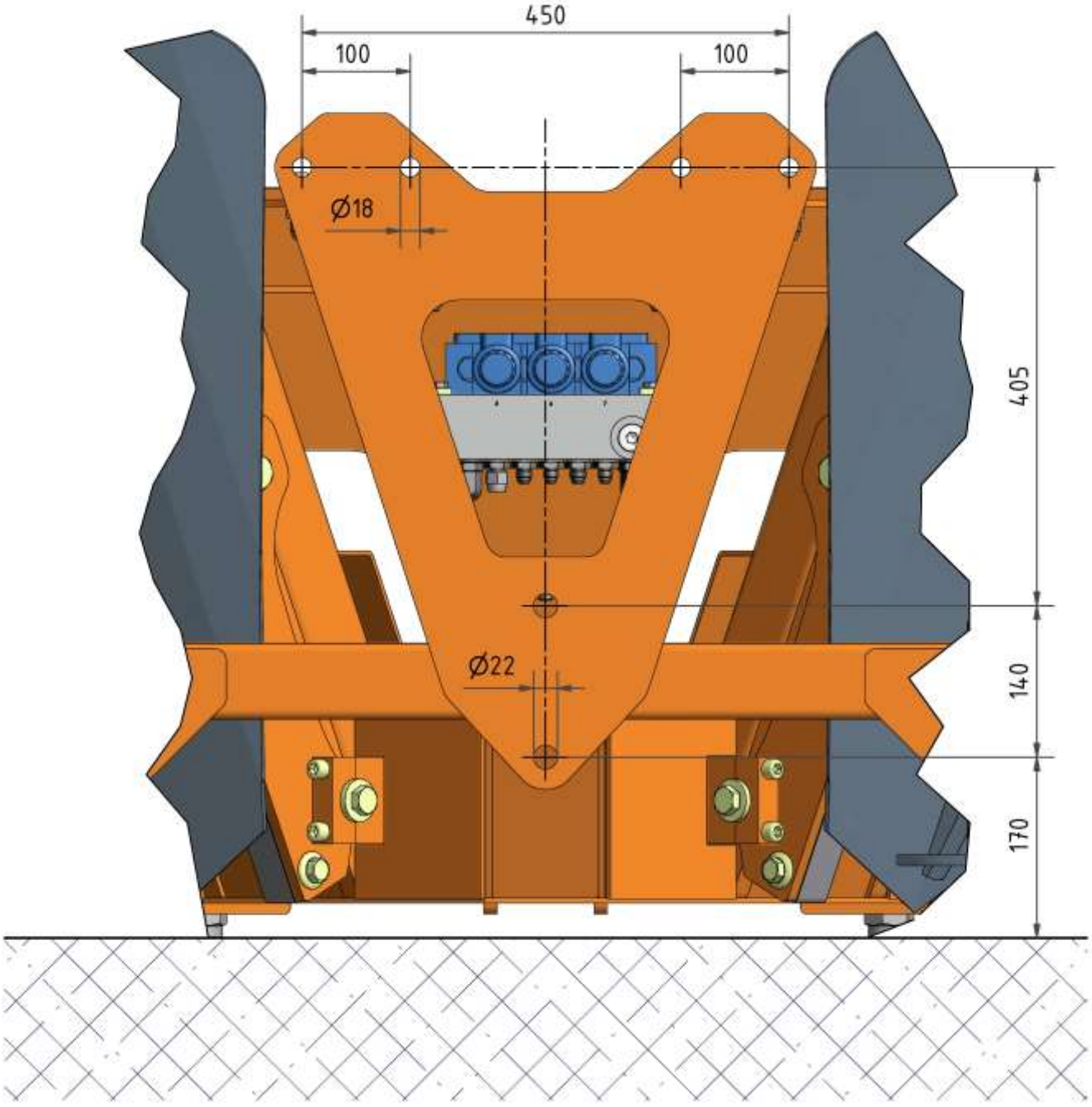


- draw blade guide (N) down until free.
- replace worn plastic linings and screws by new original parts.
- installation is done in the reverse order.

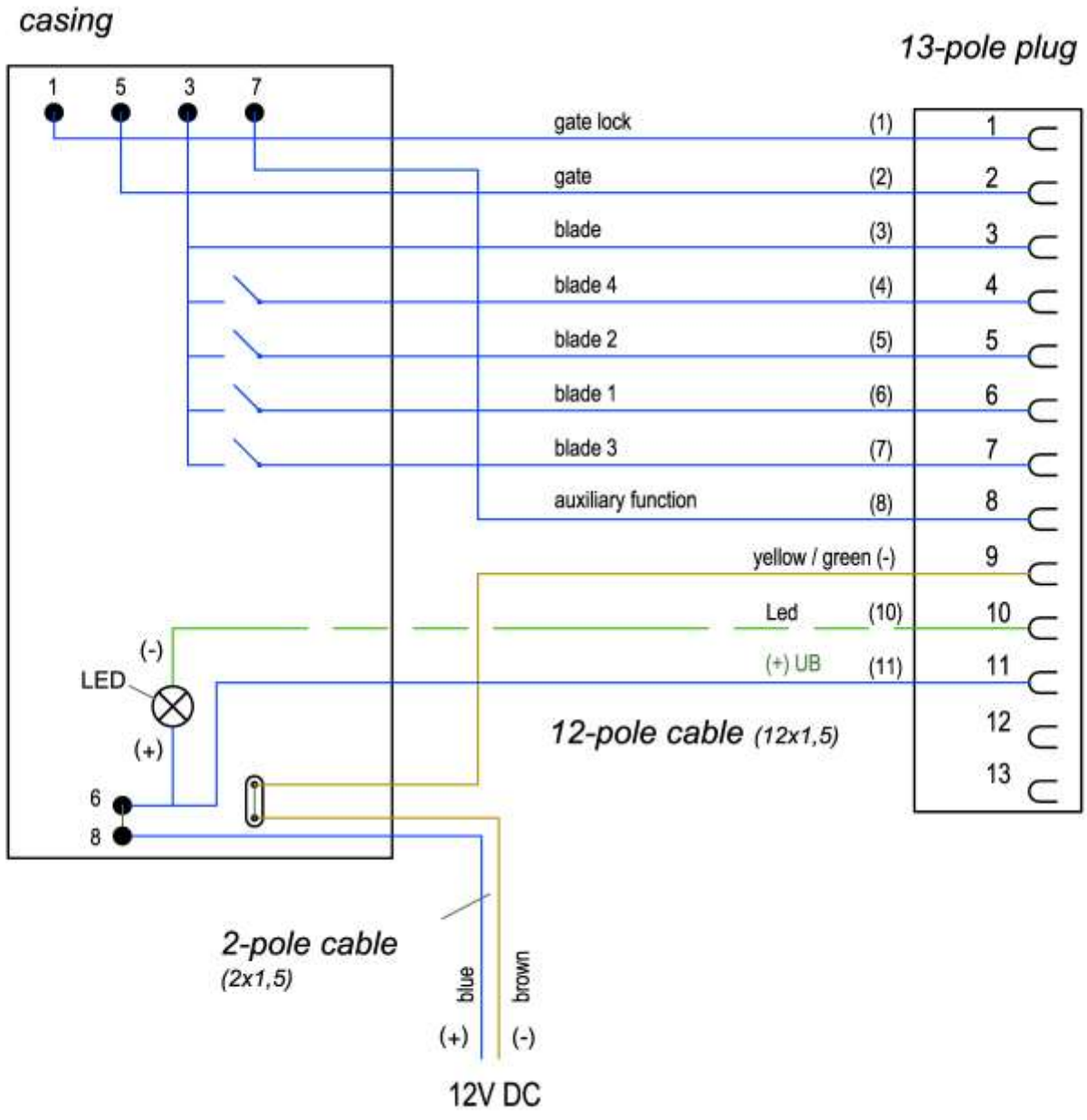
Tightening torque:

- screws to fasten Führungsleisten (J+H): 210 Nm
- screws to fasten blade M16: 210 Nm
- screws to fasten blade M12: 125 Nm

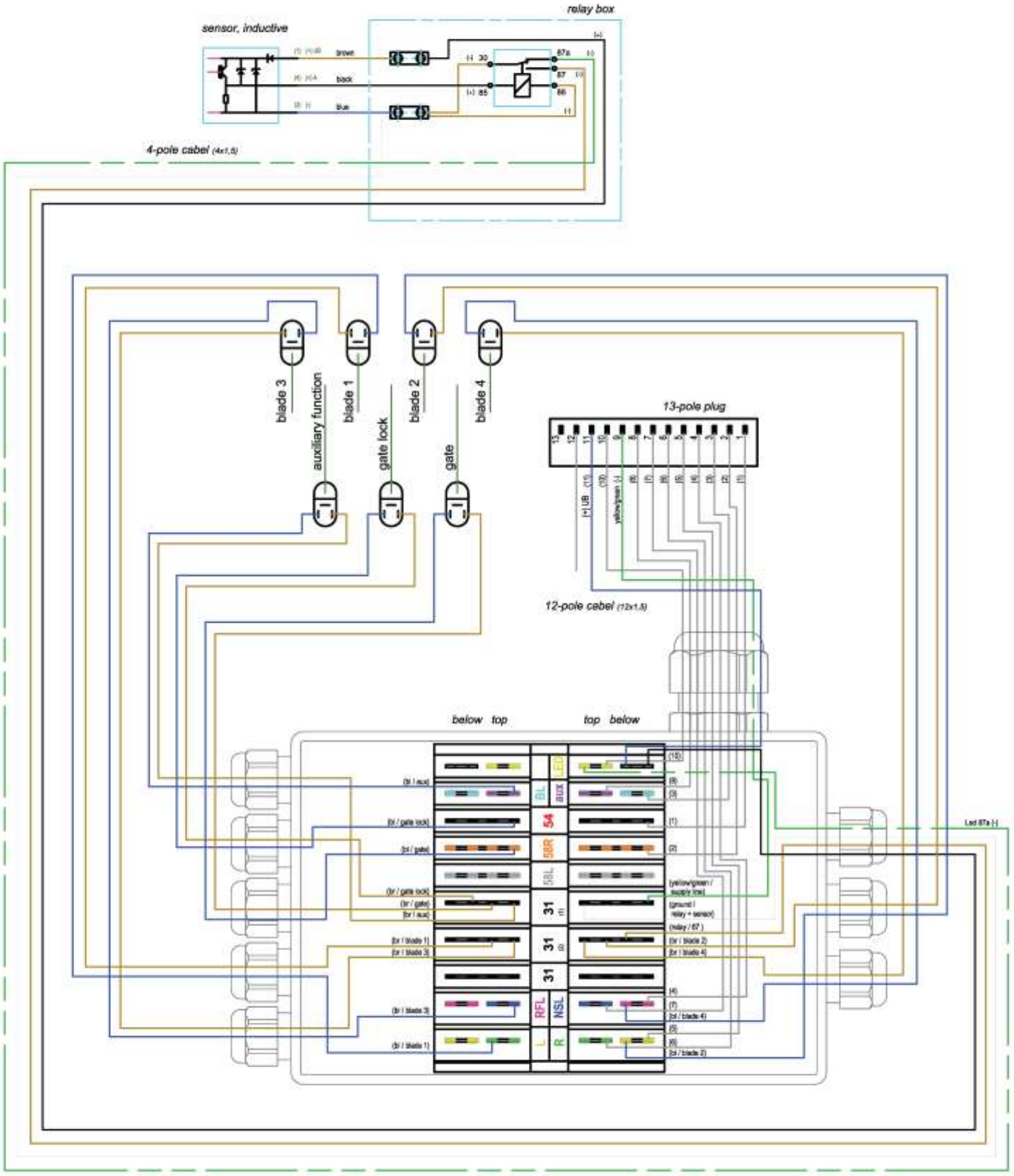
6.1 Attachment points



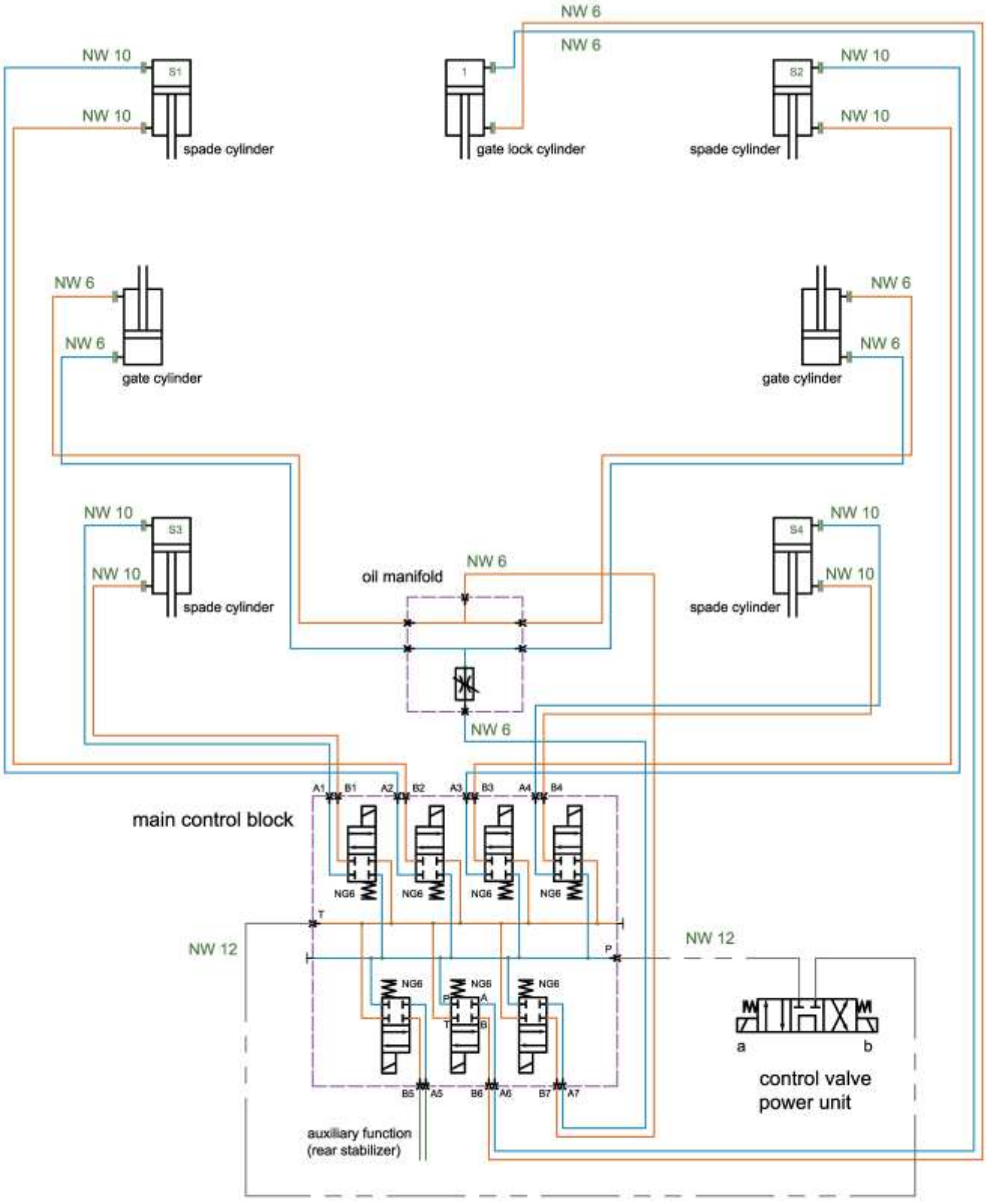
6.2 Wiring Diagram for Control Box



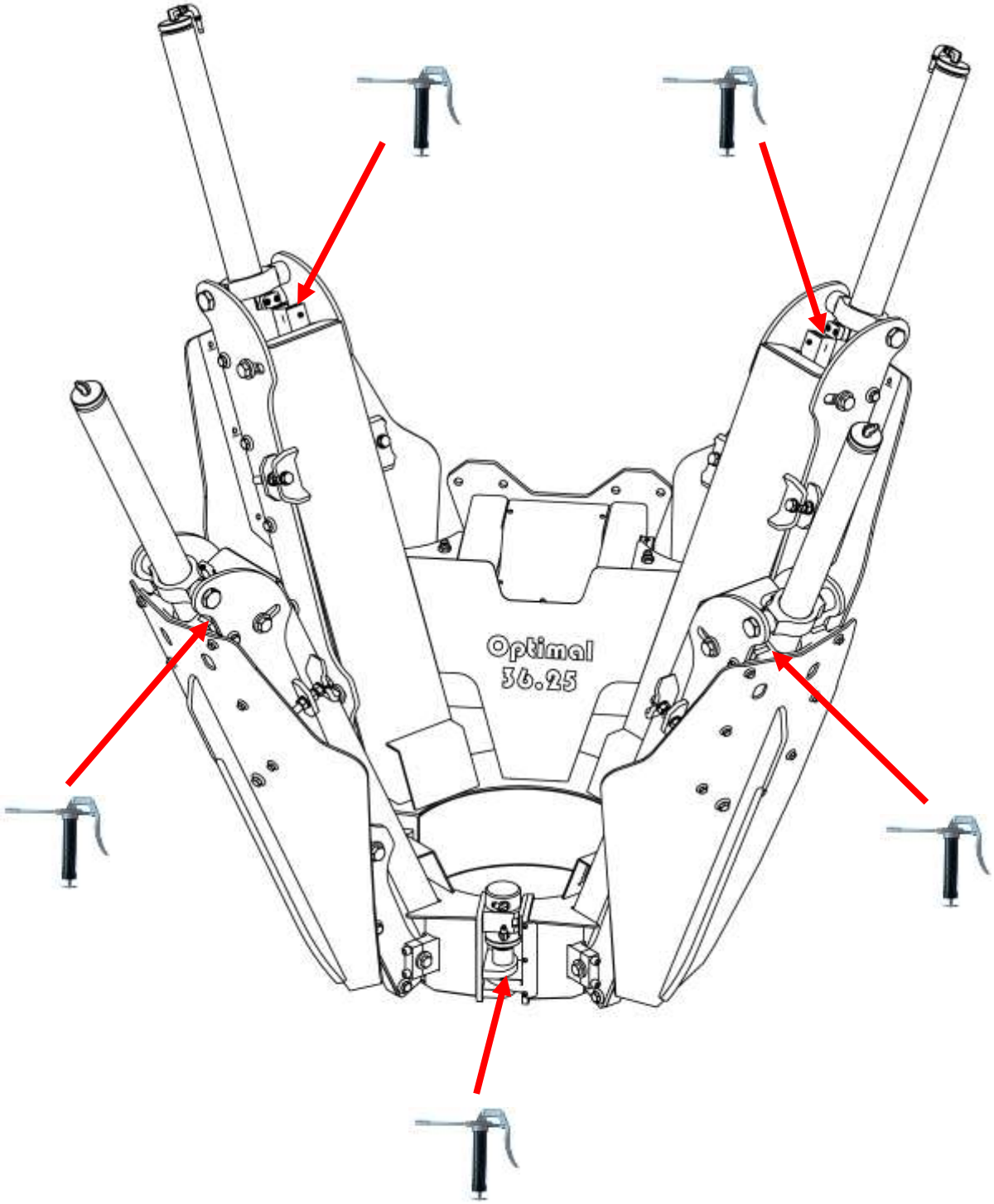
6.3 Wiring Diagram for Control System



6.4 Hydraulic system



6.5 lubriction chart



-- lubricate once per week

Trouble Shooting

1. Nothing moves. (none of the hydraulic functions works)

   - Electricity supply to control box is interrupted. Check fuses at power unit.

   - Hydraulic disconnect is not properly attached. Check attachment.

2. Two hydraulic functions (e.g. gate lock and spades) work at the same time.

   - On one of the valves the plunger does not move.
     This defect might be caused by a dirt particle. Disassemble and clean the respective valve.

   - If this does not solve the problem, the valve is damaged and must be replaced.

3. After the blades have been retracted and the valve has been relieved, they immediately move down again.

   - If the spades move down a short way only, the oil supply of the pump might be too high.
     Oil flow of power unit must be regulated by service of manufacturer.

   - If the spades move down all the way, the seals in the spade cylinder might be defect und must be replaced.

   - If the spades move down all the way, the spade valve might be defect and must be replaced.

4. The gate does not close and / or lock completely.

   - The adjustment screw at the hinge wants readjustment.
     Adjust adjustment screw.

   - The eye joint is worn, bushes must be replaced.

5. Although the gate has been closed and locked properly, the blades do not move down.

   - The safety switch at the lock needs readjustment.

   - The electricity supply is interrupted. Check fuses at power unit.

6. The blades do not close properly although the spade cylinders are fully extended.

   - Guides are worn and must be replaced.

   - Blades are bent and have to be adjusted.

7. One function (any) does not work.

   - The electricity supply is interrupted. Check power circuit.

   - The magnet of the respective control valve is defect. Valve must be replaced.

   - The plunger of the control valve is seized, probably due to a dirt particle in the hydraulic oil. Disassemble valve and clean.

LIMITED WARRANTY

Optimal-Vertrieb Opitz GmbH ("Opitz") warrants that this product will be free from defects in material and workmanship for a period of 6 months from the date of purchase (the "Warranty Period"). If, during the Warranty Period, this product proves to be defective, Opitz will remedy the defect by either repairing or replacing the product or any of its defective parts, at Opitz's option.

If you need warranty service, you must, prior to the lapse of the Warranty Period, file a claim, together with proof of purchase and your original Warranty Certificate received at the purchase of the product, with Fieldworks Nursery Equipment, Grand Bay AL 36541; USA. After a warranty claim is properly filed, Opitz or its designated representative will evaluate the warranty claim. This warranty is conditioned upon your reasonable cooperation with Opitz in the evaluation of your warranty claim and the implementation of any remedy. When supplying replacement product or parts under this warranty, Opitz reserves the right to substitute product or parts of comparable value and design for any discontinued designs. This warranty is not transferable and applies only to the original consumer purchaser.

Opitz does not assume any responsibility for failures, breakage or causes which result from abuse, misuse, negligence, faulty operation, unauthorized repair or alteration, accident, fire, winds, floods, moisture, other unfavorable atmospheric conditions or other causes beyond Opitz's reasonable control or from failure to operate or maintain the product in accordance with the Opitz Operation Manual (a copy of which is provided to you with the product) or from normal wear and tear under normal usage. **OPITZ EXCLUDES AND WILL NOT PAY ANY INCIDENTAL AND CONSEQUENTIAL DAMAGES ARISING OUT OF THE PURCHASE OR USE OF THE PRODUCT**. By this Opitz means any loss, expense or damage other than to the product itself that may result from a defect in the product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THE DURATION OF ANY IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THE COVERAGE PROVIDED BY THIS LIMITED WARRANTY AS INDICATED ABOVE; PROVIDED, HOWEVER, THAT NOTHING IN THIS LIMITED WARRANTY SHALL GIVE YOU ANY IMPLIED WARRANTIES YOU WOULD NOT OTHERWISE HAVE, EXTEND THE SAME BEYOND THEIR CUSTOMARY DURATION, OR MAKE OPITZ LIABLE FOR ANY IMPLIED WARRANTIES THAT IT WOULD NOT BE LIABLE FOR IF THIS LIMITED WARRANTY HAD NOT BEEN GIVEN. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty shall apply only to product that is purchased and used within the United States. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

Date of Sale: …… Product Sold: ……

Product Serial Number: …… Expiration Date of the Warranty: ……

Name and Address of Buyer: ……

……

……

……

Signature of Buyer: ……

S P A R E P A R T S

O N

TREE SPADE OPTIMAL 36.25

3625019 -

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Email: Sales@optimaltreespades.com
Web: www.OptimalTreeSpades.com

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 1

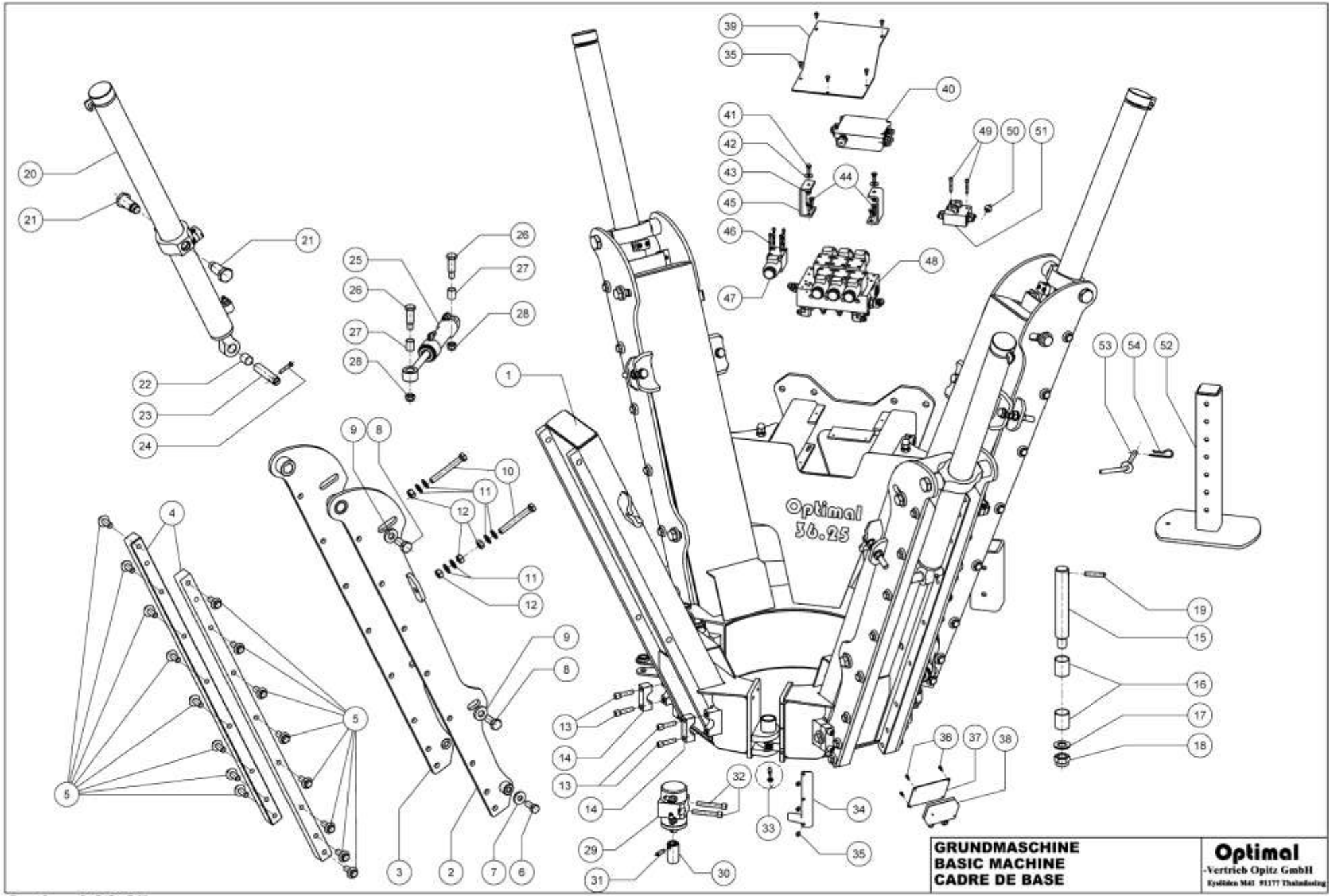


Table 1

OPTIMAL 36.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
1	1	main frame	
2	4	Haltereung re., f. Führungsschiene	3183625010
3	4	Haltereung li., f. Führungsschiene	3183625015
4	8	guide	3063625010
5	64	hex head screw M 16 x 35	5011603500
6	8	hex head screw M 16 x 35	50116035933
7	8	washer	5069162
8	16	hex head screw M 20 x 45	50120045933
9	16	washer	5069201
10	8	hex head screw M 16 x 120	50116120933
11	32	washer	506917
12	24	hex nut M16, DIN 934	502160934
13	16	socket head screw M 12 x 50	50112050912
14	8	bearing bracket	3183625020
15	2	hinge pin ø40	3073625030
16	4	bush	544404450
17	2	washer 27	506927
18	2	lock nut M 27	502270985
19	2	tapered sleeve ø12x60	5067120600
20	4	spade cylinder	3010100092

Table 1

OPTIMAL 36.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
21	8	adjustment pin	3073625020
22	4	bush	544252830
23	4	spade pin	3073625040
24	4	hex head screw M 8 x 40	50108040933
25	2	gate cylinder	3010200085
26	4	shoulder bolt M16 / ø20	3143625010
27	4	bush	544202330
28	4	lock nut M 16	502160985
29	1	gate lock cylinder	3010300081
30	1	lock pin	3073625050
31	1	tapered sleeve ø10x32	5067100320
32	2	socket head screw M 12 x 80	50112080912
33	1	sensor, M 12 x 1	5990040754
34	1	protection for sensor	3183625230
35	8	screw M 6 x 12	501060127985
36	4	screw M 5 x 10	50105010084
37	1	cover plate	3183625167
38	1	relais box	5990038103
39	1	protection for control block	5973625460
40	1	cable distributer box	3981410010

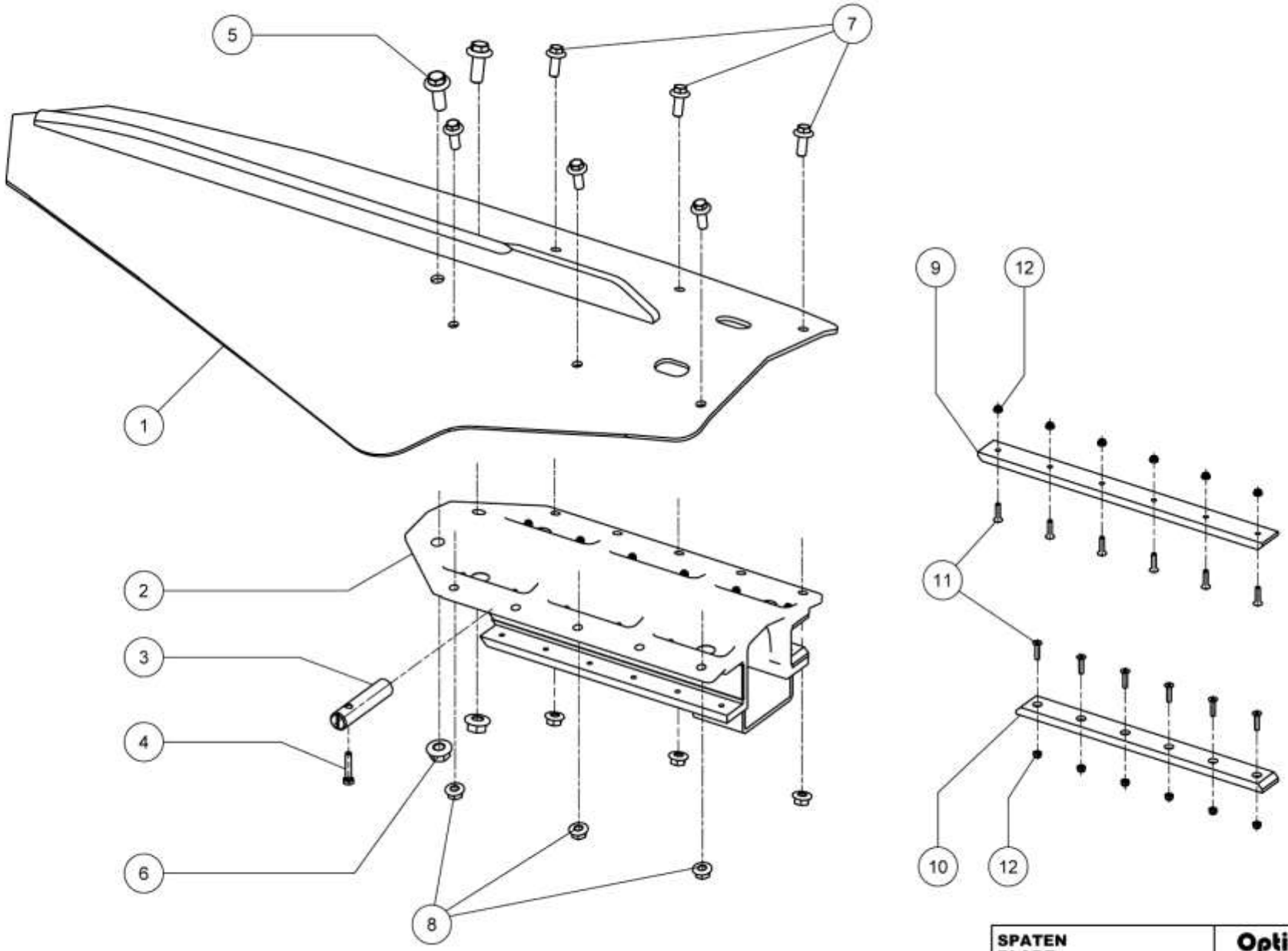
Table 1

OPTIMAL 36.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
41	2	hex head screw M 8 x 25	50108025933
42	2	washer 8,4 DIN 9021	5069081
43	2	lock nut M 8	502080985
44	4	hex head screw M 8 x 16	50108016933
45	2	bracket for control block	3153625010
46	28	socket head screw M 5 x 50 DIN 912	50105050912
47	7	control valve NG 6	547001
48	1	control block	5473625011
49	2	socket head screw M 6 x 40 DIN 912	50106040912
50	1	flow control screw	3140880030
51	1	oil manifold	3053625010
52	2	adjustment feet	3303625011
53	2	pin for adjustment feet	3303625021
54	2	clip pin	5990404

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 2



SPATEN BLADE BÊCHE	**Optimal** -Vertrieb Opitz GmbH

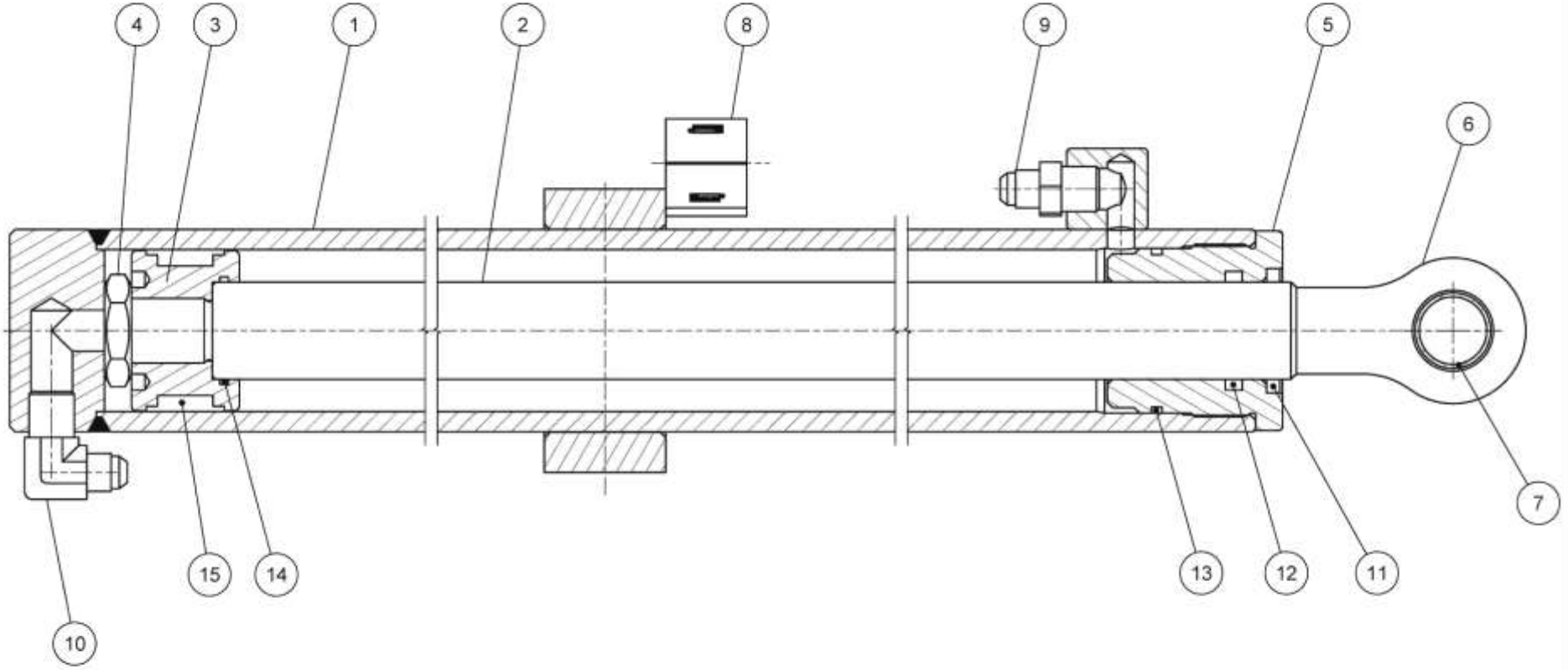
Table 2

OPTIMAL 36.25 - SPARE PARTS LIST

blade

Item	Quantity	Description	Part Number
1	4	blade	3163625000
2	4	blade guide	3163625100
3	4	spade pin	3073625040
4	4	hex head screw M 8 x 40	50108040933
5	8	lock bolt M16 x 40, 10.9	5011604000
6	8	lock nut M 16, SW 22	502160SW22
7	24	lock bolt M12 x 30, 10.9	5011203000
8	24	lock nut M 12, SW 17	502120SW17
9	8	plastic guide, long	3063625030
10	8	plastic guide, short	3063625020
11	96	countersunk socket screw M 6 x 25	501060257991
12	96	lock nut M 6	502060985

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 3



SPATENZYLINDER SPADE CYLINDER VÉRIN DE BÊCHE	Optimal -Vertrieb Opitz GmbH

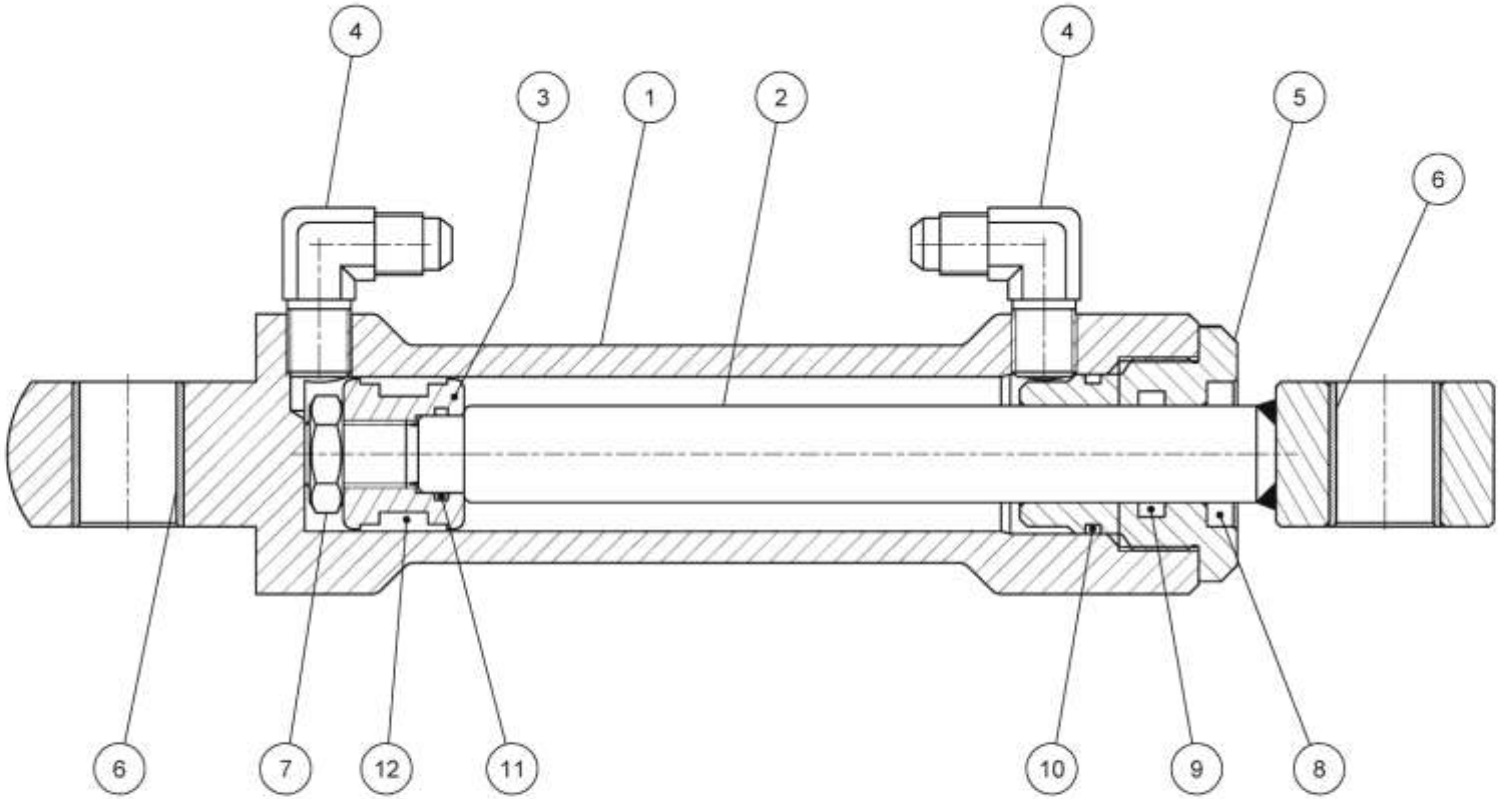
Table 3

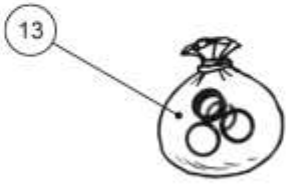
OPTIMAL 36.25 - SPARE PARTS LIST

spade cylinder

Item	Quantity	Description	Part Number
1	1	cyinder body	3020600132
2	1	piston rod	3030360191
3	1	piston	3126036241
4	1	nut M 24 x 1,5	50224150936
5	1	guide bush	3116036365
6	1	eye joint Ø 25	5070880010
7	1	bush 2528-30	544252830
8	1	pipe clamp DS218/18	510218
9	1	union	515021001017
10	1	elbow union	515070511017
11	1	scraper	5160336
12	1	rod seal	5160236446
13	1	o-ring	5170552030
14	1	o-ring	5170360025
15	1	piston seal DAS 60 48	51604060048
16	1	seal kit complete	516006036602

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 4





ÖFFNUNGSZYLINDER GATE CYLINDER VÉRIN D'OUVERTURE	Optimal -Vertrieb Opitz GmbH Eysölden 3641 91177 Thalmässing

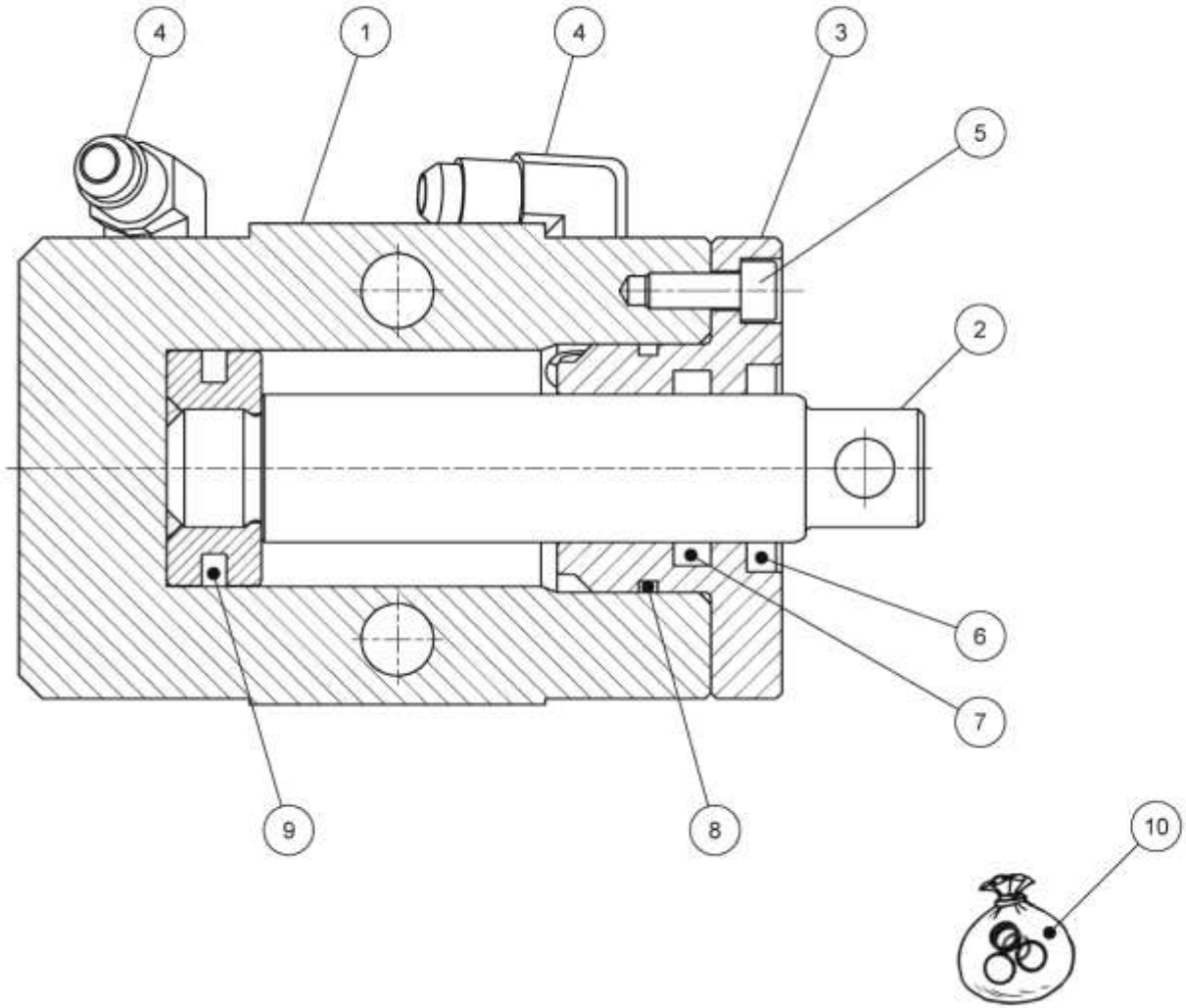
Table 4

OPTIMAL 36.25 - SPARE PARTS LIST

gate cylinder

Item	Quantity	Description	Part Number
1	1	cylinder body	3020320035
2	1	piston rod Ø 20 x 201	3030200035
3	1	piston	3123220010
4	2	elbow union	515070510813
5	1	guide bush	3113220010
6	2	bush 2023-30	544202330
7	1	nut M 14 x 1,5 DIN 936	50214150936
8	1	scraper W4 – 20 x 30	5160320
9	1	rod seal T7 20 x 26	5160220
10	1	O-ring 28 x 2,5 90 Shore	5170280025
11	1	O-ring 16 x 2 90 Shore	5170160020
12	1	piston seal TPM 32 x 24	5160132
13	1	seal kit complete	516003220601

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 5



VERRIEGELUNGSZYL. GATE LOCK CYLINDER VÉRIN DE VERROUILLAGE	Optimal -Vertrieb Opitz GmbH

Table 5

OPTIMAL 36.25 - SPARE PARTS LIST

gate lock cylinder

Item	Quantity	Description	Part Number
1	1	cylinder body	3020400070
2	1	piston rod ø 25 x 128	3030250051
3	1	guide bush	3114025010
4	2	union	515021000813
5	6	socket head screw M 6 x 16	50106016912
6	1	scraper P7 - 25 (W4-25)	5160325
7	1	piston rod seal S 8 – 25 (blau)	5160225
8	1	o-Ring 35 x 2,5 90 Shore	5170350025
9	1	piston seal KPD-040-PU	51601402
10	1	seal kit complete	516004025602

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 6

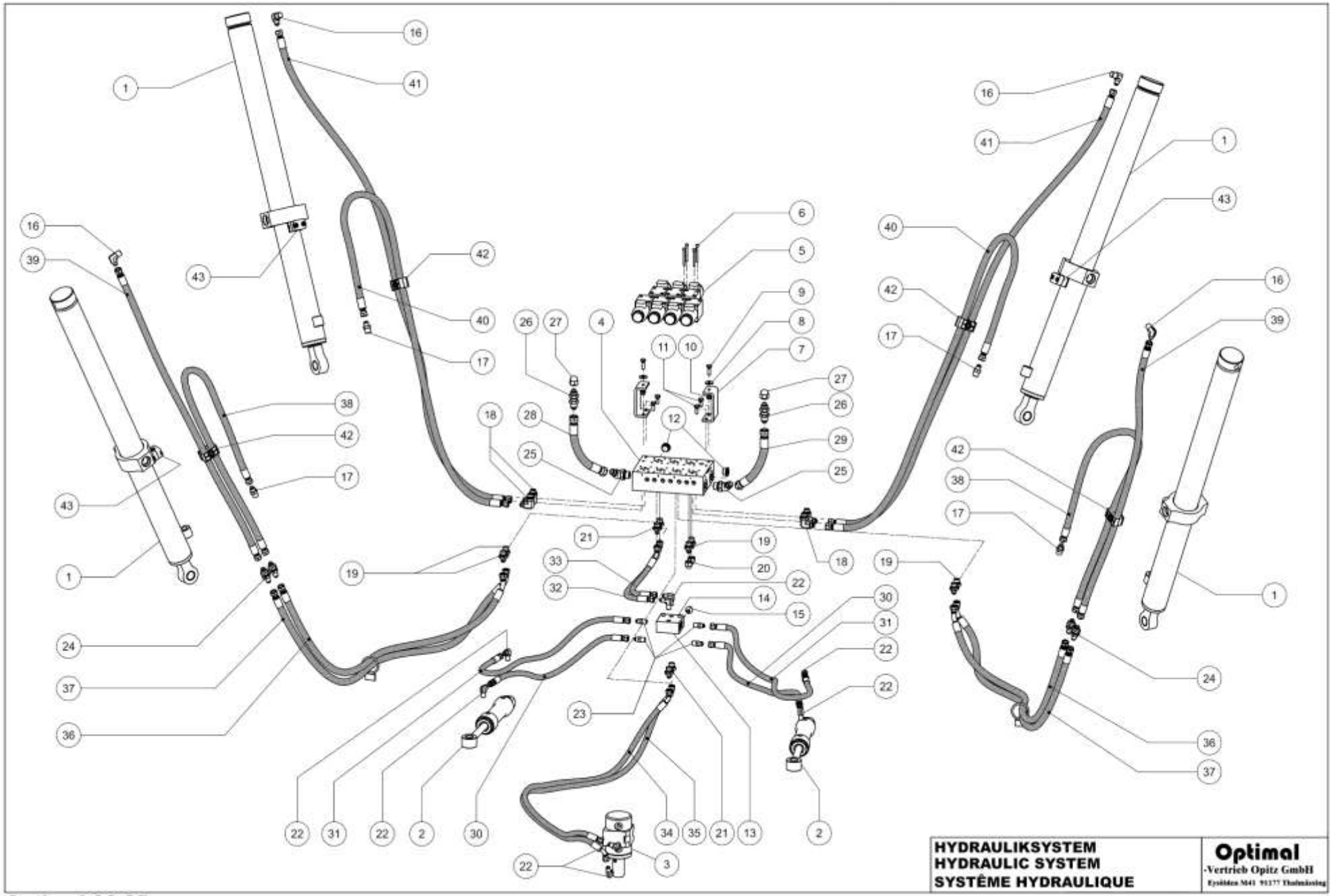


Table 6

OPTIMAL 36.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
1	4	spade cylinder	3010100092
2	2	gate cylinder	3010200085
3	1	gate lock cylinder	3010300081
4	1	control block	5473625011
5	7	control valve NG06	547001
6	28	socket head screw M 5 x 50 DIN 912	50105050912
7	2	bracket for control block	3153625010
8	2	washer 8,4 DIN 9021	5069081
9	2	hex head screw M 8 x 25	50108025933
10	2	lock nut M 8	502080985
11	4	hex head screw M 8 x 16	50108016933
12	2	plug VSTI ¼“	515VSTI1/2
13	1	oil manifold	3053625010
14	2	socket head screw M 6 x 40 DIN 912	50106040912
15	1	flow control screw	3140880030
16	4	elbow union	515070511017
17	4	union	515021001017
18	4	elbow union	515070391017
19	6	union	515020231017
20	2	plug	5150103310

Table 6

OPTIMAL 36.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
21	4	union	515020230817
22	8	elbow union	515070510813
23	4	union	515020230813
24	4	union	5150300210
25	2	union 45°	515050231221
26	2	union	5150300212
27	2	plug	5150103312
28	1	hydraulic hose NW12, length 9,5“	513132024011
29	1	hydraulic hose NW12, length 8,5“	513132021511
30	2	hydraulic hose NW6, length 23“	513062058012
31	2	hydraulic hose NW6, length 34“	513062087012
32	1	hydraulic hose NW6, length 16,5“	513062042012
33	1	hydraulic hose NW6, length 14“	513062036012
34	1	hydraulic hose NW6, length 50“	513062127012
35	1	hydraulic hose NW6, length 52“	513062132022
36	2	hydraulic hose NW10, length 49“	513102124012
37	2	hydraulic hose NW10, length 51“	513102129012
38	2	hydraulic hose NW10, length 47“	513102119011
39	2	hydraulic hose NW10, length 51“	513102130011
40	2	hydraulic hose NW10, length 64,5“	513102164011

Table 6

OPTIMAL 36.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
41	2	hydraulic hose NW10, length 69“	513102175011
42	4	pipe clamp DS218/18	510218
43	4	pipe clamp 218 PP	510RAPR-218

Ersatzteilliste - Spare Parts List - Liste De Pièces De Rechange Tafel - Table - Feuille 7

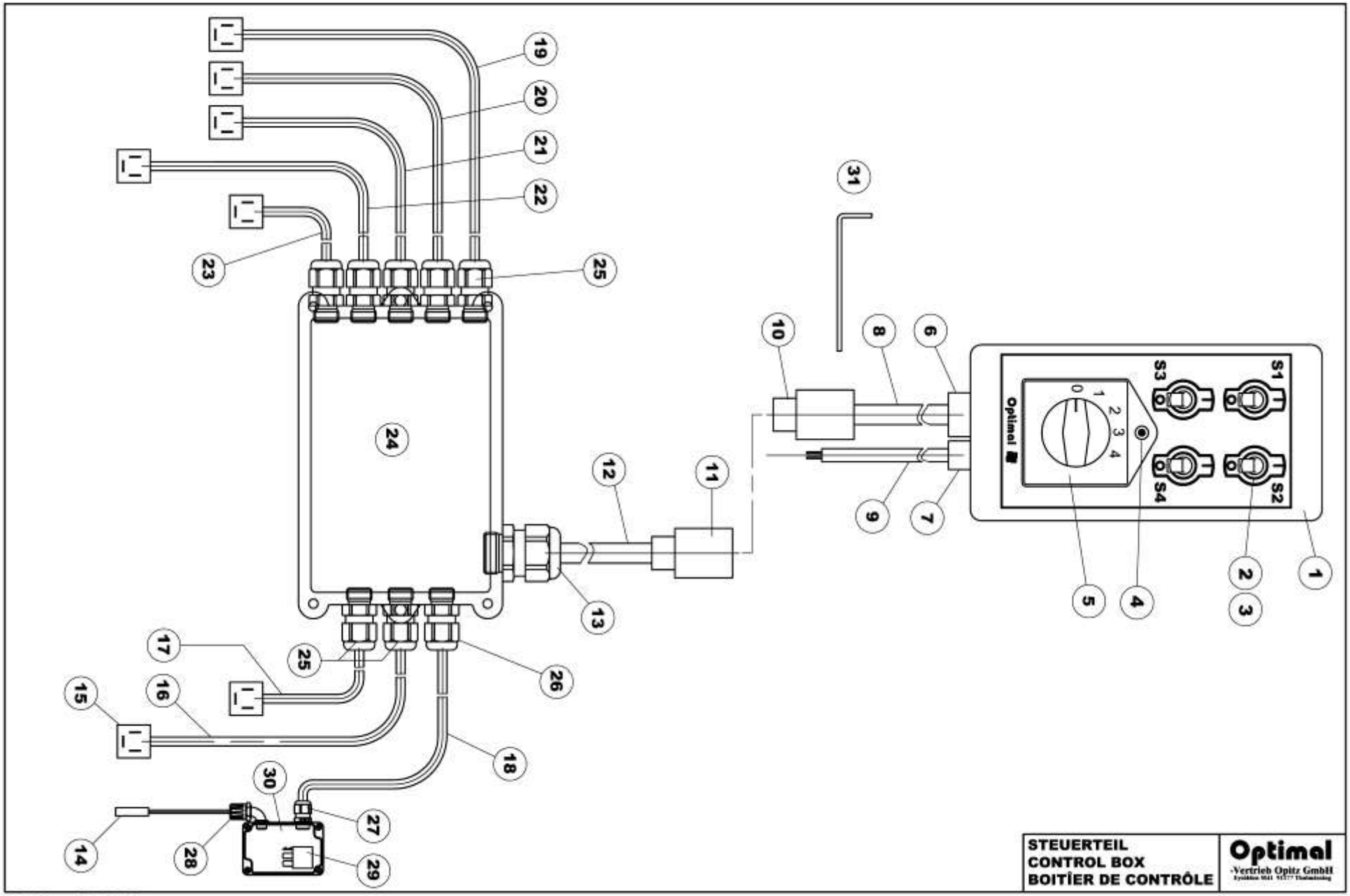


Table 7

OPTIMAL 36.25 - SPARE PARTS LIST

Electrical System

Item	Quantity	Description	Part Number
1	1	casing	3981110010
2	4	toggle switch	5470700728
3	4	name plate	5470700168
4	1	indicator lamp, 12V	5997149845
5	1	rotary switch 0,1,2,3,4	5470A242600E
6	1	straight cable fitting M20x1,5	5997527727
7	1	straight cable fitting M12x1,5	5997527701
8	1	cable 12x1,5 – 560cm (220,5”)	5121215
9	1	cable 2x1,5 – 170cm (67“)	5122015
10	1	13-pole socket	5998JB005949
11	1	13-pole plug	5998JA005951
12	1	cable 12x1,5 – 250cm (98“)	5121215
13	1	straight cable fitting M20x1,5	5997527728
14	1	sensor M 12 x 1	5990040754
15	7	standard plug	54743650
16	1	cable 2x1,5 – 50cm (20“) – blade 1	5122015
17	1	cable 2x1,5 – 50cm (20“) – blade 3	5122015
18	1	cable 4x1,5 – 190cm (75“) – safety switch	5124015
19	1	cable 2x1,5 – 49cm (19“) – optional function	5122015
20	1	cable 2x1,5 – 52cm (20,5“) – gate lock	5122015

Table 7

OPTIMAL 36.25 - SPARE PARTS LIST

Electrical System

Item	Quantity	Description	Part Number
21	1	cable 2x1,5 – 57cm (22,5“) – gate	5122015
22	1	cable 2x1,5 – 50cm (20“) – blade 2	5122015
23	1	cable 2x1,5 – 50cm (20“) – blade 4	5122015
24	1	distributor box	3981410010
25	7	straight cable fitting M12x1,5	5997527702
26	1	straight cable fitting M16x1,5	5997527714
27	1	straight cable fitting M16x1,5	5997527714
28	1	cable fitting M12x1,5-90°	5997499110
29	1	relais	5994RD3520
30	1	relais box PK 102	5990038103
31	1	bracket for 13-pole socket .	3159990010