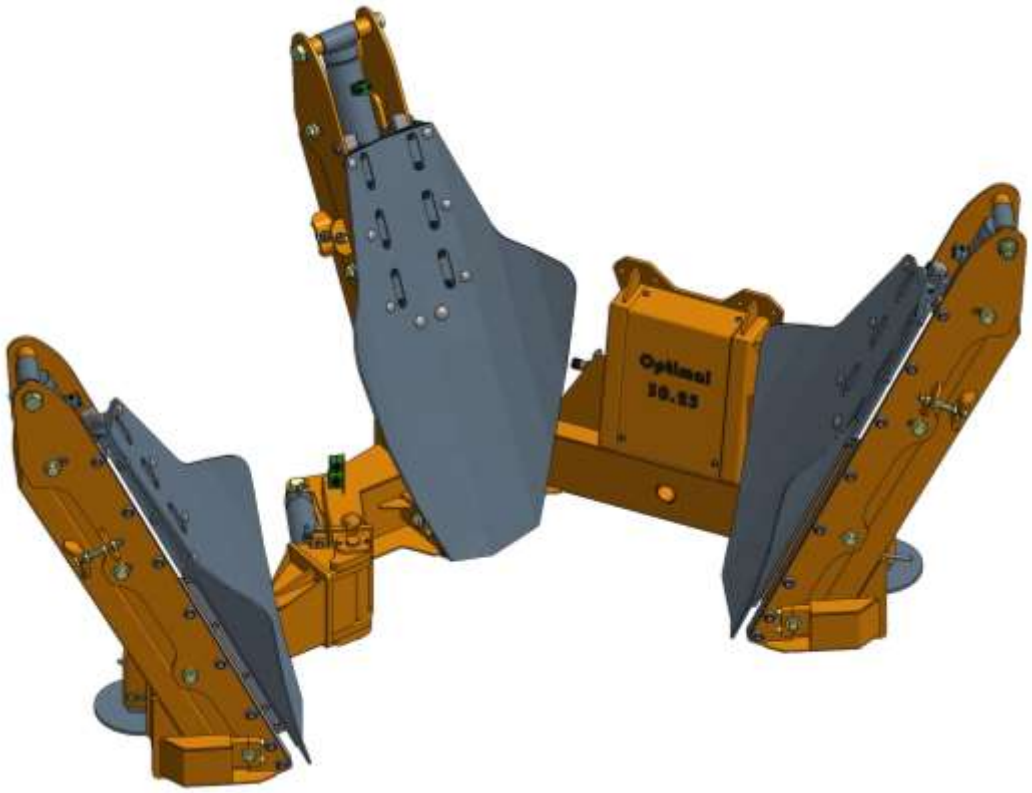
M A N U A L

O N

TREE SPADE OPTIMAL 30.25

3025003 -



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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.

2.

Part N° 7118000008

Part N° 7118000015

Part N° 7118000017

5.

Part N° 7118000007

4.

Part N° 7118000012

Part N° 7118000020

Part N° 7118000014

1.

Part N° 7118000008

8.

Part N° 7118000068

Part N° 7118000006

6.

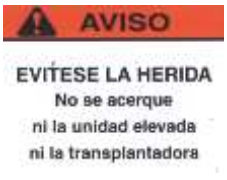
Part N° 7118000029

Part N° 7118000004

Part N° 7118000010

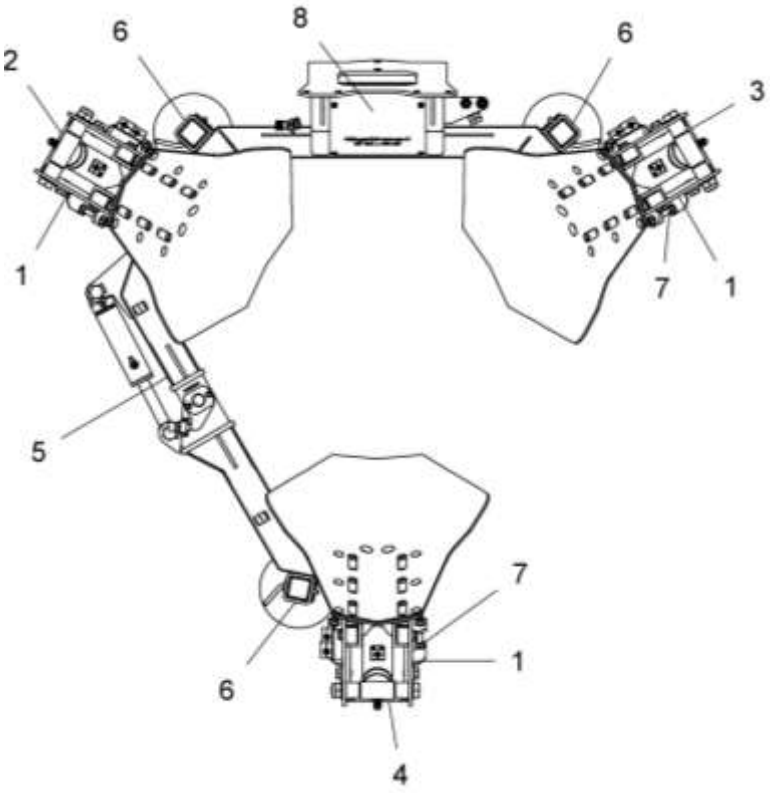
3.

Part N° 7118000009



Part N° 7118000016

Part N° 7118000013



7.

Part N° 7118000014

Part N° 7118000014

1. Operating Specifications

Description	**Tree Spade OPTIMAL 30.25**		
serial number	**3025 …**		
capacity	upper root ball diameter	78 cm	(31")
	root ball depth	66 cm	(26")
dimensions of basic machine	height	135 cm	(53")
	width, frame closed	216 cm	(85")
	width, frame open	226 cm	(89")
	clearance between open gate	117 cm	(46")
weight	basic machine, empty	790 kg	(1742 lbs.)
rated type of attachment	attachment by means of back plate to loader or excavator		
	minimum lift capacity	1350 kg	(2970 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 16/17/18)*

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 checked and 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.

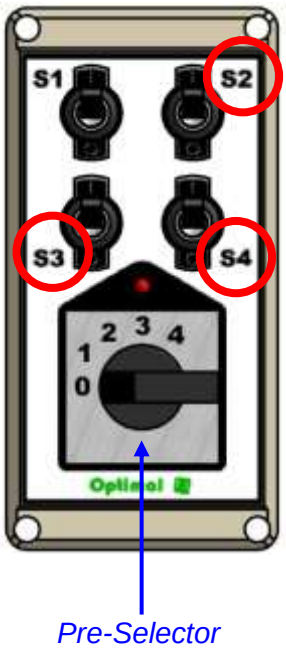
When sight is limited, an assistant should direct the operator by hand signals.

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	
function 1 :	---	
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 S2; S3 and S4.
Individual blade control is of particular advantage when soil conditions are difficult.

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 Now the gate has to be opened:

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

4.2.3 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

4.2.4 Now, 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.

4.2.4 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

4.2.5 Now proceed with digging:

pre-selector: function 3, blades (S2-S4)
manual control: down

The blades are pressed into the soil by means of spade cylinders suspended at the spade towers. When all three 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, do not rock the tree spade forward and backward by means of the tilting cylinder of the power unit!**

4.2.6 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.

4.2.7 The root ball is lowered by means of the lift arms of the power unit.

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

4.2.9 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”) 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.

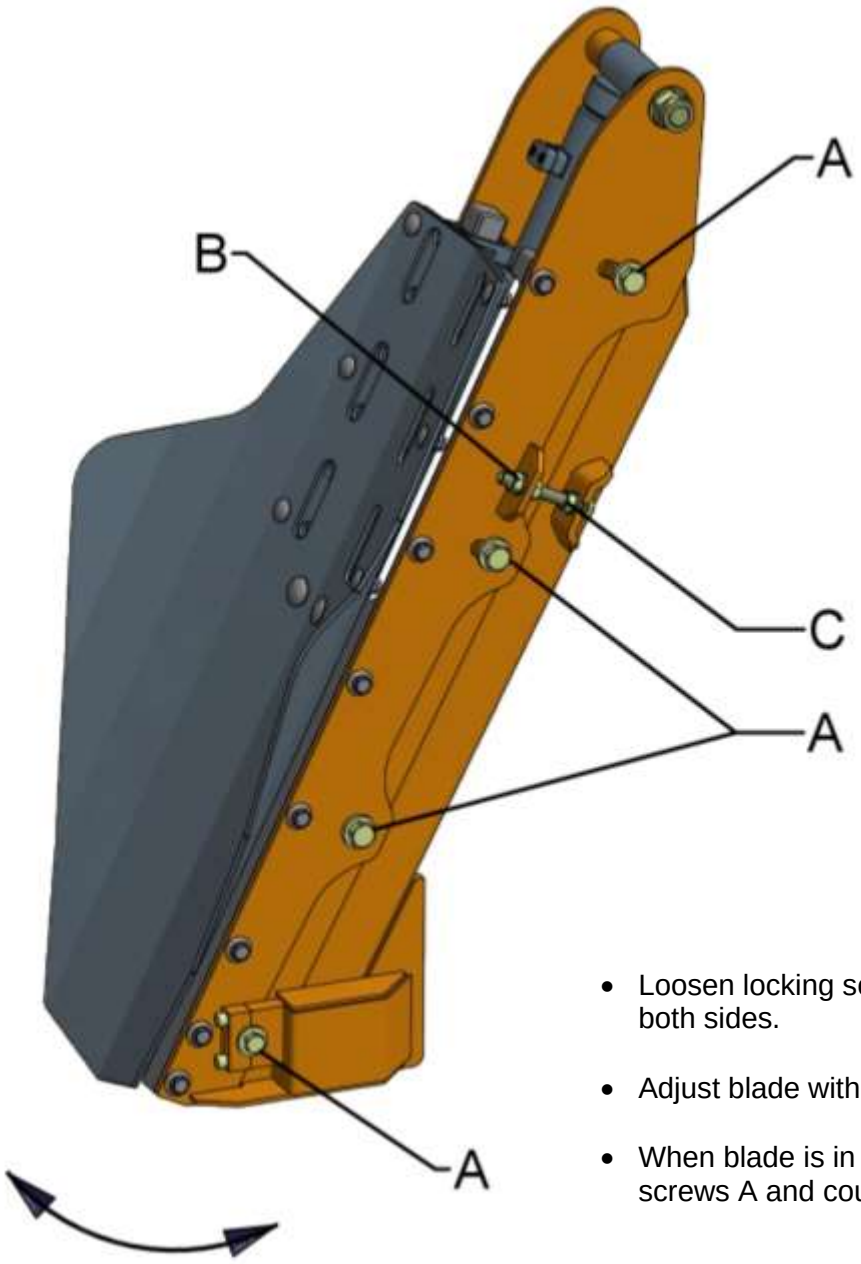
5.4 Hydraulic Hoses

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

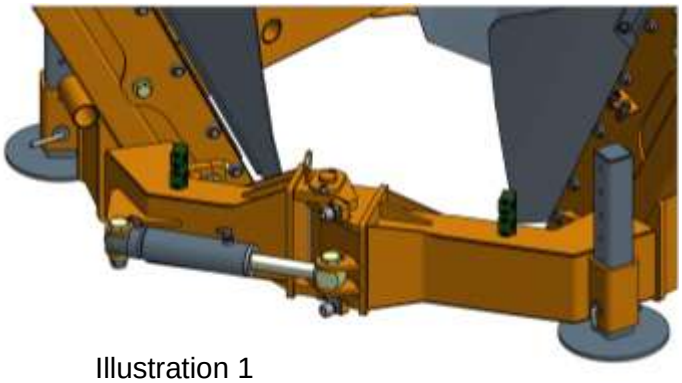


Illustration 1

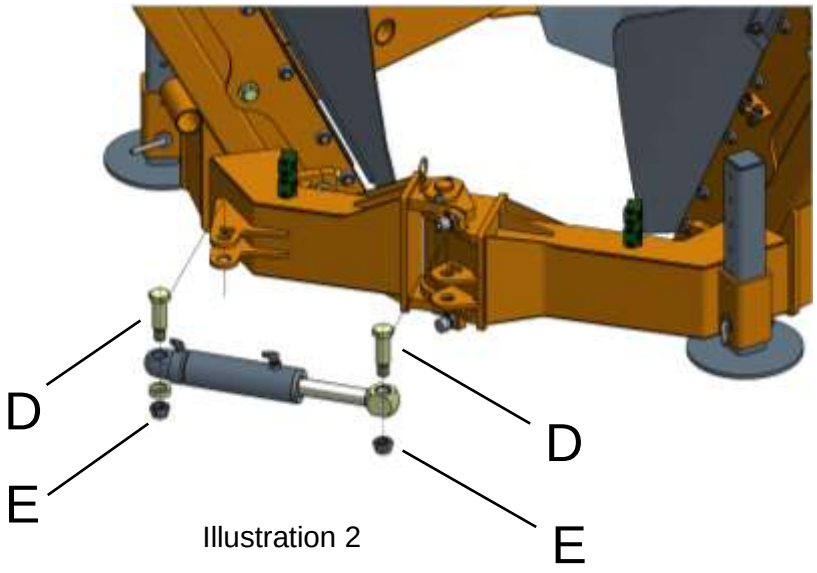


Illustration 2

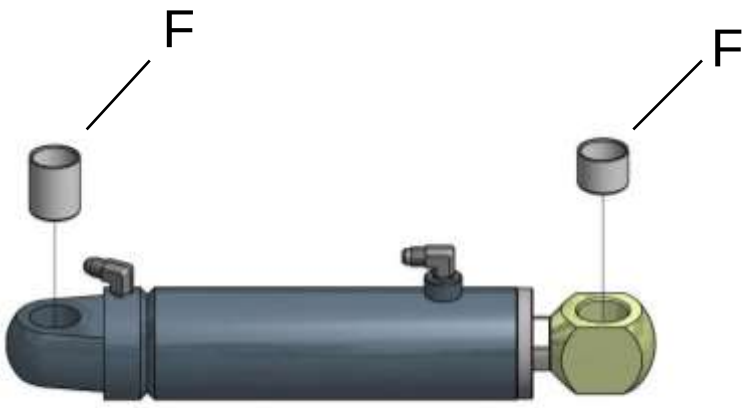


Illustration 3

Illustration 1: Overall view of gate cylinder in position.

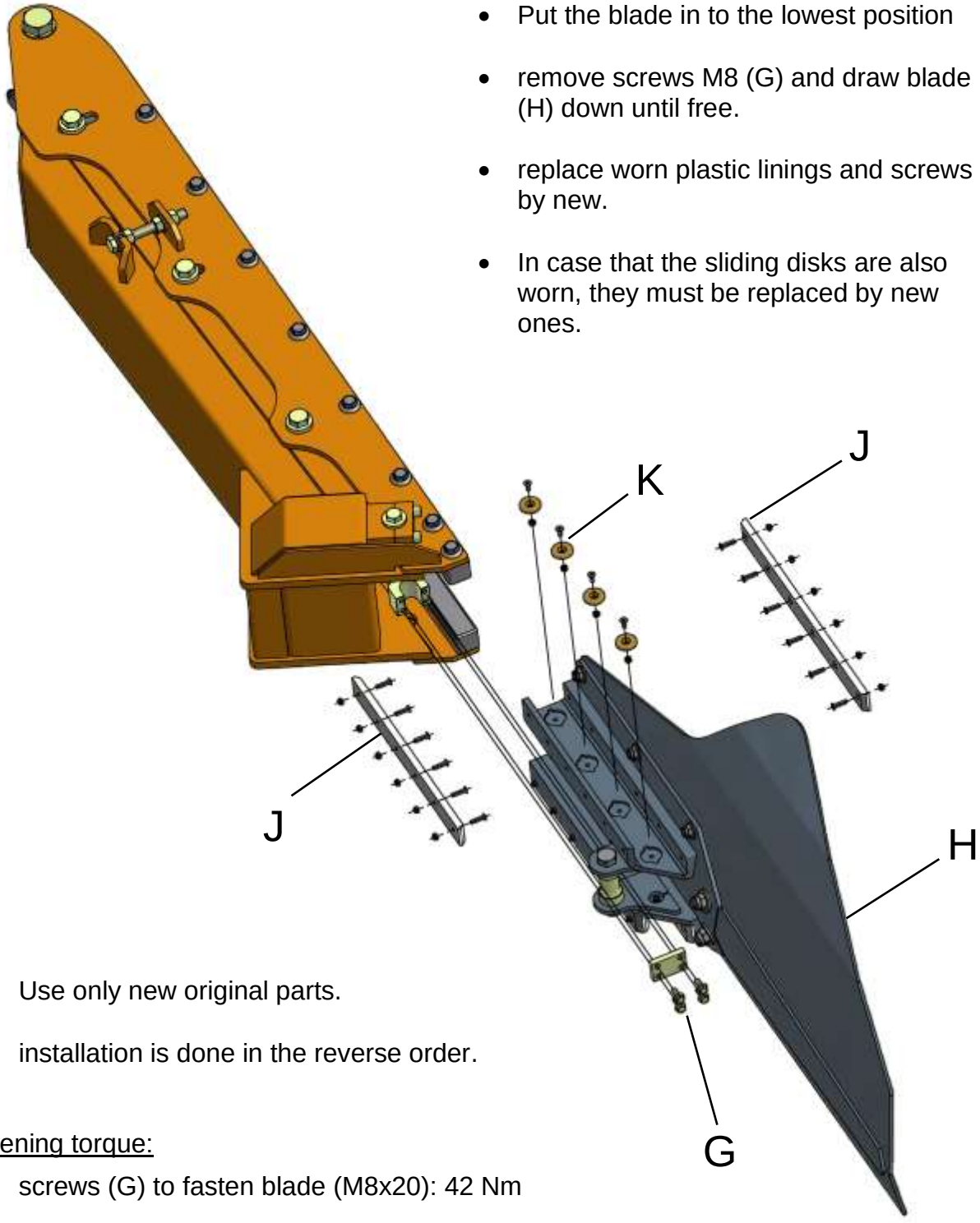
Illustration 2: Loosen nut M16 (E) and remove shoulder bolt M16 (D). If necessary, remove hydraulic hoses, too.

Illustration 3: 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 and Sliding Disk at Blade Guides

- Put the blade in to the lowest position
- remove screws M8 (G) and draw blade (H) down until free.
- replace worn plastic linings and screws by new.
- In case that the sliding disks are also worn, they must be replaced by new ones.



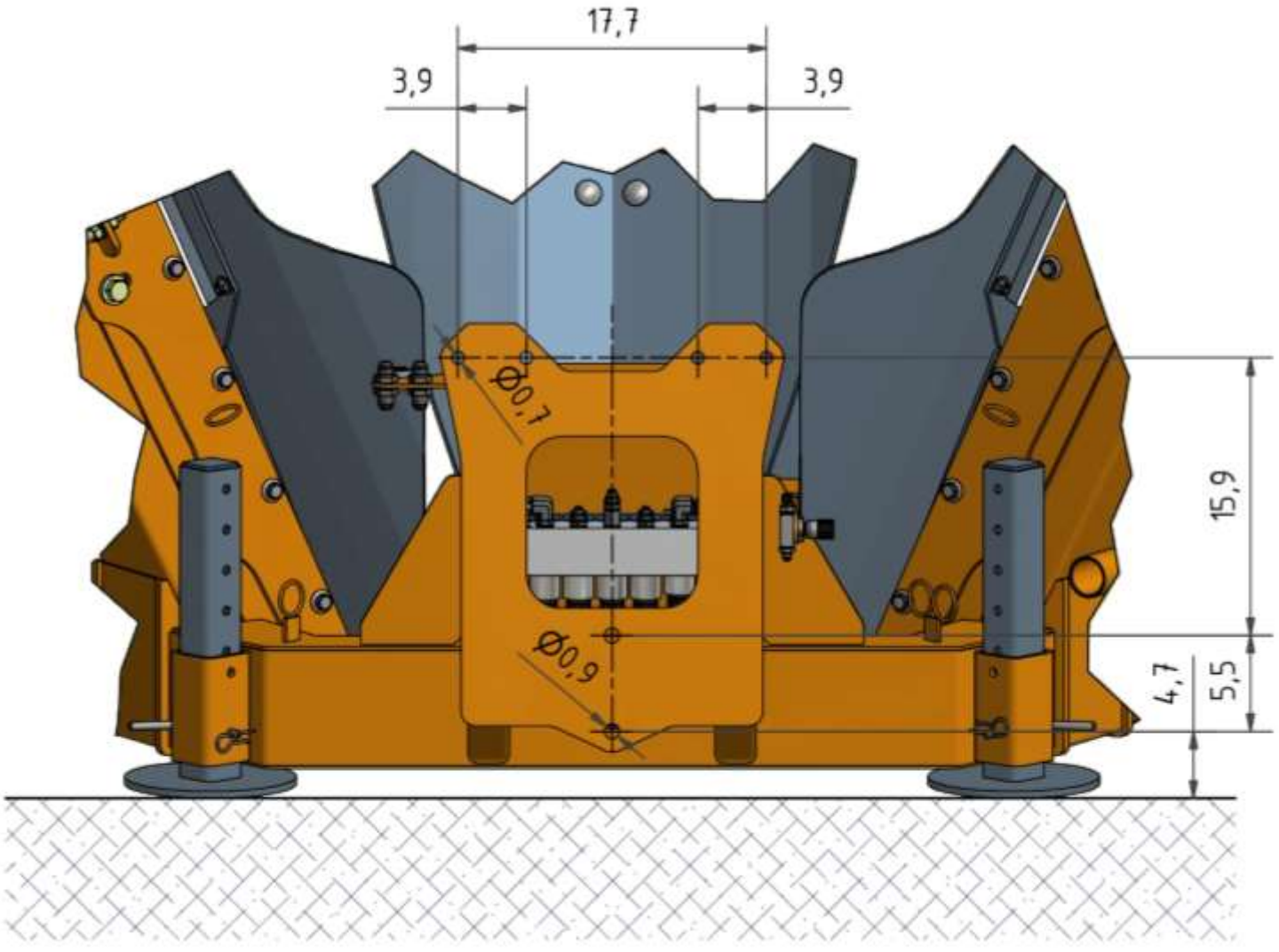
- Use only new original parts.
- installation is done in the reverse order.

Tightening torque:

- screws (G) to fasten blade (M8x20): 42 Nm

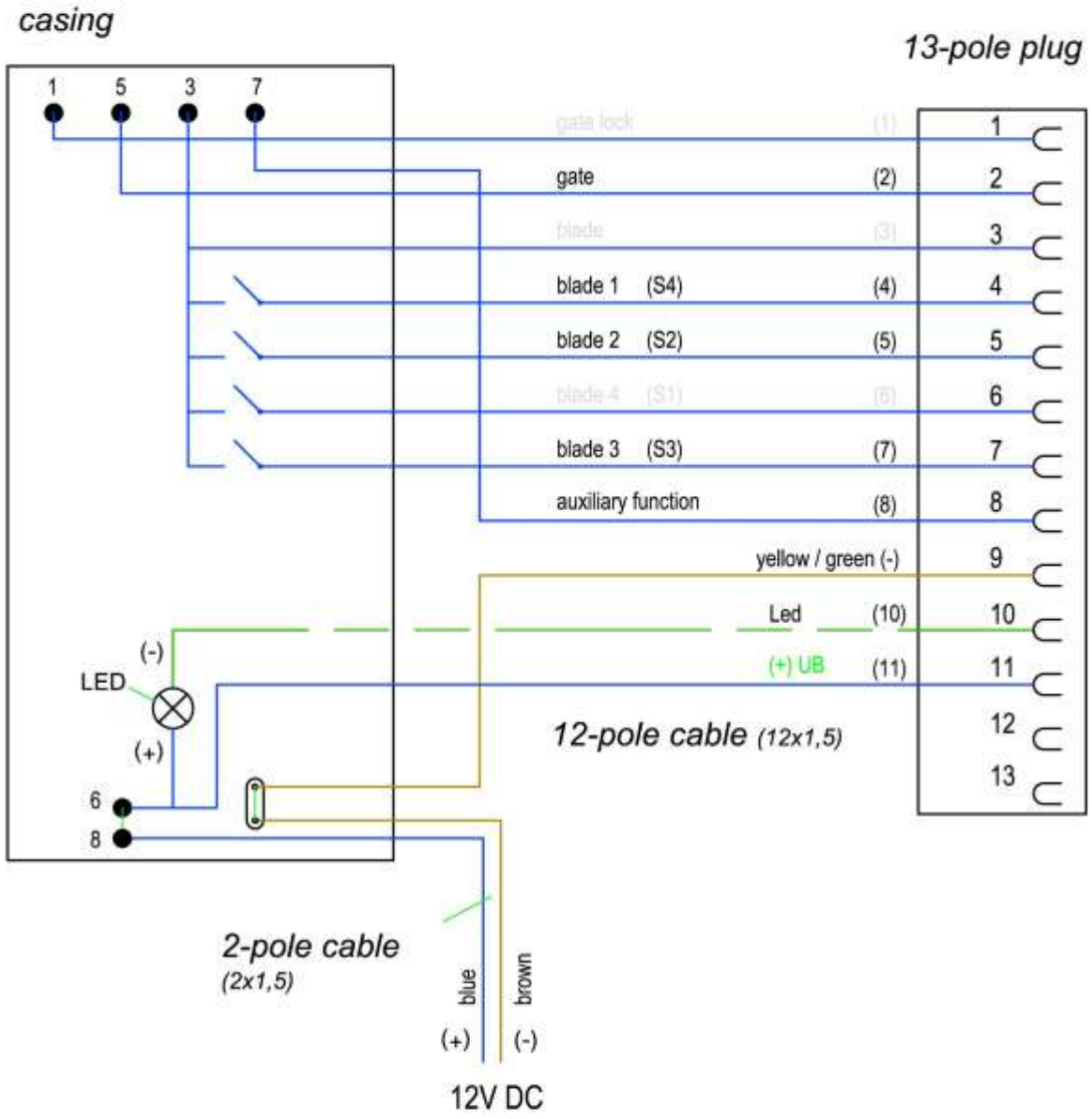
6. Appendix

6.1 Attachment points

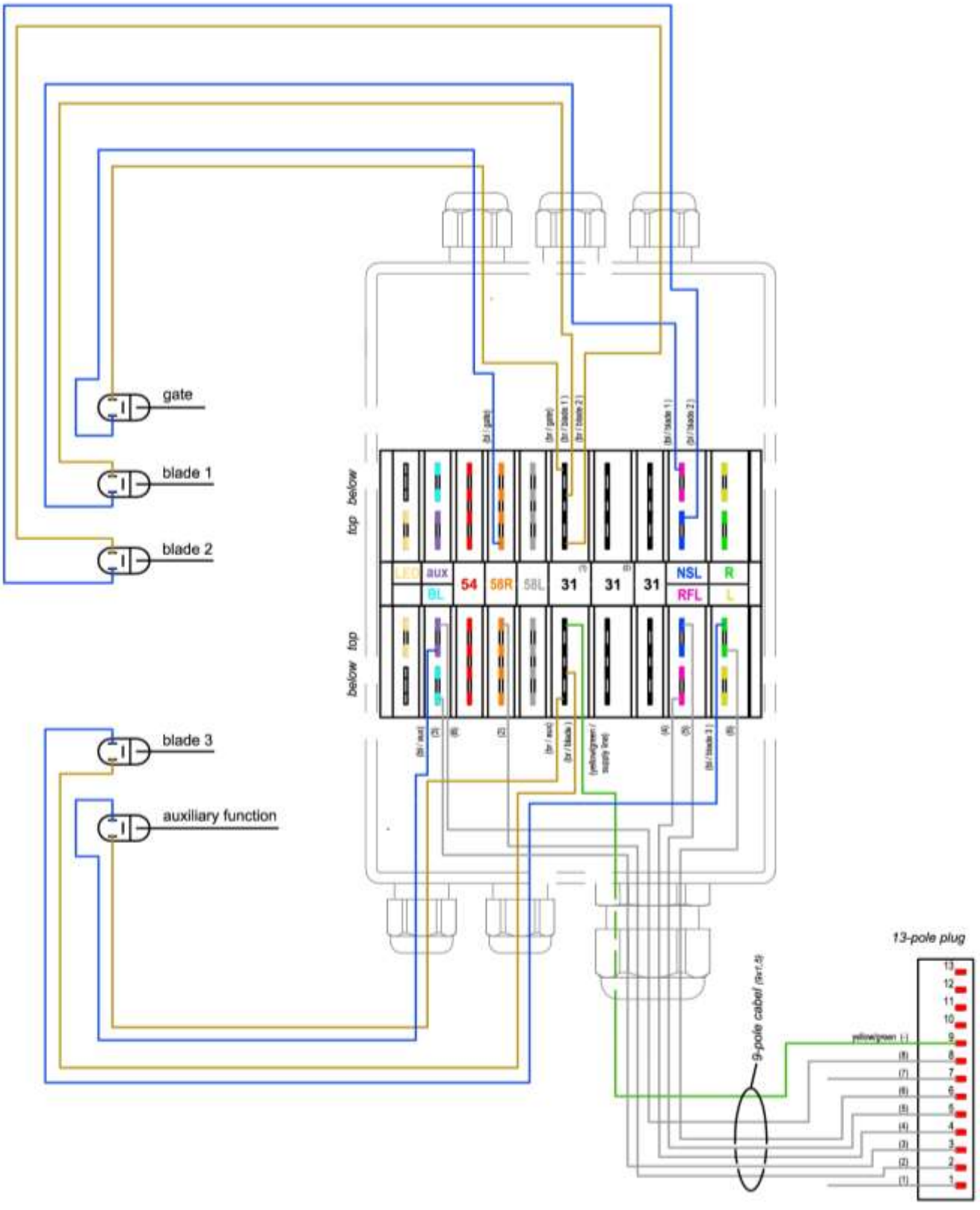


all dimensions are in inches

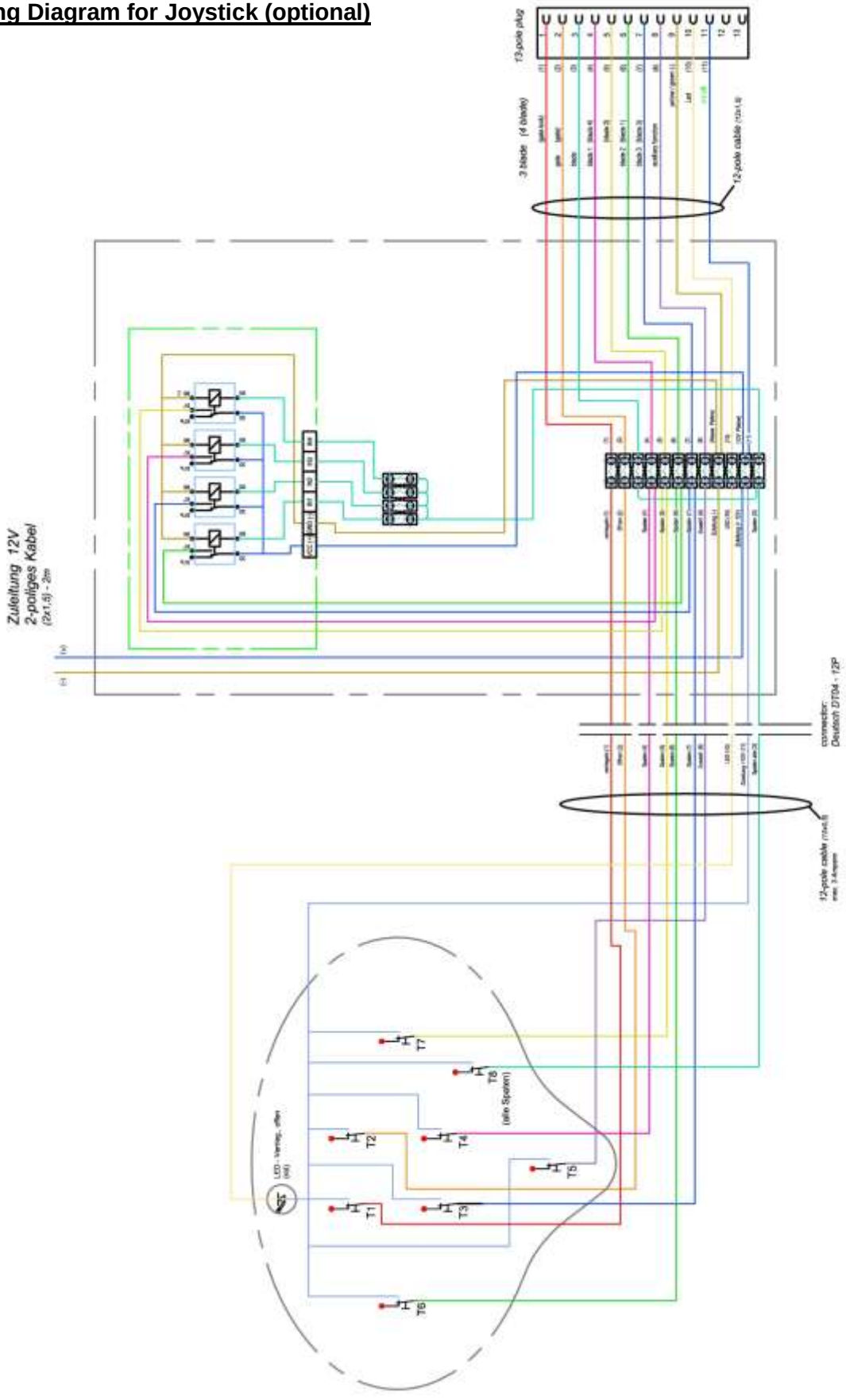
6.2 Wiring Diagram for Control Box



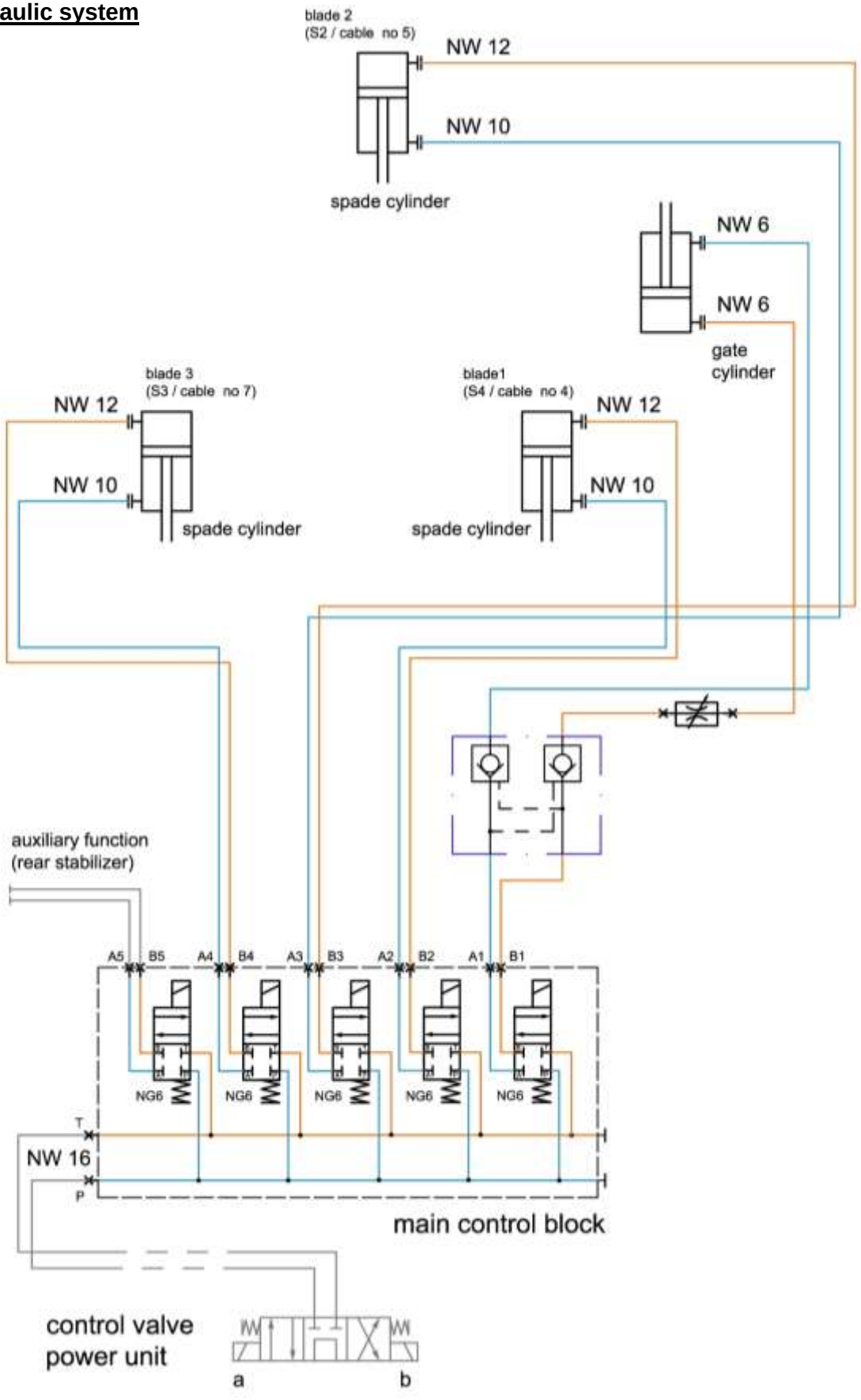
6.3 Wiring Diagram for Control System



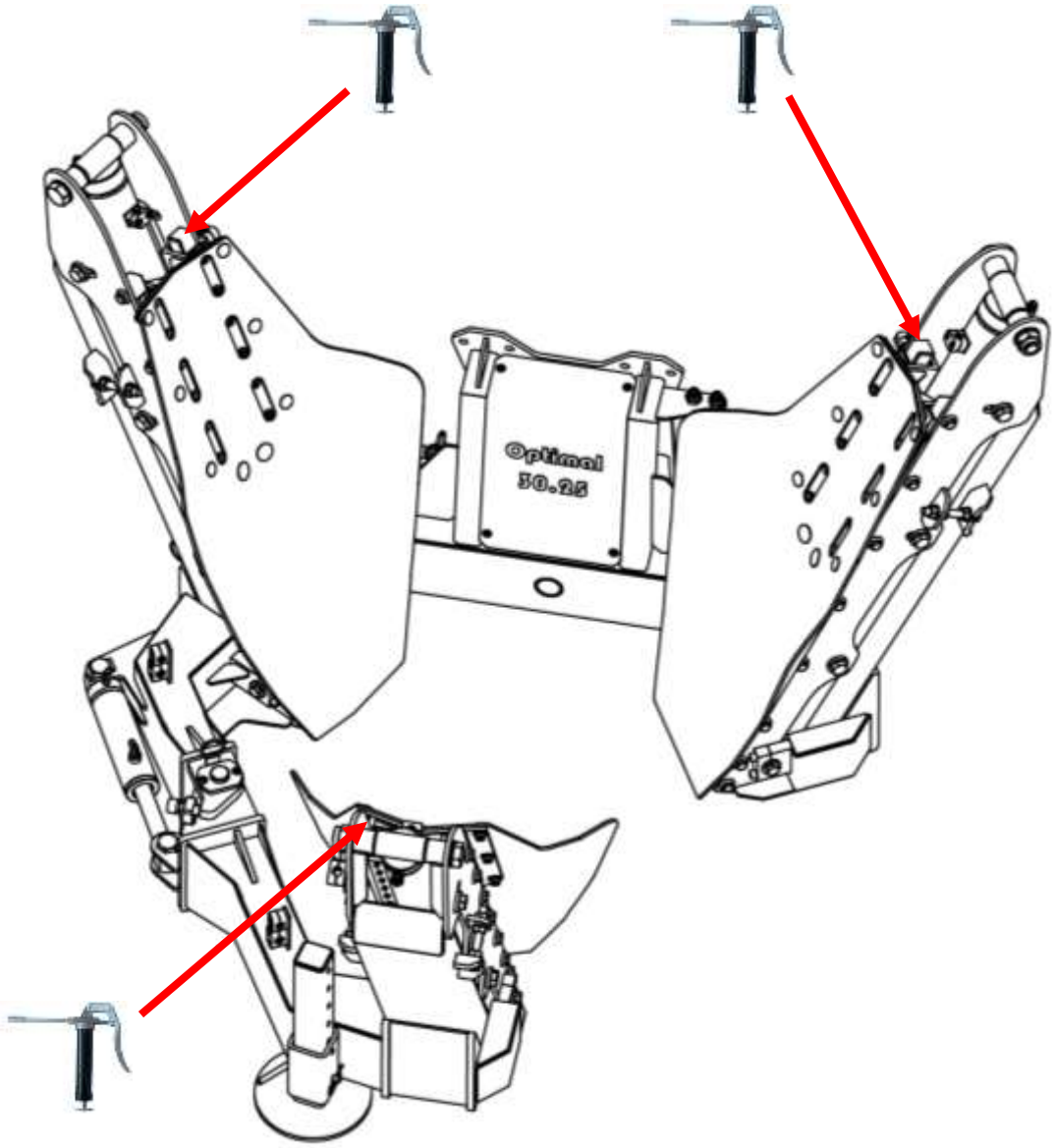
6.4 Wiring Diagram for Joystick (optional)



6.5 Hydraulic system



6.6 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 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 completely.

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

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

5. 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.

6. 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: ……

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Signature of Buyer: ……

S P A R E P A R T S

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TREE SPADE OPTIMAL 30.25

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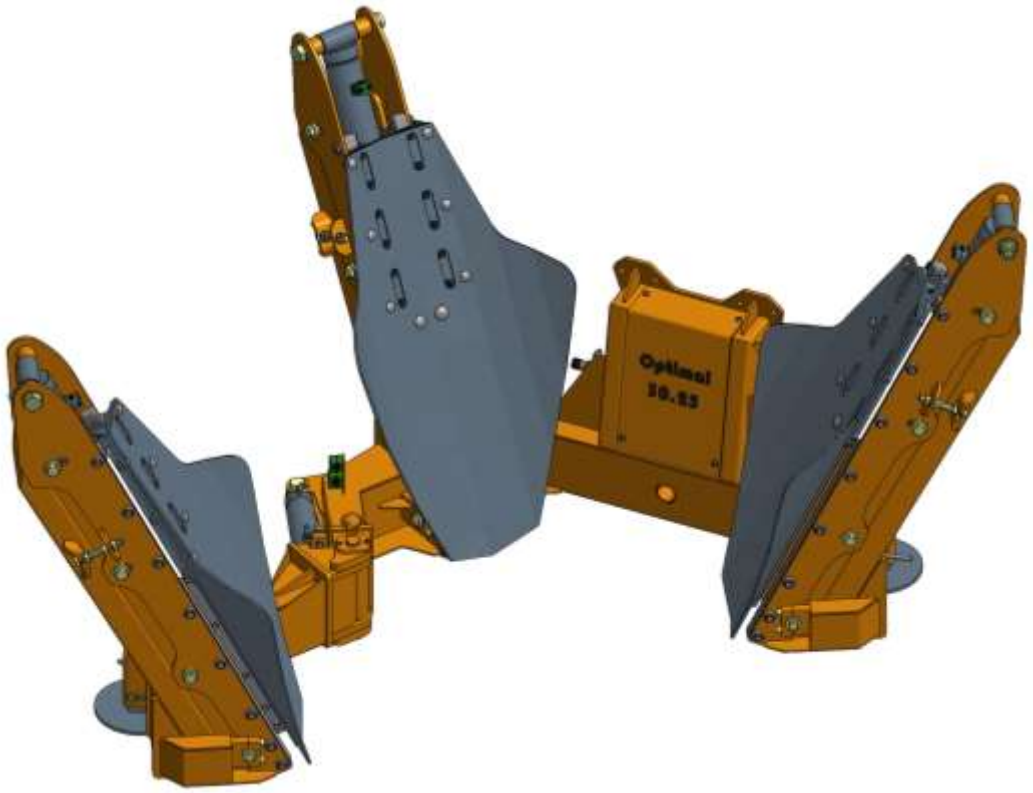

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Email: Fieldgrown@gmail.com
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Web: www.OptimalTreeSpades.com

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

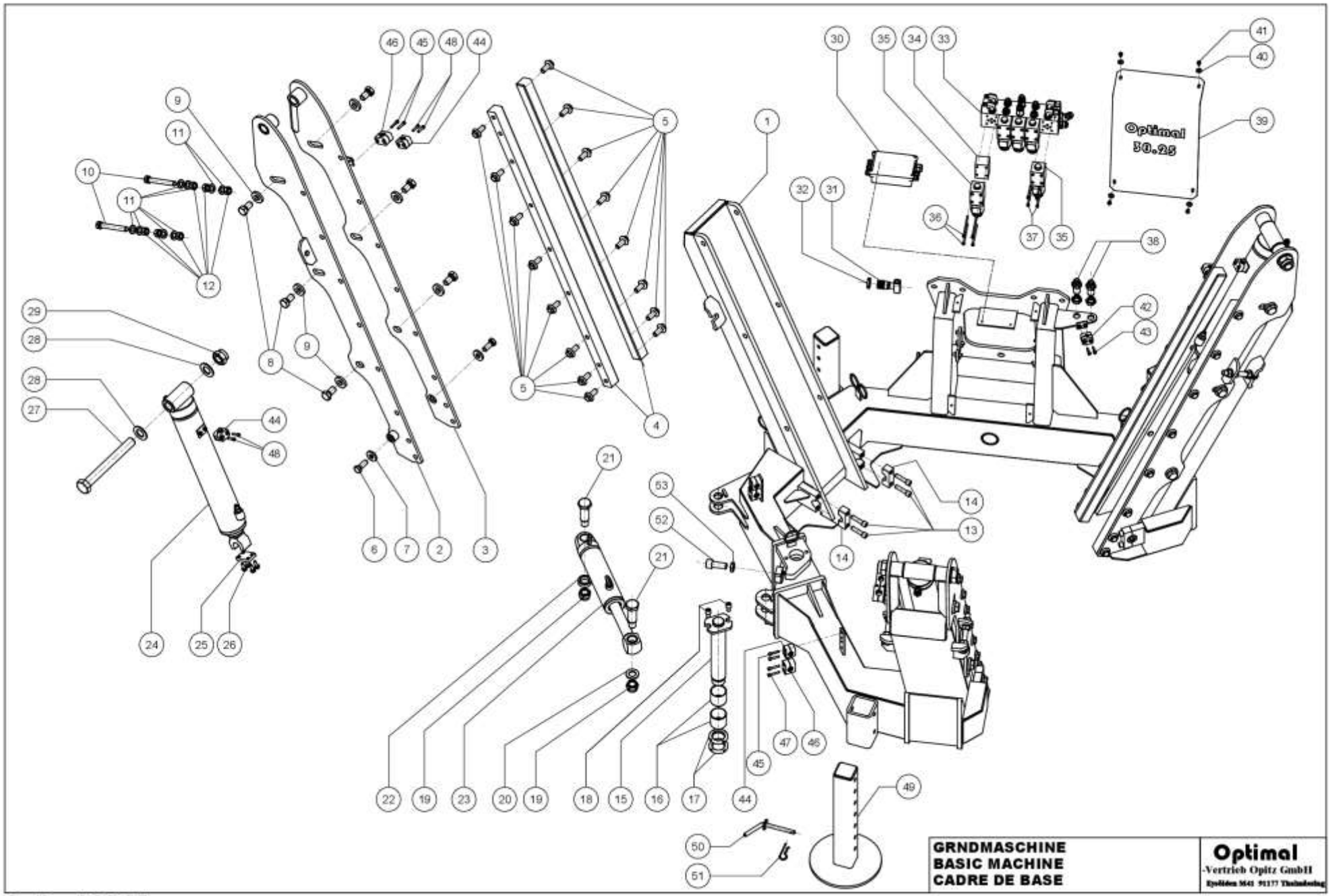


Table 1

OPTIMAL 30.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
1	1	main frame	
2	3	bracket right, for guide	3183025150
3	3	bracket left, for guide	3183025160
4	6	guide	3063625010
5	48	hex head screw M 16 x 35	5011603500
6	6	hex head screw M 16 x 35	50116035933
7	6	washer	5069162
8	18	hex head screw M 20 x 35	50120035933
9	18	washer	5069201
10	6	hex head screw M 16 x 130	50116130933
11	24	washer	506917
12	18	hex nut M16, DIN 934	502160934
13	12	socket head screw M 12 x 50	50112050912
14	6	bearing bracket	3183025020
15	1	hinge pin ø50	3073025030
16	2	bush	544505550
17	2	lock nut M45 x 1,5	50309
18	2	socket head screw M 12 x 20	50112020912
19	2	lock nut M 24 x 1,5	50224150985
20	1	washer	506924

Table 1

OPTIMAL 30.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
21	2	shoulder bolt M24 x 1,5 / ø30	3073025040
22	1	spacer	3113025050
23	2	gate cylinder	3010200105
24	3	spade cylinder	3010110011
25	3	head of eye joint	3073025060
26	12	hex head screw M 8 x 20, Ripp FK100	5010802001
27	3	hex head screw M 30 x 260	50130260931
28	6	washer	506930
29	3	lock nut M 30	502300985
30	1	cable distributer box	3983025010
31	1	throttle valve	54725721/4
32	1	lock nut	5032015
33	1	control block	3053025010
34	1	check valve	547LC1MVRAB
35	5	control valve NG 6	547001
36	4	socket head screw M 5 x 90 DIN 912	50105090912
37	16	socket head screw M 5 x 50 DIN 912	50105050912
38	2	union	5150300216
39	1	protection plate	5973025480
40	4	washer 6,4	5069061

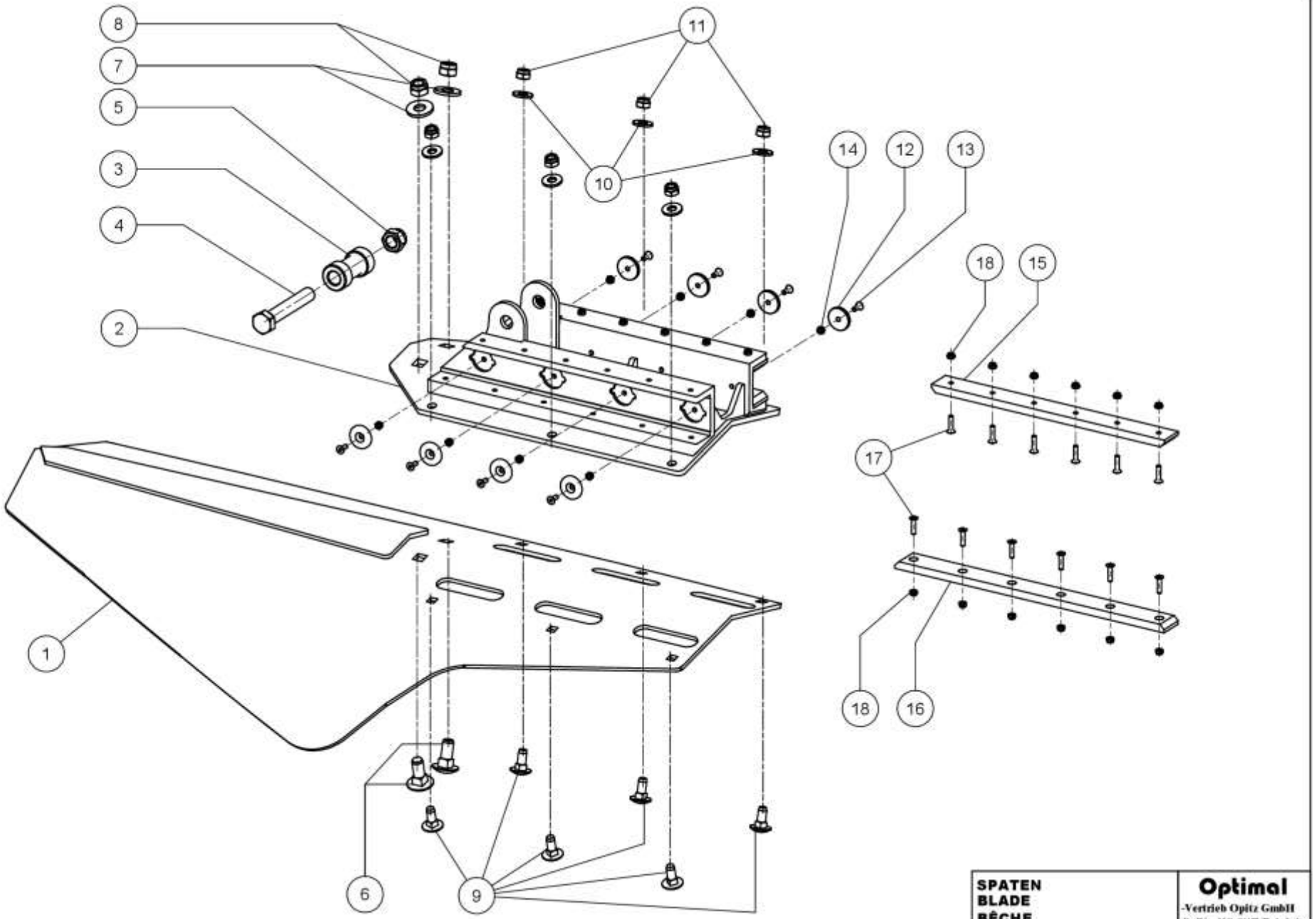
Table 1

OPTIMAL 30.25 - SPARE PARTS LIST

basic machine

Item	Quantity	Description	Part Number
41	4	screw M 6 x 12	501060127985
42	1	pipe clamp 110 A PP	510RAPR-110
43	2	socket head screw M 6 x 20 DIN 912	50106020912
44	8	pipe clamp 218 PP	510RAPR-218
45	10	socket head screw M 6 x 30 DIN 912	50106030912
46	5	pipe clamp 320 PP	510RAPR-320
47	4	socket head screw M 6 x 35 DIN 912	50106035912
48	12	socket head screw M 6 x 25 DIN 912	50106025912
49	3	adjustment feet	3303025010
50	3	pin for adjustment feet	3303625021
51	3	clip pin	5990404
52	2	socket head screw M 20 x 50 DIN 912	50120050912
53	2	nut M 20 DIN 936	502200936

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



SPATEN BLADE BÊCHE	Optimal -Vertrieb Opitz GmbH

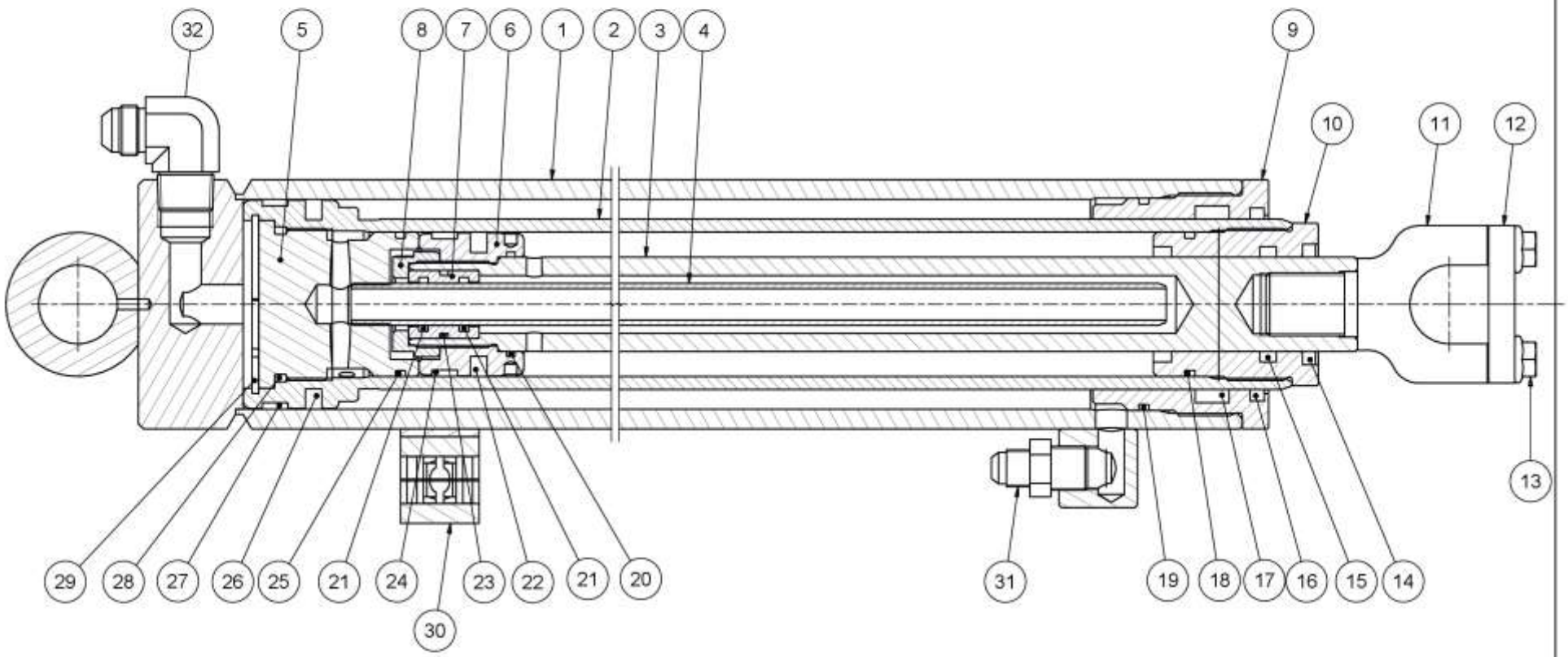
Table 2

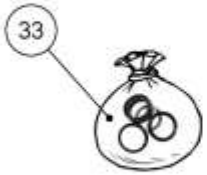
OPTIMAL 30.25 - SPARE PARTS LIST

blade

Item	Quantity	Description	Part Number
1	3	blade	3163025000
2	3	blade guide	3163025050
3	3	bush	3113025070
4	3	hex head screw M 20 x 120	50120120933
5	3	lock nut M 20	502200985
6	6	screw M 16 x 35	50116035603
7	6	tapered washer 39 x 17	5041667691
8	6	lock nut M 16	502160985
9	18	screw M 12 x 30	50112030603
10	18	tapered washer 29 x 13	504126769
11	18	lock nut M 12	502120985
12	24	sliding disk	3163025040
13	24	countersunk socket screw M 6 x 16	501060167991
14	24	lock nut M 6	502060985
15	6	plastic guide, short	3063625020
16	6	plastic guide, long	3063625030
17	72	countersunk socket screw M 6 x 25	501060257991
18	72	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 Eysölden Mü1 91177 Thalmässing

Table 3

OPTIMAL 30.25 - SPARE PARTS LIST

spade cylinder

Item	Quantity	Description	Part Number
1	1	cyinder body	3020800140
2	1	cyinder body ø80 / 55	3020800141
3	1	piston rod	3030360151
4	1	cyinder body ø16	3020800142
5	1	bottom plate	3040800030
6	1	piston	3125536010
7	1	guide bush 2616	3112616010
8	1	lock nut	3131110010
9	1	guide bush 8065	3118065010
10	1	guide bush 5536	3115536010
11	1	eye joint	3073025050
12	1	head of eye joint	3073025060
13	4	hex head screw M 8 x 20, Ripp FK100	5010802001
14	1	scraper P7 – 36	5160336
15	1	piston rod seal TS 36 x 44 x 6	5160236446
16	1	scraper PW65	5160365
17	1	piston rod seal RS 6575/1	5160265751
18	1	o-ring 49 x 3 90 Shore support ring	5170492030 516075055
19	1	o-ring 74,5 x 3 90 Shore	5170745030
20	1	o-ring 36 x 2,5 70 Shore	5170360025

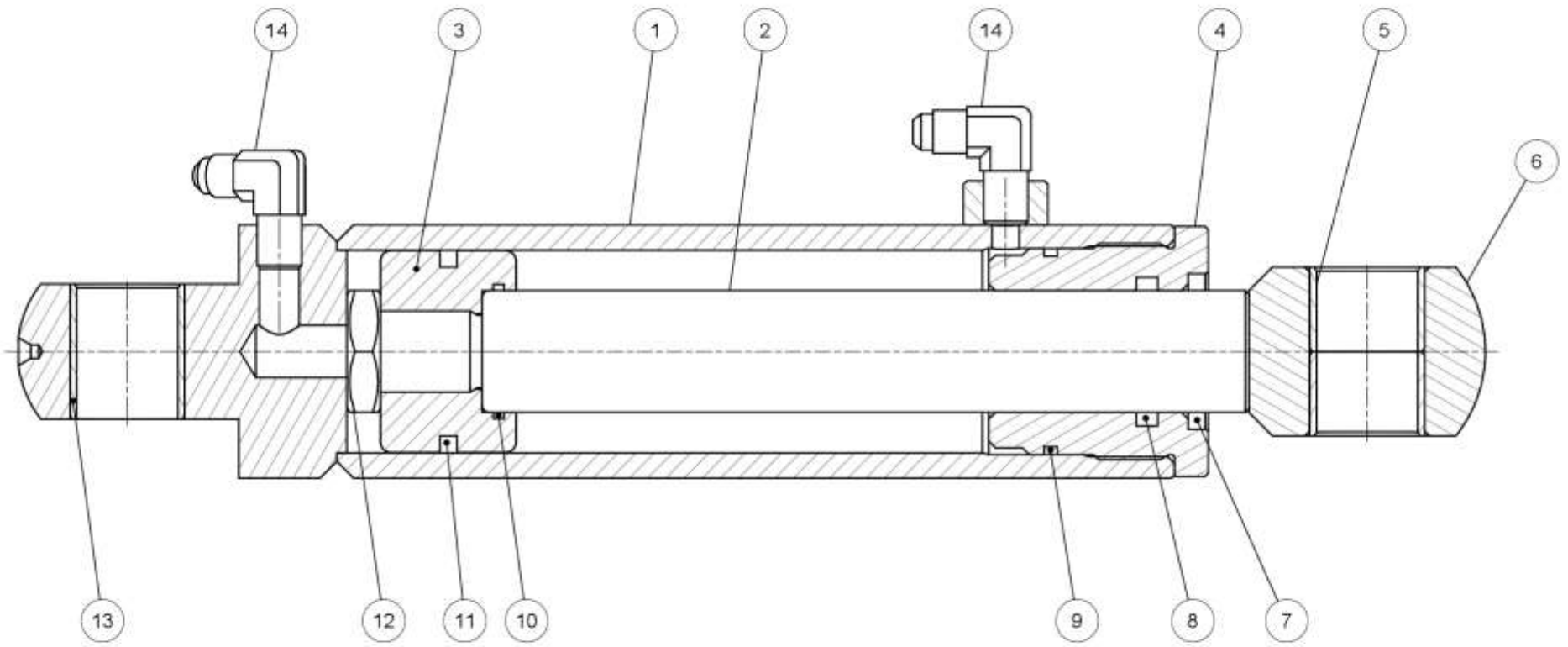
Table 3

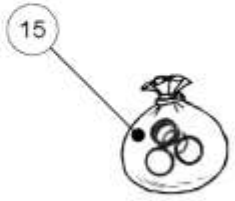
OPTIMAL 30.25 - SPARE PARTS LIST

spade cylinder

Item	Quantity	Description	Part Number
21	2	piston rod seal RS 16/20,6	51602016206
22	1	piston seal, 55-39	51604553956
23	1	o-ring 21 x 2,5 70 Shore	5170210025
24	1	guide ring FHG 50x55	5165550097
25	1	o-ring 49 x 3 90 Shore	5170492030
26	1	piston seal, 80-64	51604806456
27	1	guide ring FHG 80x75	5168075097
28	1	o-ring 53 x 3,5 70 Shore	5170530035
29	1	locking ring, DIN472, 65x2	599026420
30	1	pipe clamp 218PP	510RAPR-218
31	1	union	515021001017
32	1	elbow union	515070511221
33	1	seal kit complete	5160004065

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





ÖFFNUNGSZYLINDER GATE CYLINDER VÊRIN D`OUVERTURE	Optimal -Vertrieb Opitz GmbH

Table 4

OPTIMAL 30.25 - SPARE PARTS LIST

gate cylinder

Item	Quantity	Description	Part Number
1	1	cylinder body .	3020600121
2	1	piston rod ø 36 x 231	3030360161
3	1	piston, HZ 60/36	3126036240
4	1	guide bush HZ 60/36	3116036365
5	2	bush 3034-25	544303425
6	1	eye joint	3071110050
7	1	scraper 36 x 46 x 5/7	5160336
8	1	piston rod seal 36 x 44 x 6	5160236446
9	1	o-ring 55,2 x 3	5170552030
10	1	o-ring 36 x 2,5	5170360025
11	1	piston seal	5160160
12	1	nut M 24 x 1,5	50224150936
13	1	bush 3034-40	544303440
14	2	union	515070510813
15	1	seal kit complete	516006036601

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

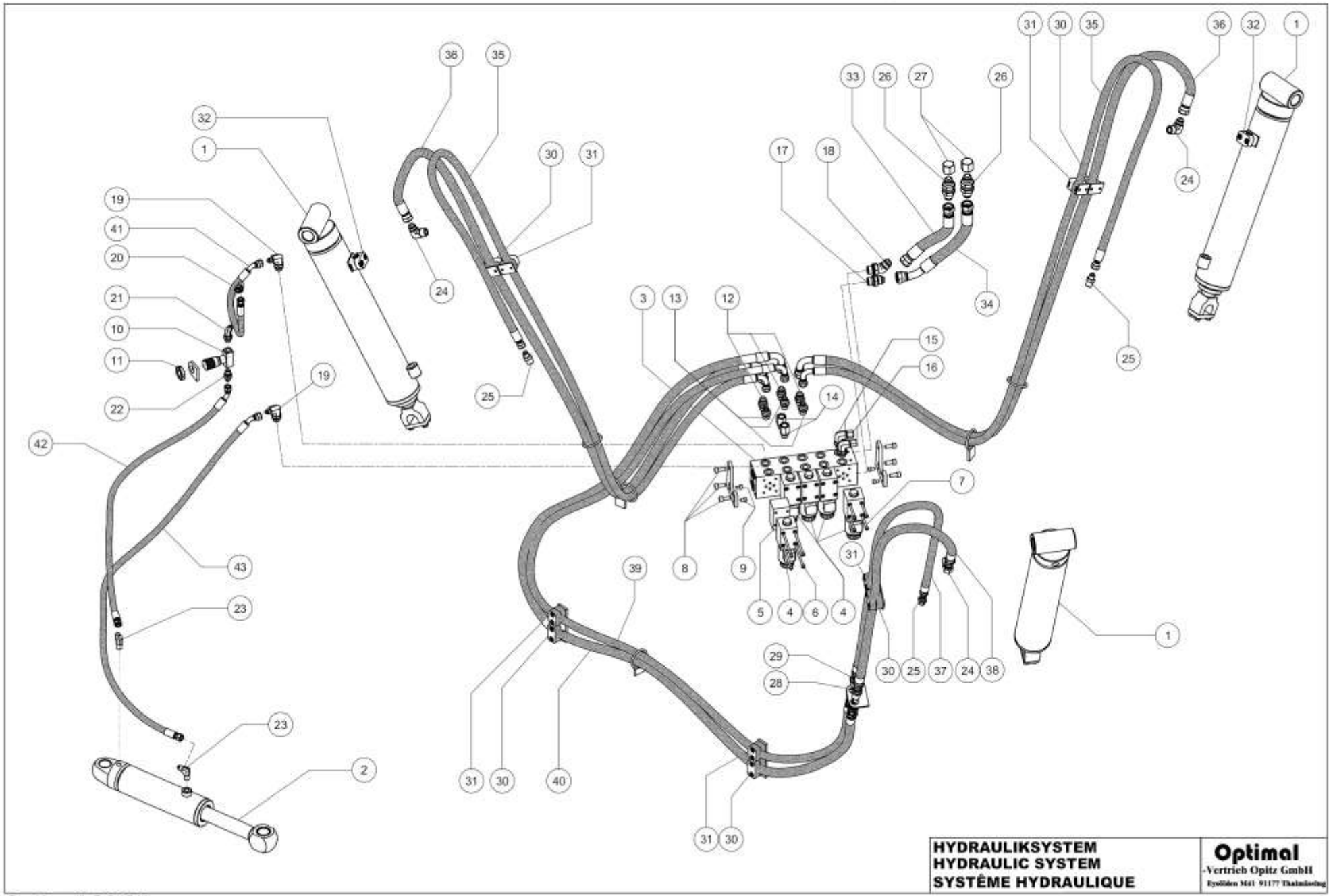


Table 5

OPTIMAL 30.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
1	3	spade cylinder	3010110011
2	1	gate cylinder	3010200105
3	1	control block	3053025010
4	5	control valve NG06	547001
5	1	sandwich valve NG06	547LC1MVRAB
6	4	socket head screw M 5 x 90 DIN 912	50105090912
7	16	socket head screw M 5 x 50 DIN 912	50105050912
8	6	socket head screw M 8 x 20 DIN 912	50108020912
9	4	socket head screw M 6 x 10 DIN 912	50106010912
10	1	flow control valve	54725721/4
11	1	lock nut M20 x 1	5032015
12	3	union	515020231217
13	3	union	515020231017
14	2	union 3/8”	5150193408
15	2	elbow union	515070391017
16	2	plug	5150103310
17	1	union	515020231621
18	1	union 45°	515050261621
19	2	elbow union	515070390817
20	1	elbow union	5150701708

Table 5

OPTIMAL 30.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
21	1	elbow union	515070390813
22	1	union	515020230813
23	2	elbow union	515070510813
24	3	elbow union	515070511221
25	3	union	515021001017
26	2	union	5150300216
27	2	plug	5150103316
28	1	union	5150300212
29	1	union	5150300210
30	5	pipe clamp 320 PP	510RAPR-320
31	5	pipe clamp 218 PP	510RAPR-218
32	3	pipe clamp 218 PP	510RAPR-218
33	1	hydraulic hose NW16, length 9,45“	513162024011
34	1	hydraulic hose NW16, length 13,4“	513162034012
35	2	hydraulic hose NW10, length 93,7“	513102238013
36	2	hydraulic hose NW12, length 77,6“	513132197013
37	1	hydraulic hose NW10, length 60,2“	513102153011
38	1	hydraulic hose NW12, length 14,6“	513132113011
39	1	hydraulic hose NW10, length 96,5“	513102245013
40	1	hydraulic hose NW12, length 97,6“	513132248013

Table 5

OPTIMAL 30.25 - SPARE PARTS LIST

Hydraulic System

Item	Quantity	Description	Part Number
41	1	hydraulic hose NW6, length 16,1“	513062041012
42	1	hydraulic hose NW6, length 39“	513062099012
43	1	hydraulic hose NW6, length 54,3“	513062138012

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

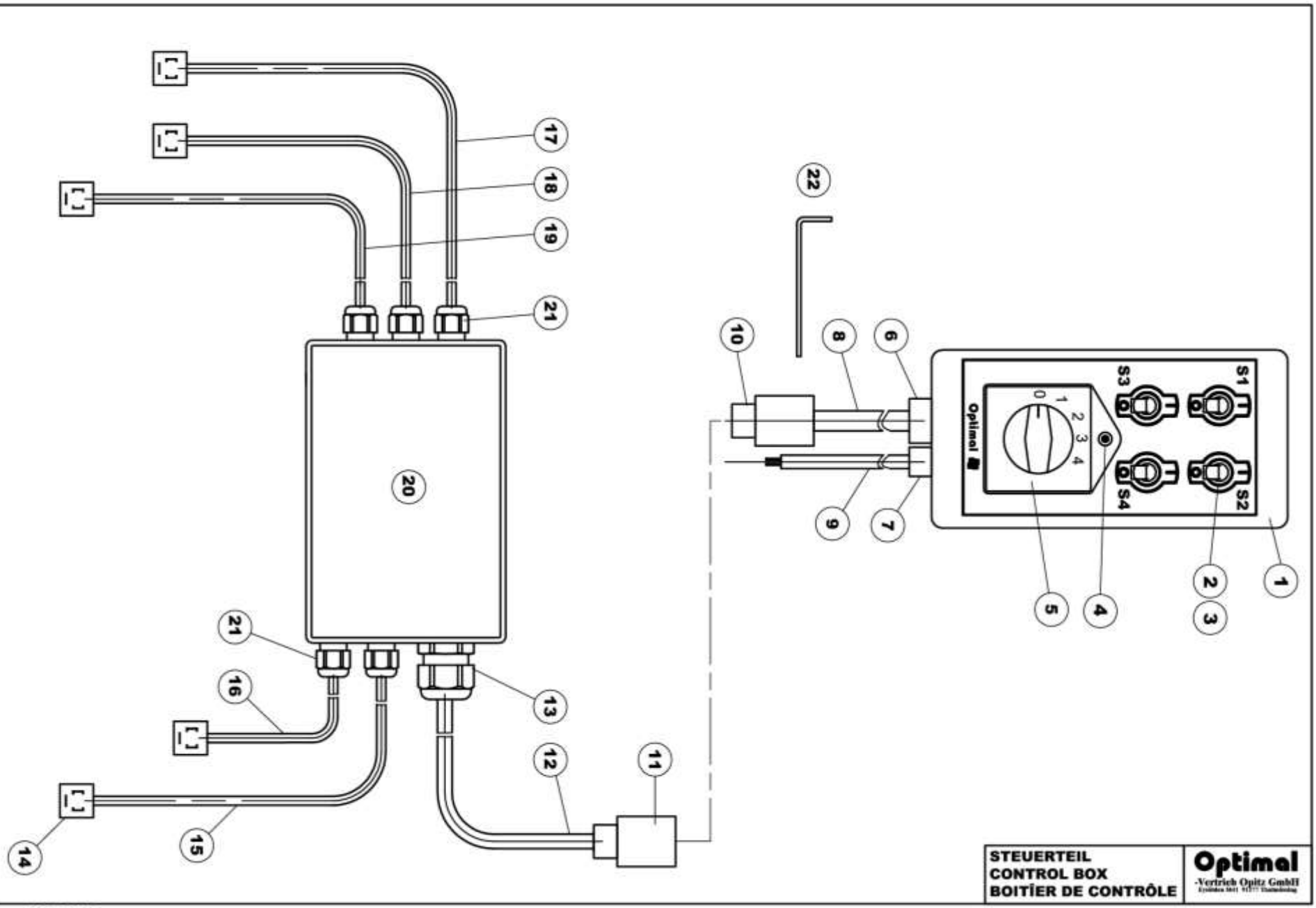


Table 6

OPTIMAL 30.25 - 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 9x1,5 – 230cm (91“)	5129015
13	1	straight cable fitting M20x1,5	5997527728
14	5	standard plug	54743650
15	1	cable 2x1 – 71cm (28“) – blade 3	5122010
16	1	cable 2x1 – 65cm (26“) – optional function	5122010
17	1	cable 2x1 – 75,5cm (30“) – blade 2	5122010
18	1	cable 2x1 – 70cm (27,5“) – blade 1	5122010
19	1	cable 2x1 – 67cm (26,4“) – gate	5122010
20	1	distributor box	3983025010

Table 6

OPTIMAL 30.25 - SPARE PARTS LIST

Electrical System

Item	Quantity	Description	Part Number
21	5	straight cable fitting M12x1,5	5997527702
22	1	bracket for 13-pole socket	3159990010