



M A N U A L

ON

TREE SPADE OPTIMAL 880



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 **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° 711800001



**KEEP AWAY
FROM SWING AREA
WHEN IN OPERATION**

Part N° 711800008



**NO SE ACERQUE A LA
ZONA DE MOVIMIENTO
CUANDO ESTÁ
EN FUNCIONAMIENTO**

Part N° 711800015

5. Gate Cylinder:



Part N° 711800007

2. Tower:



Part N° 711800001



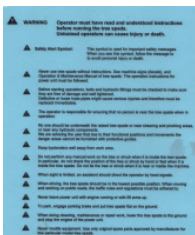
**AVOID INJURY
Stay Clear!
This structure
swings outward**

Part N° 711800012



**EVÍTESE LA HERIDA
¡No se acerque!
Está estructura
mueve hacia afuera**

Part N° 711800020



Part N° 711800018

7. Frame:



Part N° 711800004



Part N° 711800005

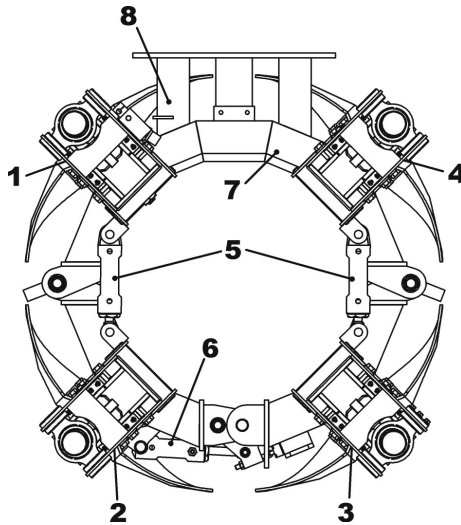


Part N° 711800006

8. Oil - Manifold:

**WARNING
SHUT OFF
POWER
BEFORE
SERVICING**

Part N° 711800010



6. Lock Cylinder:



Part N° 711800019

4. Tower:



Part N° 711800001



**AVOID INJURY
Stay Clear
Of
Elevated Unit
And Tree Spade**

Part N° 711800009



**EVÍTESE LA HERIDA
No se acerque
ni la unidad elevada
ni la transplantadora**

Part N° 711800016

5. Gate Cylinder:



Part N° 711800007

3. Tower:



Part N° 711800001



**MOVING MACHINERY
KEEP HANDS AND
FEET CLEAR**

Part N° 711800014



**MAQUINARIA EN MOVIMIENTO
MANTENGA MANOS Y PIES
ALEJADOS**

Part N° 711800017



**WATCH YOUR
HANDS AND
FINGERS**

Part N° 711800013

1. Operating Specifications

Description	Tree Spade OPTIMAL 880	
serial number	880	
capacity	upper root ball diameter	90 cm (36")
	root ball depth	60 cm (24")
dimensions of basic machine	height	150 cm (59")
	width, gate closed	110 cm (43")
	width, gate open	150 cm (59")
	clearance between open gate	70 cm (28")
weight	basic machine, empty	589 kg (1296 lbs.)
rated type of attachment	attachment by means of back plate to loader or excavator	
	minimum lift capacity	1.500 kg (3,300 lbs.)
	the power unit must be equipped with an auxiliary double-acting hydraulic circuit for implements:	
	working pressure	160 - 200 bar (2,300-2,900 lbs/in ²)
	oil flow	40 l/min. (11 GPM)
controls	electro-hydraulic valves, double-acting, for three or four functions actuated by rotary switch or joy stick	
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 18. At these attachment points the tree spade is bolted tightly to the back plate.

2.2 Installation of Electro-Hydraulic Control

2.2.1 Install rotary switch or joystick at suitable and dry location in the power unit, e.g. the rotary switch on the instrument panel, or the joy stick at the hydraulic lever.

2.2.2 Install 7-pole electric socket next to hydraulic disconnect of auxiliary hydraulic circuit at the power unit.

2.2.3 The blue wire should be connected to 12 VDC, the brown wire to the ground. It is best if the blue wire is connected to a power source that is only available when the ignition switch is on, to avoid inadvertently leaving power on the tree spade.

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 3.



IMPORTANT:

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

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.

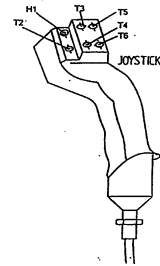
4.1 The Controls

The electro-hydraulic controls are to be operated as follows:

<u>4.1.1 Rotary Switch</u>	<u>Control Valve</u>	<u>Work Movement (actuated by Manual Lever or Pedal)</u>
function 1:	gate lock	unlock / lock
function 2:	gate	open / close
function 3:	blades	up / down
(function 4:	stabilizers	up / down)



4.1.2 <u>Joystick</u>	<u>Control Valve</u>	<u>Work Movement (actuated by Manual Lever or Pedal)</u>
T3	gate lock	unlock / lock
T5	gate	open / close
T4	blades	up / down
(T6)	stabilizers	up / down)



The function required is preset with the rotary switch and then activated by the manual control valve of the auxiliary hydraulic circuit of the power unit.

With some loaders this valve might be activated by a pedal.

4.2 Operation

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

Preset function 1 "gate lock" with rotary switch and activate "unlock" with control valve. Then preset function 2 "gate" and activate "open" with control valve.

With the gate open drive towards the tree. When the tree is positioned in the center of the main frame, preset function 2 "gate" and activate "close". Then preset function 1 "gate lock" and activate "lock".

Locking the frame before starting the digging operation is of utmost importance and must never be omitted !

If the gate is not locked properly, the frame may be bent !

In order to prevent the spades from digging with the gate not being properly locked, the gate lock is furnished with a safety switch. If the spades do not move although the operator followed above instructions, this malfunction is probably caused by a branch or some other object obstructing the movement of the gate lock latch. Remove the obstruction and try again.

After having locked the gate, lower the tree spade to the ground and get it into level position. Again check if the tree is positioned in the center of the frame and correct, if necessary.

If the power unit is furnished with rear stabilizers, extend stabilizers prior to digging.

Preset function 3 "blades" and activate "down" with control valve. Now the spade cylinders force the blades into the ground.

Because all 4 spade cylinders are activated by one valve at the same time, the blades which encounter the least resistance at any given time will penetrate into the soil first.

When the frame begins to lift when digging, retract blades and then continue digging.

Do not rock the tree spade forward and backward with the tilting cylinder of the power unit when the blades are in the ground!

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.

Before travelling, rear stabilizers must be retracted !



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 rotary switch 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

5.1 Blade Guides

The blades are furnished with plastic linings which slide on steel guides. Once the plastic lining is worn to the point that the heads of the countersunk screws are flush with the surface of the plastic linings, they must be replaced to prevent the screws from damaging the guides.

 **IMPORTANT:** Keep the guides clean.

5.2 No Lubrication

All sliding surfaces and bearings are made of plastic and do not require any lubrication.

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.

 **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 !

5.6 Adjusting Blades



Illustration 1

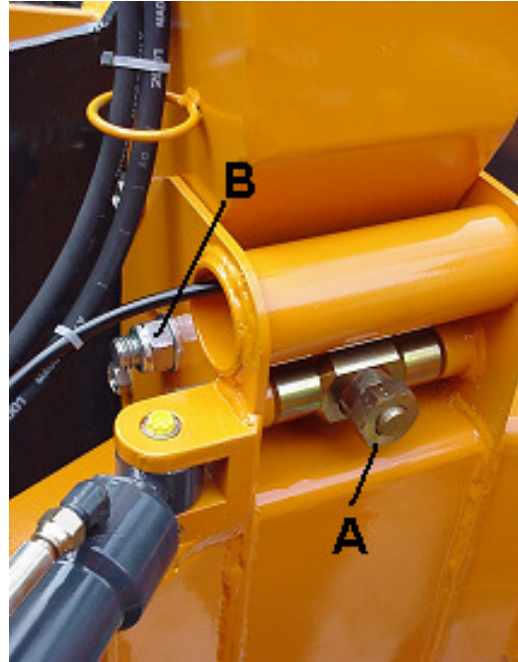


Illustration 2



Illustration 3

1. General view of spade tower
2. A adjustment screw
B retention nut
3. Slacken retention nut, then readjust tower either way by means of adjustment screw. When spades are in proper position, tighten retention nut.

5.7 Replacing Plastic Bush of Spade Cylinder



Illustration 4

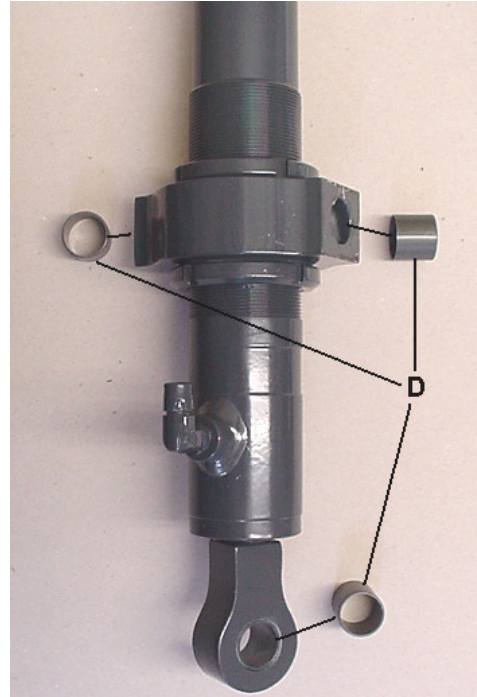


Illustration 5

Unscrew bolt (C), remove worn bush, insert new bush (D)

5.8 Replacing Plastic Bush of Gate Lock Cylinder



Illustration 7

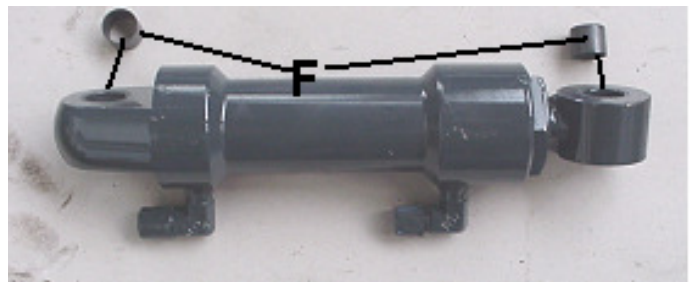


Illustration 6

Unscrew bolts (E), remove worn bush, insert new bushes (F)

5.9 Replacing Plastic Bush of Gate Cylinder



Illustration 8

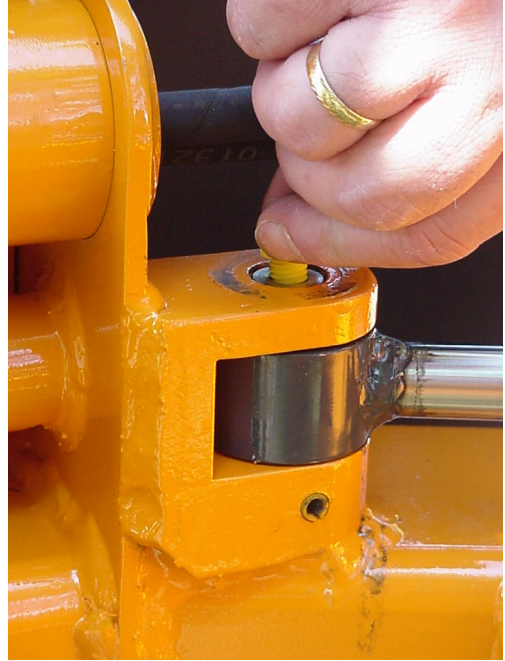


Illustration 9



Illustration 10



Illustration 11

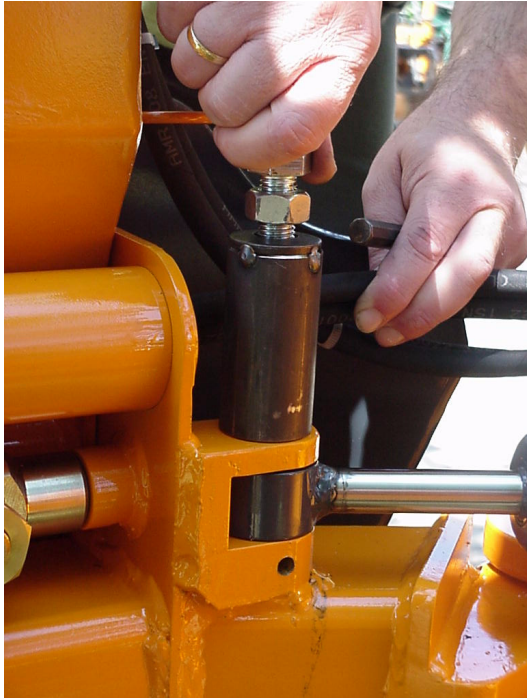


Illustration 12



Illustration 13

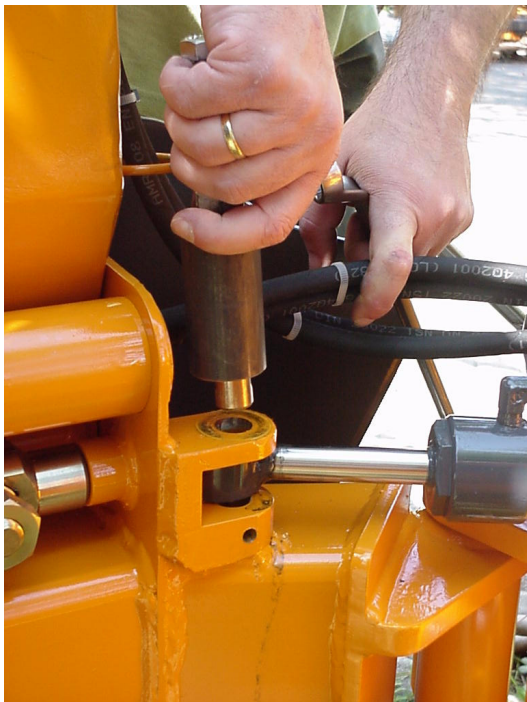


Illustration 14



Illustration 15

8. General view of gate cylinder with piston rod and eye joint.
9. Screw off plastic thread plug.
10. Remove dowel pin by means of drift punch.
11. Dowel pin has been removed. Note female thread on top of the pin,
12. Place extractor on top of pin and fasten screw into female thread.
13. When screw has a firm grip, hold it with wrench in position and tighten nut until it is stopped by the extractor. Now hold nut and tighten screw further into pin thread, thereby extracting the pin.
14. Pin and plastic bush is removed from eye joint.
15. The plastic bush is replaced.



Extractor with screw and nut.

6. Trouble Shooting

1. Nothing moves. (none of the hydraulic functions works)
 - Electricity supply to rotary switch 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.

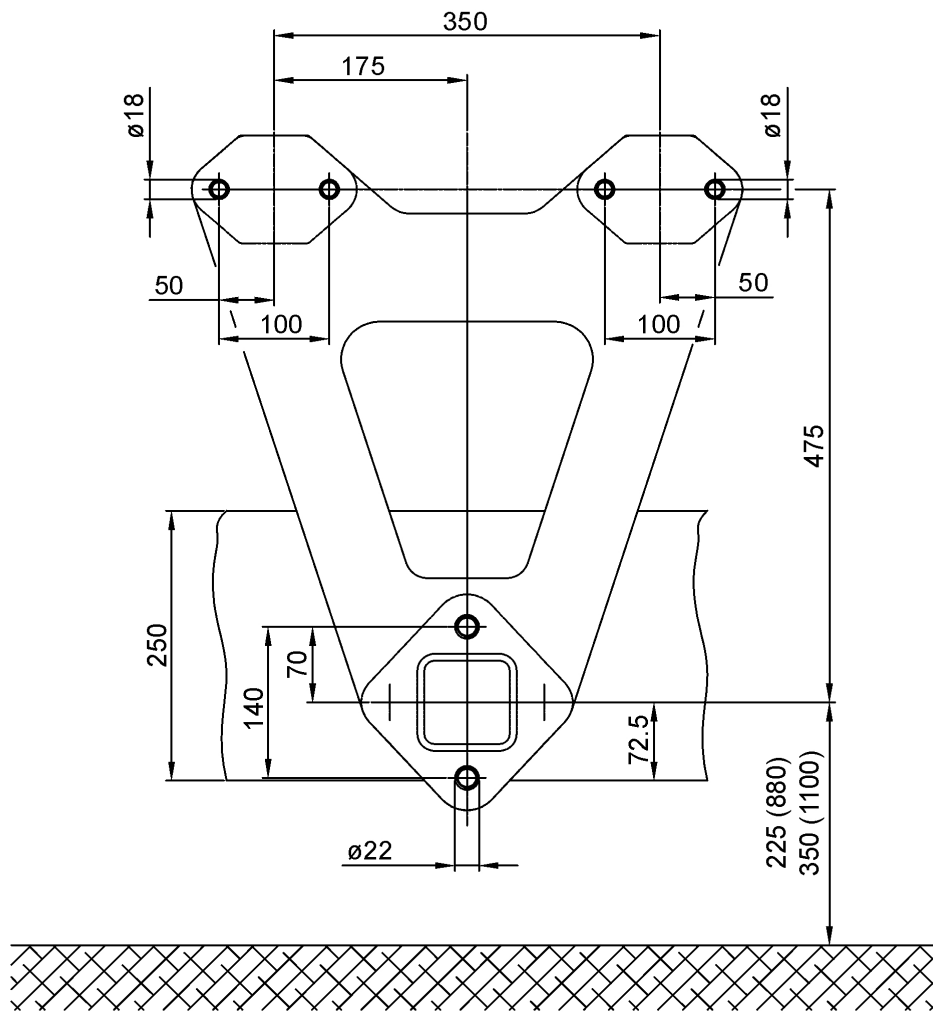
7. One function (any) does not work.
 - The electricity supply is interrupted. Check power circuit.
 - The magnet of the respective control valve is defect. Valve must be replaced.
 - The plunger of the control valve is seized, probably due to a dirt particle in the hydraulic oil. Disassemble valve and clean.

6. Trouble Shooting - individual spade control

8. The spades cannot be operated individually, i.e. all spades move at the same time.
 - Controls were not switched to individual control. (When working in the individual control mode, the red light must show red.)
 - Circuit board is defect and must be replaced.

9. One of the blades moves even when not actuated.
 - The electricity between valve and blade has been interrupted.
 - Valve of the respective blade is defect. Replace valve.

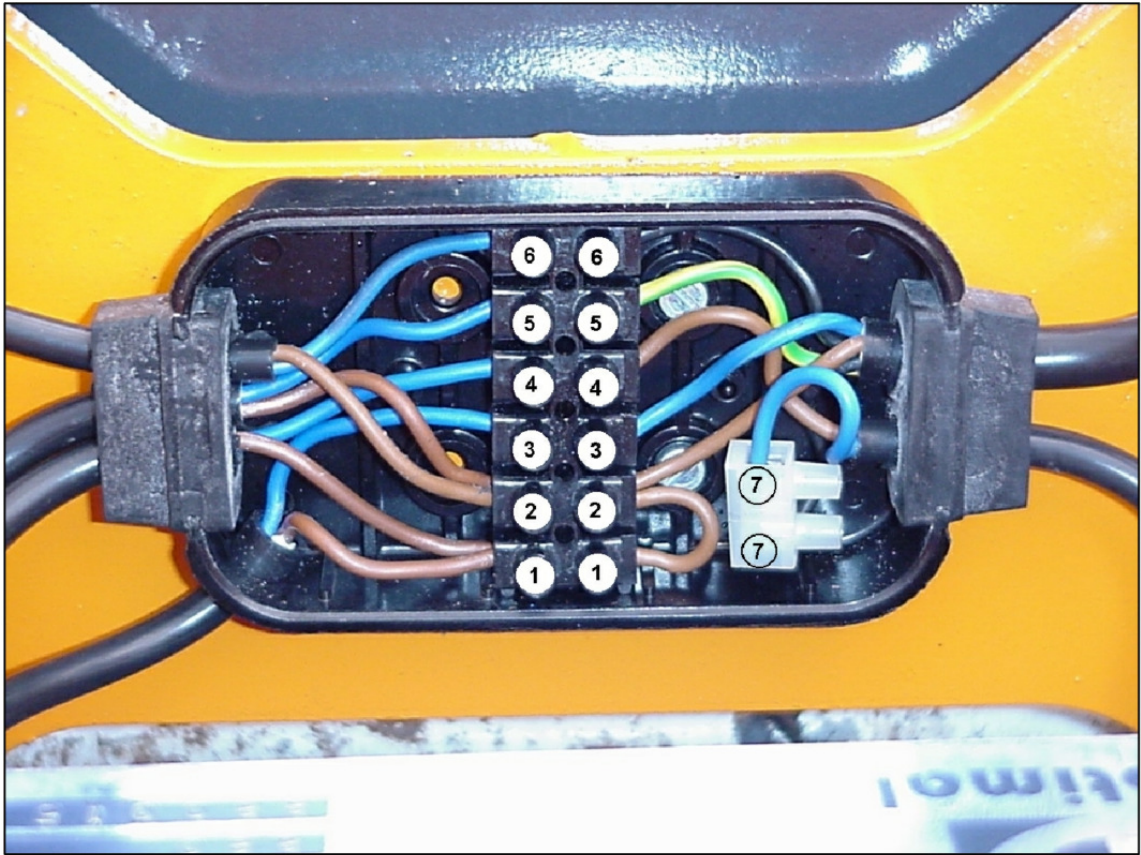
10. None of the hydraulic functions works.
 - Electricity supply to joy stick is interrupted. Check fuses at power unit.
 - Hydraulic disconnect is not properly attached. Check attachment.
 - Circuit board is defect and must be replaced.



ANBAUPUNKTE -
ATTACHMENT POINTS

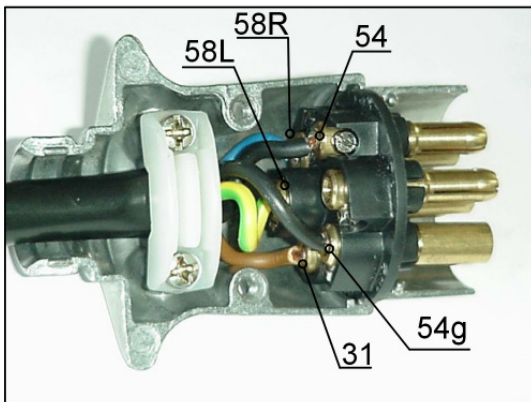
Optimal
Vertrieb Optitz GmbH
Byaliden 1641 D-91177 Thalmassing

terminal box

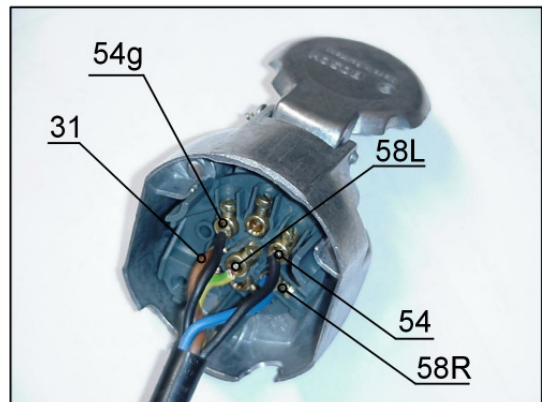


- 1) ground
- 2) ground - brown (31)
- 3) gate lock - blue (58R)
- 4) spades - brown of safety switch (13)

- 5) gate - yellow/green (58L)
- 6) stabiliz. - black (54g)
- 7) blue of safety switch (14) - black (next to brown) (54)



7-pole plug



7-pole socket



S P A R E P A R T S
ON
TREE SPADE OPTIMAL 880



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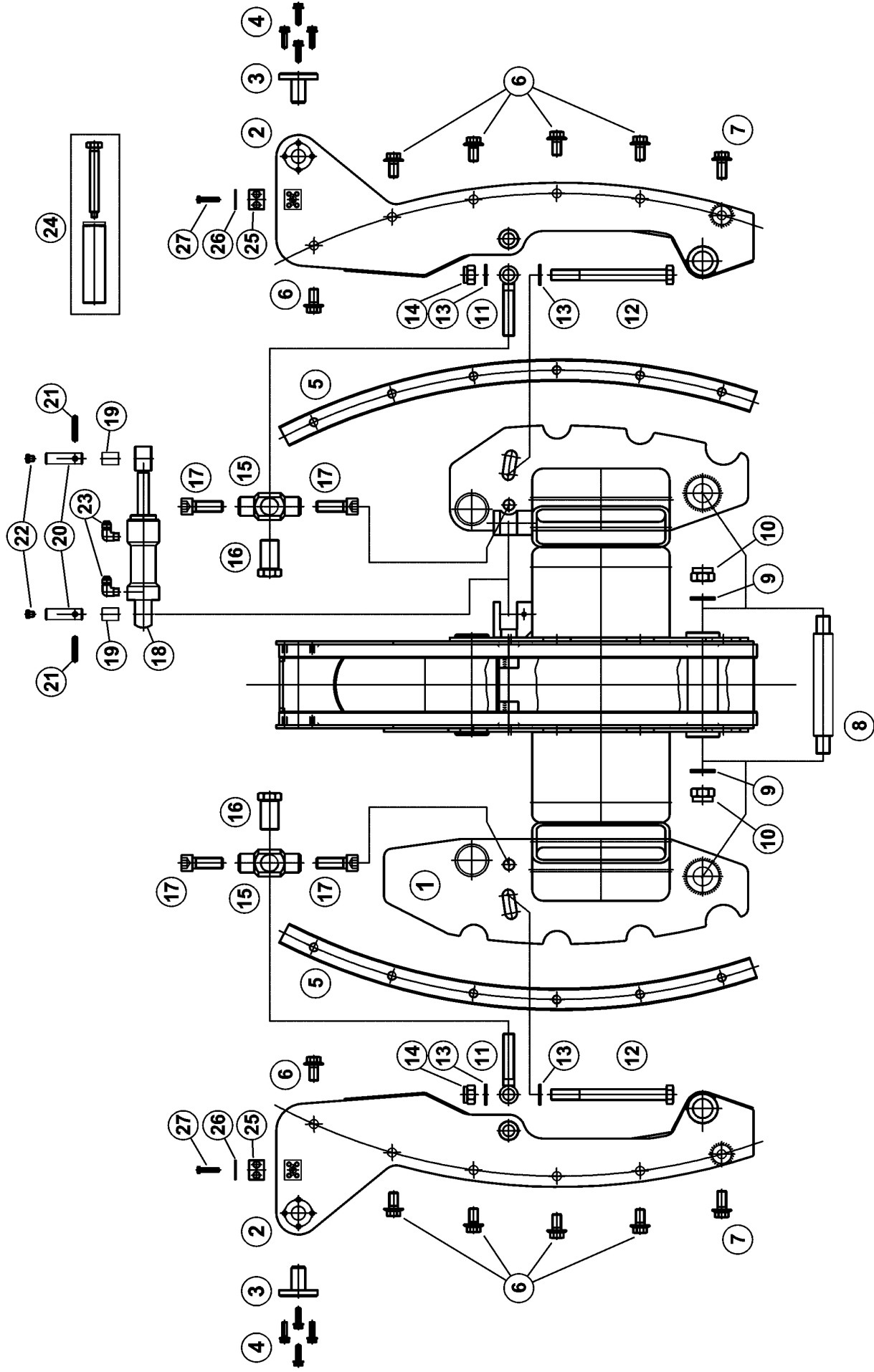
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GRUNDRAMMEN -
MAIN FRAME

Optimal
-Vertrieb Optitz GmbH
Rythen 9441 91777 Thalheim

Table 1**TREE SPADE OPTIMAL 880 - SPARE PARTS****Main Frame**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	main frame	3180880150
2	4	spade tower	3180880010
3	8	swivel pin	30785025
4	32	screw M 8 x 30	5010803000
5	8	guide	30685024
6	40	screw M 16 x 30	5011603000
7	8	screw M 16 x 35	5011603500
8	4	pivot pin 35 mm dia.	3070880080
9	8	flat washer M 24 DIN 125	506924
10	8	elastic stop nut M 24 x 1,5 DIN 985	50224150985
11	4	adjustment block	3140880010
12	4	bolt M 20 x 210 DIN 931	50120210931
13	8	flat washer M 20 DIN 7349	5069201
14	4	retention nut M 20 DIN 985	502200985
15	4	adjustment pin	3070880010
16	4	adjustment screw	3130880010
17	8	socket head screw M 20 x 55 DIN 912	50120055912
18	2	gate cylinder	3010200040
19	4	bush 2023-30	544202330

Table 1

TREE SPADE OPTIMAL 880 - SPARE PARTS

Main Frame

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
20	4	pin 20 mm dia.	3070880070
21	4	tapered sleeve 8 x 45	506798451481
22	4	thread plug	599700M10
23	4	elbow union	515070510813
24	1	pin extractor	370880050
25	4	double pipe clamp	510112
26	4	cover	5100DP-B1
27	4	bolt M 6 x 35 DIN 931	50106035931

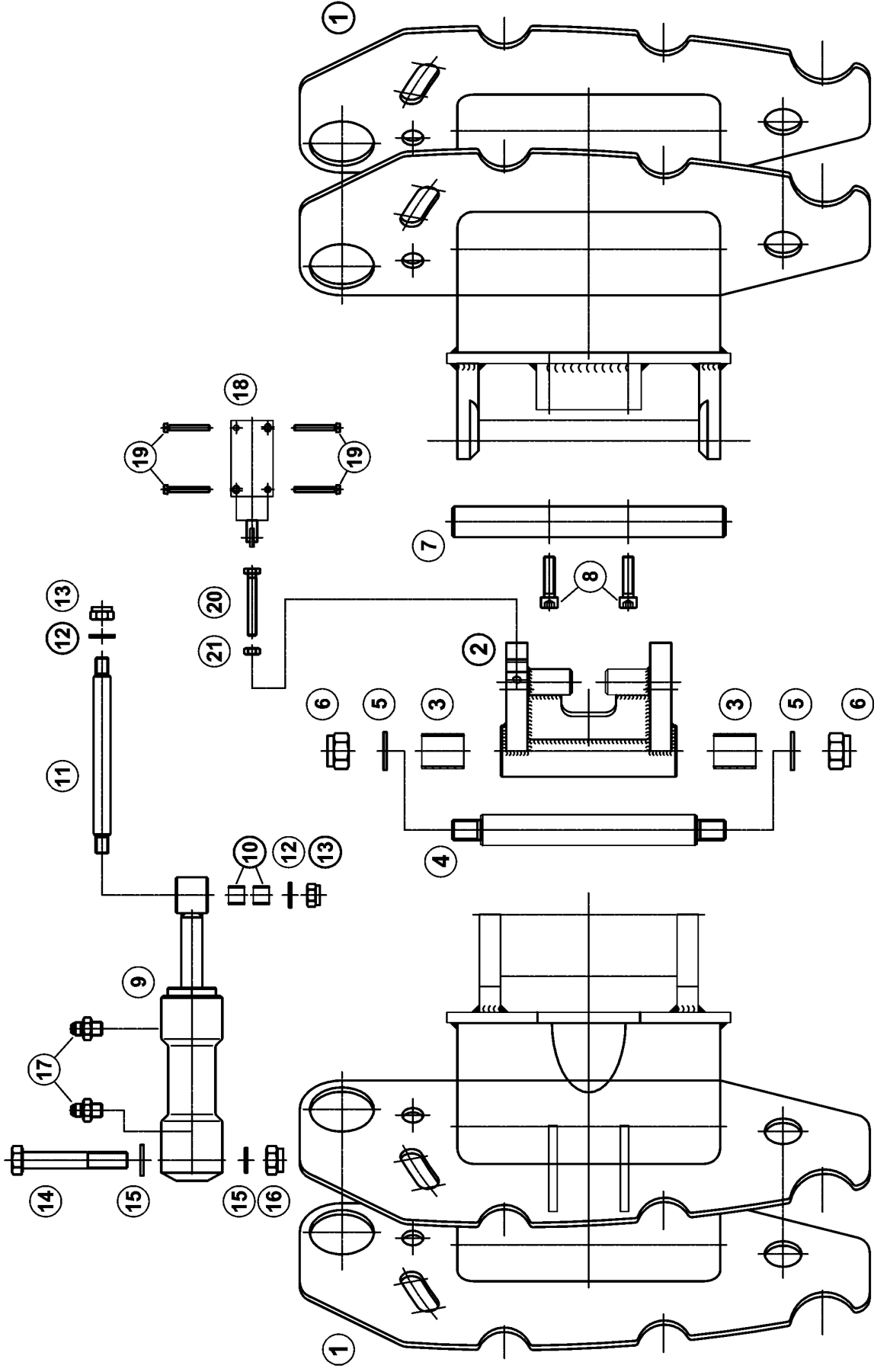


Table 2**TREE SPADE OPTIMAL 880 - SPARE PARTS****Gate Lock**

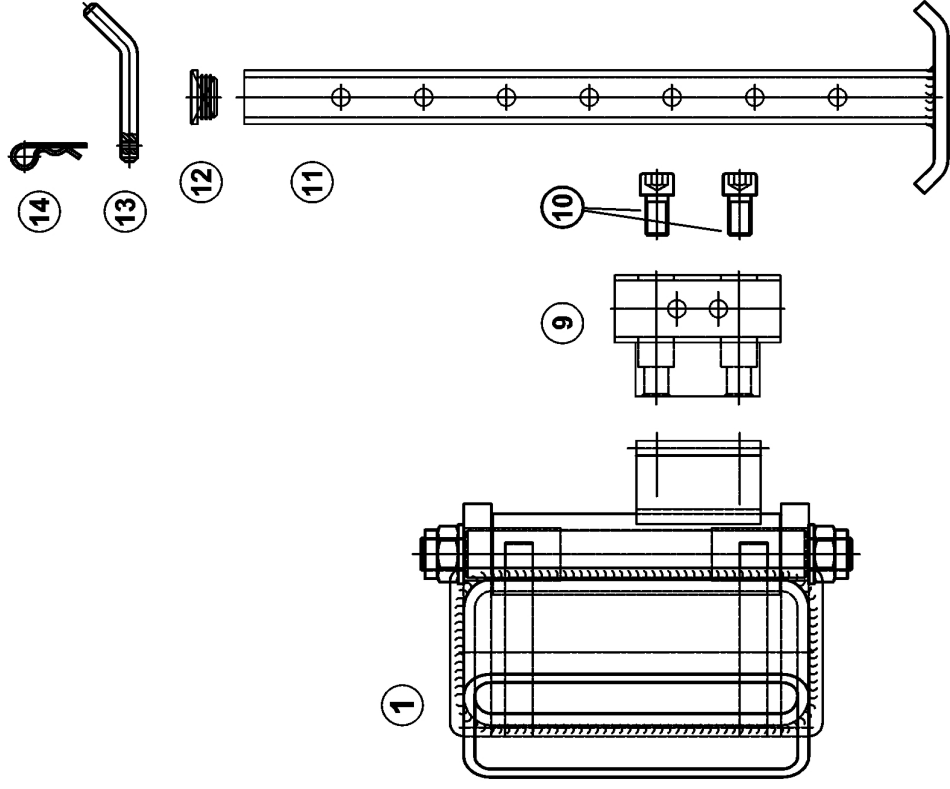
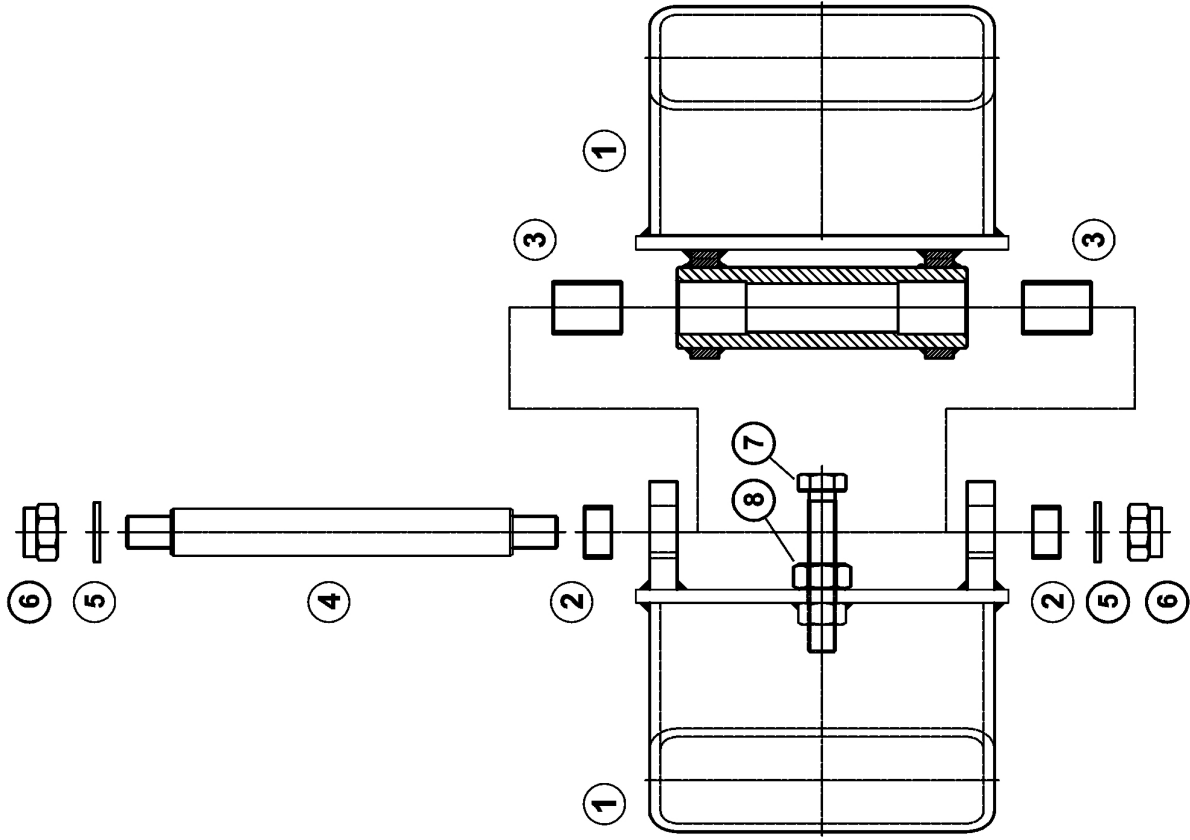
<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	main frame	3180880150
2	1	catch hook	3180880070
3	2	bush 3034-40	544303440
4	1	pin 30 mm dia.	3070880030
5	2	flat washer M 20 DIN 125	506920
6	2	elastic stop nut M 20 DIN	502200985
7	1	catch pin 30 mm dia.	3070880020
8	2	socket head screw M 10 x 40 DIN 912	50110040912
9	1	gate lock cylinder	301030040
10	2	bush 1618-15	544161815
11	1	threaded pin Ø 16 M 12	3070880050
12	2	flat washer M 12 DIN	506912
13	2	elastic stop nut M 12 DIN 985	502120985
14	1	bolt M 16 x 100 DIN 931	50116100931
15	2	flat washer M 16 DIN 125	506916
16	1	elastic stop nut M 16 DIN 985	502160985
17	2	straight union	515021000813
18	1	safety switch	5990043782
19	4	slotted hex screw M 5 x 40 DIN 84	50105040084

Table 2

TREE SPADE OPTIMAL 880 - SPARE PARTS

Gate Lock

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
20	1	bolt M 8 x 60 DIN 933	50108060933
21	1	nut M 8 DIN 934	502080934

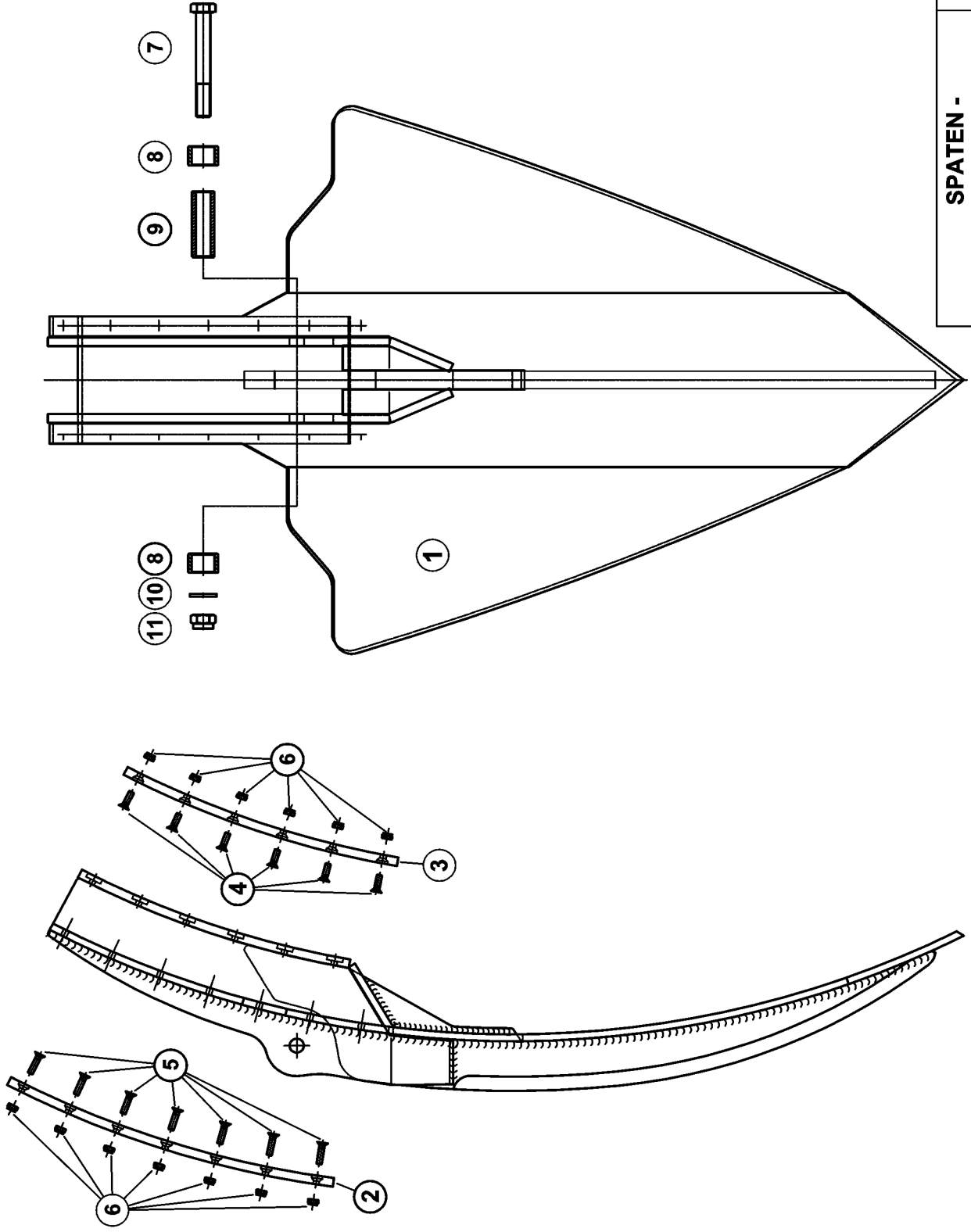


SCHARNIER / VERSTELF.
HINGE / ADJUSTMENT FT.

Optimal
-Vertrieb Optitz GmbH
Rythen 144 91777 Thalmassing

Table 3**TREE SPADE OPTIMAL 880 - SPARE PARTS****Gate Hinge and Adjustment Feet**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	main frame	3180880150
2	2	bush 3539-20	544353920
3	2	bush 3539-50	544353950
4	1	hinge pin Ø 35	3070880060
5	2	flat washer M 24 DIN 125	506924
6	2	elastic stop nut M 24 x 1,5 DIN 985	50224150985
7	1	screw M 20 x 120 DIN 933	50120120933
8	1	nut M 20 DIN 934	502200934
9	2	mounting device	3300880040
10	4	socket head screw M 16 x 30 DIN 912	50116030912
11	2	adjusting foot	3300880030
12	2	plastic cover	599035035
13	2	pin	3301100060
14	2	cotter pin	5990403



SPATEN -
SPADE

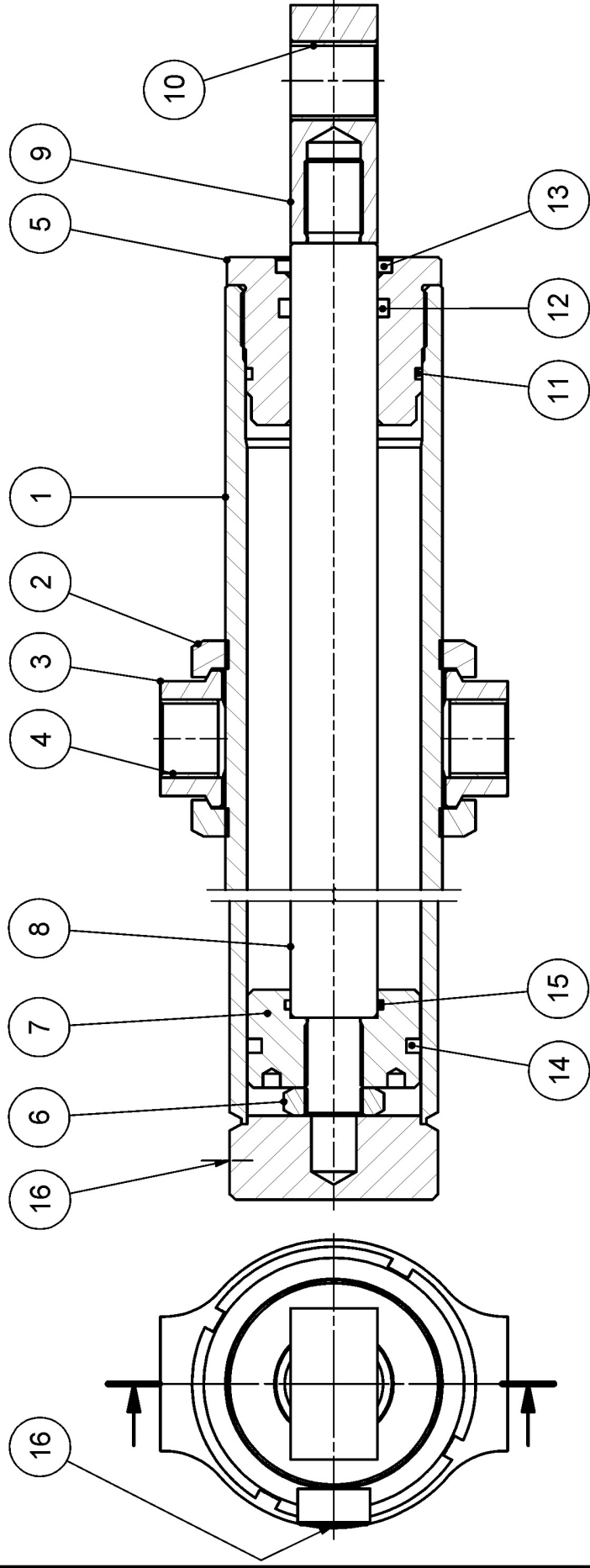
Optimal
-Vertrieb Optitz GmbH
Rybinskae Nr.1 91177 Thalmassing

Table 4**TREE SPADE OPTIMAL 880 - SPARE PARTS****Blades (quantities for one blade only)**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	blade	3160880070
2	2	plastic lining, long	3060880010
3	2	plastic lining, short	3060880020
4	12	countersunk socket head screw M 6 x 20 DIN 7991	501060207991
5	14	countersunk socket head screw M 6 x 25 DIN 7991	501060257991
6	26	elastic stop nut M 6 DIN 985	502060985
7	4	bolt M 16 x 120 DIN 931	50116120931
8	8	spacer	3110880120
9	4	bush	31185030
10	4	washer 17 mm	506916
11	4	elastic stop nut M 16	502160985

Ersatzteilliste - Spare Parts List

Tafel - Table 5

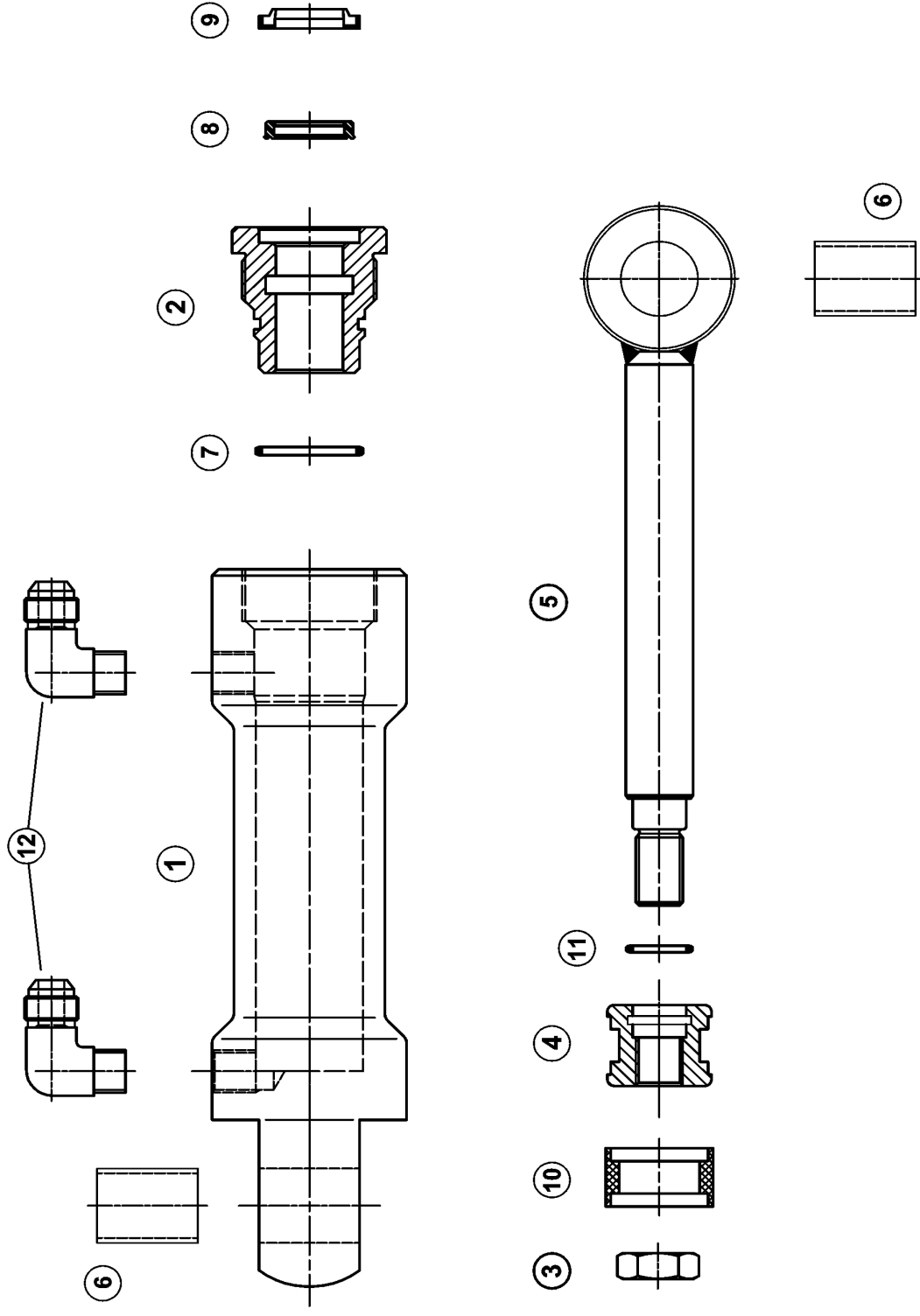


SPATENZYLINDER
SPADE CYLINDER

Optimal
-Vertrieb Optitz GmbH
Eysastr. 14A | 911771 | haimching

Table 5**TREE SPADE OPTIMAL 880 - SPARE PARTS****Spade Cylinder**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	cylinder body	3020600090
2	2	slotted nut KM 15	31350315
3	1	cylinder suspension	30985024
4	2	bush 2528-20	544252820
5	1	guide bush 60 30 360	3116030360
6	1	nut M 20 x 1,5 DIN 936	50220150936
7	1	piston 60 30 235	3126030235
8	1	piston rod Ø 30 x 760	3030300070
9	1	eye joint Ø 25	5070880010
10	1	bush 2528-30	544252830
11	1	O-ring 55,2 x 3 90 Shore	5170552030
12	1	rod seal S 8-30	5160230
13	1	scraper P7-30	5160330
14	1	piston seal OMK 60	5160160
15	1	O-ring 30 x 2,5 70 Shore	5170300025
16	2	elbow union	515070510813
	1	seal kit	516006030601

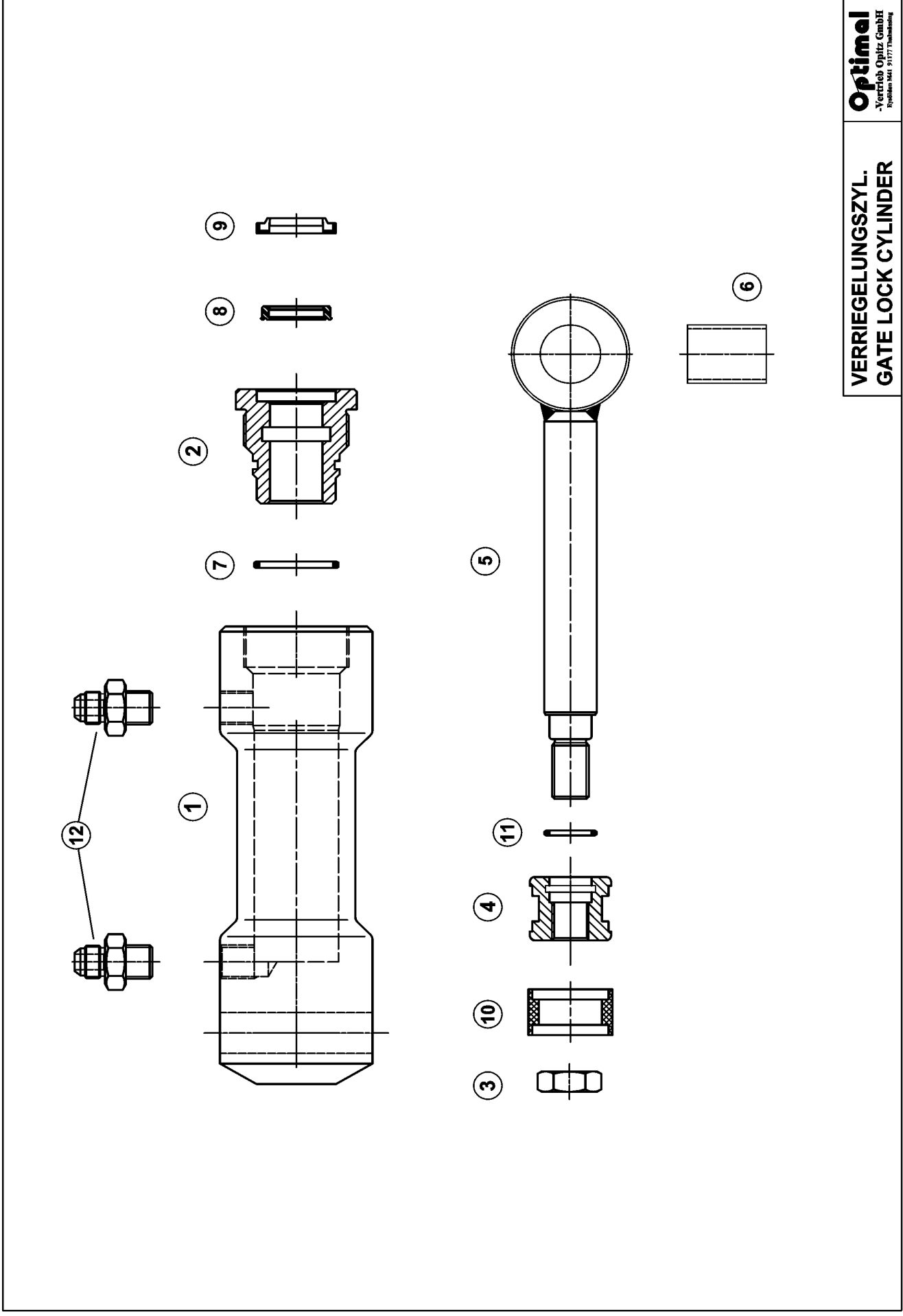


ÖFFNUNGSZYLINDER
GATE CYLINDER

Optimal
-Vertrieb Optitz GmbH
Riedheim 6641 91177 Thalheim

Table 6**TREE SPADE OPTIMAL 880 - SPARE PARTS****Gate Cylinder**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	cylinder body	3020320020
2	1	guide bush	3113220010
3	1	nut M 14 x 1,5 DIN 936	50214150936
4	1	piston	3123220010
5	1	piston rod Ø 20 x 171	3030200020
6	2	bush 2023-30	544202330
7	1	O-ring 28 x 2,5 90 Shore	5170280025
8	1	rod seal T7 20 x 26	5160220
9	1	scraper W4 – 20 x 30	5160320
10	1	piston seal TPM 32 x 24	5160132
11	1	O-ring 16 x 2 90 Shore	5170160020
12	2	elbow union	515070510813
	1	seal kit	516003220601

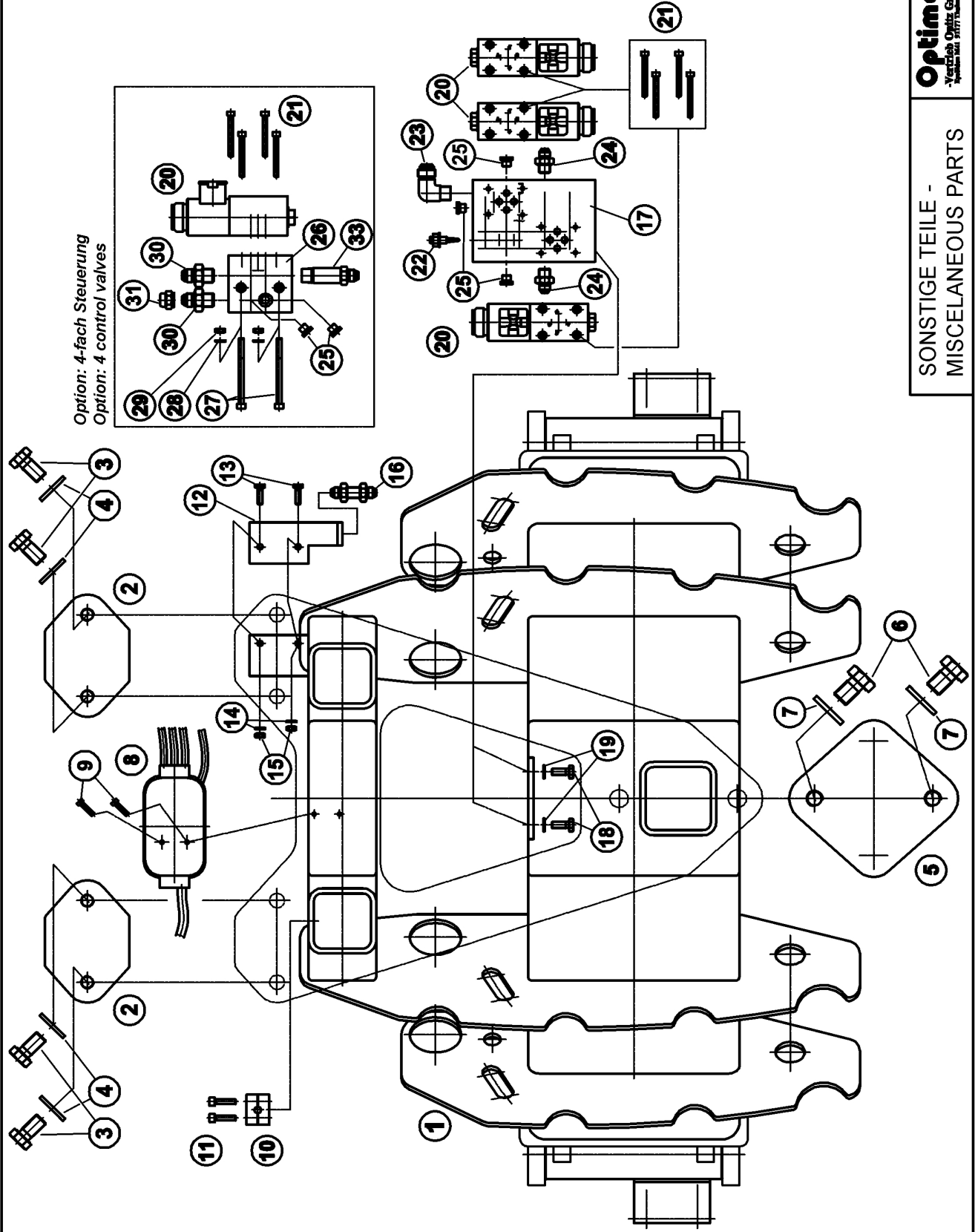


VERriegELUNGszYL.
GATE LOCK CYLINDER

Optimal
-Vertrieb Optitz GmbH
Rydzhan Nr. 91177 Thalheim

Table 7**TREE SPADE OPTIMAL 880 - SPARE PARTS****Gate Lock Cylinder**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	cylinder body	3020320010
2	1	guide bush	3113220010
3	1	nut M 14 x 1,5 DIN 936	50214150936
4	1	piston	3123220010
5	1	piston rod Ø 20 x 152,5	3030200010
6	2	bush 1618-15	544161815
7	1	O-ring 28 x 2,5 90 Shore	5170280025
8	1	piston rod seal T7 20 x 26	5160220
9	1	scraper W4 – 20 x 30	5160320
10	1	piston seal TPM 32 x 24	5160132
11	1	O-ring 16 x 2 90 Shore	5170160020
12	2	straight union	515021000813
	1	seal kit	516003220601



SONSTIGE TEILE -
 MISCELLANEOUS PARTS

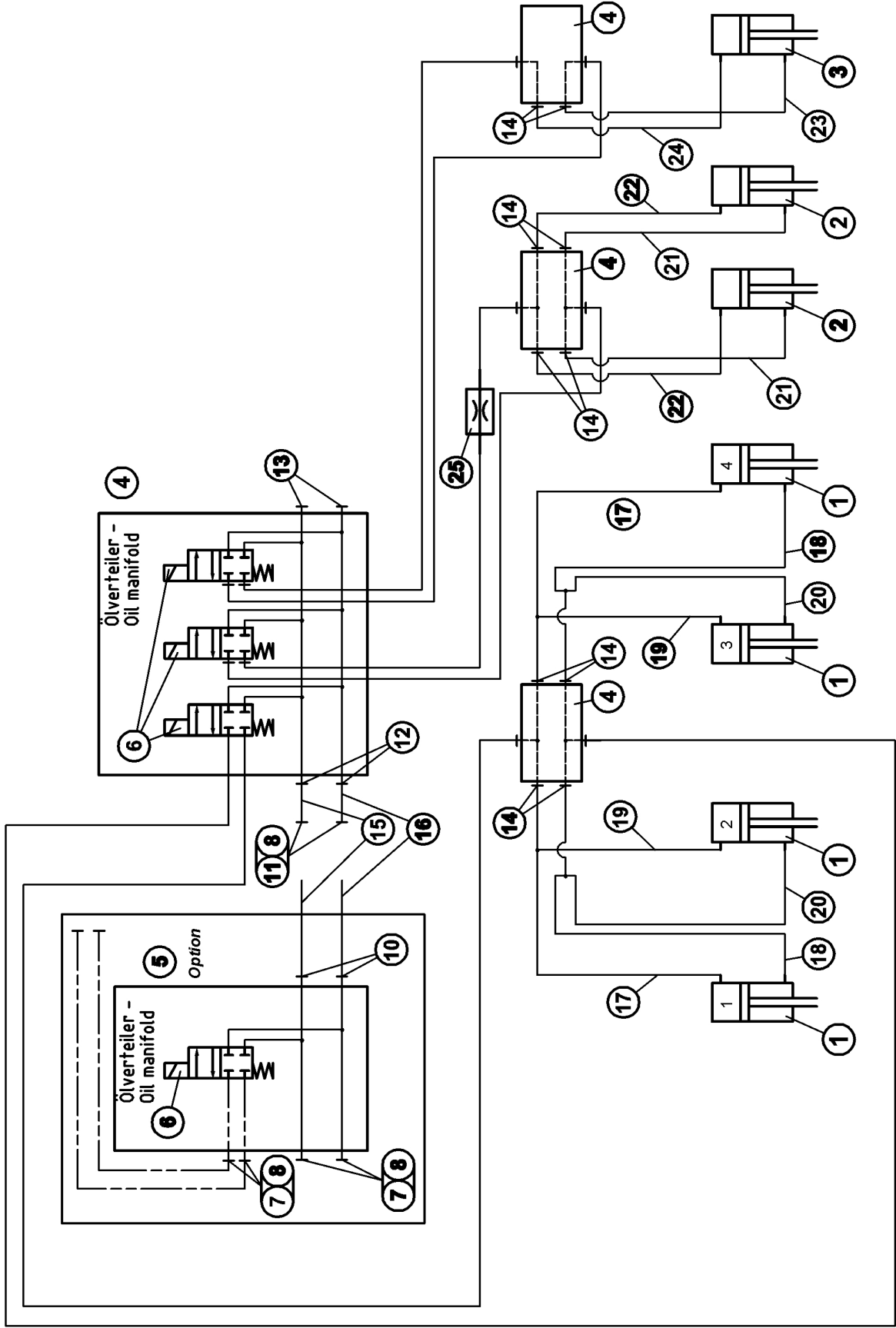
Optimal
 -Vertrieb Optix GmbH
 Apoldaer Str. 107/109a
 07309 Apolda

Table 8**TREE SPADE OPTIMAL 880 - SPARE PARTS****Miscellaneous Parts**

<u>Item</u>	<u>Quantity</u> <u>(optional)</u>	<u>Description</u>	<u>Part Number</u>
1	1	main frame	3180880150
2	2	mounting pad	31085212
3	4	screw M 16 x 30	50116030933
4	4	dished washer 16	504166769
5	1	mounting pad	31085213
6	2	screw M 20 x 30	50120030933
7	2	dished washer 20	504206769
8	1	el. distributor box, compl. wired	201408801
9	2	screw M 5 x 20 DIN 84	50105020084
10	1	pipe clamp	510108
11	2	socket head screw M 6 x 25 DIN 912	50106025912
12	1	angular bracket	5970880280
13	2	bolt M 6 x 20 DIN 933	50106020933
14	2	flat washer 6.4 DIN 125	506906
15	2	nut M 6 DIN 934	502060934
16	2	Schott union	5150300210
17	1	oil manifold	5470880010
18	2	screw M 8 x 20	50108020933
19	2	washer 8.4	506908

Table 8**TREE SPADE OPTIMAL 880 - SPARE PARTS****Miscellaneous Parts**

<u>Item</u>	<u>Quantity</u> <u>(optional)</u>	<u>Description</u>	<u>Part Number</u>
20	3 (+1)	valve NG 6 - 12 V	547001
21	12 (+4)	socket head screw	50105050912
22	1	oil flow adjuster M10x1	3140880030
23	2	elbow union	515070511017
24	14	straight union	515020230813
25	5	plug VSTI M 10 x 1	515 VSTI 10 x 1
26	(1)	oil manifold for optional function	3051110060
27	(2)	socket head screw M 6 x 80 DIN	50106080912
28	(2)	flat washer 6.4	506906
29	(2)	nut M 6 DIN 934	502060934
30	(4)	straight union	515020231017
31	(2)	union	5150103310
33	(2)	union	3990880010



HYDRAULIKSYSTEM -
HYDRAULIC SYSTEM

Optimal
-Vertrieb Optitz GmbH
Eggenhofen 3641 D-91177 Thalmünster

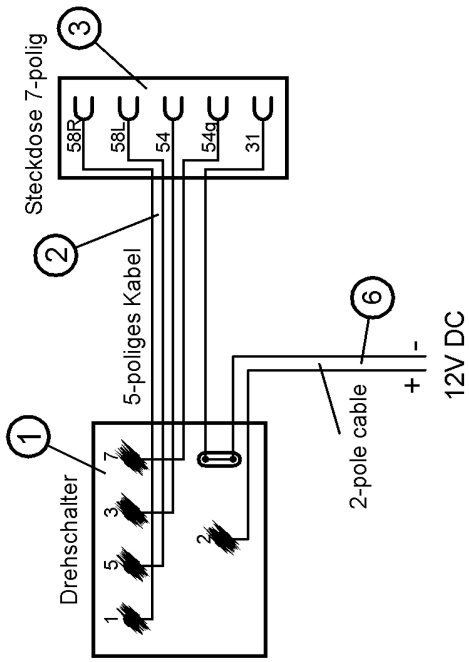
Table 9**TREE SPADE OPTIMAL 880 - SPARE PARTS****Hydraulic System**

<u>Item</u>	<u>Quantity</u> <u>(optional)</u>	<u>Description</u>	<u>Part Number</u>
1	4	spade cylinder	3010100030
2	2	gate cylinder	3010200040
3	1	gate lock cylinder	3010300040
4	1	main oil manifold	5470880010
5	(1)	oil manifold for optional function	5470880020
6	3 (+1)	control valve NG06	547001
7	(4)	union	515020231017d
8	2 (+2)	plug	5150103310
10	(2)	union, long	3990880010
11	2	union	5150300210
12	2	elbow union	515070511017
13	5 (+2)	plug VSTI M10x1	515VSTIM10x1
14	14	union	515020230813
15	1	hydraulic hose NW10, length 10" c/w one straight crimped fitting and one 90° crimped fitting	513102025013
16	1	hydraulic hose NW 10, length 6 ¾" c/w one straight crimped fitting and one 90° crimped fitting	513102017013

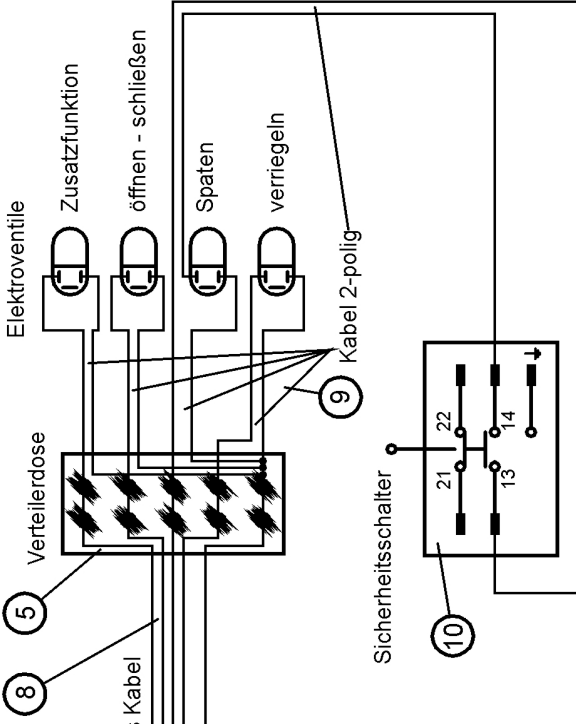
Table 9**TREE SPADE OPTIMAL 880 - SPARE PARTS****Hydraulic System**

<u>Item</u>	<u>Quantity</u> <u>(optional)</u>	<u>Description</u>	<u>Part Number</u>
17	2	hydraulic hose NW 6, length 49" c/w two straight crimped fittings	513062123011
18	2	hydraulic hose NW 6, length 39" c/w two straight crimped fittings	51306297011
19	2	hydraulic hose NW 6, length 70" c/w one straight crimped fitting and one 45°-crimped fitting	513062176012
20	2	hydraulic hose NW 6, length 59" c/w one straight crimped fitting and one 45°-crimped fitting	513062148012
21	2	hydraulic hose NW 6, length 21" c/w one straight crimped fitting and one 45°-crimped fitting	513062053012
22	2	hydraulic hose NW 6, length 16" c/w one straight crimped fitting and one 45°-crimped fitting	513062040012
23	1	hydraulic hose NW 6, length 50" c/w one straight crimped fitting and one 45°-crimped fitting	513062126012
24	1	hydraulic hose NW 6, length 48" c/w one straight crimped fitting and one 45°-crimped fitting	513062122012
25	1	oil flow adjuster	515179832

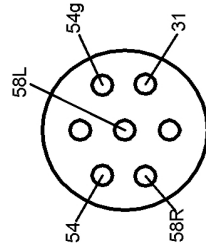
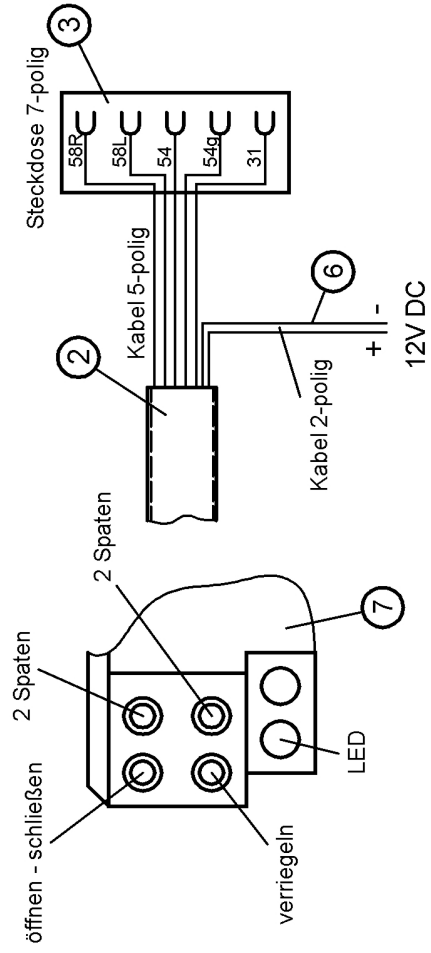
Trägerfahrzeug



Ballenstechmaschine



Joystick



- 58R - blau || (schwarz)
- 58L - gelb / grün || (schwarz / braun)
- 54 - schwarz (neben braun) || (schwarz / rot)
- 54g - schwarz || (schwarz / blau)
- 31 - braun

Table 10**TREE SPADE OPTIMAL 880 - SPARE PARTS****Electric Controls**

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Part Number</u>
1	1	electro-selector switch /4	5470A242-521
2	2	cable 5 x 1.5 – 170 cm (67")	5125015
3	1	7-pole socket	5998JB7-POL
4	1	7-pole plug	5998JA7-POL
5	1	el. distributor box	5998KV002142
6	2	cable 2 x 1,5 - 150 cm (60")	5122015
7	1	Joystick	560001
8	1	cable 5 x 1,5 – 170 cm (67")	5125015
9	1	auxiliary - cable 2 x 1,5 – 35 cm (14")	5122015
	1	spades - cable 2 x 1,5 – 41 cm (16")	5122015
	1	gate - cable 2 x 1,5 – 46 cm (18")	5122015
	1	gate lock - cable 2 x 1,5 – 30 cm (12")	5122015
	1	safety switch - cable 2 x 1,5 – 160 cm (63")	5122015
10	1	safety switch	5990043782



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 Prichard's Nursery Equipment, LLC; P.O. Box 250; Harrison, TN 37341-0250; 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.

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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: