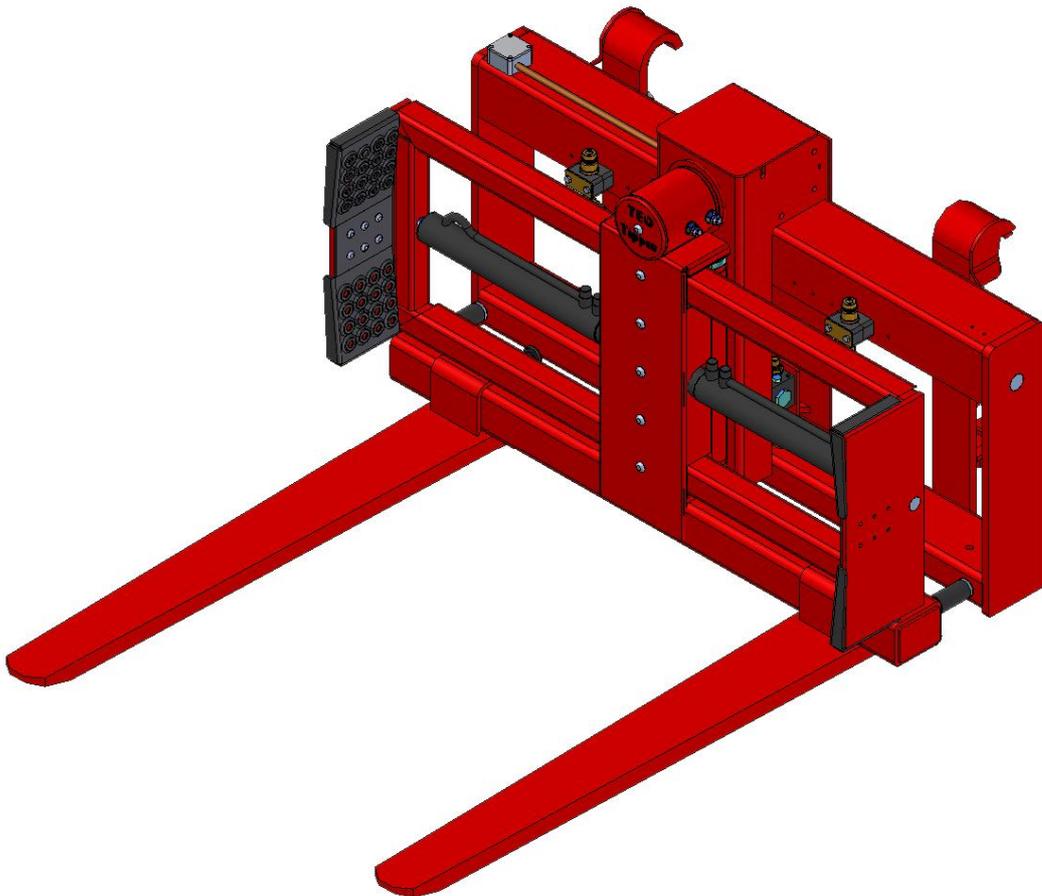


TEO tipper



Model: 1500 HDK

USER- & MOUNTING MANUAL

Table of contents:

Table of contents:	2
Technical specifications:	3
Equipment:	4
Manner of operation:	5
First time preparation of the tipper:	5
Quick summary:	5
Hydraulics:	5
Electrics:	6
Overview:	6
Attaching the tipper:	7
Assembling the forks:	7
Other:	7
Using the tipper:	8
Maintenance:	8
Lubrication:	8
Circuit Diagrams for tractors:	9
Circuit Diagrams for forklifts:	10
Principal drawings:	11
Declaration of conformity:	12

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Technical specifications:

Max. tipping load	1 500 kg
Max. transport load	1 500 kg
Specific weight incl. equipment	300 kg
Fork lengths (standard/optional)	93/103 cm
Max. distance between forks (outside edges)	100 cm
Min. distance between forks (outside edges)	50 cm
Max. tipping both directions	180°
Min. box width	110 cm
Max. box width	160 cm
Tipper width with side grips in inner pos.	110 cm
Height	73 cm
Length including forks	130 cm
Length excluding forks	38 cm
Torque at oil pressure 195 bar appr.	275 kpm
Max. oil pressure (safety factor 4:1)	225 bar
Power load shuttle valve (12 VDC)	3,5 A

Equipment:

64-00:

Teo Tipper 1500 HDK for tractor and forklift. Includes 64-03, 64-20 and mounting brackets 64-10. Mounting brackets 64-11, 64-12 and 64-13 are options. Please state item no. when ordering.

Hydraulic hoses must also be specified.

For forklifts with triple masts, 64-05 and 64-06 must also be ordered.

Item no.	Equipment
64-03	Switch, including set of cables
64-05	Flexible cable
64-06	Grey junction box
64-10	Mounting brackets for forklift, Trima, Bergsjø, Kjællve and HMV
64-11	Mounting brackets for Ålø Quicke Euro (type 3)
64-12	Mounting brackets for Ålø Quicke
64-13	Mounting brackets for Triangle coupling (Accord)
64-20	Shuttle valve 12 volts (standard)
64-21	Shuttle valve 24 volts
64-22	Shuttle valve 48 volts
64-30	2 x hydraulic hoses, 1,5 m, 1/4'' with ISO coupling in both ends
64-31	2 x hydraulic hoses, 6,5 m, 1/4'' with ISO coupling in both ends
64-107	Compact fork, long type. 103 cm

Manner of operation:

The Teo Tipper is used for gripping, turning and emptying boxes of various sizes. In addition to ordinary forks under the box, it grips the boxes on the sides with clamping plates. This allows the box to be rotated 180° to either side without the box falling down. It uses hydraulic cylinders for both gripping and turning, and an electric shuttle valve to switch between the two functions. By default, the side grip cannot be loosened when the box is turned from the horizontal level. A switch can be added to bypass this safety feature.

First time preparation of the tipper:

Quick summary:

1. Mount and connect the hydraulic hoses.
2. Mount and connect the electrical cables.
3. Attach the tipper to the tractor or forklift.
4. Attach the forks to the tipper.

Hydraulics:

Equipment needed: various wrenches, dependent on make of tractor or forklift.

The Teo Tipper has two hydraulic connectors, both are male ½” ISO 7241-A. These go into a shuttle valve, which is controlled by a switch placed in the cabin of the tractor or forklift.

When making the connection to the tipper, there are 3 different scenarios:

1. A tractor or forklift with no spare double-action hydraulic outlets.
2. A tractor or forklift with one spare double-action hydraulic outlet.
3. A tractor or forklift with two spare double-action hydraulic outlets.

1. You will need a shuttle valve connected to the bucket or tilting function on the tractor or forklift. If the forklift has side shift or a fork positioner, the shuttle valve is best mounted here. This saves you from setting up hydraulic hoses to travel up and down the mast, since you already have an oil outlet for the side shift on the fork bar. When you need to operate the tipper, hold down a switch, and the lever usually handling the bucket, tilt or side shift function will now handle the tipper.

2. With one spare valve, connect this outlet to the tipper and you have a separate lever just for the tipper. You use a switch on the lever to change between gripping and rotating functions. This is the recommended setup.

3. With two spare valves, you can have dedicated levers to both gripping and turning functions. It requires disconnecting the shuttle valve on the tipper and laying out 4 hoses and connections to the tipper. This permanently bypasses the built-in security switch that prevents you from opening the grip when the tipper has been rotated. For safety reasons, this is not recommended nor further described.

Electrics:

Equipment needed: Various wrenches, screwdrivers, drills, zip ties.

Overview:

- Mount the 3-way power outlet to the crossbeam of the front-end loader/top of the outer mast. The idea is for cable nr. 1 to flex equally in both directions.
- Triple mast: The grey junction box w/ flexible cable is mounted on top of the middle part of the mast.
- Mount the power supply box near the cabin of the tractor/the forklift.
- Route and fasten cable no. 2 from the power outlet to the power supply box.
- Mount and route the switch from the loader lever to the power supply box.
- Connect and route the power cable from the battery to the power supply box.
- With an extra shuttle valve, route its cable to the power outlet or power supply box.



All circuit diagrams are found at the end of this manual.

There are a few things to keep in mind:

- When you are mounting and routing the switch and cable inside the tractor or forklift cabin, you might have to drill a hole in the cabin. A 16mm drill bit is suitable for the cable gland.
- The power supply box must be fastened by the best means available; there are no pre-drilled holes for mounting. Two 3M™ Scotchlok™ pinching Y-junctions are included for connecting to the battery power cables.
- Notice that the 3-way power outlet and the cables going into it are made to fit only one way.
- If the tractor or forklift has integrated switches available, we recommend trying to use these instead of the switch supplied. See the circuit diagrams for help.

Attaching the tipper:

Attach the tipper to the tractor or forklift with the mounting brackets. For tractors: remove the two M16 x 50 bolts next to the brackets. Secure the tipper to the tractor or forklift. Connect the hydraulic hoses. Connect spiral cable no. 1 from the tipper to the three-way power outlet.

Assembling the forks:

Equipment needed: 1 x 24 mm wrench, 1 x 8 mm Allen wrench.

- The snap locks are mounted inside out for transportation. Unscrew them and mount them the other way around.
- The two M12 x 20 setscrews should be loosened to make sure the fork fits onto the fork mount.
- Unscrew the pan head bolts on the tipper. A 5-10° rotation of the tipper is required to free the pan head bolts.
- Insert the forks on the bar mount, one on each side. Hold the snap lock out on entry.
- Adjust the two M12 x 20 setscrews to be as tight as they can without preventing the forks from moving in and out on the bar mount. As the paint wears off, these should be readjusted.
- If the forks are rarely moved, they can be tightened all the way to keep the forks as steady as possible on the bar mount.
- Refit the pan head bolts and tighten them with the wrench.

Other:

The tipper is equipped with a restrictor for the turning movement. If the turning motion feels either too quick or too slow, it can be replaced with a bigger or smaller restrictor. Contact Teo Teknisk as for any further details.

Hazards and protective measures:

- Keep away from moving parts.
- Never move beneath a hanging load.
- Keep other people on a safe distance from the working area.
- Be careful with the stability when lifting and stacking in great heights.

Using the tipper:

Loading a box:

- Position the side grip in the outer range.
- Place the forks under the box and lift it up.
- Clamp the box using the side grip.
- For safety reasons we recommend clamping the box during transportation.

Loading a box in a tight space:

- Position the side grip in the inner range.
- Place the forks under the box and lift up. The side grip will give way when pushed against the box.
- When clear of the tight space, position the side grip outside the box edges, then clamp the box. The side grip will move forward when the grip movement is activated.

Unloading a box:

- Unclamp the box from the side grip.
- Put the box down and reverse until the forks are free of the box.

Emptying a box:

- Clamp the box you want to empty with the side grip.
- Rotate the box to the side most suited until the box is empty.

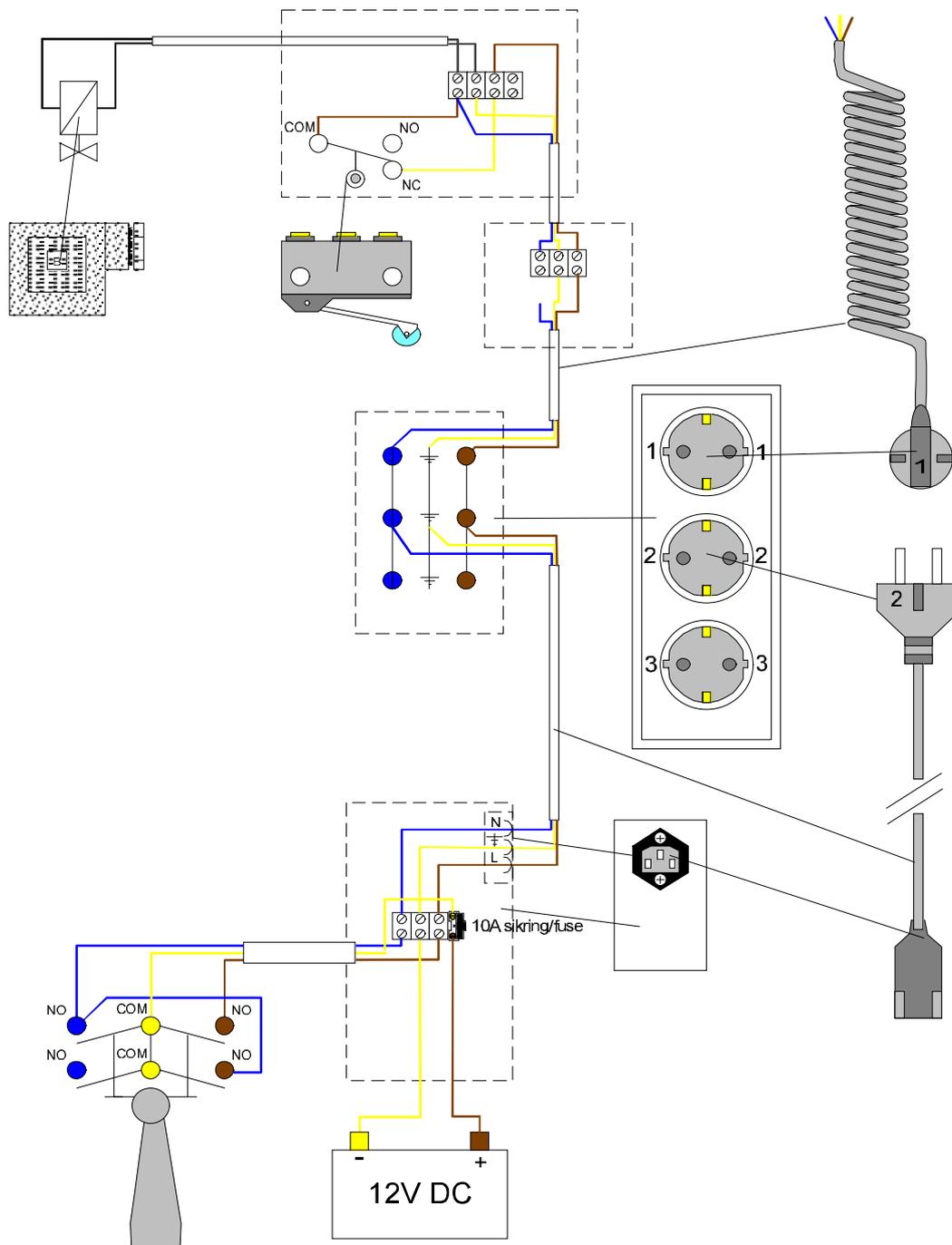
Maintenance:

- Wipe off the hydraulic connectors before connecting them.
- Check the screw-connections on the mounting brackets, turn and grip cylinders and clamping plates.
- Check the wear on the forks. Max. allowed wear: 10 % on the back end.
- The turning cylinders piston rod should be greased before long-term storage. Any blank parts should also be either greased or repainted. Grip cylinders in inner pos.

Lubrication:

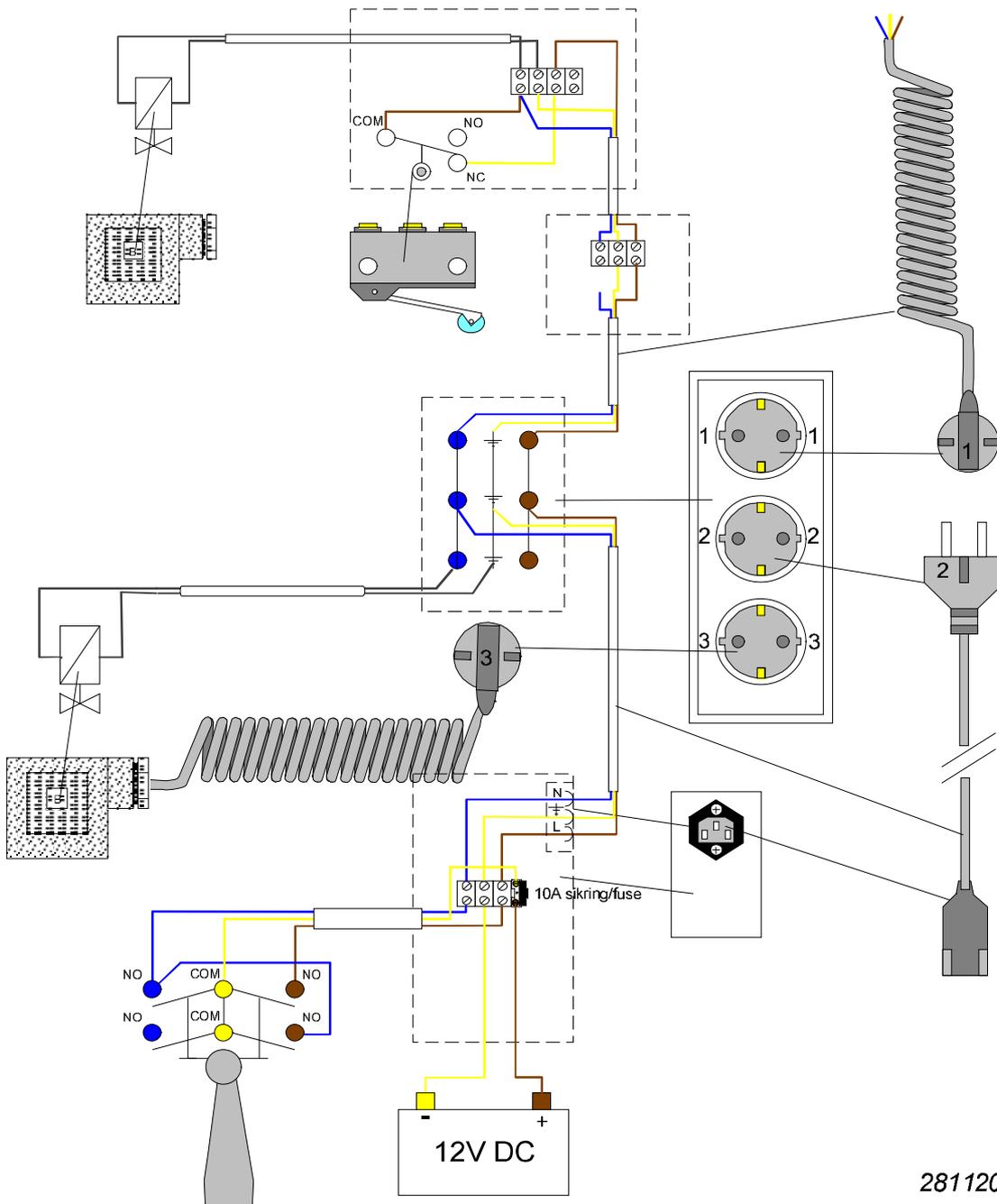
- Grease the telescopic arms for the side grip for every 100 box clamped. Position the side grip in the outer position and grease both sliding surfaces.
- Lube the center bearing for every 100 box turned with a grease gun. There are two grease nipples on the same side.

Elektrisk kopleingsskjema for tilkopling av **TEO TIPPER** til traktor med frontlaster
Electric wiring diagram for connecting **TEO TIPPER** to a tractor with front loader



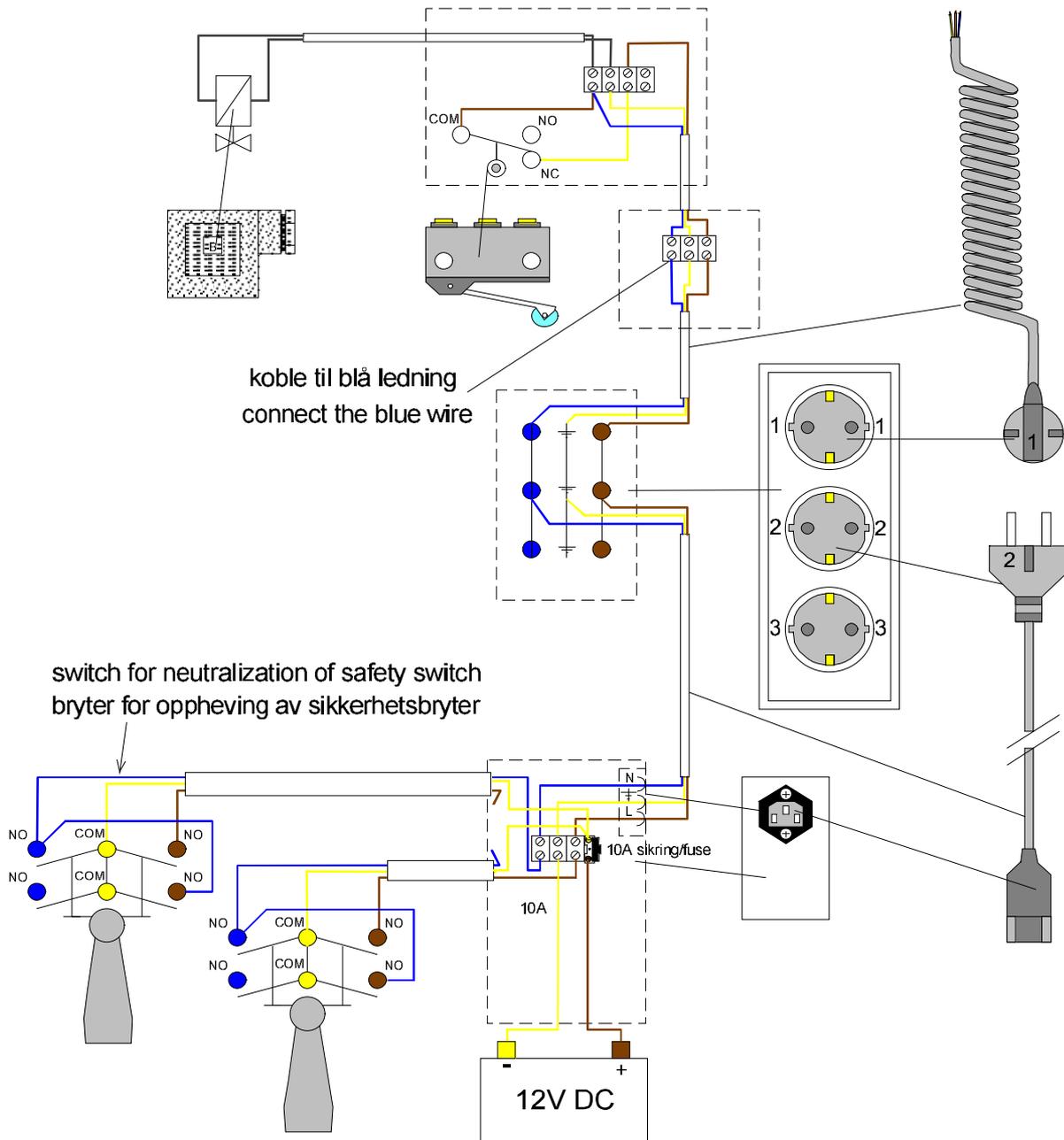
Elektrisk koplingskjema for tilkopling av **TEO TIPPER** (m/1 ekstra vekselventil)
til traktor med frontlaster

Electric wiring diagram for connecting **TEO TIPPER** (with extra shuttle valve)
to a tractor with front loader.

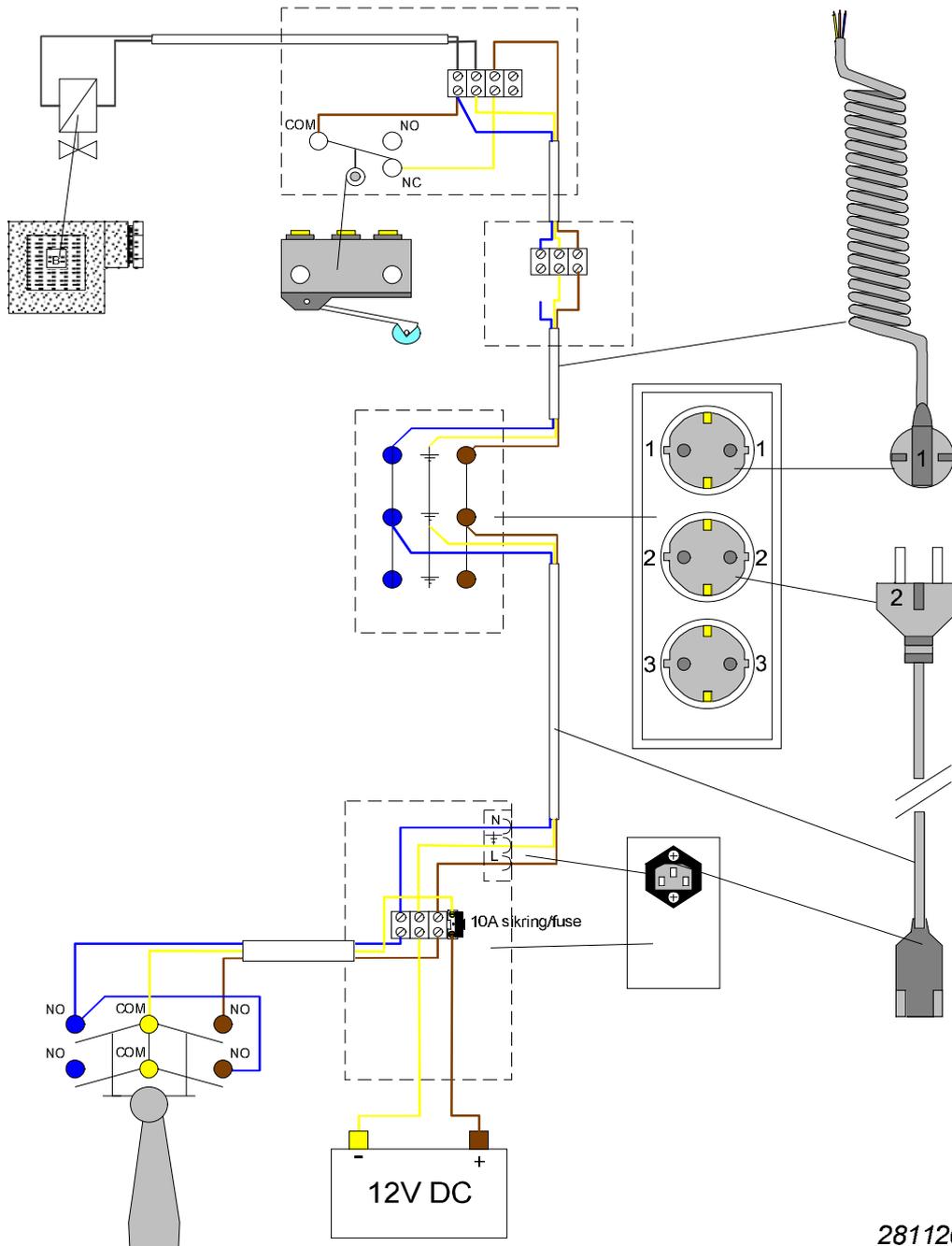


Elektrisk koplingskjema for tilkopling av **TEO TIPPER** til traktor med frontlaster
(med bryter for oppheving av sikkerhetsbryter)

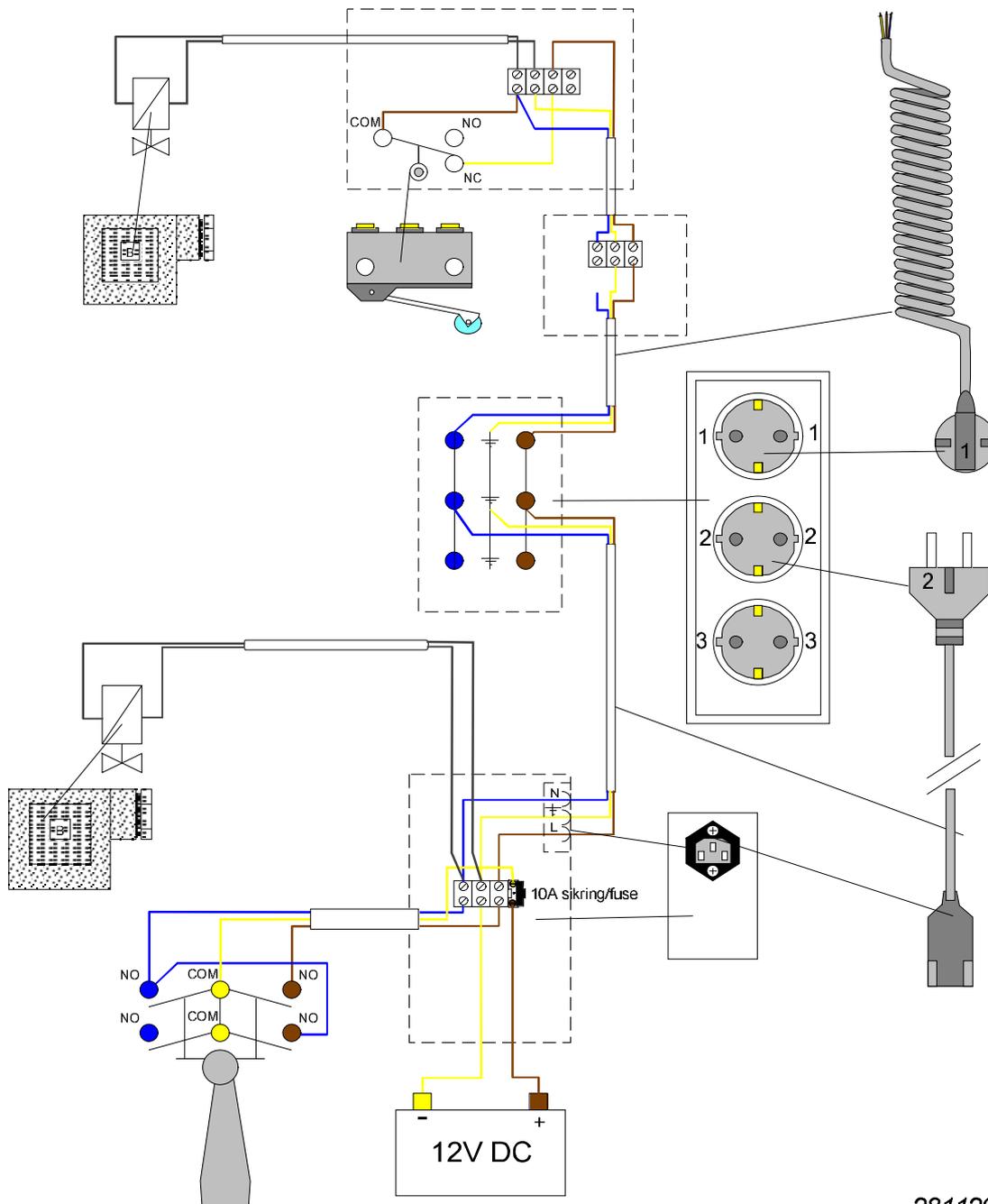
Electric diagram for connecting **TEO TIPPER** to a tractor with front loader
(with switch for neutralization of safety switch)



Elektrisk koplingskjema for tilkopling av **TEO TIPPER** til truck
Electric wiring diagram for connecting **TEO TIPPER** to a forklift.

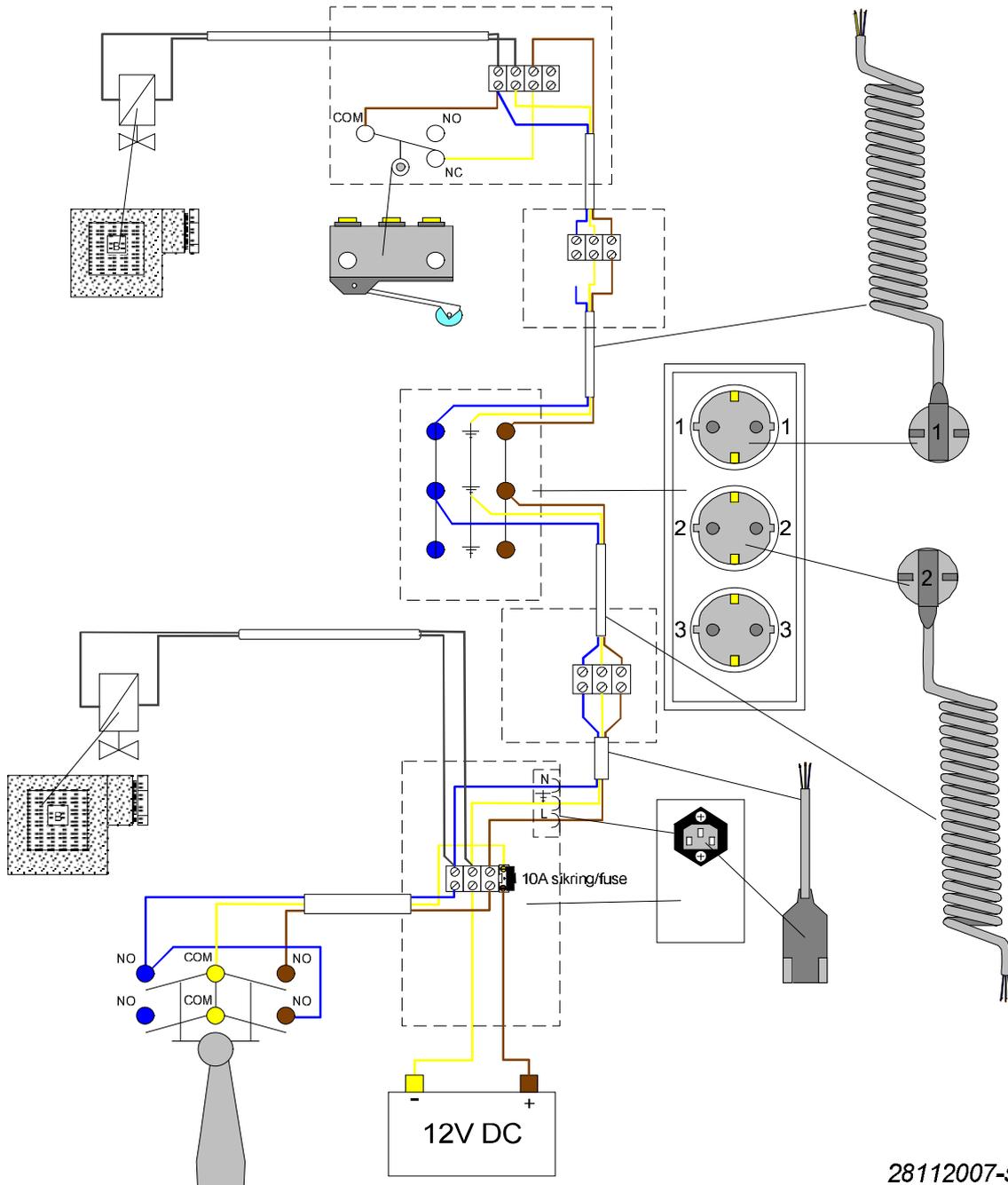


Elektrisk kopleingsskjema for tilkopling av **TEO TIPPER** (m/ 1 ekstra vekselventil) til truck
 Electric wiring diagram for connecting **TEO TIPPER** (with extra shuttle valve) to a forklift.



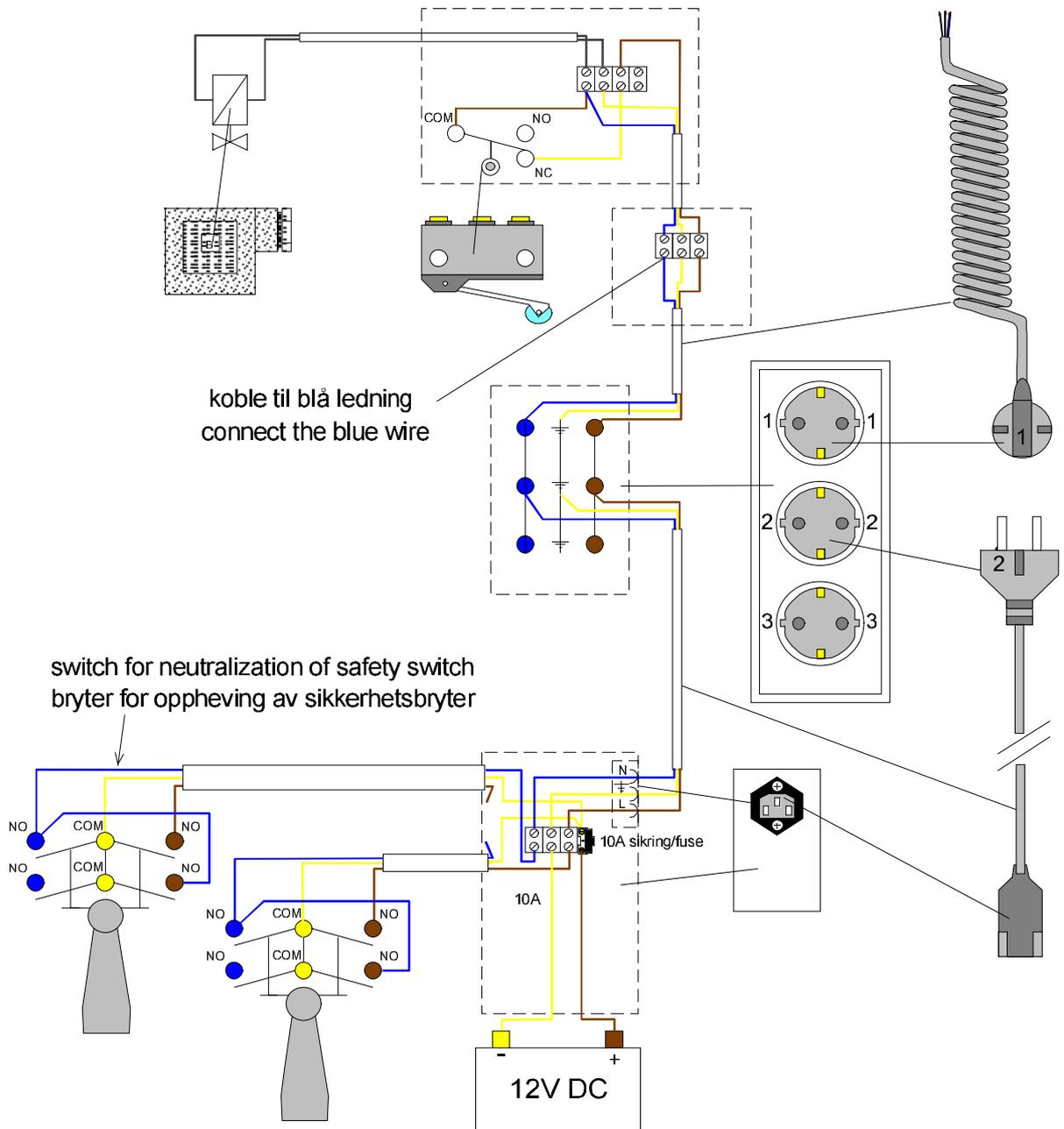
Elektrisk koplingskjema for tilkopling av **TEO TIPPER** (m/ 1 ekstra vekselventil)
til truck med trippelmast

Electric wiring diagram for connecting **TEO TIPPER** (with extra shuttle valve)
to a forklift with triple mast.



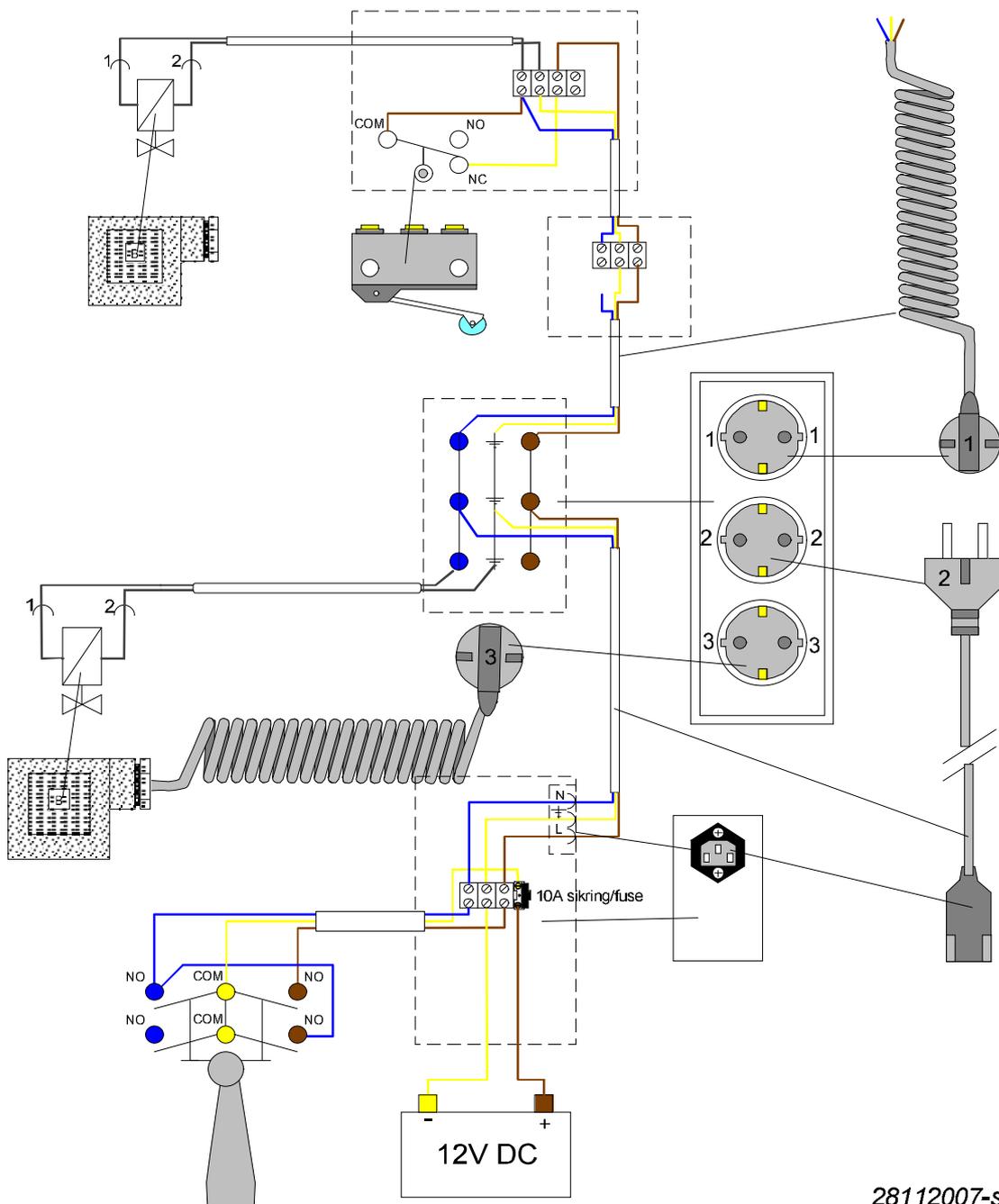
Elektrisk koplingskjema for tilkopling av **TEO TIPPER** til truck
(med bryter for oppheving av sikkerhetsbryter)

Electric wiring diagram for connecting **TEO TIPPER** to a forklift
(with switch for neutralization of safety switch)



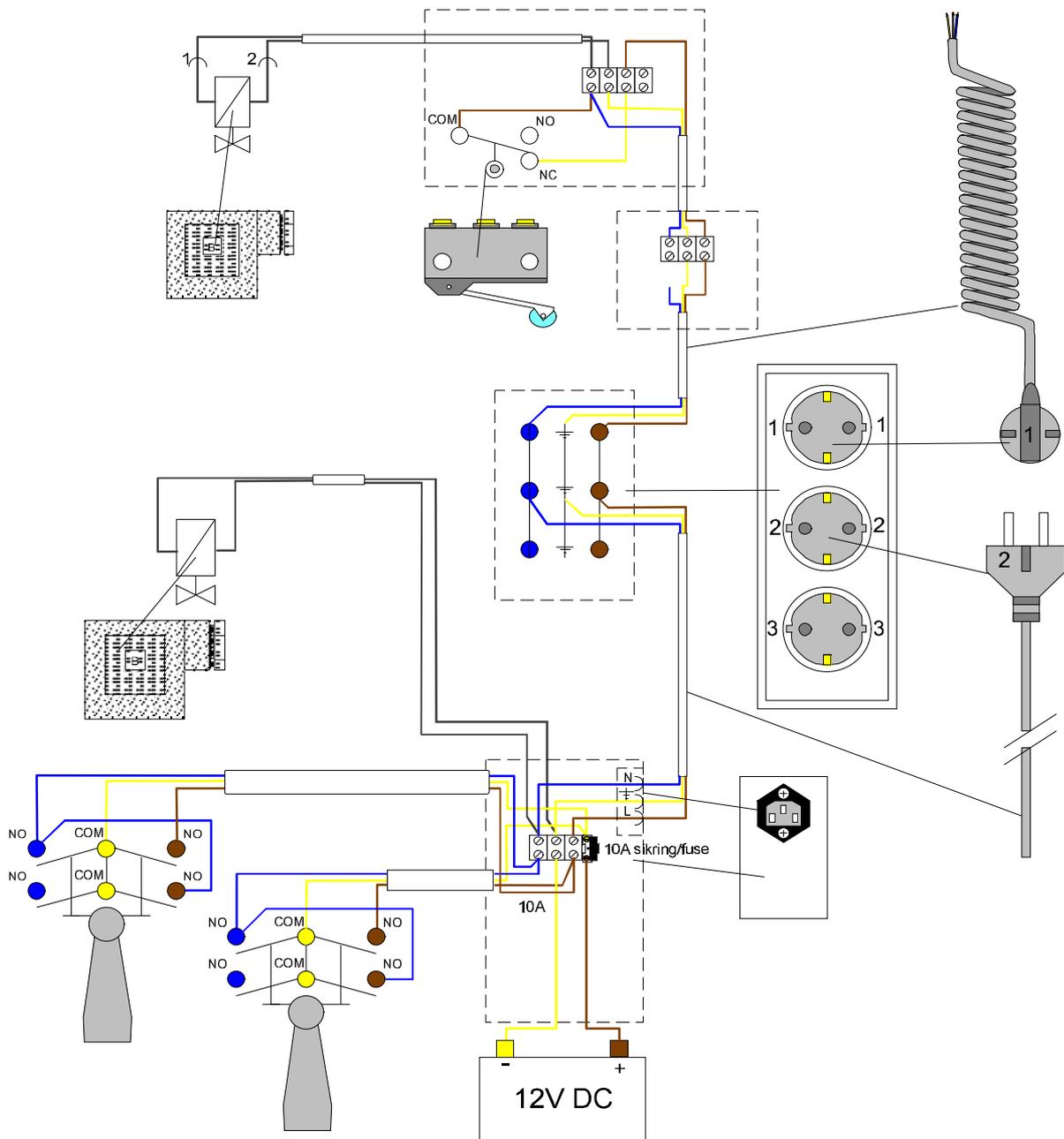
Elektrisk koplingskjema for tilkopling av **TEO TIPPER** (m/1 ekstra vekselventil)
til truck med sideforskyving

Electric diagram for connecting **TEO TIPPER** (with extra shuttle valve)
to a forklift with side shift



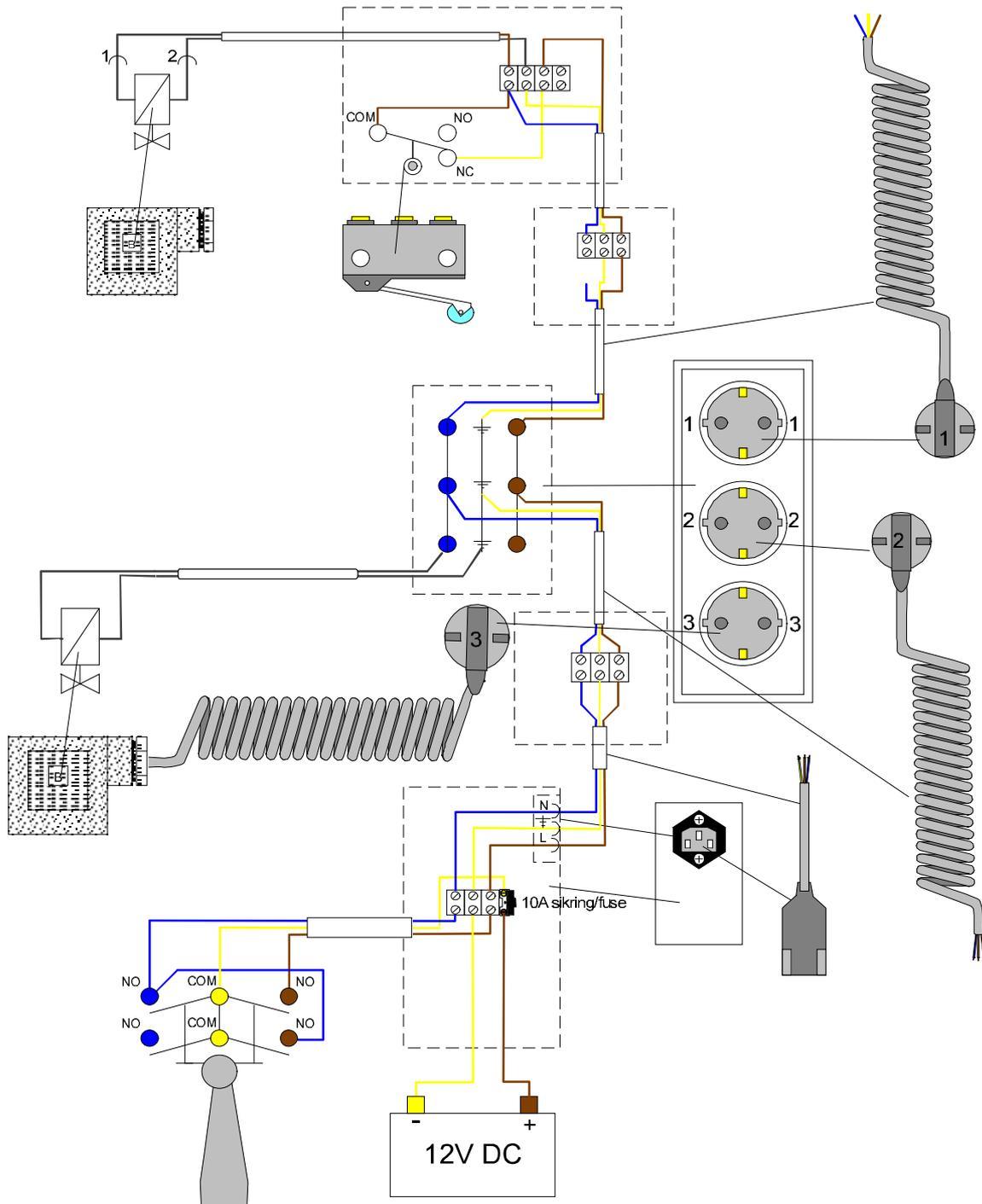
Elektrisk koplingskjema for tilkopling av **TEO TIPPER** (m/ 1 ekstra vekselventil)
til truck med 1 bryter for handbetjening og 1 bryter for fotbetjening.

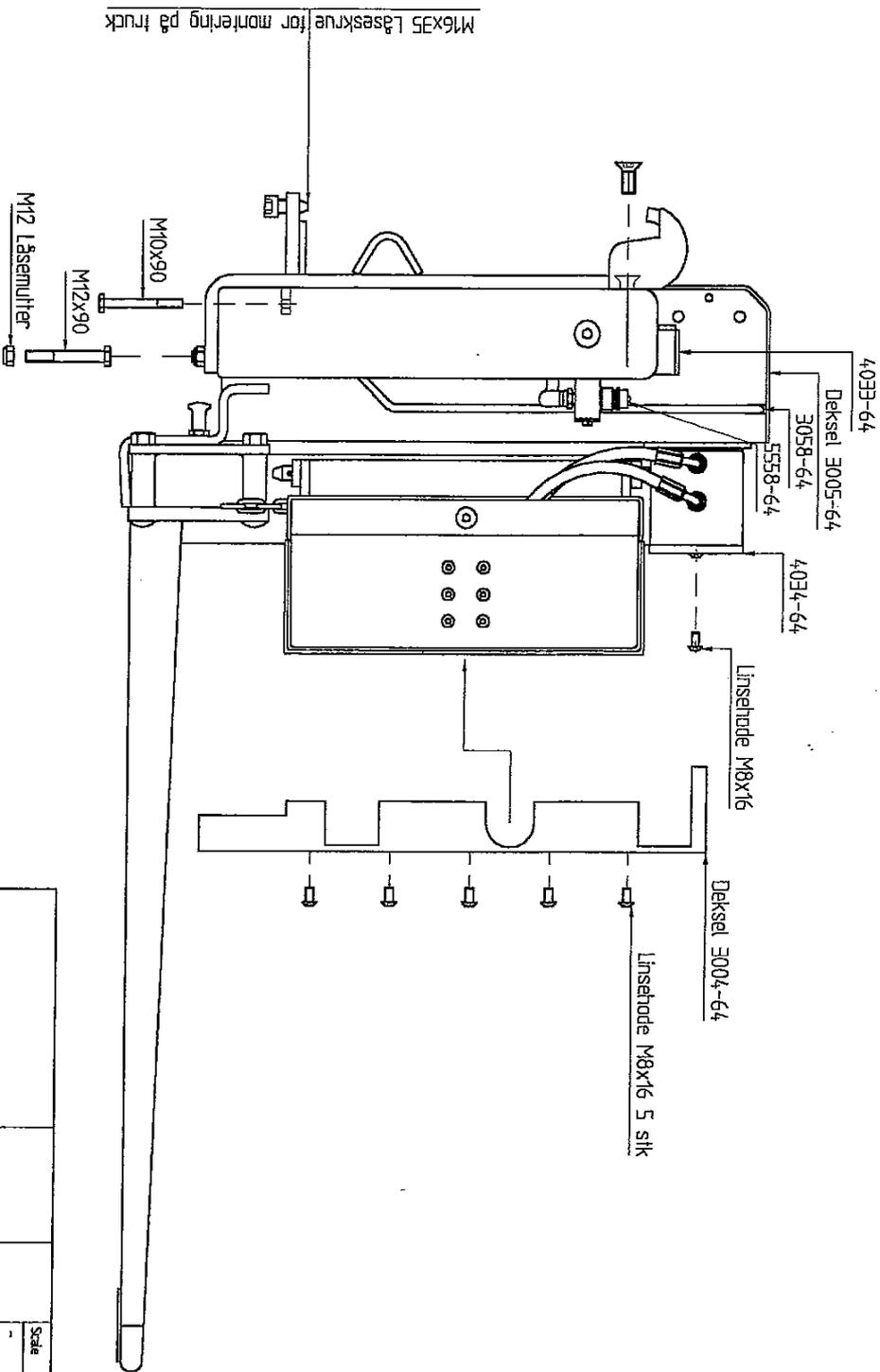
Electric diagram for connecting **TEO TIPPER** (with extra shuttle valve)
to a forklift with hand and foot switches.



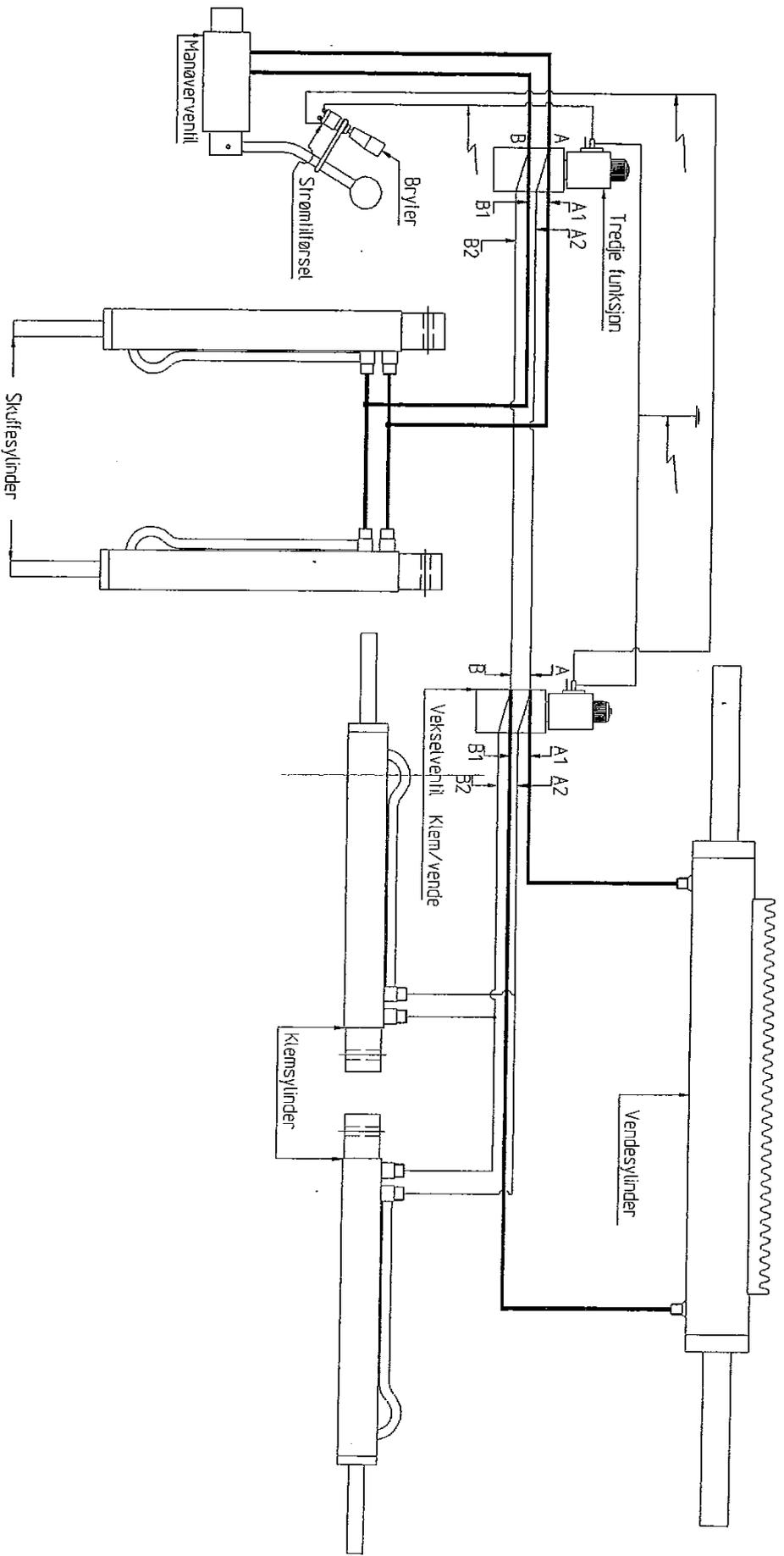
Elektrisk kopleingsskjema for tilkopling av **TEO TIPPER** (m/1 ekstra vekselventil)
til truck med trippelmast og sidefordskyvning.

Electric diagram for connecting **TEO TIPPER** (with extra shuttle valve)
to a forklift with triple mast and side shift.





Scale	1:5	Ratio	-	Qty	-
Sammenstilling					
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Scale	15	Porten	Quantity
Prinsipskisse for tilkobling av tredje funktion til traktor			
Hydraulikk			

Date	Produced by
15.10.96	K. Stokkestrand
Drawn	Isakstad
Checked	Norm

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TEO TEKNIKK AS
4350 MÅRBO

3033-64

Declaration of conformity:

Manufacturer: Teo Teknikk as

Address: Haavegen 196, 4365 NÆRBØ, Norway

Herewith declares that

Make, type: Teo Tipper 1500 HDK

Serial number:

- is in conformity with the provisions of the Machinery Directive (Directive 89/392/EEC), as amended, and with national implementing legislation

- is in conformity with the provisions of the following other EEC directives

- the following (parts/clauses of) national technical standards and specifications have been used: EN 292

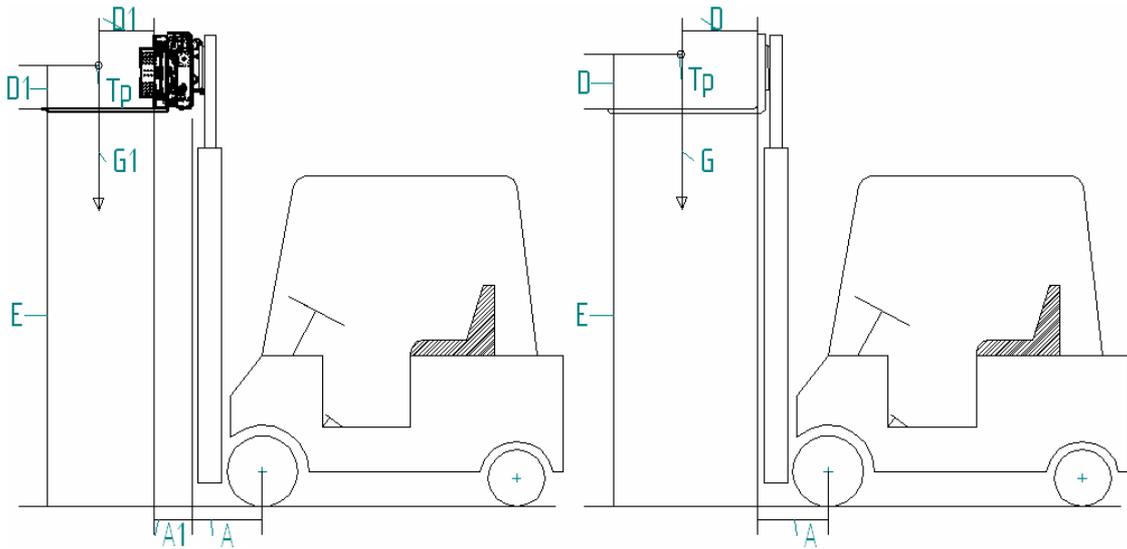
Place: NÆRBØ

Date:

Signature:

Calculations for load capacity data plates:

When other equipment than the original forks are in use, the forklifts lifting properties are affected. Calculate the values for using the tipper using this formula. Then fill out the included load capacity data sticker and place it in a visible place inside the forklifts cabin.



$$G_1 = \frac{G(A + D) - G_2(A + D_2)}{A + A_1 + D_1}$$

G = The forklifts original allowed lifting capacity, in kg.

G₁ = The forklifts new allowed lifting capacity with Teo tipper attached, in kg.

G₂ = The tippers own weight (300 kg) – the original forks own weight.

A = Horizontal distance from front wheel center to vertical front of original forks, in cm.

A₁ = Horizontal distance from vertical front of original forks to tipper front, in cm. This is 37,5 cm – the original forks thickness (typically 2,5-4 cm).

D = Original load center of forklift. This is usually 50 cm for a forklift with capacity 1000-4999 kg.

D₁ = Desired load center for the tipper. Recommendations: 50 and 60 cm + your desired load center.

D₂ = The tippers centre of gravity. 20 cm.

E = Lifting height, in m.

You decide if you wish to fill out the load capacity data plate with different values for either load centre or lifting height. For lifting heights above 3,3 m, 3,3 m should also be included on the plate. If so, use the load center originally used on the forklift. Then use the original data plate to estimate allowed lifting capacity at 3,3 m.

Example: New lifting capacity for 2 t capacity forklift:

$$(2000 \times (42+50) - (300-110) \times (42+20)) / (42+(37,5-3,5)+50)=1367 \text{ Kg.}$$