Electric Fork Lift Trucks

ER18/20



Service Manual

Contract #2830 R2048 166806 06.07

LINDE MATERIAL HANDLING
NORTH AMERICA CORPORATION

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Testing internal backup capacitor

Before removing the converter, a check must be made to see whether the internal backup capacitors are discharged.

- Connect a multimeter between **+** (Batt+) and **B-** (Batt-).
- With the truck switched off, only a low voltage reading (< 1V) should be obtained.

Activation of discharge circuit

- If a voltage equal to the battery voltage (48V) is measured, the internal discharge circuit of the converter must be activated.
- Switch on the lock switch S1, the multimeter indicates the battery voltage.
- Switch off the lock switch, the internal discharge circuit automatically discharges the backup capacitors. This procedure takes about 1 minute.
- When the console display is switched off, the voltage should have reduced to < 5V.
- If this is not the case, switch on the key switch S1 again until the contactor closes and disconnect the battery connector. The voltage will now drop and the backup capacitors are discharged.

Note:

If the discharge cannot be activated, the capacitor circuit can be discharged with a suitable discharge resistor (50Ohm/50W) or an 80V filament lamp. For this purpose, the discharge resistor, like the multimeter, must be connected between **+**(Batt+) and **B-** (Batt-).

Removal

- Disconnect connectors X150/151/152
- Remove power terminals and four fixing screws in the base plate and remove the converter.

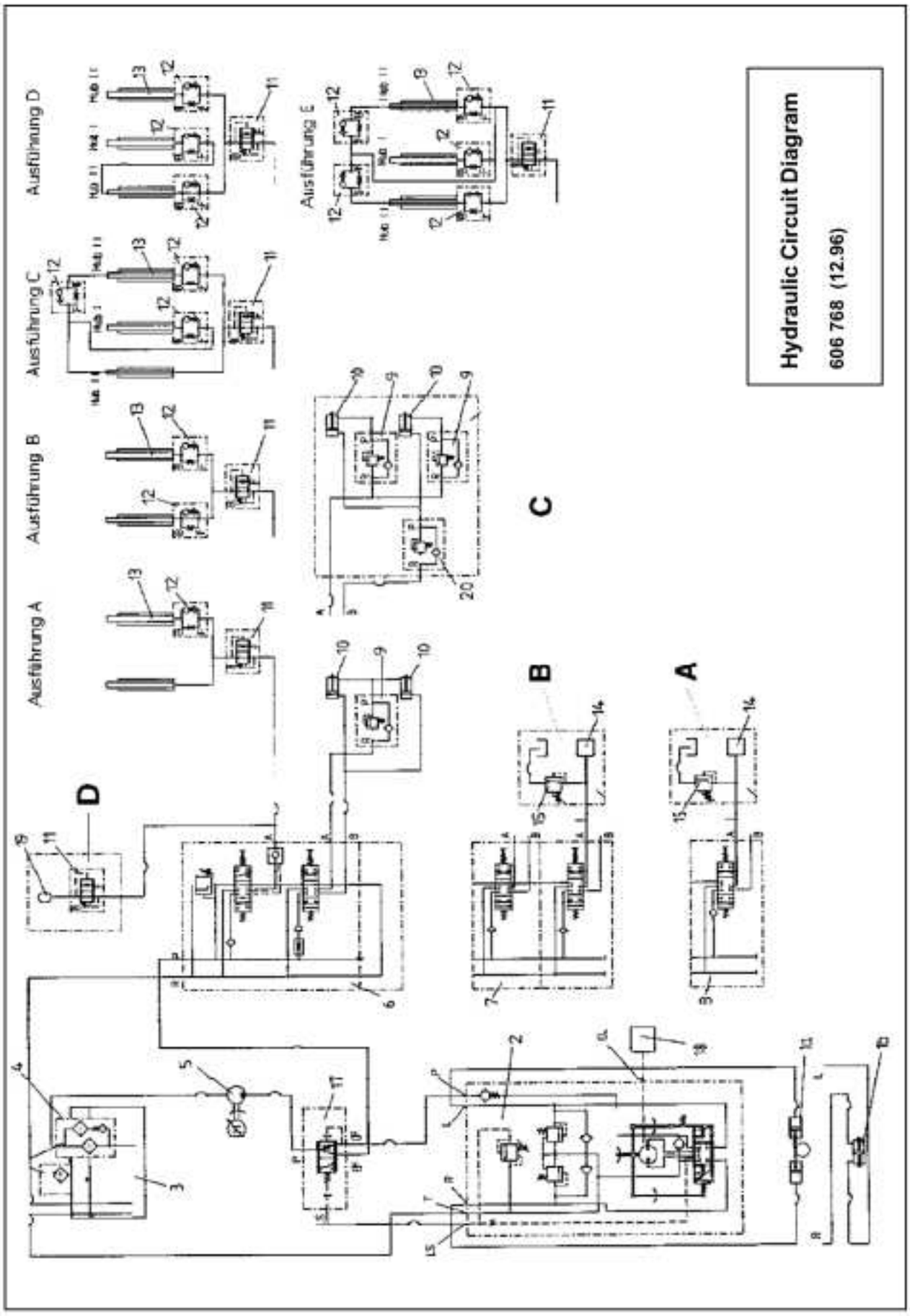
Installation

- Remove all heat transfer foil residues completely.
- Prior to installation, a check must be made to ensure that the base plate of the converter lies flush on the cooling surface.
- Evenl apply a thin coat of heat transfer compound to the cooling surface.
- Tighten the four fixing screws in the base plate and the power terminals with a tightening torque of 46Nm.
- Connect connectors X150/151/152.

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Hydraulic circuit diagram



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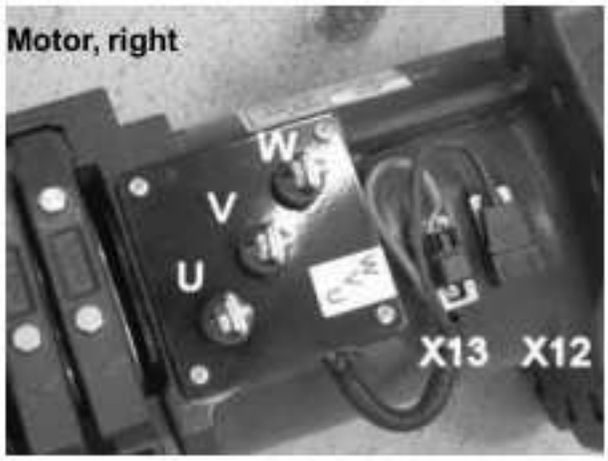
Motors
Two motors with integrated wheel gears form together with the centrally arranged brake a drive unit.
If a motor has to be removed for repair purposes, the complete drive unit must initially be removed from the truck



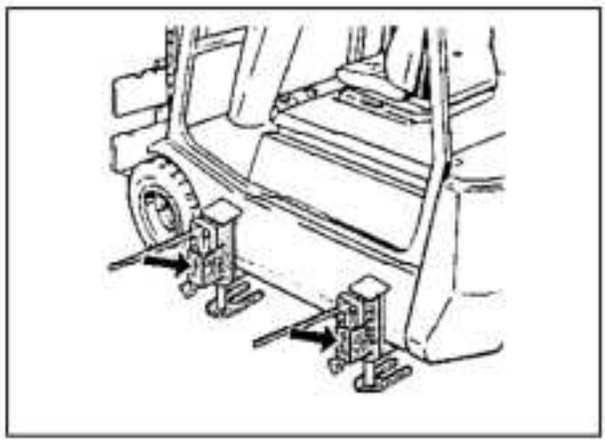
Motor terminals

Primary current terminal
The three main power motor terminals **U/V/W** are insulated and water-tight screw terminals that are brought-out upwards via a removable terminal board.

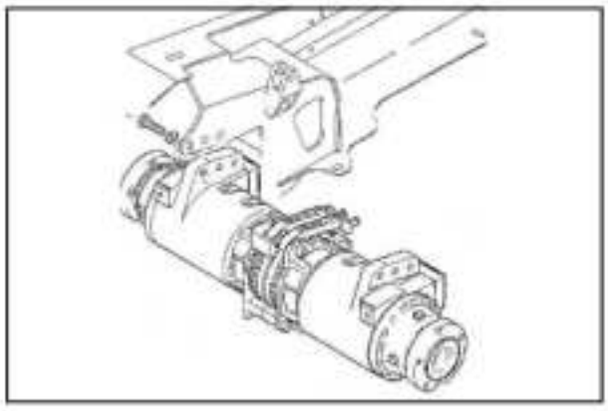
Connectors
In addition to the terminal board, connectors are also provided on the outside for
x12/Speed sensor
x13/Temperature monitor for left motor
x51/Speed sensor
x52/Temperature monitor for right motor



Removal of drive unit
The drive unit can only be removed complete.
- Jack up truck safely,
  observe safety information in Group 01!
- Remove wheels
- Remove mast (see Group 20)
- Disconnect cables from terminals (U,V,W) and sensor terminals x12, x13, x51 and x52 on both motors
- Hang out brake cable
- Position lift-truck under drive unit and remove chassis bolts
- Withdraw drive unit from chassis



Installation of drive unit
The drive unit can only be installed complete.
- Position drive unit from the front between the chassis side walls with a lift-truck and screw in chassis bolts with a tightening torque of 385 Nm
- Connect cables to terminals (U,V,W) on both motors
- Connect sensor cables to terminals x12, x13, x51 and x52 on both motors
- Hang in brake cable
- Mount wheels
- Mount mast (see Group 20)



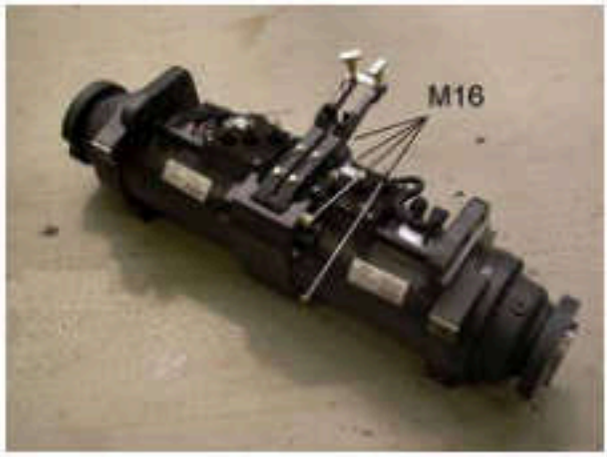
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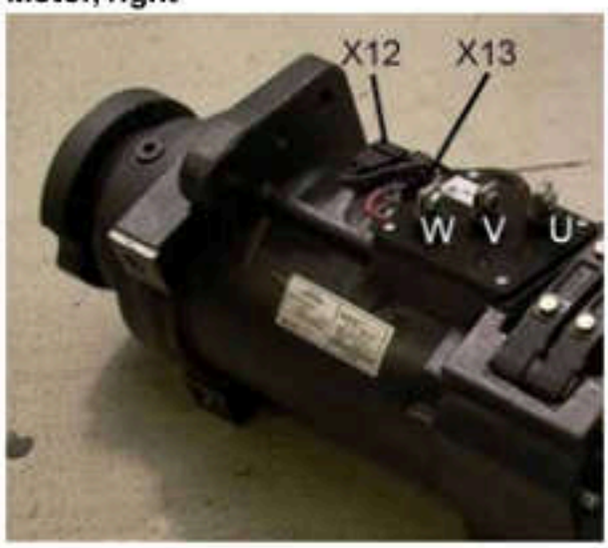
Removal of motor
The drive unit is already removed from the truck.
- Dismantle drive unit
- Drain gear oil
- Detach motors from brake housing by loosening fourM16 bolts
- Remove fixing bolts from gearing and remove with the aid of two M 8 forcing bolts

Dismantle motor
- Loosen M8 fixing bolt of bearing retainer plate and withdraw rotor with brake disc from motor housing.

Attention
The cable can be damaged while withdrawing the rotor. Carefully move out cable of speed sensor at the same time.



Motor, right



Motor, left



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Parametrization of electrical options via console

If a truck is to be retrofitted with spotlights, headlights or stop lights, the parametrization does not have to be performed with diagnostic case. The parameters of simple circuits can also be set via the console.

The condition for this is that the engineer is familiar with the handling of the console and has read the previous pages about parametrization.

Furthermore, for a better understanding some notes on the processing of the switching commands in the controller are necessary.

The controller has a SERVICE ADDRESS for each input and output of a functional block:

SERVICE ADDR 000

So that the controller can recognize all keypads, switches, transmitters, relays and control relay boards, they have been assigned a VALUE:

Control relay board, front (2)
SERVICE ADR **0A6**
VALUE **41**

Control relay board, rear (1)
SERVICE ADR **0A5**
VALUE **40**

Registering a consumer:

First the 3-digit SERVICE ADDR. for the **input** of a function block and the VALUE of the desired switch are entered. Then the 3-digit SERVICE ADDR. for the **output** of this function block and the VALUE of the input channel from the control relay board or relays is entered.

Note
The VALUE will only be stored in memory when both characters are confirmed with PRG ↵ and the entire line is flashing.

Then further consumers can be registered or the inputs can be saved with a RESET.

For a better overview, the SERVICE ADDR. and VALUE of frequently used function blocks, keypads, switches and transmitter are shown on the following double pages.

The selection of the relay and/or the input channel in the control relay board is done using the circuit diagrams for the lighting and optional electrical equipment in the appendix.

Relays K1 and K2 are only available with variant A.



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