

Multiway Reach Truck

NRM20K

NRM25K

Service Manual



631058 A



The type plate of the truck states the following:

Manufacturer

Truck type

Serial number

Battery minimum weight

Battery terminal voltage

Nominal lifting capacity of the truck

Year of manufacture

CE mark



NOTE: If a plate or sticker is damaged, replace it with a new identical sticker. When you order a sticker, include the serial number of the truck in your order.

8.5 Power stages

Important:

The minus-connections always have to be connected first.

When disconnecting the system, the minus has to be the last one to be disconnected.

Terminals + and -

The power supply (battery voltage) is connected to these terminals. The Power cables have to be protected by a fuse (see 'Technical data' for fuse size). The diameter of the power cables has to be determined according to the dimension of the fuse. To provide for a reverse-connect protection, it is highly recommended to use a main contactor to be controlled by the traction-inverter.



Note: In case that the main contactor is not used, a polarity inversion will damage the inverter.

Terminals U,V,W

The motors are connected to these terminals. Basically, the motors have to be connected to the inverters as U_{motor} to U_{inverter} and so on also for V and W.

With a positive set value, the traction motor should drive the vehicle forward. If it doesn't: Parameter 180 of traction inverter's software changes phase sequence of motor output and encoder input.

With a positive set value, the pump motor should drive the pump in correct direction. If it doesn't: Parameter 180 of pump inverter's software changes phase sequence of motor output and encoder input.

8.6 Control stages

The dimension of the control wires is specified to $0,5\text{mm}^2$ (i.e. all plug-able connections). Bigger diameters can be used alternatively to improve the mechanical stiffness. The MOLEX connector is specified for wire dimensions $0,24$ and $0,82\text{mm}^2$.

The following schematic gives an example of the numbering of a 6- and 10-pin connector:

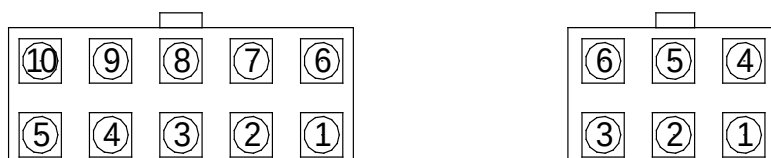


Figure 9: Numbering of connector viewed in direction to the inverter

25	25 Pulse...Pause	Watchdog error 10ms routine
26	26 Pulse...Pause	Error in stepper motor supervision circuit
27	27 Pulse...Pause	Error Lift/Lower High-Side Switch

10.2 Traction and pump controller

Err. nr	blinking code of LED	Description
-	Puls-/ Pausenverhältnis 1:1 (f = 1,25 Hz)	Watchdog
-	Puls-/ Pausenverhältnis 1:3 (f = 2,1 Hz)	RAM-error
-	Puls-/ Pausenverhältnis 3:1 (f = 2,1 Hz)	FLASH-error
2	2 Pulse...Pause	New software version
3	3 Pulse...Pause	Power stage over current
4	4 Pulse...Pause	Low battery voltage
5	5 Pulse...Pause	Battery over voltage
6	6 Pulse...Pause	Overtemperature motor
7	7 Pulse...Pause	Overtemperature inverter
8	8 Pulse...Pause	-
9	9 Pulse...Pause	CAN-bus timeout
10	10 Pulse...Pause	CAN-bus error
11	11 Pulse...Pause	-
12	12 Pulse...Pause	-
13	13 Pulse...Pause	-
14	14 Pulse...Pause	EEPROM fault
15	15 Pulse...Pause	Unrealistic setting of the mot. V/f characteristics
19	19 Pulse...Pause	Unrealistic setting of the gen. V/f characteristics

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