

Addition to the VLT[®] LiftDrive documentation

For use of Safe Stop in lift systems.

Preface

This document is an addition to the equipment documentation for VLT[®] AutomationDrive and VLT[®] LiftDrive.
Subject to technical changes.
All trademarks mentioned are property of the respective companies.

Function

Safe Stop with VLT[®] AutomationDrive and VLT[®] LiftDrive acts as a replacement for the contactors which are usually installed in lifts between the frequency converter and the motor.
This function is patented.
Using Safe Stop ensures that no "rotational field" energy is output from the frequency converter to the motor.

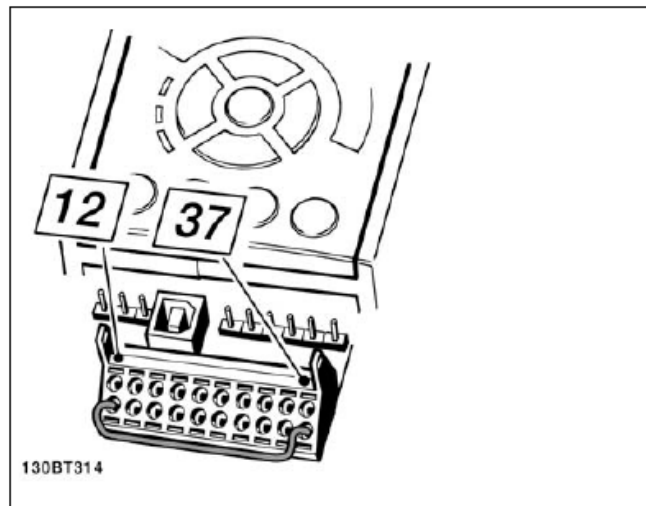


This does not constitute electrical safety. The frequency converter must be disconnected from the supply voltage before working on the cabling or the motor. See the operating instructions for additional waiting times, for the discharge of the DC link voltage.

Preparation



The product is shipped with Safe Stop disabled. The jumper installed between terminals 12 and 37 must be removed to enable this function.



Kabelbrücke (Jumper) zwischen Klemme 37 und Klemme 12 (24 V DC).

Environment

Use of Safe Stop requires enclosure rating IP 20 and 5X or higher as the installation environment. Optionally, the unit itself or the control cabinet in which the equipment is installed may have this rating. See the "Type code" section for specific information.

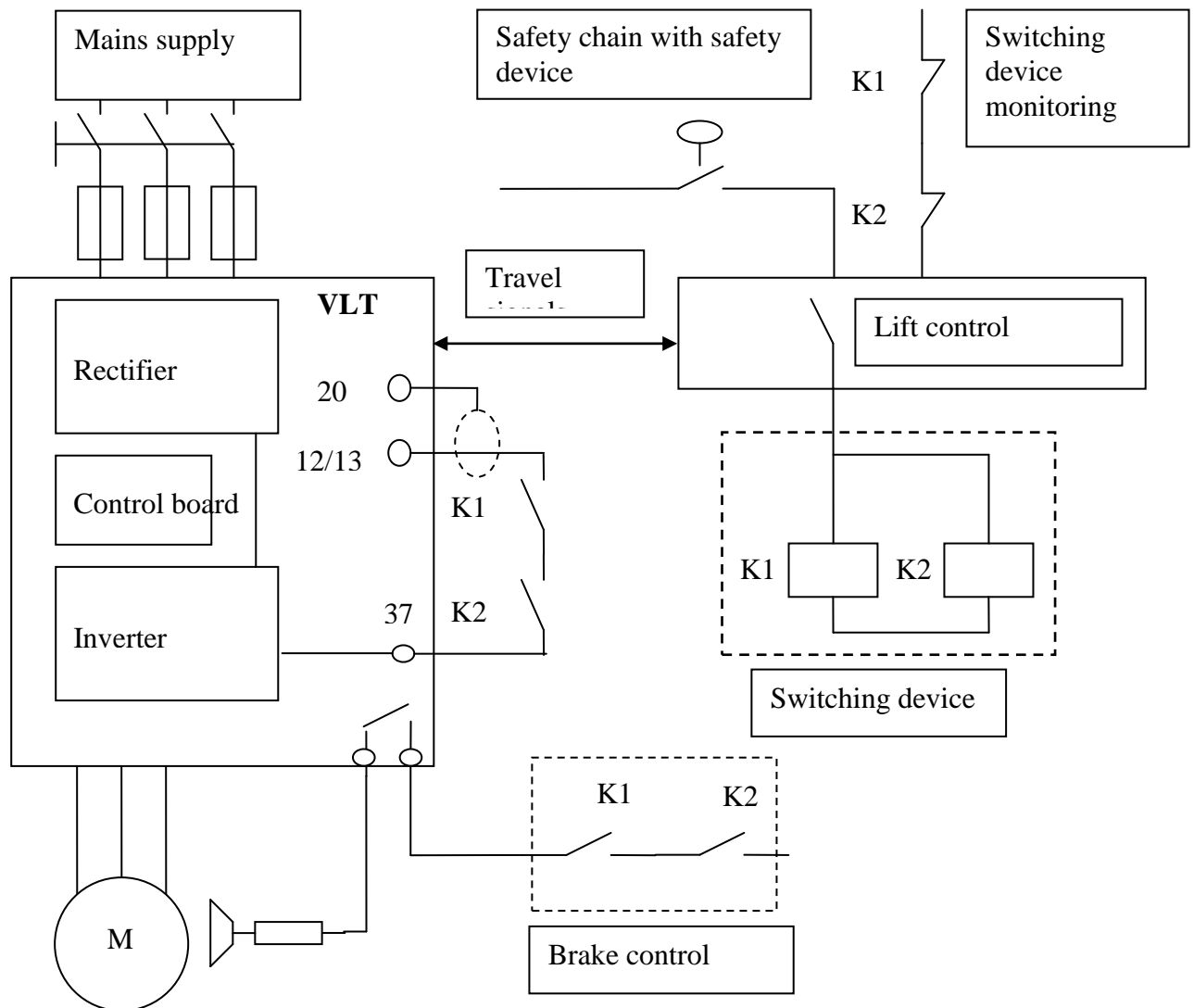
Installation instructions

Install the device and cabling in accordance with the latest technical standards. Cables used for Safe Stop must be protected.

Components used

All components which are related to the use of Safe Stop for lifts must comply with the requirements of EN 81-1 and the specific requirements under "Further information".

Block diagram



Block diagram of Safe Stop application in lift systems

Further information

Switching device

Monitoring of the switching device is based on EN81-1 Section 12.7.1

"The voltage on terminal 37 must be interrupted by 2 independent contacts (see block diagram). If the contacts of one of the two relays have not opened, a further start must be prevented no later than the next change of direction."

Switching element design

In accordance with EN81-1 Section 13.2.1.2 b, use category DC -13, Section 13.2.1.3 (forcible guidance of the contacts) and Section 13.2.2. Section 14.1.1, Fault analysis for electrical safety devices

Electrical requirements for the switching elements:

Clearance and creepage distance

Rated impulse withstand voltage 4 kV

IEC 60664-1

Overvoltage category III

Contamination level 3

Rated insulation voltage 250 V AV

The cable from terminal 12 to the first switching contact and the return cable from the second switching contact to terminal 37 must be shielded, with the shield connected to terminal 20. The two switching elements must be mounted side by side.

Electrical requirements for the cable

The requirements of EN 81-1 Section 13.5 apply

Flexible cable, shielded

Rated voltage U_0/U 300 / 500 V

Note: The function of the two independent switching elements can also be implemented with an emergency stop relay in accordance with EN ISO 13849-1 (EN 954-1) Category 4 and EN81-1 Annex H. See the lift control documentation for the functional test procedure.

Brake control

The mechanical brake must be controlled in accordance with EN 81-1 Section 12.4.2.3.1.

Supply of power must be interrupted by two independent electrical devices.

These may be the same devices which interrupt the voltage to terminal 37 (Safe Stop). If the contacts of one of the two electrical devices have not opened when the lift is stationary, a further start must be prevented no later than the next change of direction.

Device identification

Type code

Each device is marked with a 39-character type code on the nameplate.

Example: LD-302P5K5T5E20H1BGXXXXSXXXXAXBXCXXXXDX

If the type code on the installed device has all the features described below, then the device is equipped with the components which are described in the declaration of conformity (44 799 13131701) and which are relevant for the Safe Stop function.

LD-302P4K0TAE20H1###x
LD-302P5K5TAE20H1###x
LD-302P7K5TAE20H1###x
LD-302P11KTAE20H1##Cx Coating is necessary
LD-302P15KTAE20H1###x Serial no >=Week 41 2014 (XXXXXXXX414)
LD-302P18KTAE20H1###x Serial no >=Week 41 2014 (XXXXXXXX414)
LD-302P22KTAE20H1###x Serial no >=Week 41 2014 (XXXXXXXX414)
LD-302P5K5TAE55H1###x
LD-302P7K5TAE55H1###x
LD-302P11KTAE55H3###x
LD-302P18KTAE55H3###x
LD-302P30KTAE55H3###x
LD-302P55KTAE55H3###x

distinguishes between frequency converters with or without brakes and with or without graphic displays, with or without coating; all possible combinations are covered by the certificate.

x The remaining characters of the type code do not affect the safety function. All possible combinations are covered by the certificate.

Functional test

1. The jumper between the supply voltage terminal 12/13 and terminal 37 must be removed.
2. The switching element (K1, K2) contacts (NO) which are used to drive terminal 37 must be connected in series.
3. If at least one switching element (K1 or K2) is not actuated, the warning LED must light up and the message "Safe Stop" must be displayed.
4. The warning LED is off during travel.



This test is only an aid and does not relieve the need for due care when installing and commissioning lift systems.

History:

- V 1.00 First version
- V 1.01 Device identification updated
- V 1.02 Functional test paragraph updated, device identification extended
- V 1.03 Change to test instructions
- V 1.04 Changes for new IP 20 frequency converter
- V 1.05 Changes for Frame Size B4, corrections for typecode