

DIETZ DSV 5453 LIFT

Operating Instructions



Edition 04/07
Subject to technical modifications
(Interim)

DIETZ DSV 5453 LIFT

Dear customer / user,

System DSV 5445 - Lift offers you a high-quality, modern and very powerful drive concept for old and new lift and lifting gear systems.

The u/f oriented system DSV 5445 - Lift with 'Open Loop Technology' controls your lift refurbishment or new low-cost systems with conventional gear solutions and escalators.

The customer/user should read these instructions carefully and should have understood them before starting work.

The following products:

DSV 5445 ; DSV 5452 ; DSV 5453 ; DSV 5445/5453-Plus-series

KD 915 , KD 920 ; Fine HF-SET 93251340268 (DSV 5452 incl. movable cubicle) ;

Brake resistors 4...40 Ohm (Type Cressall, Frizlen, Danotherm),

comply with the following directives and standards:

Low voltages directive 73/23/EEG - amendment 93/68/EEG - EMC directive 89/336/EEG, amendments 92/31/EEG and 93/68/EEG, incl. actually EMC directive 2004/108/EG

including the appropriate amendment directives up to date of drawing.

The following standards are used:

EN 60204-1	1998-11	IEC 61000-3-2:	2002-12	EN 55011:	1998
EN 61800-3 pr A.1.1	1999	IEC 61000-3-2/A1:	1997	EN 55011/A1:	1999
EN 61800-3 pr A11 ;	1999	IEC 61000-3-2/A2:	1998	EN 55011/A2:	2000
EN 61800-3	2002-04	EN 61800-2	1999-08	EN 61800-4	2003-08
EN 12015	2004	EN 12016-08	1998	VDE 0660 Part 500 (IEC 439, EN 60439)	
EN 61800-6-3	2002-08	EN 55011B	(basic emission standards) incl. IEC801 Part 1-5		
VDE 0875 Part 11	2003-08	EN 61000-6-3/AA	2004-07	EN 61800-1	1999-08

Optional on request : EN 954-1 part EN 61508 (not for all products available).

The declaration covers the modules and units delivered by us, but the user must ensure that the machine complies with the directives applicable to the end product after mounting or installation.

Following the IEE915 directive line reactors of 4% uk minimum are needed, further information or special solutions will be projected and quoted on request.

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1 Safety Notice



- ◆ The installation, commissioning and parameter configuration may be performed only by qualified personnel, who have thoroughly read and understood these commissioning instructions.
- ◆ The technical documents and program versions issued by the manufacturer must always be used for commissioning.
- ◆ One must be prepared for unexpected responses by the whole drive during commissioning as a result of incorrect settings, incorrect connection and/or defective components.
- ◆ Before commencing commissioning, at least the EMERGENCY OFF functions, voltage isolation and fall of the mechanical brake must be installed and tested.
- ◆ The unauthorised removal of parts of the enclosure, improper use and incorrect installation or operation can cause fatal or serious injury and material damage.
- ◆ Pay attention before every commissioning that all persons and objects are removed from the danger area.
- ◆ The frequency converter described in these operation instructions is specially intended for use in the lift industry. The frequency converter is to be used only for the stepless speed control of three-phase motors. The operation of other electrical consumers is not permitted and can lead to destruction of the equipment.
- ◆ Commissioning, i.e. the commencement of operation for the intended purpose, is permitted only subject to the applicable EMC directives.
- ◆ Oil lubrication in a power or force transmission systems with an oil-filled gear casing (geared motor) or reduction gears can deteriorate during operation at low speeds. Information on the permissible continuous speed range must be obtained from the gear manufacturer.
- ◆ If reactive power compensation equipment is installed in the power mains, it is to be checked for correct function.
- ◆ If earth-leakage relays are employed, their sensitivity should be 30 mA or more per converter. The earth-leakage relays must be suitable for pulsed DC currents.
- ◆ Check the required motor current at all speeds after completing commissioning
- ◆ Check the function of the brake resistor after completing commissioning; the resistor must not glow! Pay attention to the risks of ignition/inflammation and fire.

2 The 6 golden rules in the switchgear cubicle building

1) Hold the "24V systems" (and/or possible other low voltages) separate from the "230V systems" and/or "400V systems"

2) Consider that the three below point 1) mentioned basic voltages star-shaped from their respective generation point to the individual consumers may be had be stated! In particular that is especially crucial for the "24V systems". Do never move the 24V and/or the 0V through the rails and consumption points in series ! Always go away freshly per rail and/or consumption group with new cables from the neutral point. The neutral point in the "24V system" is the power unit and/or the filter capacitor in the 24V generation! Put a distributor terminal block for this purpose for the respective voltage in order to allow a star-shaped supply.

3) Unlike the widespread opinion, must the screens of all shielded cables (this are normally cables from the inverter to the motor - provided that no AddOn filter is used - and the cable to the braking resistor) be always connected at both sides! In the case of longer cables, this becomes all 25 metres again necessary.

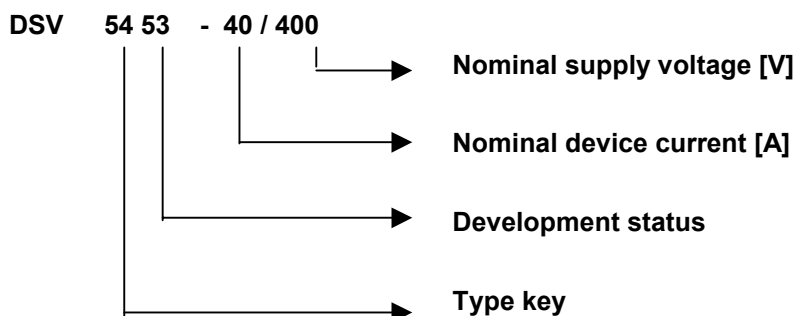
4) Suppress interference's of the contactor coils with corresponding RC networks or varistors. Also think of the electromagnetic valves and brakes! A missing varistor in the terminal box of the brake, it is selected for nominal input voltage at the brake rectifier, therefore for 230VAC or 400VAC or at the power input point in the switchgear cubicle hinder the function. The RD- or RC- and/or varistor links must be positioned directly at the seat of the reactance coils! If this is not possible, the cables must at least be installed shielded up to the possible installation position of the interface suppressor!

5) Install the "0V" and "GND" cables with enough cross section! All utility lines to our devices DSV544* and DSV545* do not may be loop to further consumers! - see also next point)

6) Use the possibility of our add-on filter that is available for the systems DSV544* and DSV545*. The add-on filter is a combination of a line and motor filter in one unit and can employed up to 10 metres without screened cables. The normal external line filter can remove no reflection power. As reflection power is designated an underestimated interference which only in particular results after 'off'-shielding. This capacity energy would like to flow off somewhere, what is often not possible for far or too weak grounding point's.

3 Technical Data

3.1 Type code DSV - LIFT:



3.2 Electrical data

- | | |
|---|---|
| <ul style="list-style-type: none"> ◆ Typical input voltage range: ◆ Power mains frequency: ◆ Control voltage for fans from 60A-DSV: ◆ Control voltage PLC level: ◆ Typical power factor ◆ Output voltage: ◆ Output frequency: ◆ Pulse frequency adjustable: ◆ Typical du/dt: ◆ Dynamic output current (I_{dyn}): ◆ Duty cycle at 10 kHz (12 kHz) PWM: ◆ Fixed speeds: ◆ Speed thresholds: ◆ Protection class: ◆ Ambient temperature: ◆ Storage temperature ◆ Humidity rating E to DIN 40040 ◆ Power reduction from 40 °C by 1.5 % per 1 C° (maximum up to 55 °C) ◆ Installation altitude up to 1000m, thereafter power reduction 6% per 1000m | <ul style="list-style-type: none"> 3 × 400V ±10 % TT, TN system (1/3 × 230V ±10 %) TT, TN system (option) Other connection voltages and/or IT system on request 50...60 Hz ± 5 % 230V +5,-15 % +24V ±15 % >0,97 3 × 0...(network input voltage – 20V) 0...400 Hz 6 / 12 kHz < 1 kV/μs (with AddOn filter) 150 % (200% BGR 1 10A) 65 % (50%) 4 2 IP 20 0 ... 40 °C -20...0.70 °C |
|---|---|

DIETZ DSV 5453 LIFT

3.2.1 Power connection and accessories

DSV 5453	I_{dyn} [A]	Output power [kVA]	Power loss [kW]	Motor type [kW]	Network-fuse type gL	RFI motor filter AddOn	Line reactors (typically)	Conductor cross-section mains/motor lines	Brake resistor Cable cross-section
10	20	6.5	0.19	3.0 - 5.5	3 × 10A	Size 1	3×1.5 mH, 16A	4 x 1,5 mm ²	40 Ω / 1 kW 2 x 1.5 mm ²
20	30	13.0	0.41	5.5 - 9.0	3 × 25A	Size 2	3×0.7 mH, 35A	4 x 2,5 mm ²	40 Ω / 1 kW 2 x 1.5 mm ²
20	40	13.0	0.45	5.5 - 11.0	3 × 25A	Size 2	3×0.7 mH, 35A	4 x 2,5 mm ²	40 Ω / 1 kW 2 x 1.5 mm ²
30	45	19.5	0.58	7.5 - 15.0	3 × 35A	Size 3 Type 0	3×0.7 mH, 35A	4 x 4,0 mm ²	18.8 Ω / 2 kW 2 x 2.5 mm ²
40	60	26.0	0.75	11 - 22	3 × 50A	Size 3 Type 1	3×0.5 mH, 50A	4 x 6,0 mm ²	18.8 Ω / 2 kW 2 x 2.5 mm ²
60	90	39.0	1.2	22 - 30	3 × 63A	Size 4 Type 1	3×0.3 mH, 80A	4 x 16 mm ²	14.4 Ω / 4 kW 2 x 2.5 mm ²
80	120	52.0	1.5	30 - 45	3 × 80A	Size 4 Type 2	3×0.25 mH, 100A 3×0.3 mH, 80A	4 x 25 mm ²	14.4 Ω / 4 kW 2 x 2.5 mm ²
120	180	78.0	2.25	45 - 55	3 × 125A	Size 4 Type 3	3×0.18 mH, 130A 3×0.25 mH, 100A	4 x 35 mm ²	13 Ω / 6.5 kW 2 x 4.0 mm ²
150 - 250	on request								

Motor type [kW]

The allocation DSV5453 to motor power has to be verified by means of the lift data!

Network fuse

The type "gL" can be used for the network fuse. In case of using semiconductor fuses the nominal current has to be increased.

Line reactors

Depending on the operating time, mechanical and electrical specifications of the system the nominal data of the line reactor can drift.

Conductor cross-section:

The given cross-sections are standard values regardless the ambient conditions, used cable types and network fuses. Because of this the cross-sections can vary depending on the applicable regulations.

Brake resistor

The dimensioning of the brake resistor has to be verified by means of the lift data!

3.2.2 Equipment design in dependence on the characteristic curve and efficiency

Required maximum current in A
at $a = 0,5m/s^2$

$$\text{Required maximum current in A} \approx \frac{\text{load bearing capacity [kg]} \times V_{\max} \left[\frac{m}{s} \right] \times 16As}{\text{gearing efficiency rate} \times \text{characteristic factor} \times 1kgm \times \text{sheave efficiency rate}}$$

Sheave efficiency rate $\approx 1 - (\text{number of idler pulleys} \times 0,045)$

The equation for the calculation of the maximum current only applies if the high-inertia load was removed.

If the high-inertia load cannot be removed, select the next larger unit.

Typical $\cos\phi \approx 0,58 \dots 0,77$; small rotor time factor.

Silumin characteristic curve, high starting torque (thyristor controller or pole-changing).

The MAXIDRIVE VVVF DSV 5453 is suitable.

Disadvantage on the motor side: very poor efficiency rate.



characteristic factor= 600



characteristic factor= 700

Typical $\cos\phi \approx 0,78 \dots 0,84$, large rotor time factor.

New FC characteristic curve, mean starting torque (lift motors on frequency converters).

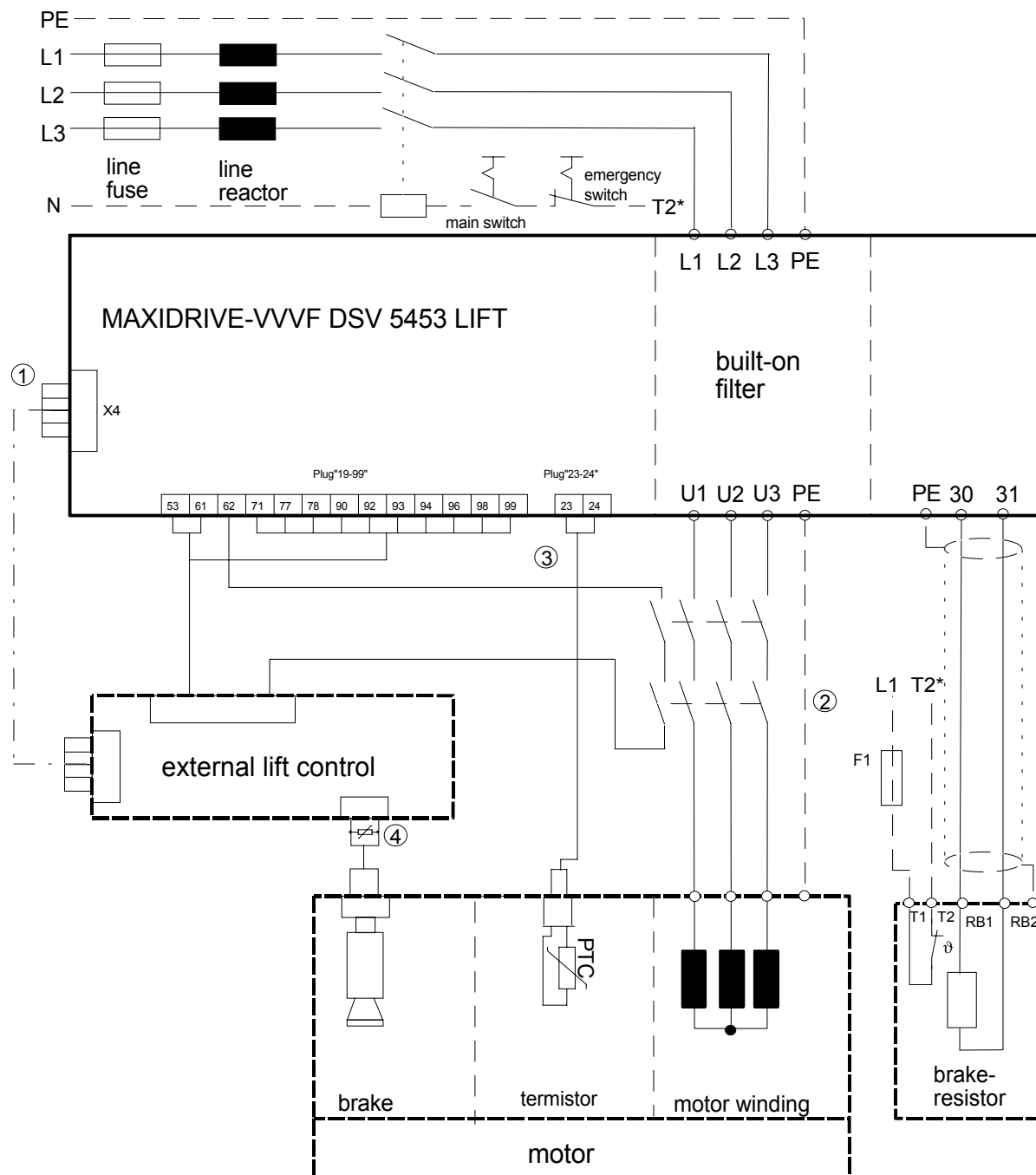
The MAXIDRIVE VVVF DSV 5453 is only partly suitable.

The MULTIDRIVE VECTOR VVVF DSV 5445 is suitable.

Good compromise between smooth performance and good efficiency rate.

4 Terminal Assignment

4.1 Power Terminals



- ① If required it can be operated via bus interface
- ② Second contactor, only if required
- ③ If the PTC is connected to the external PLC, the plug-in termination 23;24 must be bridged.
- ④ Varistor (e.g. TNR G331K) must be connected in parallel to the brake connection!

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4.2 Digital Inputs/Outputs

The frequency converter MAXIDRIVE DSV 5453 LIFT features several hard-wired inputs/outputs. Yet, a voltage of +24 VDC \pm 15% must not be exceeded at the inputs and outputs. The control voltage should be smoothed with electrolytic capacitors.

Each output is capable of switching a maximum current of 0.1 A at a maximum voltage of 24 VDC. Output power is supplied via an external power source at pin 77 and pin 78. The power supply is to be equipped with a 2 AT fuse. The inputs switch at a voltage of 15...24 VDC. They require a current of each 10 mA. The voltage corresponds to the reference potential at Pin 77. **The 24V-supply must be smooth** (transformer with only a rectifier is not sufficient enough!).

Digital Inputs Plug „19-99,,	Pin		Function	Remarks
Direction of rotation	53	24 V	direction of rotation	
Pulse release	62	24 V	Release output module	
Reference potential, external	77		external reference potential	
+24 V external	78	24 V	external 24 V (fuse 1,5 AT)	
d.c. braking	92	24 V	d.c. braking	„level stop,,
Digital input 1 (DE 1)	98	24 V	Selection of fixed frequencies	
Digital input 2 (DE 2)	99	24 V	FF1, FF2, FF3 and FF4	
Standstill	61		Output frequency = 0	
Frequency attained	71		Actual frequency = set point frequency	
Digital output 1 (DA1)	93		FU - Frequency > FF5 and FU - Frequency < FF6	Brake control with adjustable switching hysteresis
Digital output 2 (DA2)	94		FU - Frequency < FF6	
Ready for operation	90		Message ready for operation	max. 24VDC at 0,5A
Ready for operation	96		potential-free relays contact	loadable
PTC thermistor			Function	Remarks
Motor PTC thermistor	23		Motor temperature monitoring	bridge 23-24, if no motor PTC thermistor can be placed on
Motor PTC thermistor	24			

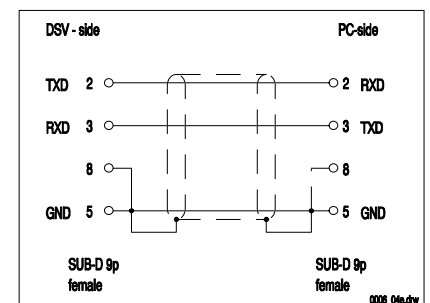
4.3 Interface RS232/RS485

RS232 → Connect Pin 8 with 5 (refer to diagram 0006_04d.drw)

RS485 → Connect Pin 6 with 5 (as with RS232)

addressed RS485-operation → Connect Pin 5 with Pin 6 and 7.

Plug SUB-D 9 Pin No.	Description
1	TXD-RS422
2	TXD RS232 or TXD+ RS422
3	RXD RS232 or RXD+ RS422
4	RXD- RS422
5	GND
6	Switched to RS485/422
7	Switched to addressed RS485
8	Operation
9	connect with Pin 5 VCC

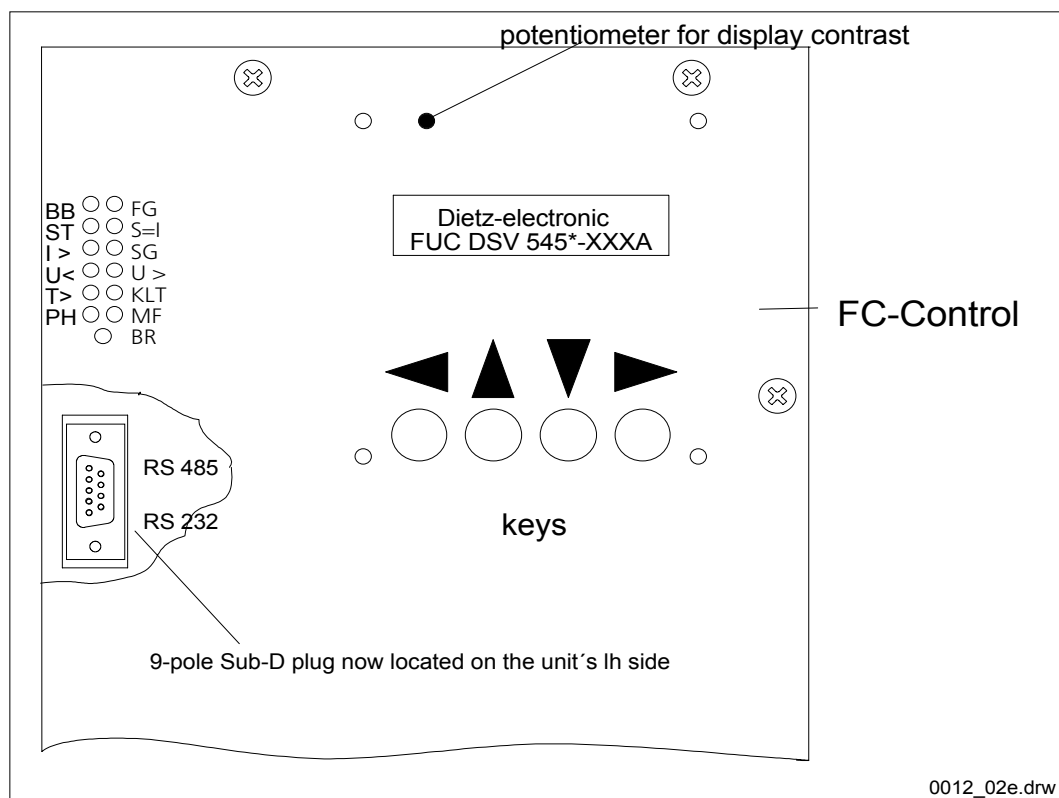


The RS232 interface cable for MAXIDRIVE VVVF DSV 5453 and MULTIDRIVE VECTOR VVVF DSV 5445 LIFT plugs in both systems. (Our item-no.: 7906014)

5 Start-up with the FC-Control

5.1 Operation

The four-key control panel with a two-line LC-display provides an easy, menu-assisted start-up. The actual values are indicated in the two-line LC-display. The LEDs on the left serve as status and error indicators.



The four keys have the following function:

Key		Function
◀	left key	Moves back to the menu level or selects the previous digit of a parameter.
▲	up key	Changes within a menu level or increases the value of a parameter
▼	down key	Changes within a menu level or decreases the value of a parameter
▶	right key	Moves to the next menu level or selects the next digit of a parameter or confirms the entry with the enter key.

Editing a value:

Once the desired parameter is selected, the cursor can be positioned with the right/left keys to the digit, that you want to be changed. The number value can be changed by pushing the up/down keys.



During each change of a parameter, push the right key until the message "value saved" is indicated in the display. Instantly after the change, the value is available to the frequency converter.

We have tried to deliver your unit with optimum manufacturers settings. Please try and run the unit with these settings first before you change any of the parameters.

5.2 Light-Emitting-Diodes



Short descriptions for all LEDs are printed on the front panel.

Attention: Green LEDs may always flash, red LED's never. (Exception "SG")

short desc..		Function	Remarks
BB	Ready for operation	Unit is ready for operation, i.e. no incurred errors.	Must always flash otherwise an error occurred!
FG	Release	Pulse release activated (release final amplifier)	
ST	Standstill	Standstill message, flashes when Motor is stopped	
S=I	Frequency is attained	Set point frequency is (end of the ramp and current limit is attained).	
I>	Overcurrent	Ground fault or short, the hardware current limit was exceeded.	Line reset is required
SG	Current limit	Unit operates at the current limit (reduction of ramp and output frequency, if necessary). This is only a message and not a locking	May only flash once.
U<	Undervoltage	Undervoltage of the intermediate circuit	Line reset is required
U>	Overvoltage	Overvoltage of the intermediate circuit	Line reset is required
T>	Excess temp. unit	Overtemperature of the heat sink	Line reset is required
KLT	Excess temp. Motor	Overtemperature of the motor (motor PTC thermistor)	Line reset is required
PH	Phase-failure	Failure of one or more phases of a power supply.	
MF	Module error	The final amplifier module signals an error (overcurrent or overtemperature in the motor circuit or brake). This message is only activated in a unit of design size 1.	
BR	Braking resistor	Frequency converter brakes	

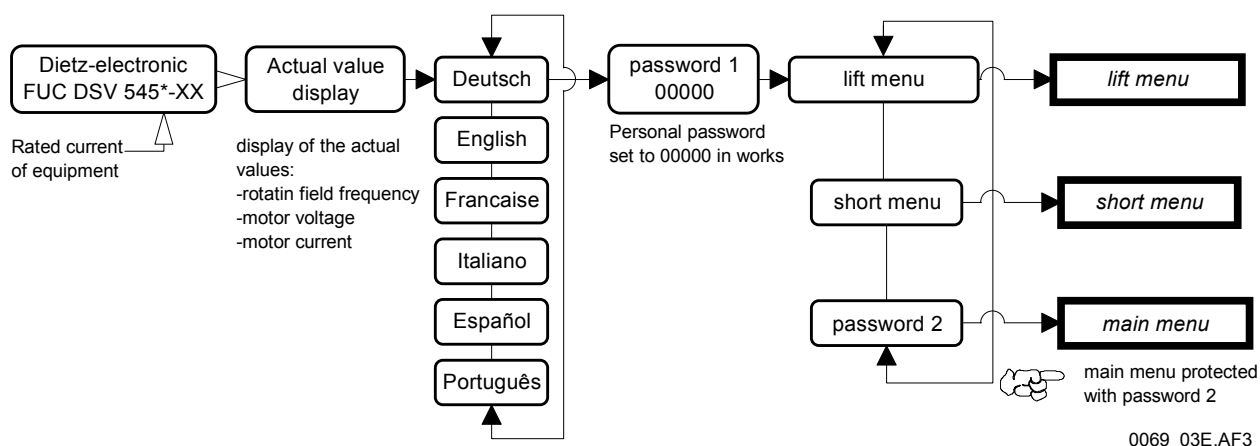
5.3 Operating the FC-Control

Several seconds after switching on the unit, the actual values (rotating field frequency F, motor voltage U, motor current I) are displayed.

Push the right key and select the desired language with the up/down key. Pushing the right key will confirm the language. The display will show "language saved".

All other menus and parameter can be accessed the same way.

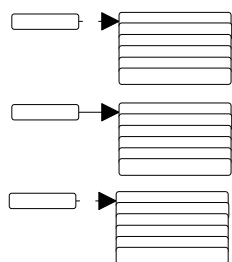
The following picture represents the path to lift menu, short menu and main menu:



In order to access the lift menu or the short menu, you have to enter the **password 00000**. The main menu is protected with a second additional password (**00300**).

(Generally for the start-up of the lift system only the **LIFT MENU** is required.)

menu parameter



The available parameters are divided in menus according to their context. The functions of parameter or parameter group are represented in the display. In addition a six digit number is displayed in short menu and main menu.

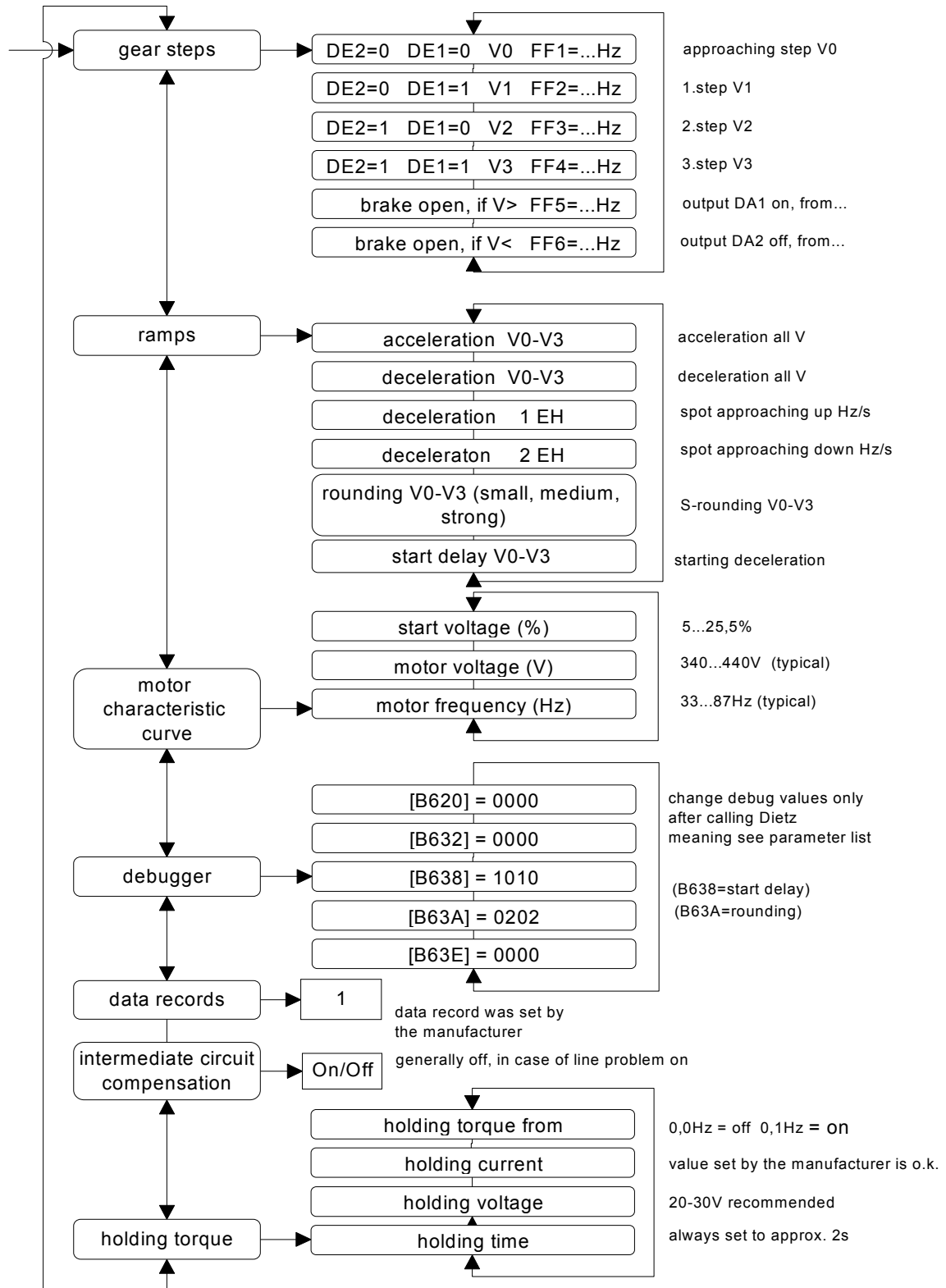
Operation and entry of the desired parameters is represented in an easy to comprehend way.)

Enter the motor data first, then the gear steps, ramps and rounding.

After entry of the command to run, the motor should start to rotate, if not, refer to chapter 9 *Troubleshooting*.

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5.4 Lift Menu



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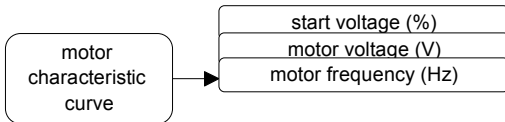
5.5 General Setting References

5.5.1 Motor Characteristics

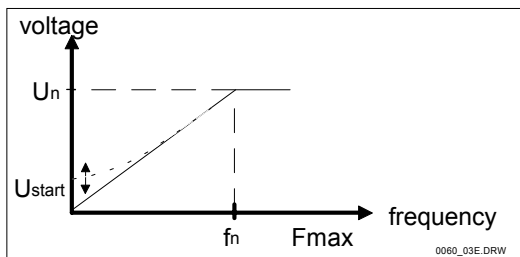
These settings need to be made:



- ♦ motor voltage, motor frequency, start voltage
The starting voltage must be adjusted in a way that during operation, the LED SG (current limit) does not flash or only shortly flickers, because otherwise the motor characteristic curve will be skewed.



- ♦ start setting motor voltage and motor frequency
- ♦ select the starting voltage according to the motor (for "old" motor 15..25%, for "new" motor approx. 5..12,5%)



In order to compensate the smooth motor characteristic curve of the "old" motors, the motor voltage can be increased which will lead to a slightly higher torque in the higher speed range (typical: 420V/50Hz).

The starting voltage is an important parameter. If it is too small, the motor will not start. If it is too large the unit reaches the current limit and the motor also does not run.

"old" (smooth) Motor 15...25%

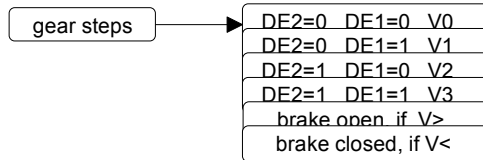
"new" (hard) Motor 5...12.5%

5.5.2 Gear Steps

These settings need to be made:

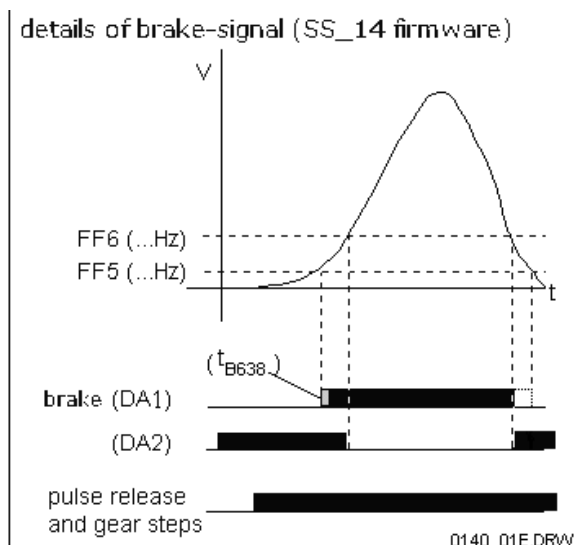
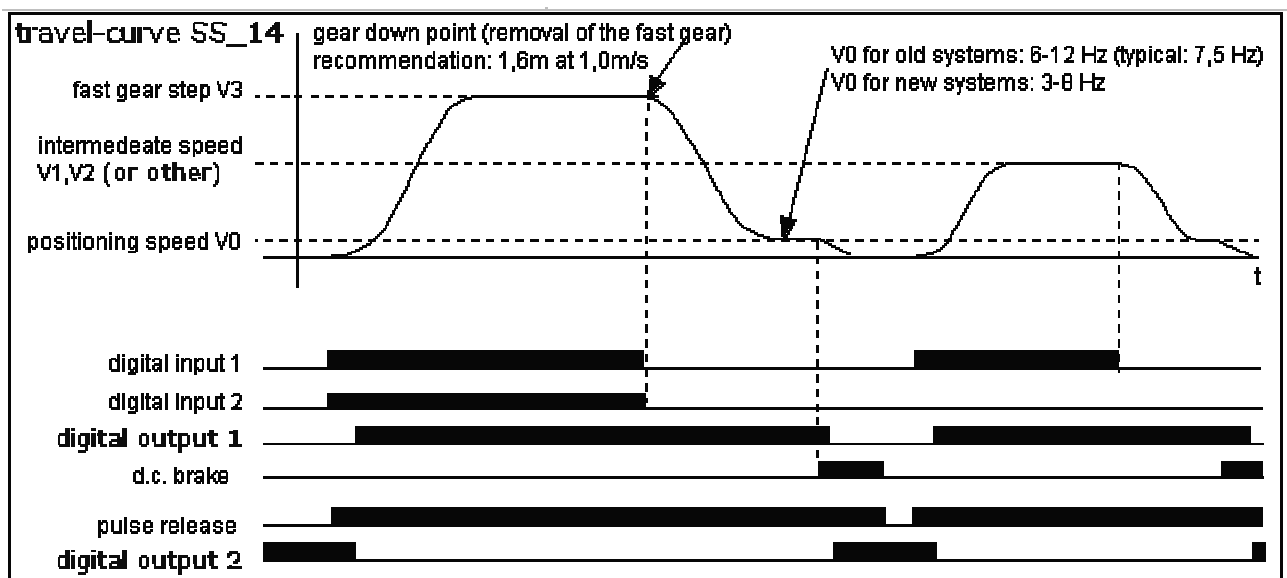


- ◆ gear steps (V0, V1, V2, V3), and outputs digital output 1 (DA1) digital output 2 (DA2).



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- ◆ begin with the combination 00 (DE1=0, DE2=0), and enter the approaching speed of "V0".
- ◆ enter the remaining combinations. V1...V3 (V1, V2= intermediate gear step, V3= fast gear step)



A good starting performance requires that after opening the mechanical brake the drive can take over the holding torque at the optimum moment. If you select a FF5 value that is too high, the motor torque is not sufficient and the cabin will "run off". If you have selected a low FF5 value and your system is still braked and you need to change the starting deceleration under the submenu "starting delay" which corresponds to the debugger setting of cell B638 ("small"=1010, "medium"=3030, "strong"=5050).

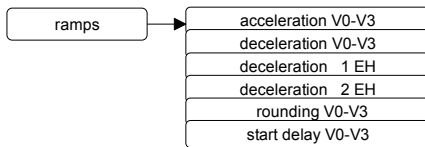
For getting ideal stopping behaviour the drive has to be stopped before the brake opens. Use digital output DA1 for opening and closing the brake. The value FF5 defines the output frequency that opens the brake. The value FF6 defines the output frequency that closes the brake.

5.5.3 Ramps and Rounding

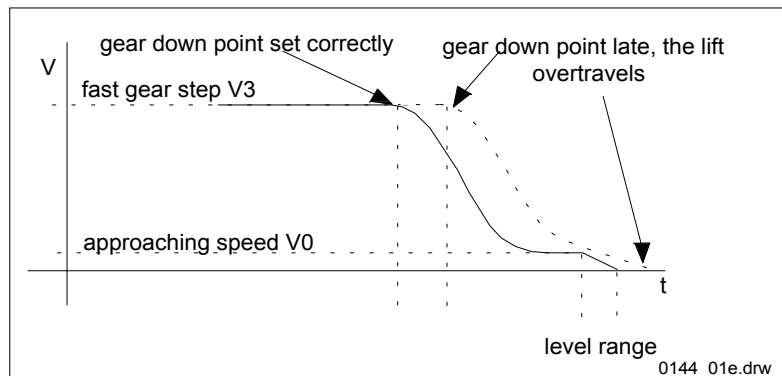
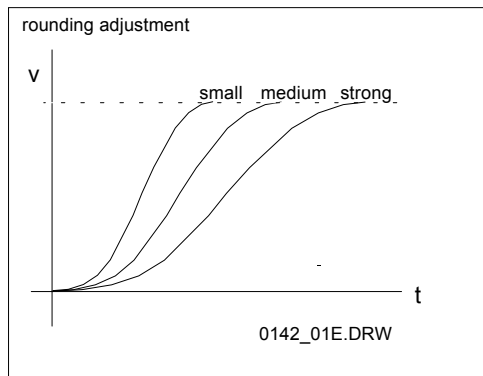
These settings need to be made:



- ◆ ramps and rounding



- ◆ Enter the acceleration V0-V3. Select a value between 0.2 and 0.5 (typically 0.3)
- ◆ Enter the deceleration V0-V3 accordingly. At a deceleration of 0.3 at 1m/s = 50Hz the travel to the stop amounts to 1.6 m. Higher values reduce the travel. Make sure that during both travelling up and down the current limit (LED SG) does not flash.



Keep both stopping ramps (only in short menu and main menu) equal, they will be used for the remaining distance (d.c. braking signal). A value of 10Hz/s is usually o.k.. If you are not comfortable with the manufacturers settings, change the S-curve rounding at the point "rounding". You can choose between "small", "medium" and "strong" which corresponds to the debugger setting of cell B63A ("small"=0101, "medium"=0202, "strong"=0303).

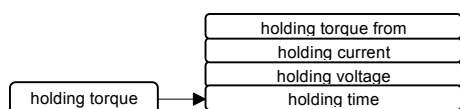
5.5.4 Level Range

Fixed speed systems are always slightly load-dependent. Small level range differences may thus occur due to different loads.

These settings can be made:



- ◆ holding torque in the level range:



You usually do not need to use the "holding torque from", but if you encounter problems levelling at the stop despite correct settings for approach speed "V0" (it must not be too low) and starting voltage (it must not be too low), set "holding torque from" in the "Lift Menu" from the manufacturer's setting of 0.0Hz to 0.1Hz. Quit the menu point "holding torque from" and search for the "holding torque". Confirm the found holding torque and select the menus "holding voltage" and "holding time". Set "holding time" to 10...30V (higher values do not improve the performance and rather cause a rough running motor approach performance. For "rough" motors you should therefore keep the manufacturer's settings of a "holding torque" of 0.0 Hz).



TIP: Level Range

- ◆ Optical Level Range:

The open loop system DSV 5453 - LIFT will always show a load-related variation in levelling. It appeared that the passenger at the walk on the cabin they unconscious very much pay attention to the level range. Therefore, one recommends not to do the adjustment with half load but with the empty cabin if the system supplied too great levelling variations. Furthermore, the braking ramp should be not too flatly set in order to hold an as high as possible voltage at the engine.

5.5.5 Intermediate Circuit Compensation

These settings can be made:



- ◆ Intermediate circuit compensation:



Intermediate circuit compensation will be required for highly fluctuating line power or if the smooth performance seems to be strongly directional (rough performance is encountered mainly with the operation of the braking chopper). The manufacturer's setting is "no" which usually improves the smooth performance of the motor.

6 "WinDietz-1.1x" under W95 / W98 / ME / W2000 / NT4 / XP

The **WinDietz** program is very powerful. You can configure and even program the system both **online** and **offline**.

The CNF files or CFG files form the user menu control and are also adaptable if required.



Your PC/laptop requires a **"real" RS232 interface**.
USB - RS232 adapters are possibly not suitable.

6.1 Installation of WinDietz

If you are using an actually WinDietz-CD (at least 1.18d, 2003) AUTORUN starts the setup-window. First do the installation and after this the update-function from CD. If the CD is older than 3 months then better do the update using the integrated online-function within WinDietz. If you can not start AUTORUN from here, try to start WinDietz manually from path z:\terminal\windietz\version.11x. 'z' means here the CD-ROM and 'x' the version you want to have (version. 119=WinDietz 1.19). This is also valid for the update from CD with 'DATEN.ZIP' which you have to unzip manually if AUTORUN does not work.



If you are visiting our download website for receiving the actual version of WinDietz you have to register. For this you need a customer number and your email address. Visit our website or try directly click to URL: www.dietz-electronic.de/download.htm you will be redirected automatically.

You can get the zipped full version of WinDietz (appr. 5MB) from the download site. Try and click 'link' ... download zipped file 'WinDietz 1.1x' ... After the setup please use the online-update-function of WinDietz for getting additional actual files. If your PC/laptop has no connection to the Internet please try to get at least the file DATEN.ZIP and unzip it to the WinDietz-folder DATEN. You only need the full version if you have installed a WinDietz version lower than 1.16 resp. Your PC/laptop has no connection to the Internet. Otherwise the new online-update-function completes WinDietz.

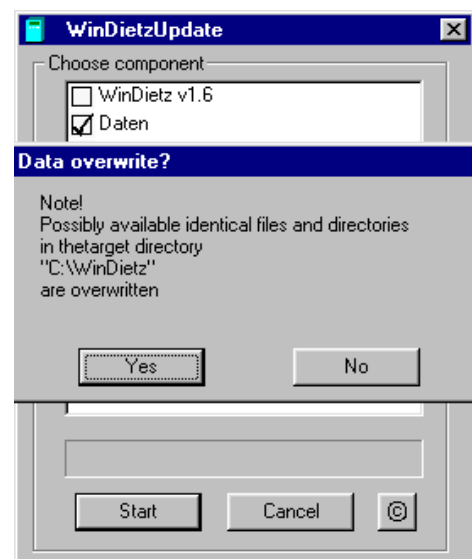
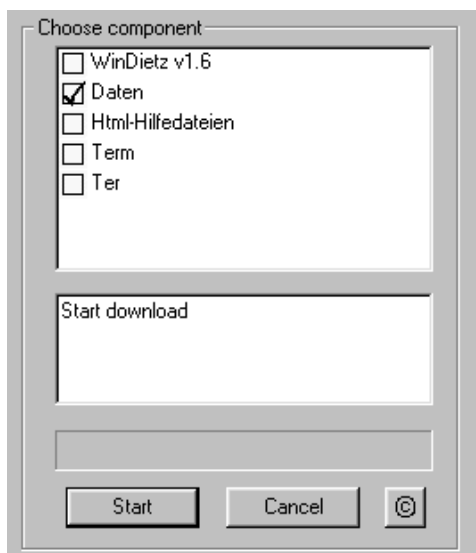
DIETZ DSV 5453 LIFT

New function in **WinDietz** supplies you automatically with current **Update** from the **Internet**! Now you always get the newest data. WinDietz can also again install itself.



With the new function '**Online-Update**' now you have a fantastic tool for all upgrades!

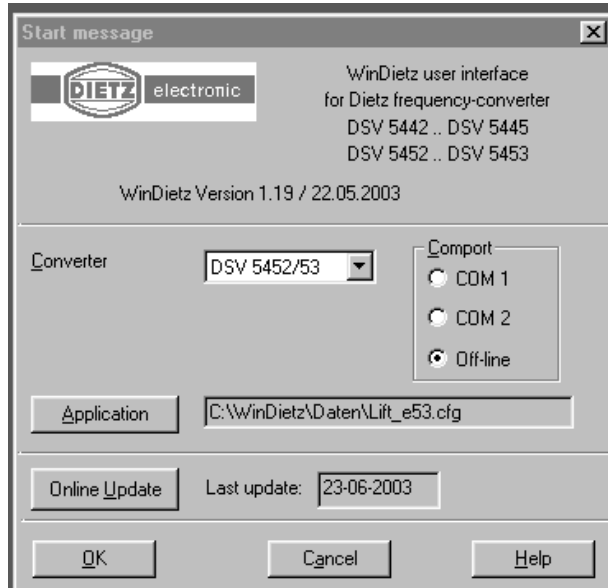
Server will be visited for **new files** for you!



Start now the transfer of new files and folders! Please don't stop the download before the update-process is successful finished.

6.2 WinDietz start message

The following start message appears after starting the program:



6.2.1.1 Select converter

Select the converter type in the converter window. "DSV 5452/53" for your lift device.

6.2.1.2 ComPort interface

Select the correct COM X for your PC/laptop! COM1 is standard.

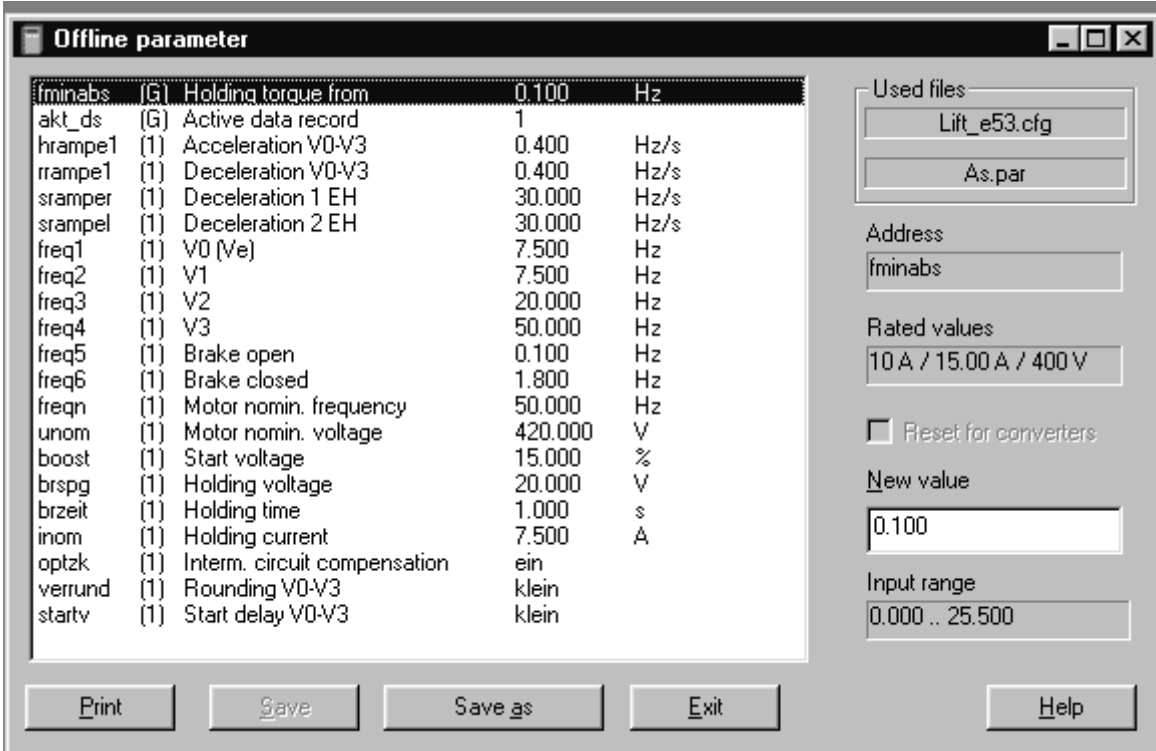
6.2.1.3 Application

The selection of the application inserts or ignores parameters and variables in the parameter record appropriate to the application and defines setting limits. The application **Lift_e53.cfg** is suitable for many standard cable lifts.

6.2.1.4 Help

Use the help function.

6.2.2 WinDietz Parameter-Editor and Online Help



Parameter	Unit	Value	Unit
fminabs	(G)	Holding torque from	0.100 Hz
akt_ds	(G)	Active data record	1
hrampe1	(1)	Acceleration V0-V3	0.400 Hz/s
rrampe1	(1)	Deceleration V0-V3	0.400 Hz/s
sramper	(1)	Deceleration 1 EH	30.000 Hz/s
srampel	(1)	Deceleration 2 EH	30.000 Hz/s
freq1	(1)	V0 (Ve)	7.500 Hz
freq2	(1)	V1	7.500 Hz
freq3	(1)	V2	20.000 Hz
freq4	(1)	V3	50.000 Hz
freq5	(1)	Brake open	0.100 Hz
freq6	(1)	Brake closed	1.800 Hz
freqn	(1)	Motor nomin. frequency	50.000 Hz
unom	(1)	Motor nomin. voltage	420.000 V
boost	(1)	Start voltage	15.000 %
brspg	(1)	Holding voltage	20.000 V
brzeit	(1)	Holding time	1.000 s
inom	(1)	Holding current	7.500 A
optzk	(1)	Interm. circuit compensation	ein
verrund	(1)	Rounding V0-V3	klein
startv	(1)	Start delay V0-V3	klein

Buttons: Print, Save, Save as, Exit, Help

Used files: Lift_e53.cfg, As.par

Address: fminabs

Rated values: 10 A / 15.00 A / 400 V

☐ Reset for converters

New value: 0.100

Input range: 0.000 .. 25.500



Ensure that your system is set to "return" so that no drive commands are initiated while you change data in the DSV.

6.2.2.1 Changing data in the DSV

The most important function is "Edit parameter of converter" in the menu "Parameter". After the read-out of the data in the DSV you can change any given parameters or variables. Pressing the button "Send" starts the transmission of all parameters and variables back to the DSV.

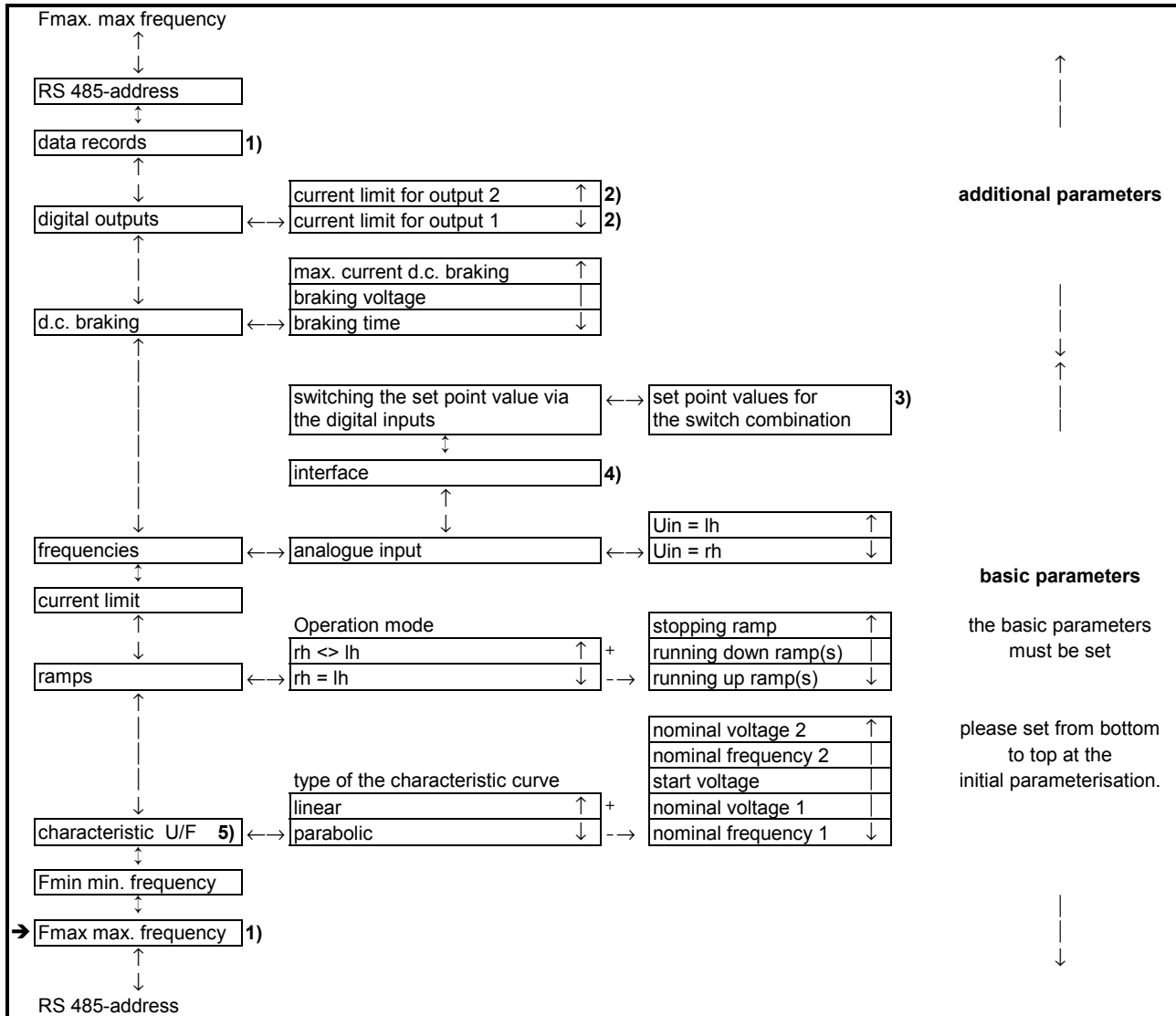
6.2.2.2 Backup of parameters and variables

To perform a "data backup" of the DSV use the function "File – complete read-out from DSV to PC" (Tip: Enter the project or controller number as the file name like 12345, then you later have a clear relation between the data status and the hardware on site). The backup file you can find in the subdirectory "Daten" (factory setting) or in the assigned path e.g. 12345.PAR. The file ending ".PAR" is attached automatically

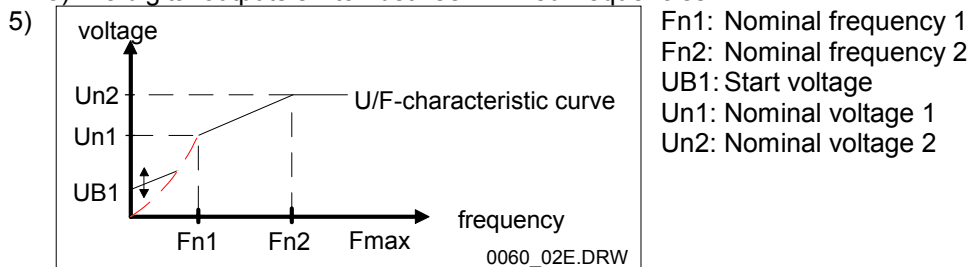
6.2.2.3 Transmission of parameters and variables to DSV

For transmission of the selected file from PC/laptop to the DSV use the function "File – Complete transfer from PC to DSV". In the select window you can find all files ending *.PAR.

7 Short Menu

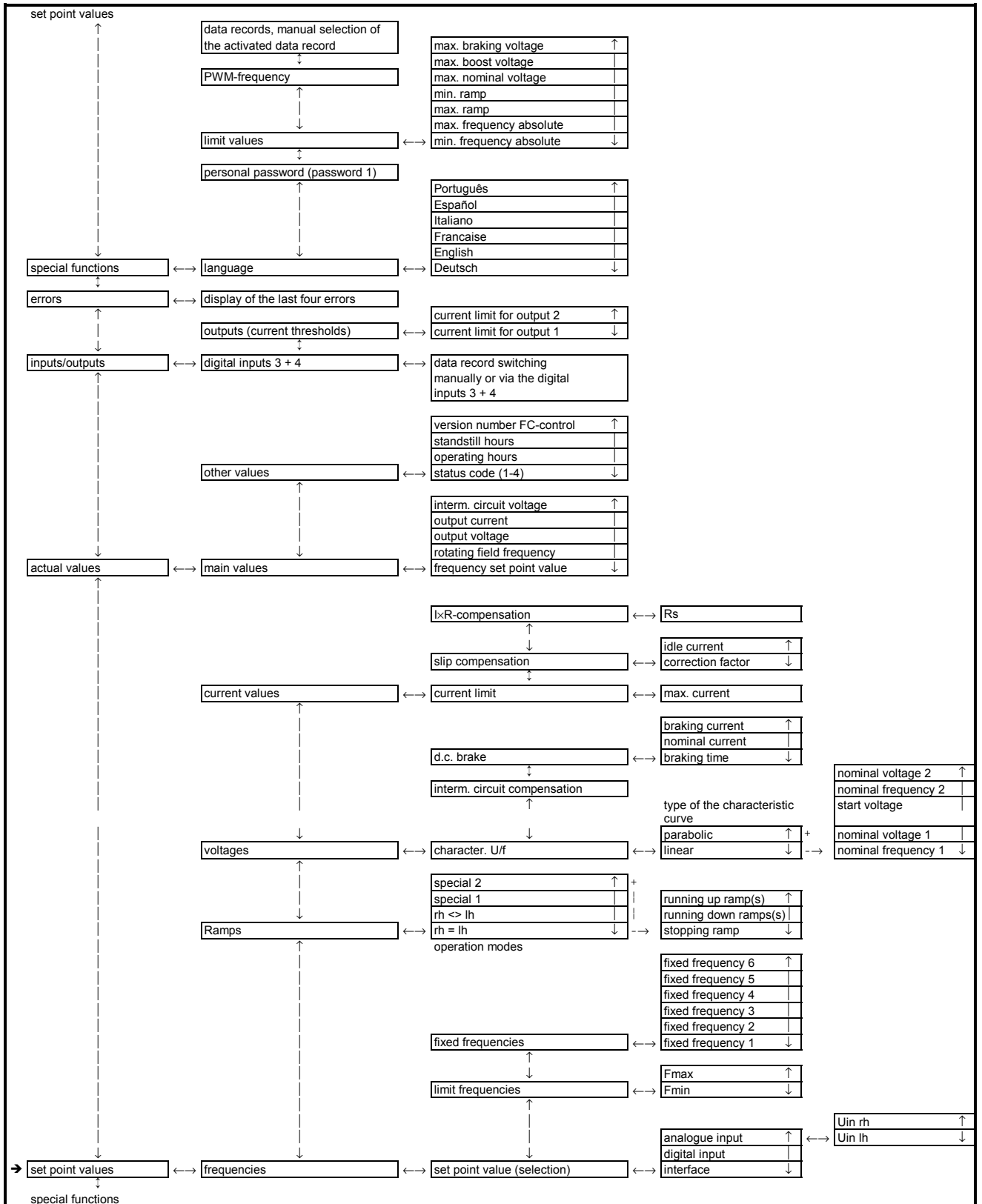


- 1) Attention! You can only change the max. frequency and the data record if the release has been reset.
 2) Attention! You can only change the entries for output 1 and 2 if the release has been reset.
 3) The digital outputs switch between 4 fixed frequencies



DIETZ DSV 5453 LIFT

8 Main Menu



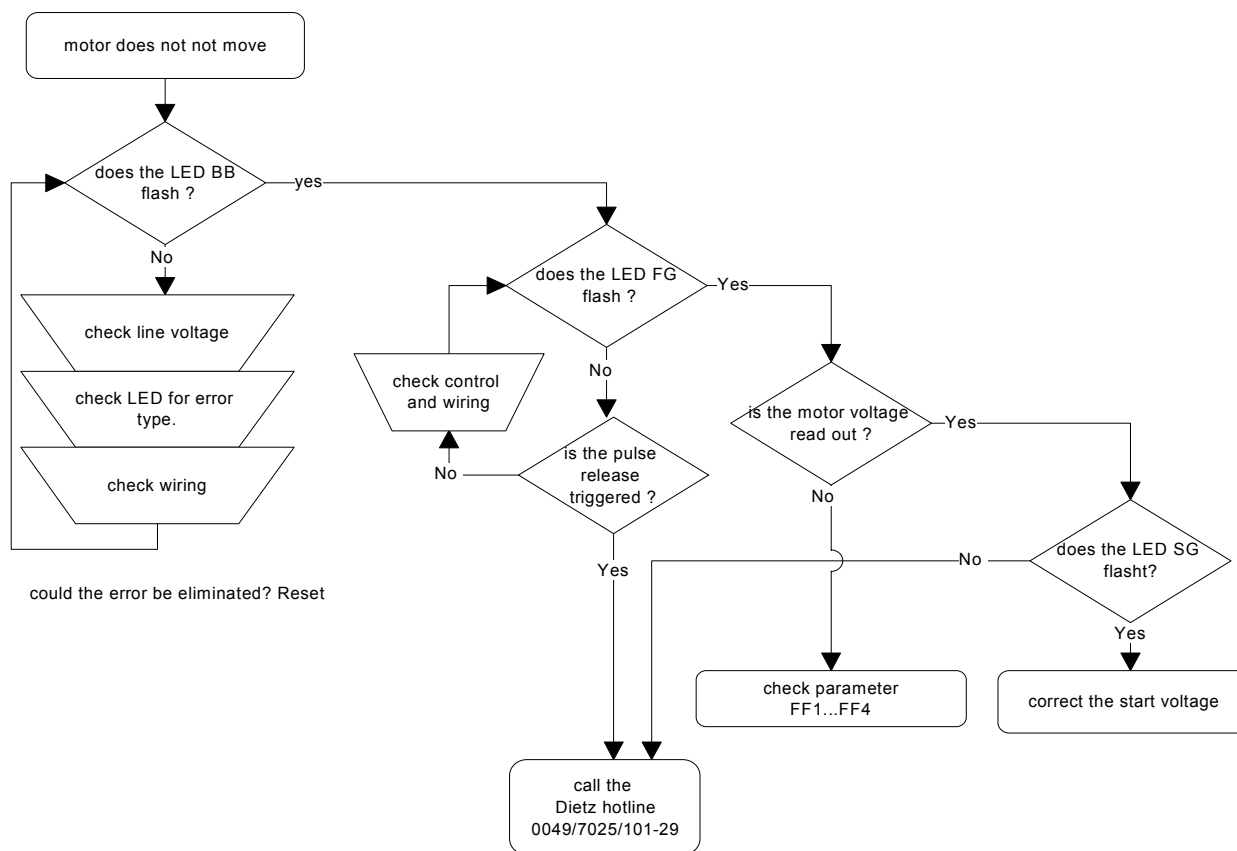
9 Troubleshooting

All settings are correct but the lift does not operate or does not run properly:

in order to ensure rapid troubleshooting, the errors are classified into groups:

- ⇒ lift does not run (hardware error, control error)
- ⇒ poor starting performance (jerky start, cabin runs off after start)
- ⇒ approaching problems (running level)

9.1 Lift does not run



0138_01E.AF3

Motor does not rotate and does start in change -of -direction positions:

- ◆ When converting to a multi-speed motor, have you selected the correct winding and attachment type?
- ◆ Have you taken the differences between "old" and "new" motor into consideration?
- ◆ Are there any unnecessary high-inertia loads that you could eliminate?
- ◆ Is the selected gear step too small?
- ◆ Is the start voltage too low (motor is stopped and the red LED "current limit" does not flash)?
- ◆ Is the start voltage too high (motor is stopped and the red LED "current limit" flashes)?
- ◆ Is the rounding (debugging cell B63A) set to "small" (0101), thus too small?
- ◆ Is the acceleration ramp (or run up ramp) too steep (more than 0.3 at a correct rounding)?
- ◆ Is the operation mode accidentally set to "analogue" or is the U/F characteristic curve misadjusted to "parabolic" (which is not possible in the FC-Control menu "lift") ?
- ◆ Is the unit appropriately dimensioned for this lift?

9.2 Poor Starting Performance

The motor runs into the brake, jerky starting motions:

- ◆ Is the FF5 set too high (more than 0.1)?
- ◆ Does the motor run into the brake despite a low FF5? (Instead of "start delay" = "small", you should select "medium" or "large", if necessary).

Cabin sinks down, when the brake is opened:

- ◆ Increase the start voltage, since the motor does not have sufficient torque in the lower speed range. If this measure does not solve the problem, increase the value for "brake open" (FF5).

9.3 Not "Level"

Very poor or load-dependent approaching:

- ◆ Is the approaching speed too low?
- ◆ Is the start voltage too low?
- ◆ Is the machine performance too smooth? (activate the d.c. brake in the menu "lift", "holding torque")
- ◆ Is the brake controlled correctly? (does it brake too early or too late due to faulty FF5 and FF6 values?)
- ◆ Do the motor contactors open before the run is terminated? (Control)
- ◆ Does the red LED current limit flash during the braking phase, because the deceleration V0-3 (run down ramp) is too high or else not enough braking travel is provided.
- ◆ Is the unit dimensioned too small for the operation with a high-inertia load?
- ◆ The signals at terminal 62 and/or 92 are removed before the mechanical motor brake is closed !

The motor can hardly attain limit speed or does not attain limit speed at all:

- ◆ Have you adjusted the motor characteristic curve correctly for the "old" (smooth) motor, i.e. the motor voltage must be higher than the one on the rating plate in order to avoid over excitation?
- ◆ Have you entered the voltage in accordance with the rating plate for the "new" (hard) motor?
- ◆ The start voltage is still too small.

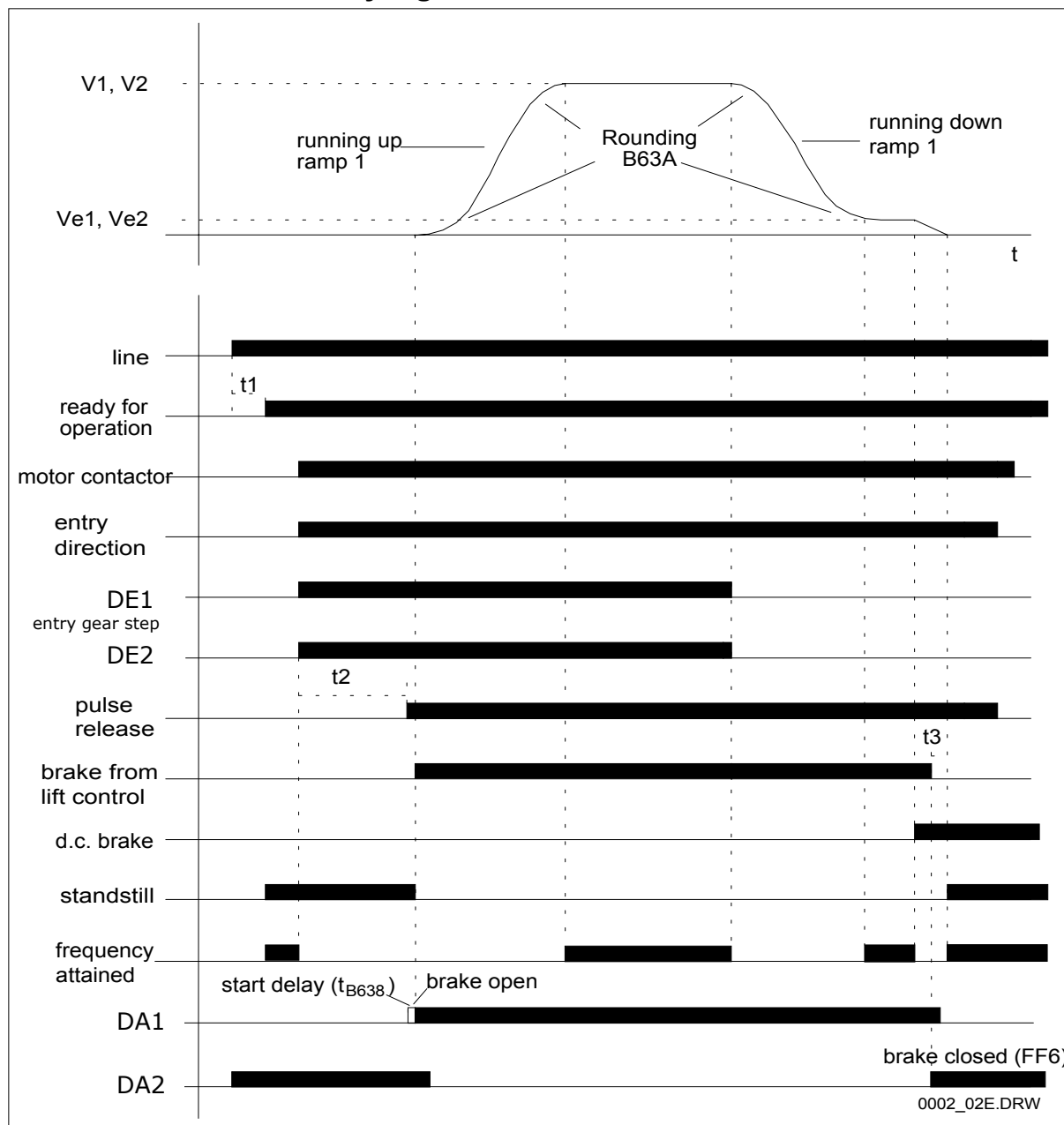
The motor performance is rough at low speed and during approaching:

- ◆ Is the "holding voltage" (or braking voltage) set too high? Turn this function off to verify.
- ◆ Is the start voltage set higher than necessary?

Additional notes:

- ◆ In case of phase or line failure, the converter with the adjusted run down ramp brakes the motor until the message undervoltage is indicated. The motor is then spinning out. As long as the ramp is adjusted steep enough, the converter is capable of supplying itself. When the line power returns, the converter automatically accelerates the motor to the desired set point value provided that the release is still activated.
- ◆ During acceleration or braking, the ascent of the ramp will be reduced (to 0 hz/s, if necessary), if the adjustable current limit is exceeded (maximum the 1.5-fold converter nominal current). The output frequency needs to be reduced for steady-state speeds. This function serves to "catch" out-of-step motors.
- ◆ Except of phase failure all errors induce locking and must be acknowledged with a line reset.

10 Control and Hoist way signals



	digital input 2 (DE2)	digital step 1 (DE1)	step	example	
FF1	0	0	V0	Ve	8 Hz
FF2	0	1	V1	Vi	15 Hz
FF3	1	0	V2	V _{intermediate}	40 Hz
FF4	1	1	V3	V _{fast}	50 Hz

t1 time until ready for operation approx. 1s
 t2 wait for protection time approx. 200 ms
 t3 break-away torque of the brake, deceleration time approx. 150 ms
 t_{B638} start deceleration (default = small(1010))
 B63A rounding (Default = medium(0202))

DIETZ DSV 5453 LIFT
11 Parameter Overview

All the possible settings for Maxidrive :

①	Parameter and variables	Lift menu	Manufac.setting	Adj. range	Unit	Status	②	③	Notes
W	max. limit frequency		120.0		[Hz]		(G)	(H)	
?	min. limit frequency	holding torque from	0.0	0.0-0.1	[Hz]		(G)	(H)	
W	max. nominal voltage		475.0		[V]		(G)	(H)	
W	max. boost voltage		25.5		[%]		(G)	(H)	
W	max. holding voltage		20.0		[V]		(G)	(H)	
W	max. braking voltage		100.0		[V]		(G)	(H)	
W	max. ramp		50.0		[Hz/s]		(G)	(H)	
W	min. ramp		0.0		[Hz/s]		(G)	(H)	
?	password 1		00000	00000-32767			(G)	(H)	
W	active data record		1	1-4			(G)	(H)	
W	external date record selection		Yes	Yes/No			(G)	(H)	
W	F*		0.0		[Hz]		(G)	(K)	
W	RS485 address		0				(G)	(H)	
?	unit nominal voltage		400	380-415	[V]		(G)	(H)	
W	start option		0x100			Start	(1)	(H)	
W	set point value type F*		0x2			digital	(1)	(K)	
?	+Uin (analogue)		0			= rh	(1)	(K)	
!	acceleration ramp 1	acceleration V0-3	0.3	0.1-5	[Hz/s]		(1)	(K)	
W	acceleration ramp 2		0.3		[Hz/s]		(1)	(K)	
W	acceleration ramp 3		0.3		[Hz/s]		(1)	(K)	
!	deceleration ramp 1	deceleration V0-3	0.3	0.1-5	[Hz/s]		(1)	(K)	
W	deceleration ramp 2		0.3		[Hz/s]		(1)	(K)	
W	deceleration ramp 3		0.3		[Hz/s]		(1)	(K)	
?	stop ramp rh	deceleration 1EH	10.0	5.0-15	[Hz/s]		(1)	(K)	
?	stop ramp lh	deceleration 2EH	10.0	5.0-15	[Hz/s]		(1)	(K)	
W	rh = lh		0				(1)	(K)	
?	max. frequency		55.0	33.0-87.0	[Hz]		(1)	(K)	
W	min. frequency		0.1		[Hz]		(1)	(K)	
!	fixed frequency 1 V0 00	V0 (Ve)	7.5	3.0-10.0	[Hz]		(1)	(K)	
!	fixed frequency 2 V1 01	V1	15.0	5.0-15	[Hz]		(1)	(K)	
!	fixed frequency 3 V2 10	V2	50.0	10.0-50	[Hz]		(1)	(K)	
!	fixed frequency 4 V3 11	V3	50.0	10.0-50	[Hz]		(1)	(K)	
!	fixed frequency 5 DA1 on	brake open	0.1	0.1-0.3	[Hz]		(1)	(K)	
!	fixed frequency 6 DA2 off	brake closed	0.7	0.1-15.0	[Hz]		(1)	(K)	
W	U/f-characteristic curve		0			linear	(1)	(K)	
?	nominal frequency 1	motor nomin. frequency	50.0	33.0-87.0	[Hz]		(1)	(K)	
!	nominal voltage 1	motor nomin. frequency	420.0	340-460	[V]		(1)	(K)	
?	nominal frequency 2		50.0	33.0-87.0	[Hz]		(1)	(K)	
?	nominal voltage 2		420.0	340-460	[V]		(1)	(K)	
!	start voltage	start voltage	15.0	5.0-25.5	[%]		(1)	(K)	
W	slip compensation		0			OFF	(1)	(H)	
W	KF slip compensation		0.0				(1)	(H)	
W	idle current		0.00		[A]		(1)	(H)	
W	IxR compensation		0			OFF	(1)	(H)	
W	Rs (IxR compensation)		0.00		[Ω]		(1)	(H)	
W	current limit		0			OFF	(1)	(H)	
W	max. current		150.00		[A]		(1)	(H)	
W	current threshold1		0.00		[A]		(1)	(K)	
W	current threshold2		0.00		[A]		(1)	(K)	
W	holding torque		0.0			OFF	(1)	(H)	
W	holding time		0.0		[s]		(1)	(H)	
W	holding voltage		0.0		[V]		(1)	(H)	
W	d.c. brake		Yes	Yes/No		ON	(1)	(K)	
?	braking voltage	holding voltage	20.0	10.0-50.0	[V]		(1)	(K)	
?	d.c. brake	holding time	2.00	1.00-2.00	[s]		(1)	(K)	
W	current limit	holding current	50.00		[A]		(1)	(K)	
?	interm. circuit compensation	interm. circuit comp.	No	yes/no		OFF	(1)	(H)	
W	PWM-frequency		12		[kHz]		(1)	(H)	
W	address B632 (only for 20A)		0000	0000-00FF	hex.			(K)	
?	start deceleration B638	start delay V0-V3	1010	1010-5050	hex.			(K)	
?	rounding B63A	rounding V0-V3	0202	0101-0303	hex.			(K)	

①! = must be adjusted by the customer

② (G) = limit data record (1) = data record 1 (TERM.EXE)

①W = manufacturer's setting, do not change

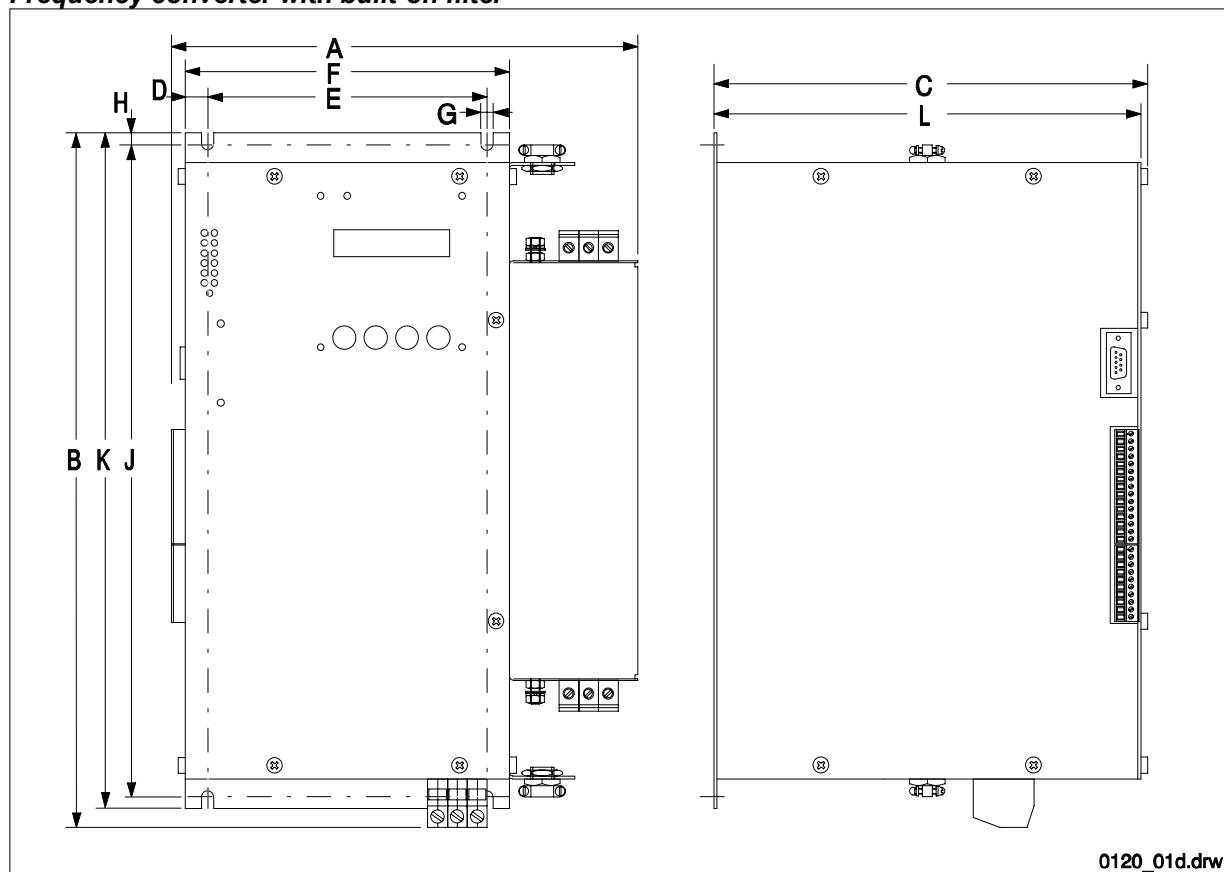
③ (H) = main menu (K) = short menu (FC-control)

①? = can be adjusted by the customer

12 Appendix

12.1 Dimensions and Weight

Frequency converter with built-on filter



DSV 5453	Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	J [mm]	K [mm]	L [mm]	Weight [kg]
10 - 15 A	I	194	283	182	11.5	107	130	6	6	264	276	171	10.5
16 - 20 A	II	237	353	220	11.5	142	165	6	6	331	343	217	16.5
30 - 40 A	III	237	473	220	11.5	142	165	6	6	451	463	217	24.0
60 - 80 - 120 A	IV	293	759	310	25	161	210	6.5	6	745	757	304	60.0



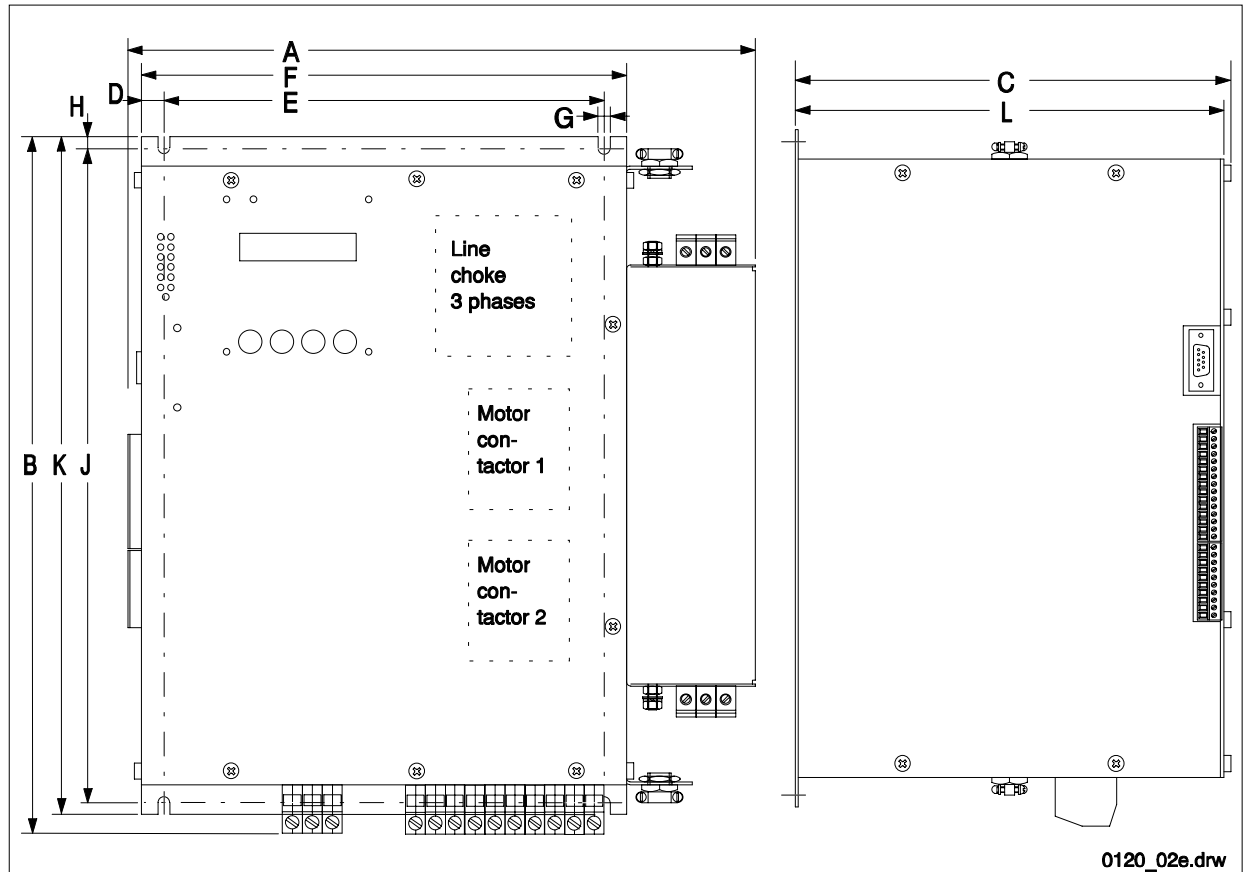
Only with size BGR I (this device replaces the former 10A device size BGR 2!):

- The connectors are located at the front
- Size BGR I is supplied without internal FU-Control

DIETZ DSV 5453 LIFT

12.2 Dimension and weight of the DSV 5453-PLUS

Frequency inverter with AddOn filter, line choke and motor contactor



DSV 5453-PLUS inclusive 2 motor contactor and line choke 4%uk

(Note: The device is also available with additional break contactor and rectifier)

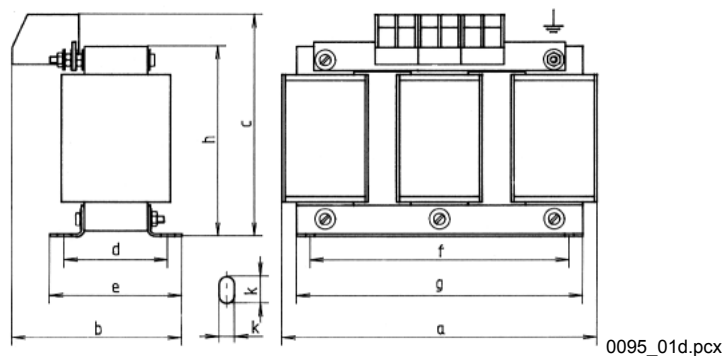
DSV 5453-PLUS	Size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	J [mm]	K [mm]	L [mm]	Weight [kg]
10 - 15 A	I	324	283	182	11.5	237	260	6	6	264	276	171	20.0
16 - 20 A	II	398	353	221	11.5	304	327	6	6	331	343	217	25.0
30 - 40 A	III	398	473	221	11.5	304	327	6	6	451	463	217	35.0



Only for size BGR I:

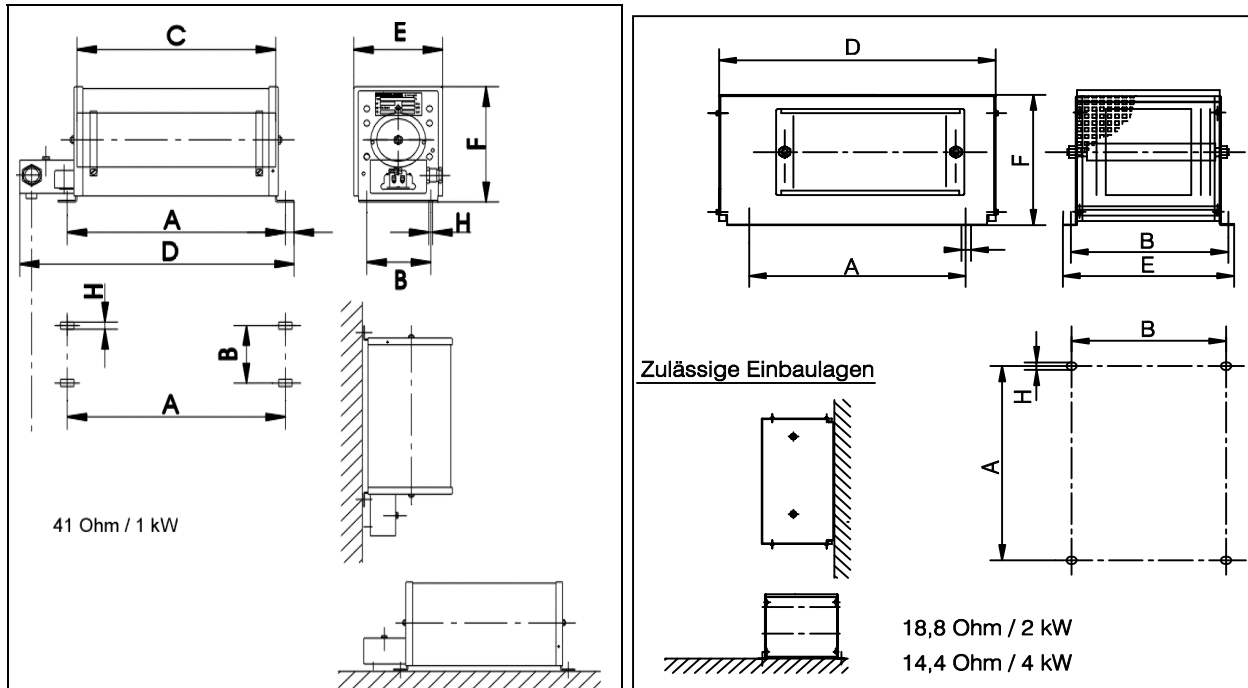
- The connectors are located at the front
- Size BGR I is supplied without internal FU-Control

12.3 Line Reactor



No.	Type	mH	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	h [mm]	k x k [mm]	Weight [kg]
7902600	16 A	1,50	120	80	120	57	70	84	96	105	10 x 05	2,5
7902605	35 A	0,70	155	120	160	70	90	130	155	130	11 x 08	5,0
7902610	50 A	0,50	190	100	195	58	80	170	190	160	11 x 08	5,8
7902615	80 A	0,30	190	100	230	80	100	170	190	170	11 x 08	9,0
7902620	100 A	0,25	240	120	280	98	120	190	240	220	17 x 10	13,4
7902625	130 A	0,18	240	120	280	98	120	190	240	220	17 x 10	15,2

12.4 Brake Resistor



DSV 5445	Brake resistor	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	H [mm]	Weight [kg]
10 - 20 A	40 Ω / 1 kW Cressall	138	302	-	367	180	140	10.5	4
30 - 40 A	18.8 Ω / 2 kW Cressall	290	302	-	367	330	140	10.5	6
60 - 80 A	14.4 Ω / 4 kW Frizlen	380	270	-	490	295	260	10.5	9
120 A	13.0 Ω / 6.5 kW Frizlen	380	370	-	490	395	260	10.5	12
150 A	10.0 Ω / 8 kW Cressall	290	700	-	766	330	140	10.5	15
200 A	6.5 Ω / 11 kW Frizlen	380	570	-	490	595	260	10.5	21



Pay attention to connection assignment:

Terminals: RB1 / RB2 → Braking resistor terminals.
Terminals: T1 / T2 → Thermo-contact terminals.

High operating temperature:

The temperature of the resistor elements reaches up to 350 °C. No heat-sensitive objects, e.g. cables, may therefore be located in the vicinity. The electrical connections must be made from below. The braking resistor may not be operated in explosive environments or in the vicinity of inflammable materials. Free circulation of cooling air must not be obstructed.

Protection class:

Due to the low protection class based on the physical principles of braking resistors, it must be ensured by means of a suitable installation position, that foreign objects can never fall, drip, flow or blow into the resistor.

0028 02D.DRW

2 relais outputs

Pin-No.	I/O	Name	Description
1	E	V1+	relay coil 1 +
2	E	V2+	relay coil 2 +
3	E	V-	relay coil 1/2 -
4	A	PE	protective earth (ground)
5	A	Ö1	break contact 1
6	E	W1	changeover contact 1
7	A	S1	make contact 1
8	A	Ö2	break contact 2
9	E	W2	changeover contact 2
10	A	S2	make contact 2
Data:	jumpers in initial position: relay coils approx. 30 mA at 15 VDC		
	when jumpers are rearranged: relay coils approx. 36 mA at 24 VDC		
Contacts:	for each 1 changeover contact with a switching capacity of max. 50 W at max. 0,5 A and 230 VAC or 48 VDC at max. 0,5 A		

Our item-no.:
board with two relays: 95444215
board with one relay: 95452215

12.6 PLUS version of the lift devices (integrated contactor, integrated choke)

1) Both DSV 5445-Lift and DSV 5453-Lift can be delivered as the following variants:

- I) Standard:* Device with side AddOn motor/line filter.
- II) PLUS:* Device with side AddOn motor/line filter motor contactors, brake contactor, brake rectifier, line reactor
- III) Low-cost:* Device without side AddOn motor/line filter.

2) Additional terminals are provided on the full version of the DSV 5445-Lift (or DSV 5453-Lift) device, which are assigned as follows:

The upper row for the motor contactor controller is assigned as follows:

A1	A2	Y	32	33	34	35
----	----	---	----	----	----	----

A1 and A2 are the solenoid terminals for the motor contactors. The solenoid voltage is 230 V AC. The power contacts are already wired internally; one pair of contacts is interlinked with the AC circuit of the brake rectifier.

Terminal Y together with terminal L (in the lower terminal strip) forms the contactor interlock with the brake rectifier. Y is brought out only for inspection purposes; this contact is needed only when the internal brake contactor should not be used for certain reasons.

The auxiliary normally-open contact is connected to 35 and 33 (to connect the enable signals "ISP" and/or "E0" on DSV 5445-Lift). The auxiliary normally-closed contacts on the motor contactors lie alternatively between 34 and 32.

The lower row for the brake controller has the following terminals:

A9	0V	40	4L	NL	L	8	7
----	----	----	----	----	---	---	---

A9 and 0V are the solenoid terminals of the brake contactor. The solenoid voltage is 24 V DC. The solenoid can be supplied, for example, from the converter output (i.e. by the associated 80 mA output "A9" at the DSV 5445-Lift).

40 and 4L are for the terminal of the brake magnets (this is already a DC voltage) and NL and L are the AC supply (max. nominal voltage 240 V AC).

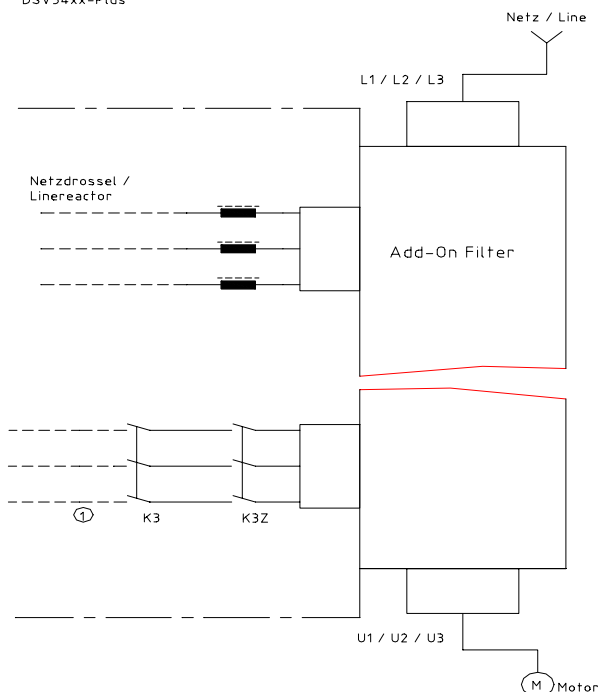
This circuit is, of course, already interlocked with the two motor contactors. Contacts 8 and 7 provide an additional free normally-closed (!) contact (the three normally-open contacts are located on the DC side, in this case).



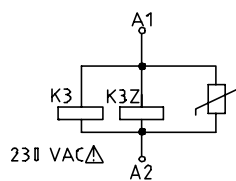
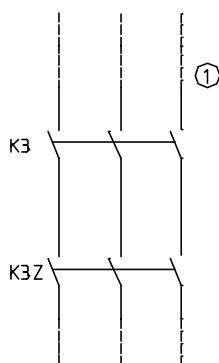
The brake contactor (terminals A9 - 0V) possesses a **24 volt** coil and can be fed directly from A) connector X1.

12.6.1 DSV5445 PLUS circuit

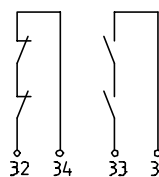
DSV54xx-Plus



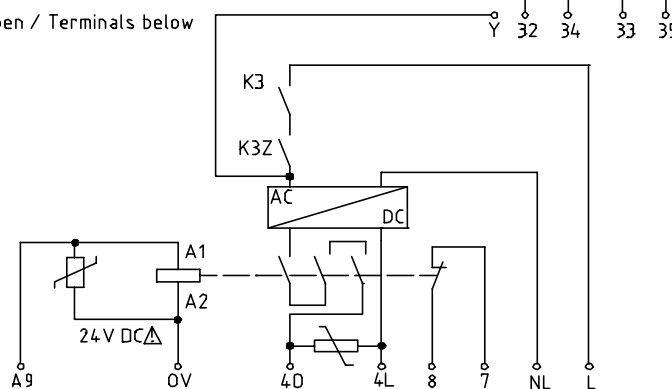
Klemmen oben / Terminals above



Hilfskontakte /
Auxiliary contacts



Klemmen oben / Terminals below



13 Hotline Note


Phone: 0049/7025/101-0
Fax: 0049/7025/5824

Please check the following points before you call our hotline:

www.emotron.com

(old) e-mail: info@dietz-electronic.de

In order to solve your technical problems, we need you to provide us with certain details. Please fill out the form and send us the data (via phone or fax).

Customer and Order Details		Date:	
Customer address:		Contact:	
Commission:		Phone on site:	
		Fax:	
Frequency converter data			
DSV545...		A / V	
M-number:			
Lift data			
load bearing capacity:	kg		
weight of the empty cabin:	kg	storey run (V0):	m/s
max. running speed (V3)	m/s	smallest storey pitch:	m
Motor data			
make:		power:	cosφ:
motor number:		U _{nom} :	I _{nom} :
Gear box data		worm gearing? <input type="checkbox"/> yes <input type="checkbox"/> no	
make:		planetary gearing? <input type="checkbox"/> yes <input type="checkbox"/> no	
gear number:		V-belt? <input type="checkbox"/> yes <input type="checkbox"/> no	
suspension bracket:		efficiency rate: % number of sheaves:	
gear location (position within the lift hoistway):		<input type="checkbox"/> top <input type="checkbox"/> bottom	
Error/problem occurs during:			
<input type="checkbox"/> switching on	<input type="checkbox"/> constant-current run	<input type="checkbox"/> in both directions	<input type="checkbox"/> error is reproducible
<input type="checkbox"/> approaching	<input type="checkbox"/> deceleration	<input type="checkbox"/> only running UP	<input type="checkbox"/> error occurs sporadically
<input type="checkbox"/> acceleration	<input type="checkbox"/> stop	<input type="checkbox"/> only running DOWN	
Short description of the error type:			