



# Capacitor reforming unit Option

For PEBB's in Emotron FDU2.0 and VFX2.0 AC drives



Instruction  
English

# Capacitor reforming unit

## Option

For PEBB's in Emotron FDU2.0 and VFX2.0 AC drives

### Instruction

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# 1. Introduction

All frequency AC drives with electrolytic type DC link capacitors needs to be reformed if they have been without any connection to the nominal mains for more than 2 years.

If this reforming process is not performed the capacitors may be damaged or can explode when the AC drive is connected to mains or when started to operate.



## **General Safety Warning!**

**Here described work may only be performed by trained personnel with the appropriate safety training and electrical education.**

**Take all necessary safety precautions before you start work. Be sure that you have the correct equipment and be aware of the high voltage up to 690VAC or 1000VDC which will be present on terminals, parts of the AC drive or to the AC drive connected cables and equipment.**

**In many countries around the world it is by law prohibited to perform “live” measurements at these voltage levels. A safe way to perform measurements is that the measurement equipment is connected and disconnected during power off.**

**Be aware that the DC-voltage is stored in the capacitors and that you need to wait at least 5 minutes before you can touch the terminals.**

**Always measure the voltage at the DC-terminals of the charge unit before you start to work on the terminals!**

**Never switch on the power supply to the AC drive if the charge unit is connected!**

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## 2. Ways of reforming

To reform capacitors it is needed to charge the capacitors in a controlled way with a limited current to the nominal voltage and let them stay charged for a specific time.

The best way to do this is a DC-supply with adjustable voltage and current limitation.

An easier way is the use of a so called charge unit. This procedure is described in this document.

If you have the possibility to use an adjustable DC supply the process is nearly the same, the difference is, that you have to increase the voltage slowly and have a look to the remaining current if the voltage is stable. Voltages for DC supply are 1,41x nominal AC voltage. ( $565V_{DC}$  for 400V units and  $976V_{DC}$  for 690V units).

## 3. Emotron capacitor reforming unit

We recommend using the Emotron capacitor reforming unit

*Table 1 Part number and dimension*

<b>Part number</b>	<b>Description</b>	<b>Dimensions</b>
01-6487-00	Capacitor reforming unit kit	250x145x105 mm

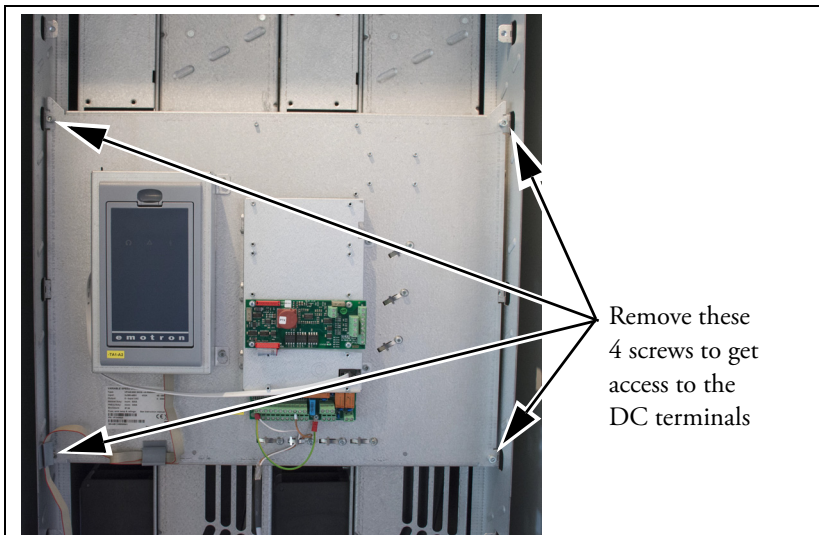
## 4. Instructions

### 4.1 Reforming capacitors on FDU/VFX AC drives 300A and larger (multiple PEBB's)

Reforming the capacitors needs to be done on each module (PEBB =Power Electronic Building Block) separate.

Because of the used HCB circuit it is needed to connect the charge unit direct to the DC power terminals of each PEBB.

1. If the PEBB's are mounted in a cabinet the front cover must be dismantled to get access to these terminals.
2. The terminals are located behind the metal plate where the control board and option boards are mounted.  
This plate needs to be removed to get access.  
Dismount the screws on the corners of the plate and hang out the plate. See picture.



*Fig. 1 Remove the 4 screws to access the DC terminals.*

- Position of the DC terminals



*Fig. 2 Position of the DC terminals*

3. Remove the metal plate and connect the charge unit to the DC terminals.



**Warning!**

**Be aware that the DC-voltage is stored in the capacitors and that you need to wait at least 5 minutes before you can touch the terminals.**

**Always measure the voltage at the DC-terminals of the charge unit before you start to work on the terminals!**

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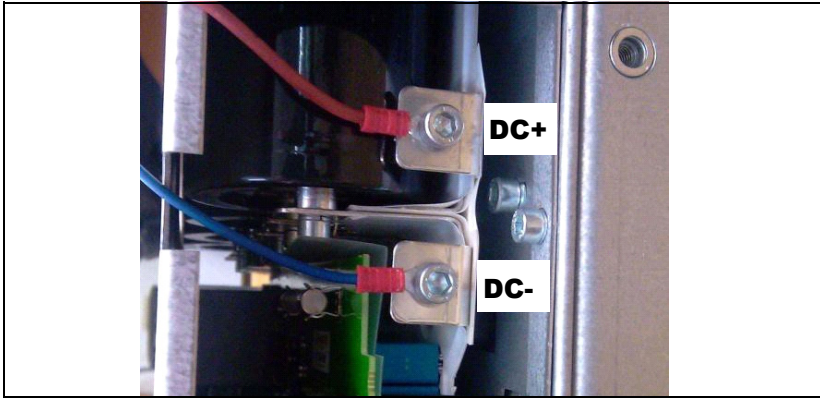
**Warning!**

**The terminals are not marked with DC+ and DC-, make sure that the DC+ is connected to the upper terminal and DC- to the lower terminal.**

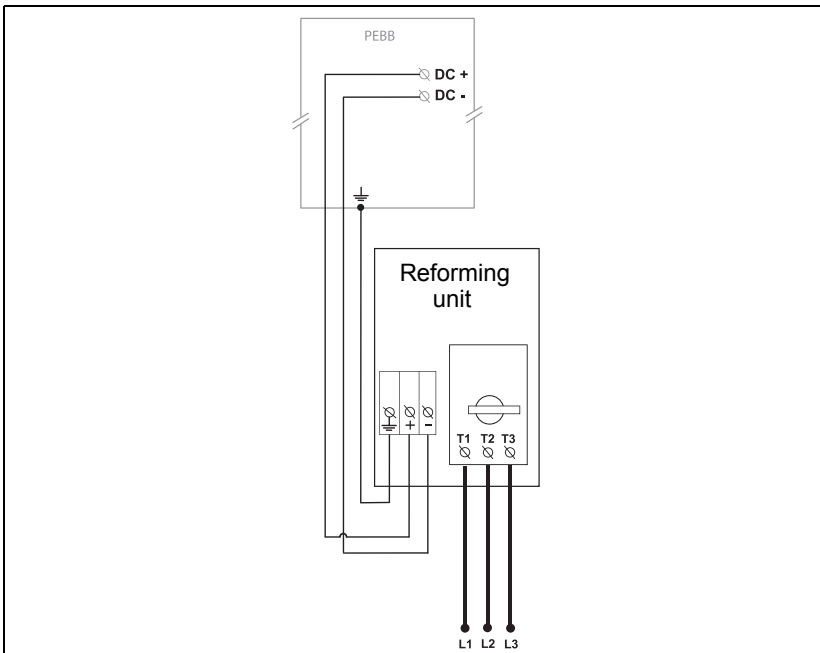
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4. Connect the cables, to DC+ and to DC- according to picture and the cable connection drawing below.



*Fig. 3 Position of DC terminals, upper terminal = DC+ and the lower terminal = DC-.*



*Fig. 4 Cable connections, principle drawing.*

## 5. Charge process

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**Warning!**

**Make sure that the PEBB is disconnected from all possible power sources!**

**Never connect more than 1 PEBB at the same time to the charge unit!**

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1. Connect the charge unit to the DC terminals as described earlier.
2. Connect the charge unit to at max. with 16A secured 400V<sub>AC</sub> or 690V<sub>AC</sub> supply depending on the nominal AC drive voltage.
3. Switch on the PKZM (Motor-protective circuit breaker) on the charge unit for at least 1h per PEBB.
4. Switch off the charge unit.
5. Wait at least for 5 minutes to let the capacitors discharge.
6. Ensure by measuring the DC voltage on the + and – terminals of the charge unit that the DC capacitors are discharged.
7. Disconnect the charge unit from PEBB.
8. Repeat process for each PEBB

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**NOTE! For AC drives that has not been connected to mains for more than 3 years, the reforming time shall be increased for 30 min per year!**

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