

# Installation Instructions

## Power Card Replacement for E1h–E4h Drives

### Description

The power card replacement kit contains all components required to install a new power card in E1h–E4h drives.

### Kit Part Numbers

This installation instruction describes replacement procedures for the following spare part kit.

| Kit number | Kit description               |
|------------|-------------------------------|
| 176F6625   | Power card for E1h–E4h drives |

Table 1.1 Part Number for Power Card Replacement Kit

### Items Supplied

The power card replacement kit for E1h–E4h enclosure sizes contains the following:

- 1 power card
- Fasteners

### Safety Instructions

Only qualified, Danfoss authorized personnel are allowed to install the parts described in these installation instructions. Disassembly and reassembly of the drive must be done in accordance with the corresponding *service manual*.

### **⚠ WARNING**

#### ELECTRICAL SHOCK HAZARD

VLT® series drives contain dangerous voltages when connected to mains voltage. Improper installation, and installing or servicing with power connected, can cause death, serious injury, or equipment failure.

To avoid death, serious injury, or equipment failure:

- Only use qualified electricians for the installation.
- Disconnect the drive from all power sources before installation or service.
- Treat the drive as live whenever the mains voltage is connected.
- Follow the guidelines in these instructions and local electrical safety codes.

### **⚠ WARNING**

#### DISCHARGE TIME

The drive contains DC-link capacitors, which can remain charged even when the drive is not powered. High voltage can be present even when the warning LED indicator lights are off. Failure to wait 40 minutes after power has been removed before performing service or repair work can result in death or serious injury.

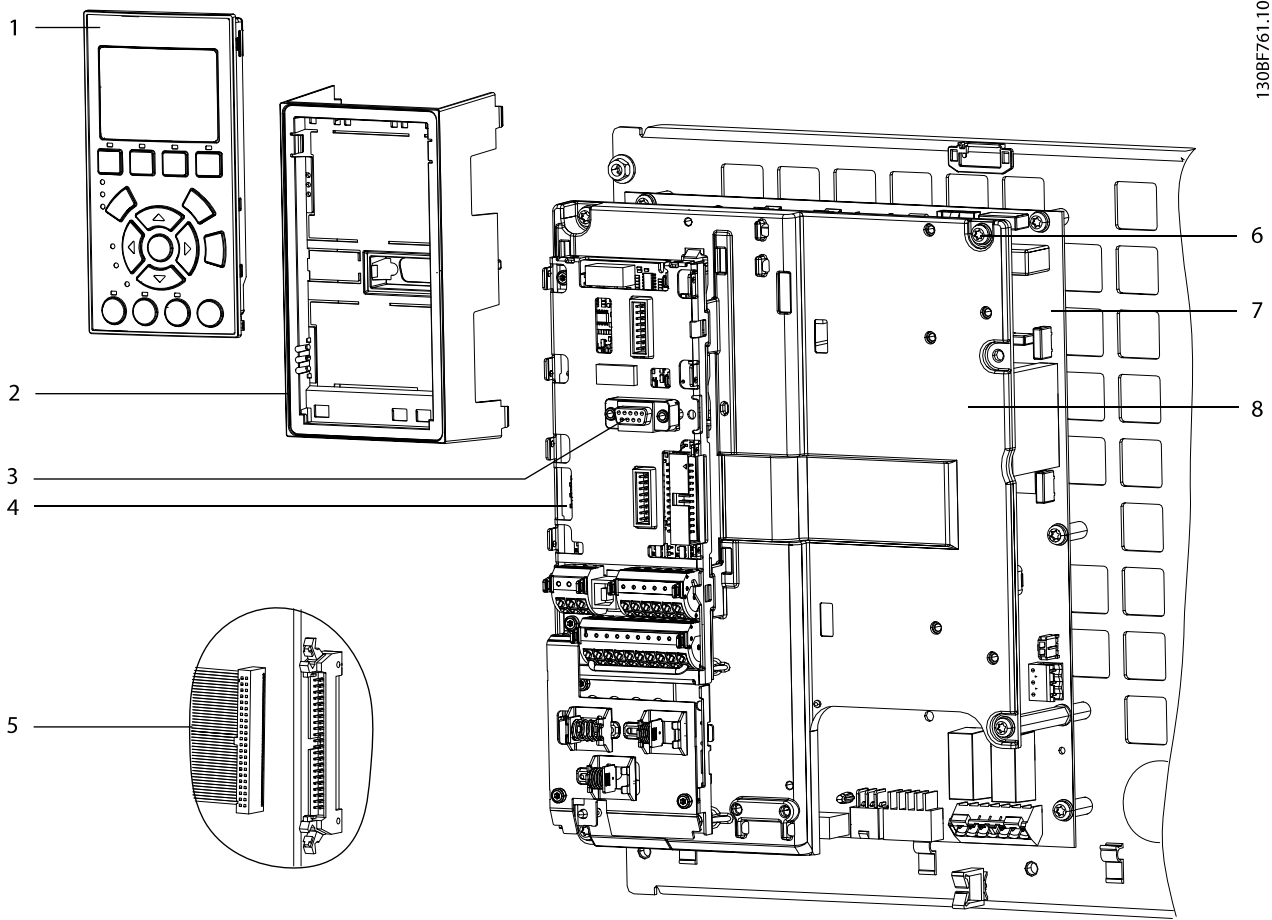
- Stop the motor.
- Disconnect AC mains and remote DC-link power supplies, including battery back-ups, UPS, and DC-link connections to other drives.
- Disconnect or lock PM motor.
- Wait 40 minutes for capacitors to discharge fully.
- Before performing any service or repair work, use an appropriate voltage measuring device to make sure that the capacitors are fully discharged.

### **NOTICE**

#### ELECTROSTATIC DISCHARGE

Follow proper ESD precautions to prevent damage to sensitive components.

## Installation Instructions



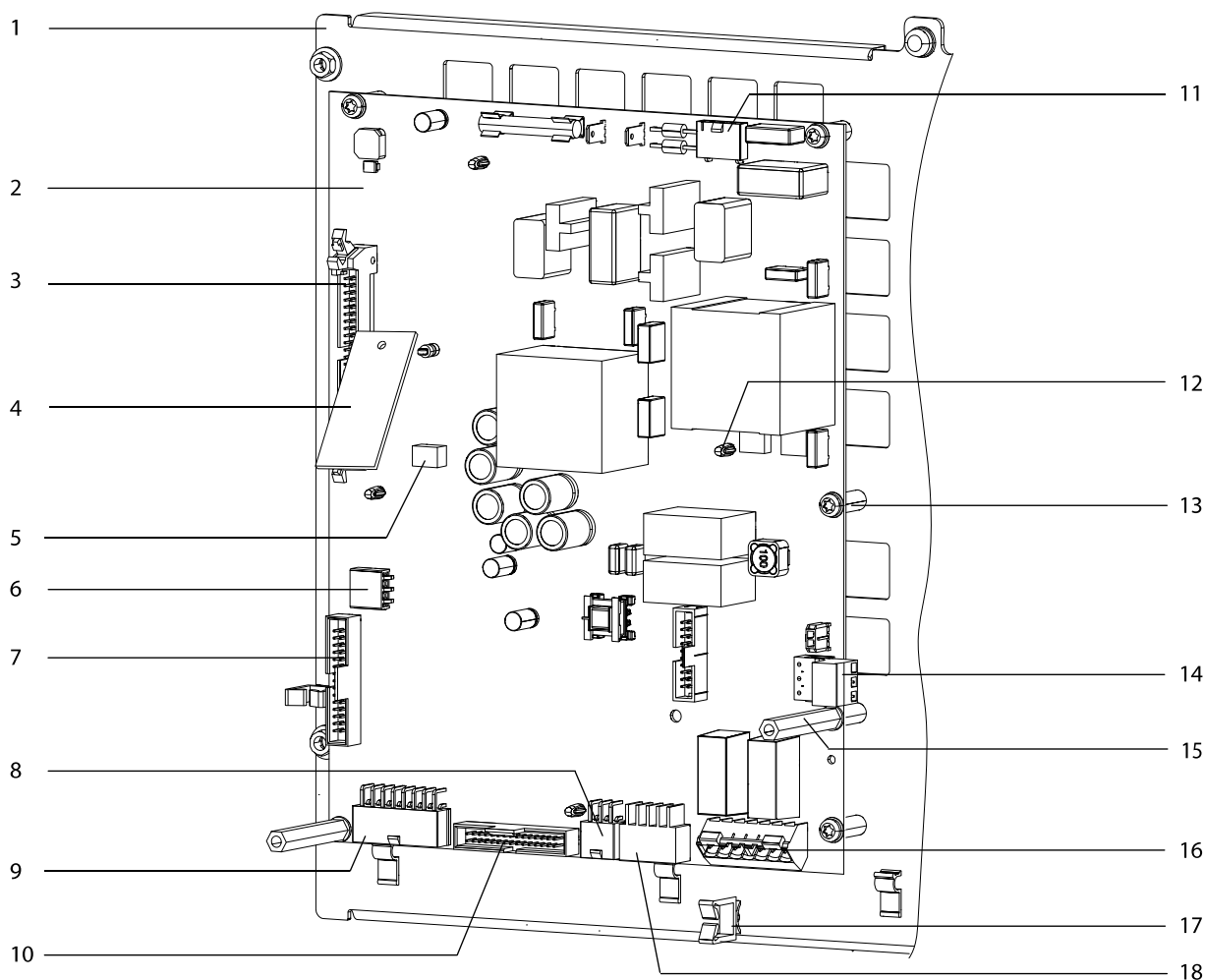
|   |                     |   |  |
|---|---------------------|---|--|
| 1 | LCP                 | 5 | Ribbon cable and connector (under control card mounting plate) |
| 2 | LCP cradle          | 6 | Screws (T20)   |
| 3 | LCP cable connector | 7 | Power card   |
| 4 | Control card        | 8 | Control card mounting plate                                    |

Illustration 1.1 LCP and Control Card Mounting Plate

### Removing the Control Card Mounting Plate

To remove the control card mounting plate, use the following steps. Refer to *Illustration 1.1*.

1. Open the front panel door or remove the front cover, depending on the type of enclosure.
2. In IP21/IP54 units, unplug the LCP cable.
3. Unplug the USB connector, if present.
4. Remove any customer control wiring from the control card and option cards.
5. Remove 4 screws (T20) from the corners of the control card mounting plate.
6. Unplug the ribbon cable connecting the control card and power card. To release the cable, press out on the clasps at each end of the cable connector on the power card.



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|   |  |    |                                     |
|---|--|----|-------------------------------------|
| 1 | Power card mounting plate                      | 10 | MK103 (to gatedrive card)           |
| 2 | Power card                                     | 11 | MK902 (to fan power card MK803)     |
| 3 | MK102 (connector to control card ribbon cable) | 12 | Plastic standoff                    |
| 4 | Current scaling card                           | 13 | Screw (T20)                         |
| 5 | MK100 (current scaling card connector)         | 14 | MK106 (to brake temperature switch) |
| 6 | MK105 (to fan power card MK1200)               | 15 | Metal standoff (7 mm)               |
| 7 | MK104 (signal test connector)                  | 16 | MK500 (to customer relays)          |
| 8 | MK502 (to EMC relays)                          | 17 | Cable retaining clip                |
| 9 | MK101 (to current sensors)                     | 18 | MK501 (to mixing fans)              |

Illustration 1.2 Power Card

## Removing the Power Card

To remove the power card, use the following steps. Refer to *Illustration 1.2*.

### **NOTICE**

#### **PARTS REUSE**

A new current scaling card is not included with the replacement power card. Retain the current scaling card so it can be reinstalled on the new power card.

1. Unplug the cables from the following power card connectors:
  - 1a MK101
  - 1b MK103
  - 1c MK105
  - 1d MK501
  - 1e MK502
  - 1f MK902
  - 1g Any customer supplied wiring at MK106 and MK500
2. Remove 5 screws (T20) from the power card.
3. Remove 2 standoffs (7 mm).
4. Remove the power card from the 4 plastic standoffs, pinching the standoffs to compress them.
5. Remove the current scaling card from the power card, pinching the tip of the plastic standoff. To avoid bending the card, lift it parallel to the power card.
6. Discard the power card, but retain the current scaling card for reinstallation.

## Installing the Power Card

To install the power card, use the following steps. Refer to *Illustration 1.2*.

### **NOTICE**

#### **UNIQUE TORQUE VALUES**

Tighten screws (T20) to the unique torque value specified in the following steps. Tighten all other fasteners according to the general torque tightening values listed in the *service guide*.

1. Insert the current scaling card into the standoff on the new power card. Press the scaling card onto the current scaling card fastener (MK100).
2. Position the power card on the mounting plate, and press it on to the 4 plastic standoffs.
3. Secure 2 metal standoffs (7 mm).

4. Secure 5 screws (T20) in the power card. Torque to 2.27 Nm (20.1 lb-in).
5. Plug the cables into the following power card connectors:
  - 5a MK101
  - 5b MK103
  - 5c MK105
  - 5d MK501
  - 5e MK502
  - 5f MK902
  - 5g Any customer supplied wiring at MK106 and MK500
6. Route the cables through the cable retaining clips.

## Replacing the Control Card Mounting Plate

To replace the control card mounting plate, use the following steps. Refer to *Illustration 1.1*.

### **NOTICE**

#### **UNIQUE TORQUE VALUES**

Tighten screws (T20) to the unique torque value specified in the following steps. Tighten all other fasteners according to the general torque tightening values listed in the *service guide*.

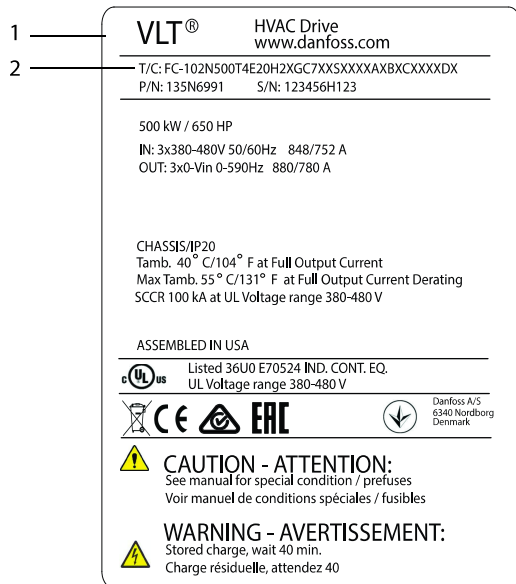
1. Attach the ribbon cable connecting the control card to the power card. Click shut the clasps on each end of the cable connector.
2. Secure 4 screws (T20) at the corners of the control card mounting plate. Torque to 2.27 Nm (20.1 lb-in).
3. Reconnect any customer control wiring to the control card and option cards.
4. In IP21/IP54 units, connect the LCP cable.
5. Connect the USB, if present.
6. Reattach the front cover, if present depending on the enclosure.

## Programming the Power Card

After installing a new power card, program the power card by entering the type code of the drive in *parameter 14-23 Type Code Setting*. To enter the type code, use the following steps.

1. Note the type code of the drive being serviced. The type code (T/C) is listed on the label of the drive. See *Illustration 1.3*.
2. Apply power to the drive. *Alarm 79, Illegal power section configuration* and *alarm 250, New spare part* appear on the LCP display and/or in the alarm log.

3. To access *parameter 14-23 Type Code Setting*, press [Main Menu].
4. To scroll to *parameter 14-23 Type Code Setting*, press the arrow and [OK] keys. *Parameter 14-23 Type Code Setting* is an array parameter with 19 index groups. See *Table 1.2*.
5. Scroll through the submenu and match the 19 index groups to the 39 characters of the type code. Press [OK] to enter each value.
6. To save the new type code, select *Save to EEPROM* and press [OK]. *Alarm 250, New spare part* changes to *alarm 251, New type code*.
7. To reset *alarm 251, New type code*, remove power from the unit and then reapply power. Press [Reset].



|   |       |   |           |
|---|-------|---|-----------|
| 1 | Label | 2 | Type code |
|---|-------|---|-----------|

Illustration 1.3 Example of Drive Label

| Index | Description    | Type code characters |
|-------|----------------|----------------------|
| [0]   | Product group  | 1–3                  |
| [1]   | Series         | 4–6                  |
| [2]   | Power          | 7–10                 |
| [3]   | Voltage        | 11–12                |
| [4]   | Enclosure      | 13–15                |
| [5]   | RFI filter     | 16–17                |
| [6]   | Brake and stop | 18                   |
| [7]   | Display        | 19                   |
| [8]   | Coating        | 20                   |
| [9]   | Mains options  | 21                   |
| [10]  | Adaptation A   | 22                   |
| [11]  | Adaptation B   | 23                   |
| [12]  | Software       | 24–27                |
| [13]  | Language       | 28                   |
| [14]  | Options A      | 29–30                |
| [15]  | Options B      | 31–32                |
| [16]  | Options C0     | 33–34                |
| [17]  | Options C1     | 35                   |
| [18]  | Options C      | 36–37                |
| [19]  | Options D      | 38–39                |

Table 1.2 Type Code Index

**NOTICE**

**INCORRECT TYPE CODE**

If the wrong type code is entered, scroll to *parameter 14-29 Service Code* and enter *00006100*. This code allows access to *parameter 14-23 Type Code Setting* to reenter the type code.

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