Installation Instructions

VLT® Frequency Converter IGBT Input Bus Bar Kit for E-size Enclosures

Description

The IGBT input bus bar kit is designed for an E1 or E2-size frequency converter. This kit replaces the existing IGBT input bus bar structure with a new input bus bar design.

The kit contains the following parts:

- Insulator, DC bus mounting (3)
- Insulator, upper (1)
- Insulator, lower (1)
- Bus bar, negative DC (1)
- Brake jumper bus bars, small (2)
- Brake jumper bus bars, large (2)
- Bus bar, positive DC (1)
- 3-piece IGBT bus bar assembly (3)
- Nuts, M4 (18)
- Nuts, M5 (12)
- Nuts, M6 (4)
- Screws, M5x18 (6)

Kit Part Numbers

Part number	Kit description
176F3710	IGBT input bus bar kit for E1/E2 size enclosures

Table 1.1 Part Number for the IGBT Input Bus Bar Kit

Additional Resources

The operating instructions for the frequency converter are shipped with the unit. They can also be downloaded at *vlt-drives.danfoss.com/Support/Technical-Documentation/*.

Safety Instructions

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

⚠WARNING

ELECTRICAL SHOCK HAZARD

VLT® frequency converters 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 frequency converter from all power sources before installation or service.**
- **Treat the bus bar and heat sink as live whenever the unit has mains voltage connected (including when the frequency converter is tripped or waiting for a command).**
- **Follow the guidelines in these instructions and local electrical safety codes.**

⚠WARNING

DISCHARGE TIME

The frequency converter contains DC-link capacitors, which can remain charged even when the frequency converter is not powered. Failure to wait for 40 minutes after power has been removed before performing service or repair work, can result in death or serious injury. To discharge the capacitors completely:

- **Stop the motor.**
- **Disconnect the AC mains, permanent magnet type motors, and remote DC-link supplies, including battery back-ups, UPS, and DC-link connections to other frequency converters.**
- **Wait 40 minutes for the capacitors to discharge fully, before performing any service or repair work.**

Installation

Existing Bus Bar Assembly

1. Remove the existing IGBT input bus bar structure according to the instructions in the service manual.

NOTICE

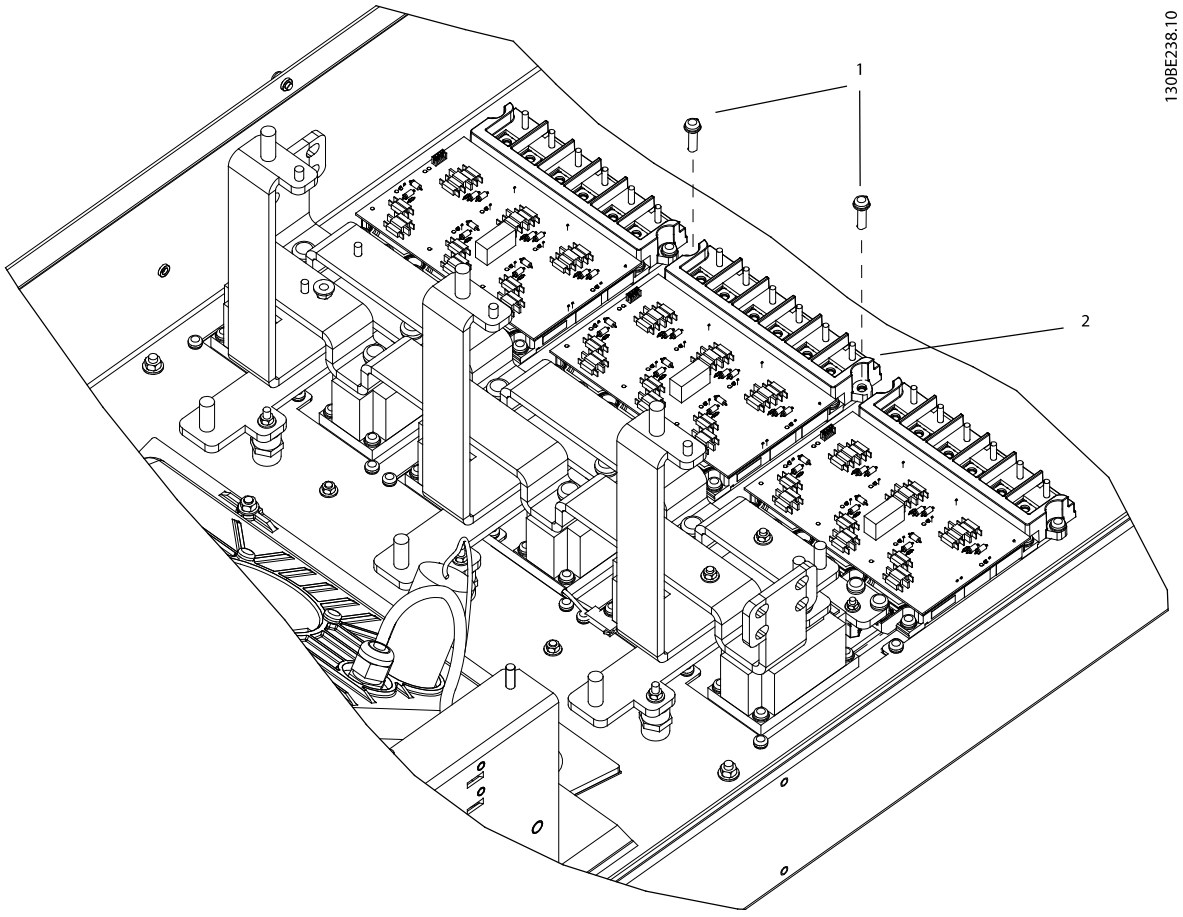
Reuse of parts

Do not throw out the following items. They are reused in later steps.

- **Snubber capacitors (9)**
- **Screws (M5) from snubber capacitors (18)**
- **Nuts (M8) from DC bus bar (4)**

DC Bus Mounting Insulator

1. Remove the 6 screws that connect the heat sink to the mid plate.
2. Install 1 DC bus mounting insulator at the top of each IGBT module using 2 M5x18 screws. Torque to 2.3 Nm (20 in/lbs). Refer to *Illustration 1.1*.

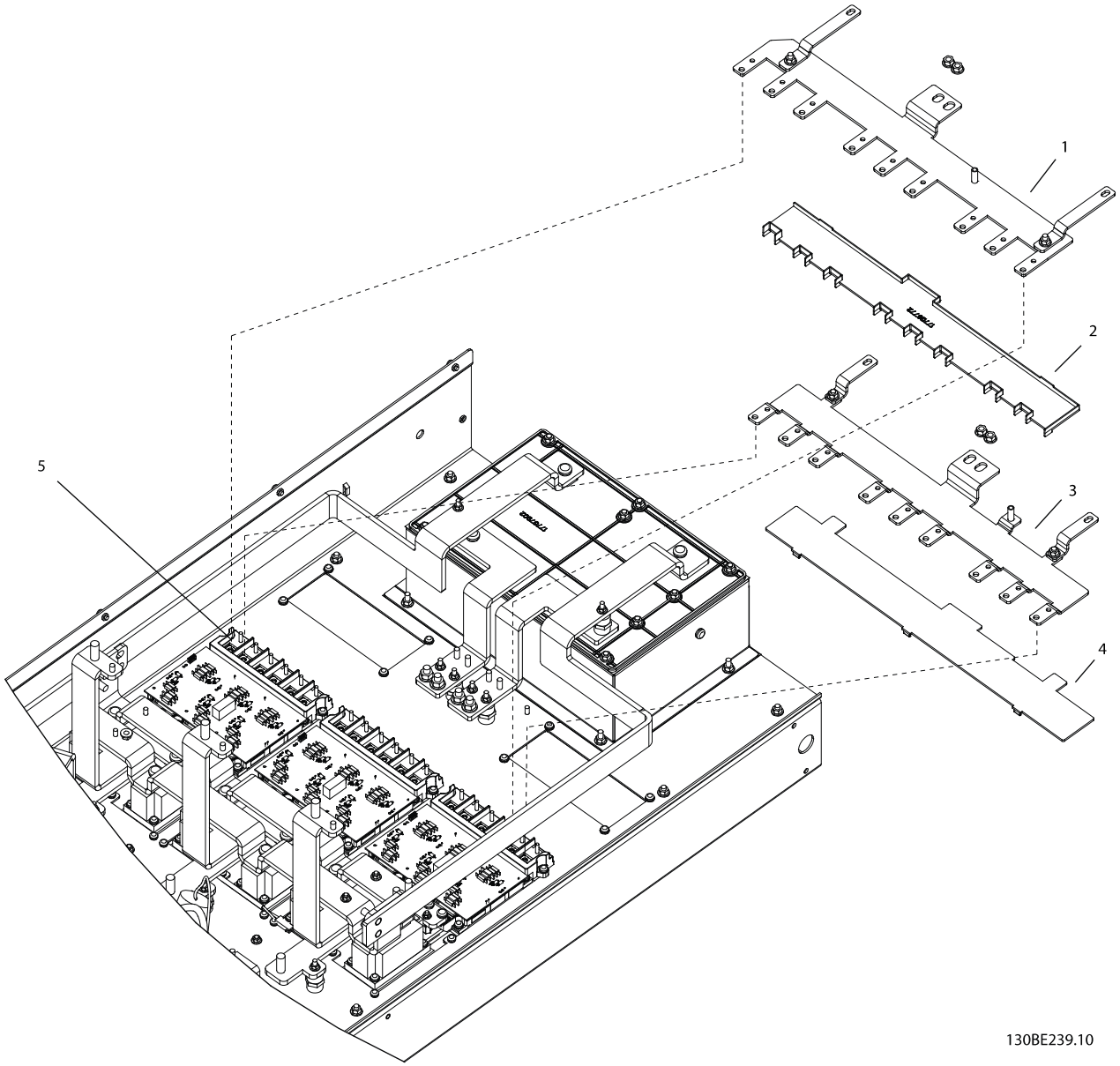


1	2 screws per insulator
2	DC bus mounting insulator

Illustration 1.1 Installing the New DC Bus Mounting Insulators

Insulator and Bus Bar Assembly

1. Place the lower insulator against the row of DC bus mounting insulators. Refer to *Illustration 1.2*.
2. Place the negative DC bus bar on top of the lower insulator. Secure with 2 nuts (M8) that were previously removed. Torque to 9.6 Nm (85 in/lbs).
3. Place the upper insulator on top of the negative DC bus bar.
4. Place the positive DC bus bar on top of the upper insulator. Secure with 2 nuts (M8) that were previously removed. Torque to 9.6 Nm (85 in/lbs).



1	DC bus bar, positive	4	Insulator, lower
2	Insulator, upper	5	DC bus mounting insulator
3	DC bus bar, negative		

Illustration 1.2 Installing Insulator and Bus Bar Assembly

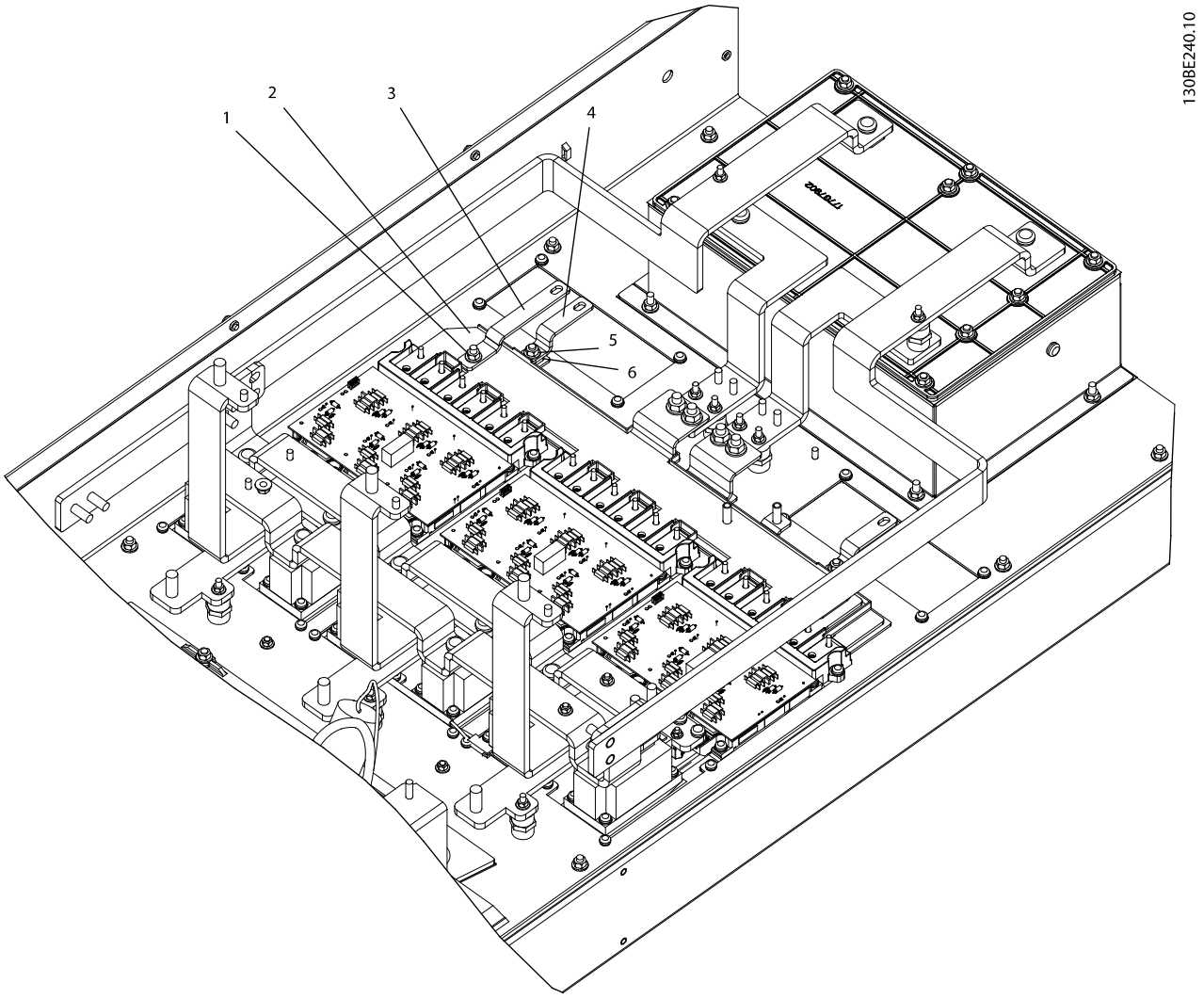
Brake Jumper Bus Bars (Only for Dynamic Brake Option)

NOTICE

DAMAGE TO UNIT

Use the brake jumper bus bars only if the frequency converter has 2 brake modules to which the brake bus bars attach. If the modules are not present, using the brake jumper bus bars can damage the frequency converter.

1. Install the smaller brake jumper bus bars to the stud, as shown in *Illustration 1.3*. Fasten each bus bar with nut (M6). Torque to 4.0 Nm (35 in/lbs).
2. Install the larger brake jumper bus bars to the stud. Fasten each bus bar with nut (M6). Torque to 4.0 Nm (35 in/lbs).

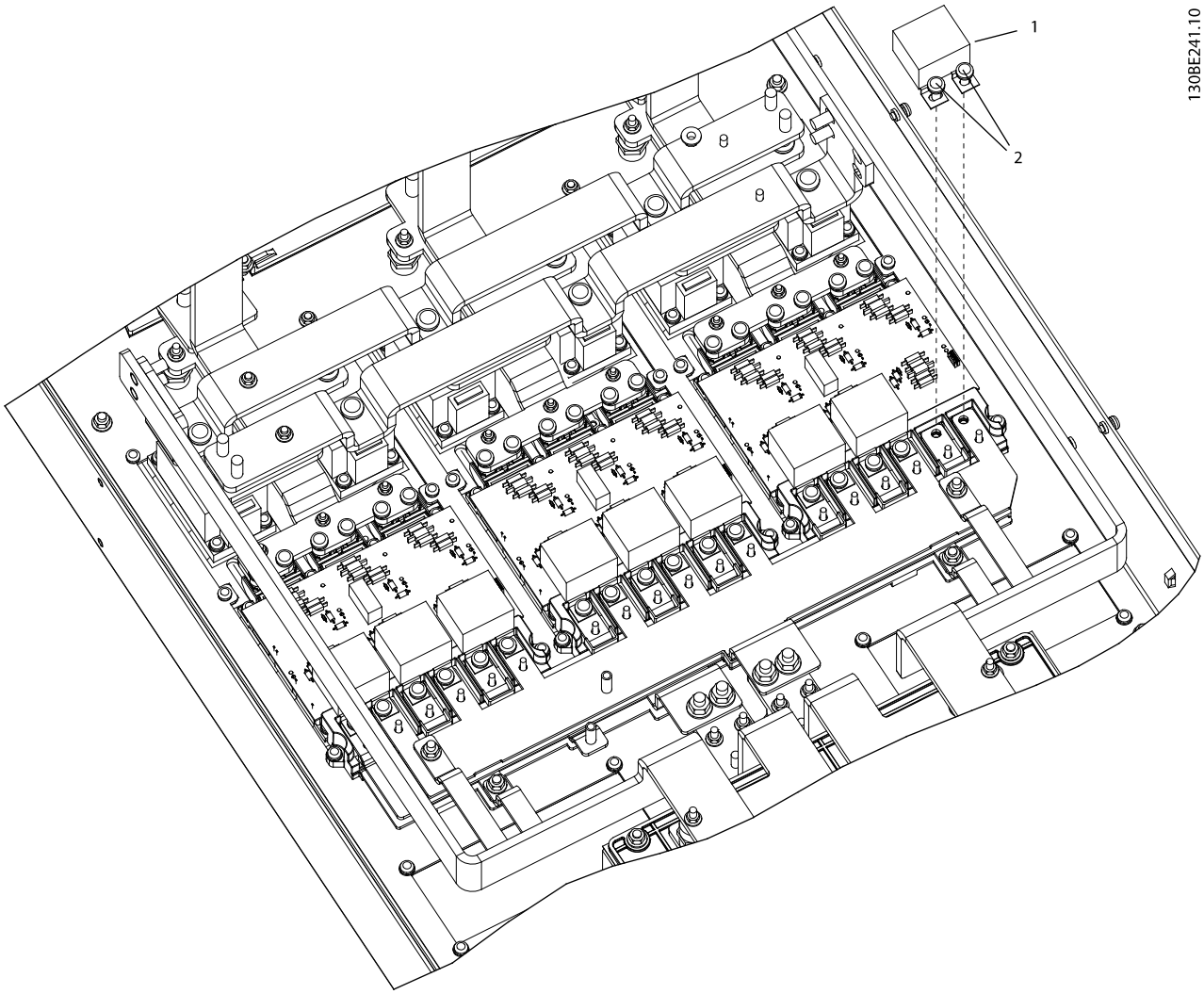


1	Nut (M6)	4	Brake jumper bus bar (smaller)
2	DC bus bar, positive	5	Nut (M6)
3	Brake jumper bus bar (larger)	6	DC bus bar, negative

Illustration 1.3 Installing the Brake Jumper Bus Bars

Snubber Capacitors

1. Install the 9 snubber capacitors. Fasten each snubber capacitor with 2 screws (M6) that were previously removed. Refer to *Illustration 1.4*. Torque to 4.0 Nm (35 in/lbs).



1	Snubber capacitor
2	Screws (M6)

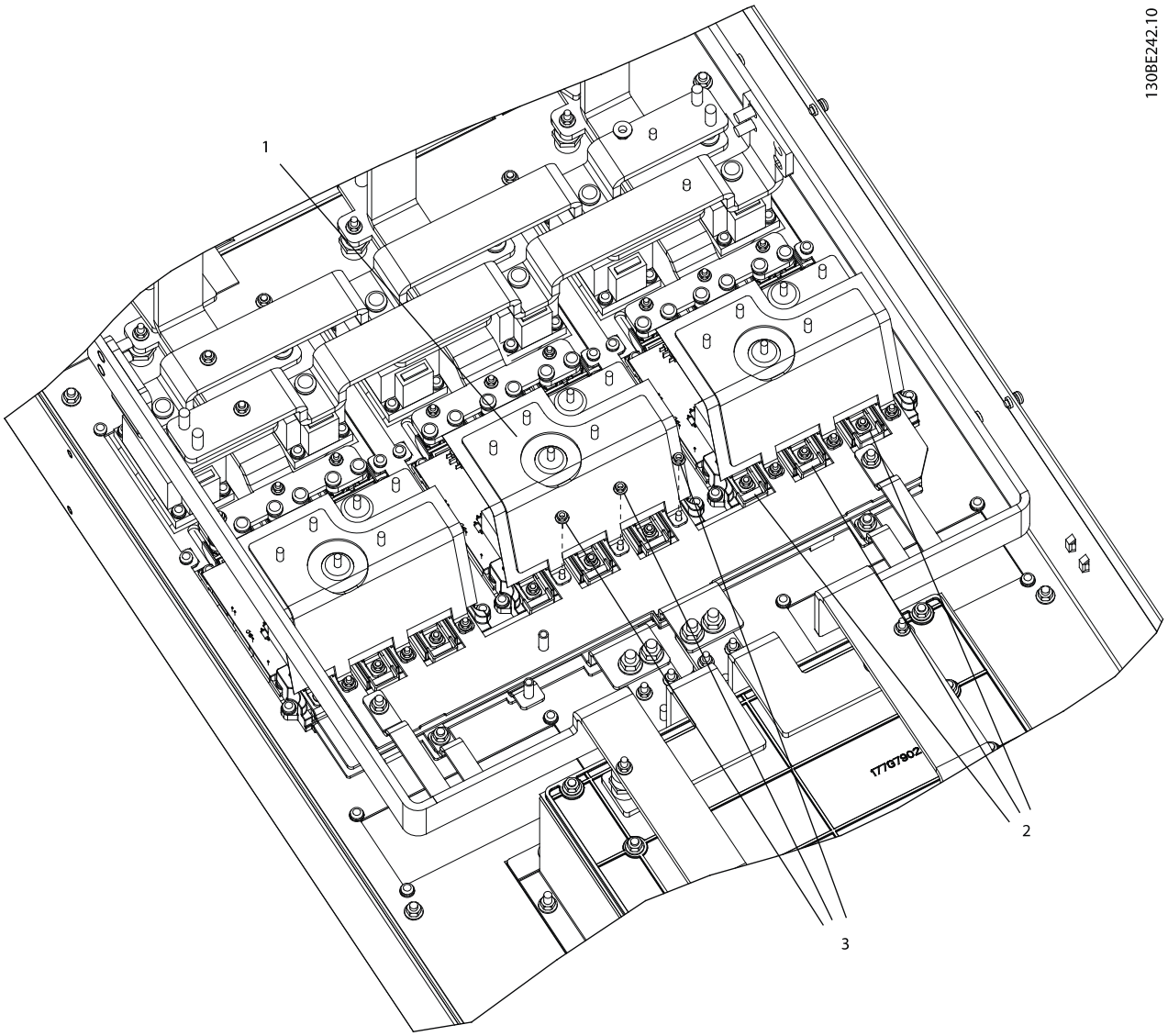
Illustration 1.4 Installing the Snubber Capacitors

IGBT Bus Bar Assembly

1. Install the 3 IGBT bus bar assemblies. Fasten each assembly with 6 nuts (M4). Refer to *Illustration 1.5*. Torque to 2.3 Nm (20 in/lbs).

NOTICE

This kit includes 12 nuts (M5) that can be used to secure the 2 capacitor banks that are placed on top of the assemblies. Refer to the service manual for instructions on how to install the capacitor banks.



1	IGBT bus bar assembly	3	Nuts (M4) connecting assembly to (+) DC bus bar
2	Nuts (M4) connecting assembly to (-) DC bus bar		

Illustration 1.5 Installing the IGBT Bus Bar Assemblies

Danfoss A/S
Ulsnaes 1
DK-6300 Graasten
vlt-drives.danfoss.com