

Top Fan Kit for FA09-FA12/D3h-D4h/E3h-E4h iC7 Series Frequency Converters and VLT® FC Series Drives

1 Overview

1.1 Description

Top fan kits are used with iC7 Series FA09–FA12 Frequency Converters and VLT FC® Series D3h–D4h and E3h–E4h Drives.

The top fan assembly in FA09–FA10 and D3h–D4h frames requires 1 fan. The top fan assembly in FA11–FA12 and E3h–E4h frames requires 2 fans. Top fans are secured under a grill or within a single or double fan housing.

Top fan replacement kits contain all parts required to replace 1 fan.

1.2 Kit Numbers

Use these instructions with the following kits.

Table 1: Top Fan Kits for iC7 Series FA09-FA12 Frequency Converters

Kit number	Description	Frame designation
176F3167	Top fan IP20 DC 80x38 mm	FA09–FA10
176F6636	Top fan IP20 DC 120x38 mm 48 V DC	FA11–FA12

Table 2: Top Fan Kits for VLT® FC Series D3h–D4h and E3h–E4h Drives

Kit number	Description
176F3166	Top fan IP20 DC 80x25 mm
176F3167	Top fan IP20 DC 80x38 mm

1.3 Items Supplied

The following parts are contained in the kit.

Table 3: Items Supplied in Top Fan Kits

Item	Quantity
Fan	1
Installation instructions	1

2 Installation

2.1 Safety Information

N O T I C E

QUALIFIED PERSONNEL

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 service guide.
- Use the standard fastener torque values from the service guide, unless the torque value is specified in these instructions.

⚠ W A R N I N G ⚠

ELECTRICAL SHOCK HAZARD

Danfoss 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.

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

⚠ W A R N I N G ⚠

DISCHARGE TIME

The frequency converter contains DC-link capacitors, which can remain charged even when the frequency converter is not powered. High voltage can be present even when the warning LED indicator lights are off. Failure to wait the specified time 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 frequency converters.
- Disconnect or lock the motor.
- Disconnect any brake option.
- Disconnect any regen/load share option.
- Wait for the capacitors to discharge fully. The minimum waiting time is listed on the frequency converter label and also in the following discharge time table.
- Before performing any service or repair work, use an appropriate voltage measuring device to make sure that the capacitors are fully discharged.

Table 4: Discharge Time

Frame	Minimum waiting time
D1h–D8h	20 minutes
Fx09–Fx10	20 minutes
E1h–E4h	40 minutes
Fx11–Fx12	40 minutes

NOTICE**ELECTROSTATIC DISCHARGE**

Electrostatic discharge can damage components.

- Ensure discharge before touching internal frequency converter components, for example by touching a grounded, conductive surface or by wearing a grounded armband.

2.2 Top Fan Replacement

Select the fan replacement instructions based on the type of fan enclosure:

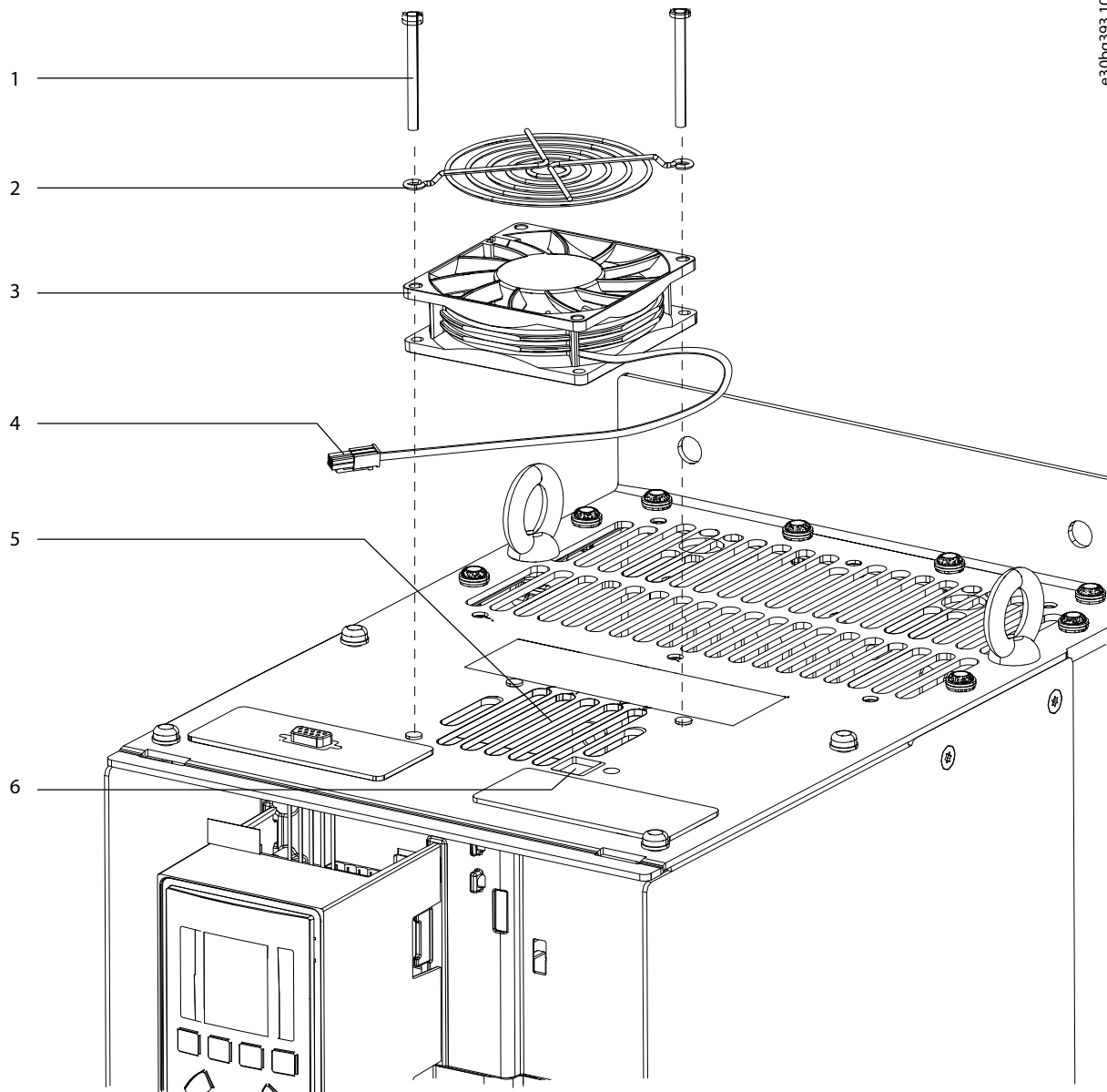
- [2.3 Removing the Top Fan and Grill.](#)
- [2.5 Removing the Top Fan and Single Fan Housing.](#)
- [2.7 Removing the Top Fan and Double Fan Housing.](#)

2.3 Removing the Top Fan and Grill

To remove the top fan and grill, use the following steps. See [Illustration 1](#).

1. Unfasten 2 screws (T25) and remove the front cover from the frequency converter.
2. Unplug the top fan cable connector.
3. Pull the top fan cable through the cable access hole, freeing it from the cabinet.
4. Remove 2 screws (T25) from opposite corners of the top fan grill.

- Lift the grill and top fan from the frequency converter.



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Illustration 1: Top Fan with Grill

1	Screw (T25)	4	Top fan cable and connector
2	Top fan grill	5	Top vent
3	Top fan	6	Cable access hole

2.4 Installing the Top Fan and Grill

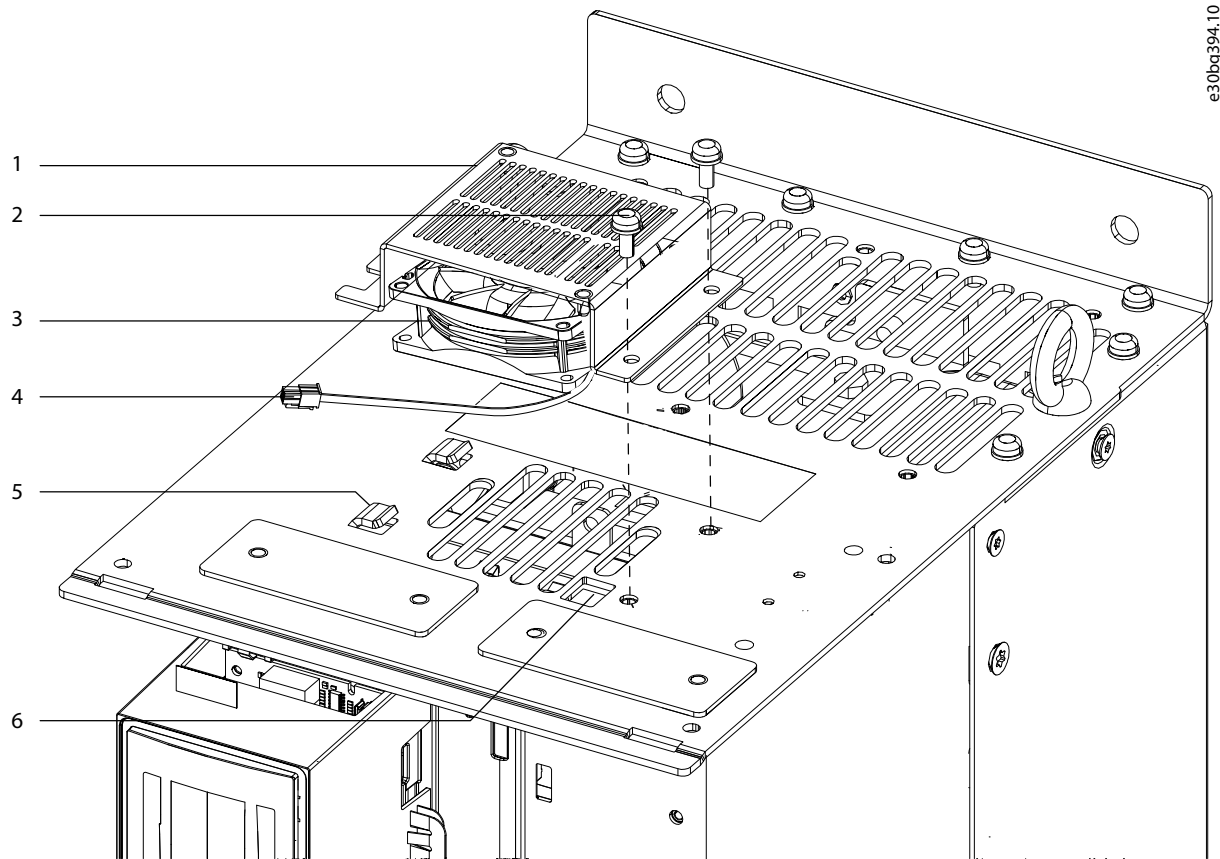
To install the top fan and grill, use the following steps.

- Feed the top fan cable through the cable access hole on the top of the frequency converter.
- Reconnect the in-line fan cable connector.
- Position the fan on top of the frequency converter with the air direction arrows pointing upward and away from the unit.
- Place the grill on top of the fan.
- Fasten 2 screws (T25) in opposite corners of the grill, securing the top fan to the frequency converter.
- Position the front cover on the frequency converter, and fasten with 2 screws (T25).

2.5 Removing the Top Fan and Single Fan Housing

To remove a fan with a single fan housing, use the following steps. See [Illustration 2](#).

1. Unfasten 2 screws (T25) and remove the front cover from the frequency converter.
2. Unplug the top fan cable connector.
3. Pull the top fan cable through the cable access hole, freeing it from the cabinet.
4. Remove 2 screws (T25) from the top fan housing.
5. Slide the fan housing and top fan out from under the retaining clips on top of the frequency converter.



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Illustration 2: Top Fan with Single Fan Housing

1	Single top fan housing	4	Top fan cable and connector
2	Screw (T25)	5	Retaining clip
3	Top fan	6	Cable access hole

2.6 Installing the Top Fan and Single Fan Housing

To install the top fan and single fan housing, use the following steps.

1. Feed the top fan cable through the cable access hole on the top of the frequency converter.
2. Reconnect the in-line fan cable connector.
3. Place the top fan in the fan housing with the air direction arrows pointing upward and away from the frequency converter.
4. Slide the fan housing and fan under the retaining clips on top of the frequency converter.
5. Fasten 2 screws (T25) in the single fan housing, securing it to the frequency converter.
6. Place the front cover on the frequency converter, and fasten with 2 screws (T25).

2.7 Removing the Top Fan and Double Fan Housing

To remove the top fan and double fan housing, use the following steps. Refer to [Illustration 3](#).

1. Unfasten 4 screws (T25) and remove the upper front cover of the frequency converter.

2. Remove 2 screws (T25) from the fan housing.
3. Slide the fan housing and fans out from under the retaining clips.
4. Unplug the in-line connector attaching the fan cable.
5. Feed the cable through the cable access hole.
6. Lift the fans from the pins in the fan housing.

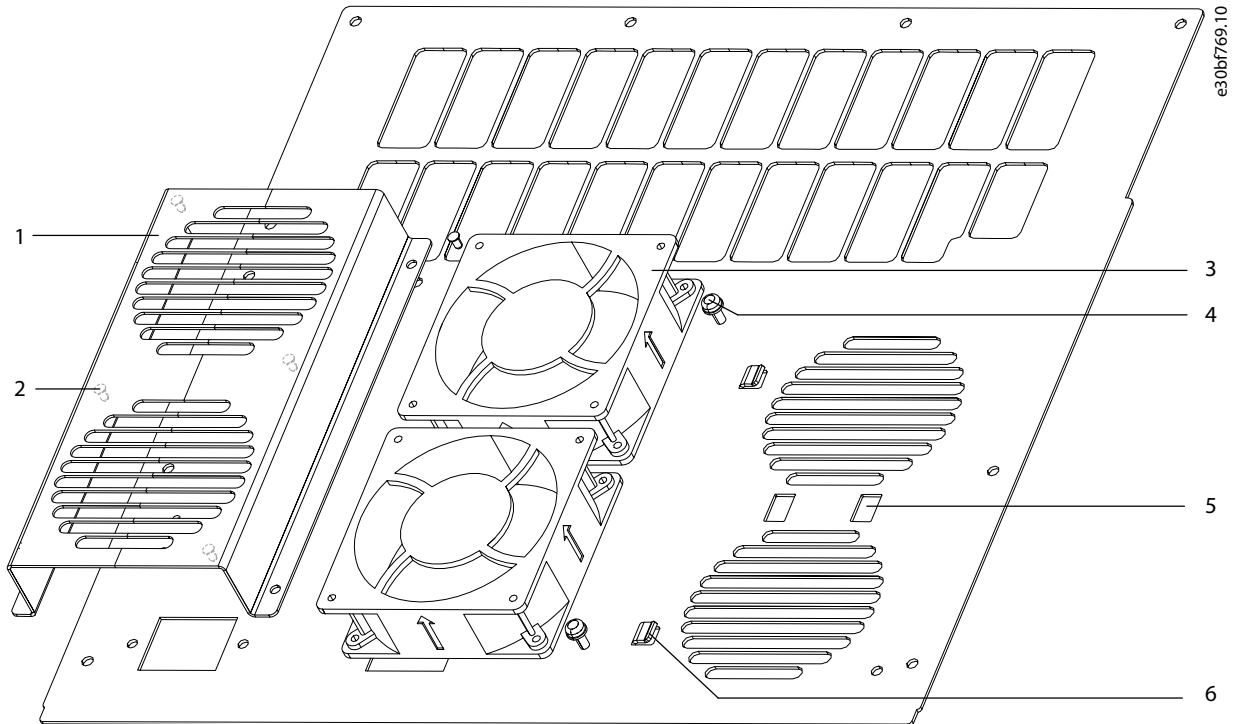


Illustration 3: Top Fan and Double Fan Housing

1	Double fan housing	4	Screw (T25)
2	Mounting pin (inside housing)	5	Cable access hole
3	Fan	6	Retaining clip

2.8 Installing the Top Fan and Double Fan Housing

To replace the top fan and double fan housing, use the following steps.

1. Place 2 fans over the pins in the double fan housing.
2. Check that the air direction arrows point upward and away from the frequency converter.
3. Feed the fan cables through the cable access hole in the top plate.
4. Attach the in-line cable connectors.
5. Slide the double fan housing and 2 fans into position under the retaining clips.
6. Secure 2 screws (T25) in the fan housing.
7. Replace the upper front cover on the frequency converter, and fasten with 4 screws (T25).

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