

# Installation Instructions

## Top Fan Kit for D3h/D4h and E3h/E4h Drives

### VLT<sup>®</sup> FC Series FC 102, FC 103, FC 202, FC 302

#### Description

The top fan assembly in D3h/D4h drives includes 1 fan within a fan housing or secured under a grill. The top fan assembly in E3h/E4h drives consists of 2 fans within a single fan housing. The top fan replacement kit contains all parts required to replace 1 fan in the top fan assembly.

#### Kit Ordering Numbers

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

Table 1.1 Numbers for the Top Fan Kit

#### Items Supplied

The top fan replacement kit contains the following:

- 1 fan
- Installation instructions

#### Safety Information

Only qualified, Danfoss authorized personnel are allowed to install the parts described in these installation instructions. Handling of the drive and its parts must be done in accordance with the corresponding *operating guide*.

#### **⚠ WARNING**

##### **ELECTRICAL SHOCK HAZARD**

VLT<sup>®</sup> FC 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**

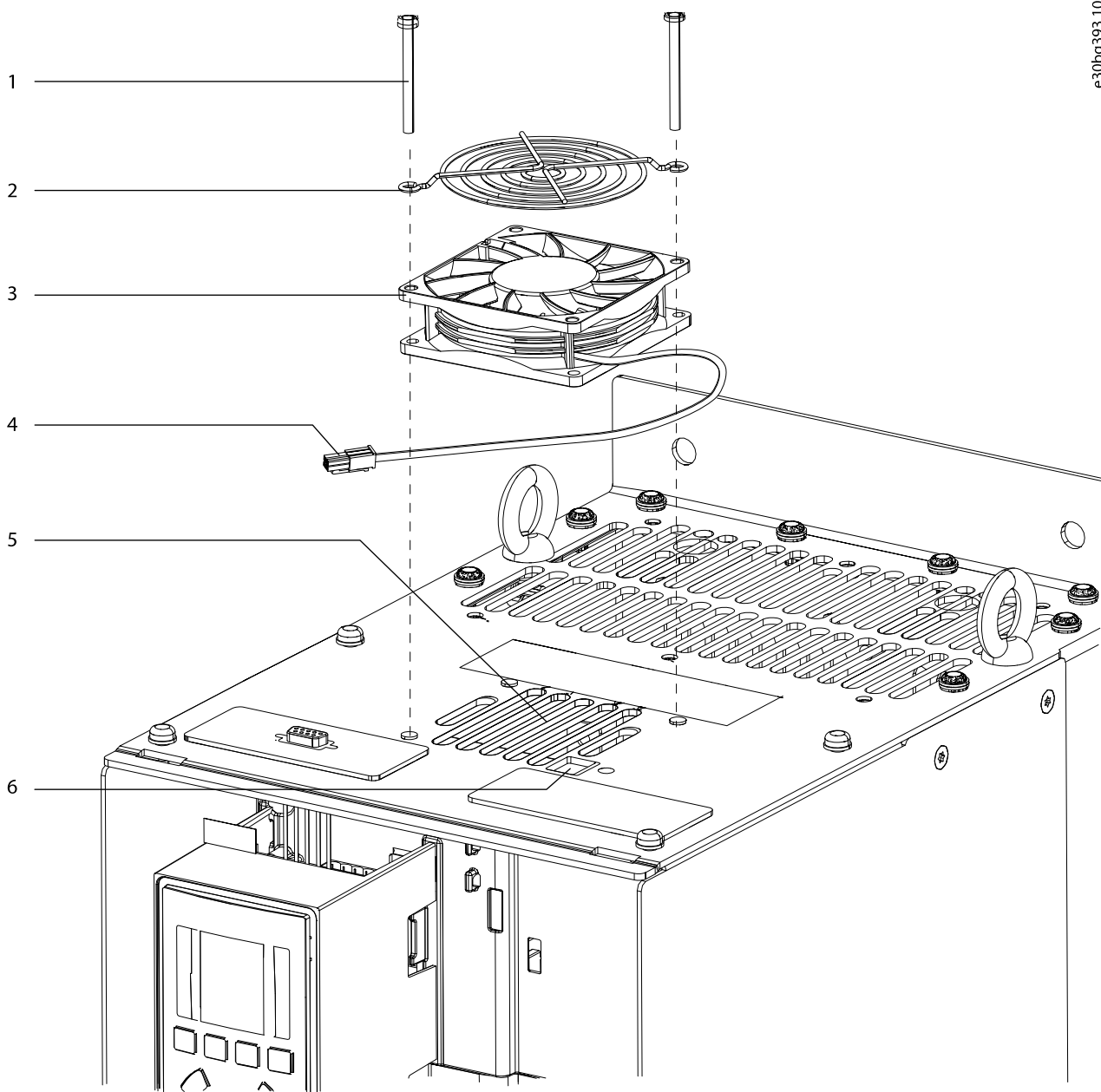
The drive contains DC-link capacitors, which can remain charged even when the drive is not powered. High voltage can be present even when the warning LED indicator lights are off. Failure to wait for the specified time listed in *Table 1.2* after power has been removed before performing service or repair work can result in death or serious injury.

1. Stop the motor.
2. Disconnect AC mains and remote DC-link supplies, including battery back-ups, UPS, and DC-link connections to other drives.
3. Disconnect or lock motor.
4. Wait for the capacitors to discharge fully. Refer to *Table 1.2*.
5. Before performing any service or repair work, use an appropriate voltage measuring device to make sure that the capacitors are fully discharged.

Voltage [V]	Power rating [kW] (hp) (normal overload)	Enclosure	Minutes to discharge
380–500	90–250 (125–350)	D1h–D8h	20
380–500	315–500 (450–650)	E1h–E4h	40
525–690	55–315 (60–350)	D1h–D8h	20
525–690	355–710 (400–750)	E1h–E4h	40

Table 1.2 Discharge Time for Enclosures D1h–D8h and E1h–E4h

Installation Instructions



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

Illustration 1.1 Top Fan with Grill in D3h/D4h Drives

## Removing the Top Fan from D3h/D4h Drives

The top fan assembly in D3h and D4h drives includes 1 fan in a fan housing or secured under a sheet metal or wire grill. To remove the top fan from D3h or D4h drives, use the following steps. For drives with a grill, see *Illustration 1.1*. For drives with a fan housing, refer to *Illustration 1.2*.

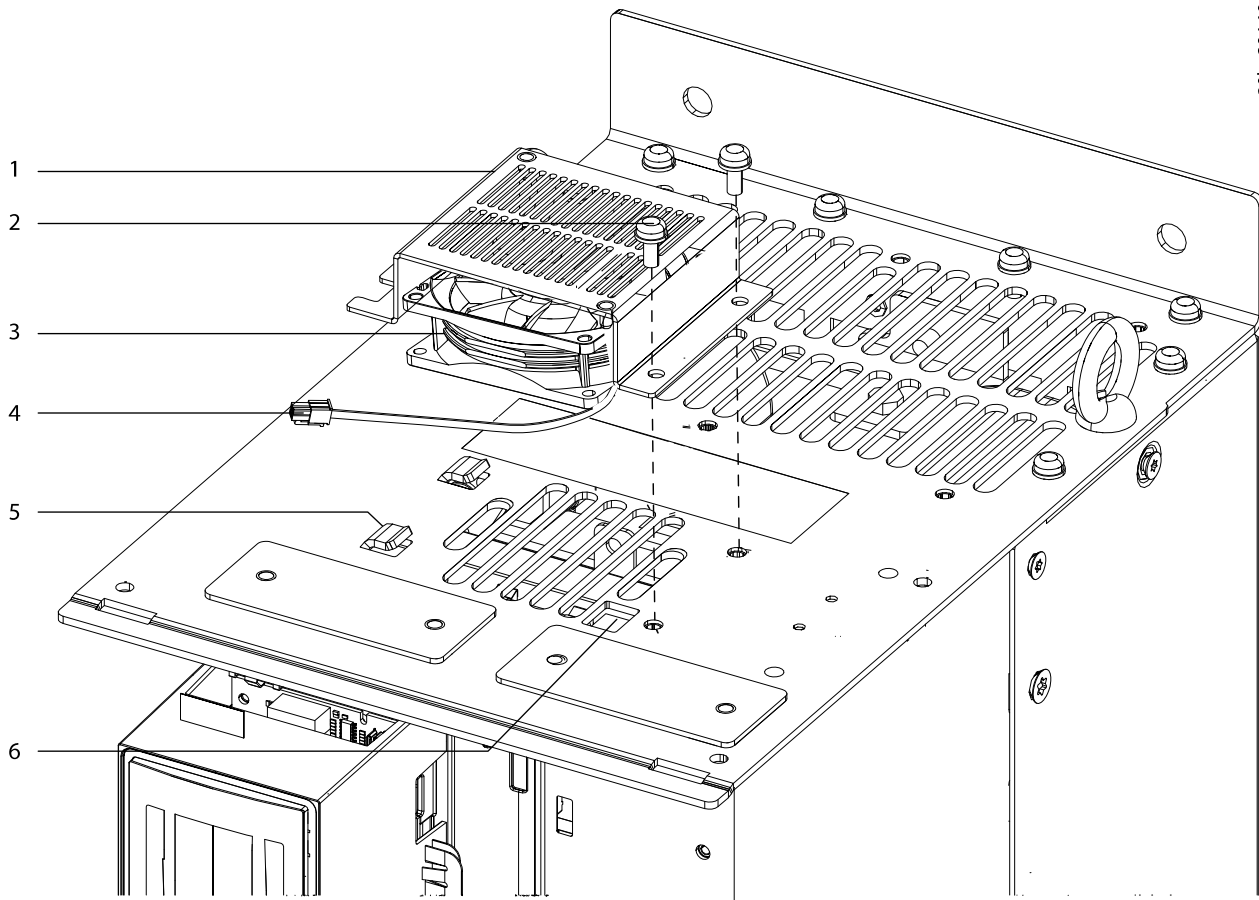
1. Unfasten 2 screws (T25) and remove the front cover from the drive.
2. Unplug the fan cable connector.
3. Pull the fan cable through the cable access hole, freeing it from the enclosure.
4. If a wire or sheet metal grill is present, perform the following steps. See *Illustration 1.1*. Otherwise, proceed to the next step.
  - 4a Remove 2 screws (T25) from opposite corners of the top fan grill.
  - 4b Lift the grill and fan from the drive.
5. If a fan housing is present, perform the following steps. See *Illustration 1.2*.
  - 5a Remove 2 screws (T25) from the top fan housing.
  - 5b Slide the fan housing and fan out from under the retaining clips on top of the drive.

## Installing the Top Fan in D3h/D4h Drives

To replace the top fan assembly in D3h and D4h drives, use the following steps. Refer to *Illustration 1.1* or *Illustration 1.2*.

1. Feed the fan cable through the cable access hole on the top of the drive.
2. Reconnect the in-line fan cable connector.
3. If a wire or sheet metal grill is present, perform the following steps. See *Illustration 1.1*. Otherwise, proceed to the next step.
  - 3a Position the fan on top of the drive. Check that the air direction arrows point upward and away from the drive.
  - 3b Place the grill on top of the fan.
  - 3c Fasten 2 screws (T25) in opposite corners of the grill, securing the top fan to the drive.
4. If a fan housing is present, perform the following steps. See *Illustration 1.2*.
  - 4a Place the top fan in the fan housing. Check that the air direction arrows point upward and away from the drive.
  - 4b Slide the fan housing and fan under the retaining clips on top of the drive.
  - 4c Fasten 2 screws (T25) in the top fan housing, securing it to the drive.
5. Replace the front cover on the drive, and fasten with 2 screws (T25).

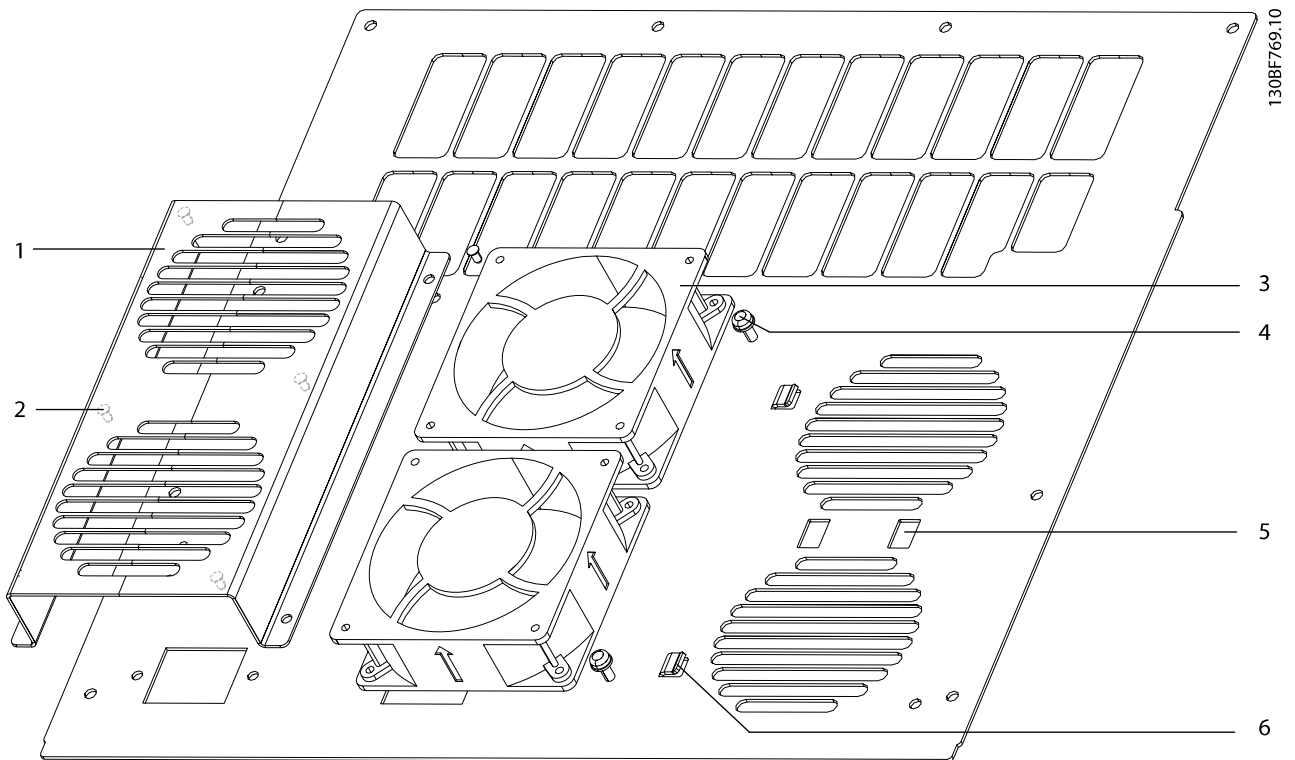
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1	Fan housing	4	Fan cable and connector
2	Screw (T25)	5	Retaining clip
3	Fan	6	Cable access hole

Illustration 1.2 Top Fan with Housing in D3h/D4h Drives

### Installation Instructions for E3h/E4h Drives



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

Illustration 1.3 Top Fan in E3h/E4h Drives

#### Removing the Top Fan from E3h/E4h Drives

To remove the top fan assembly from E3h or E4h drives, use the following steps. Refer to *Illustration 1.3*.

1. Unfasten 4 screws (T25) and remove the upper front cover of the drive.
2. Remove 2 screws (T25) from the fan housing on top of the drive.
3. Slide the fan housing and 2 fans out from under the retaining clips.
4. Inside the drive, unplug the in-line connector attaching the fan cable to the fan to be replaced.
5. Feed the cable through the cable access hole on top of the drive.
6. Lift the fan from the pins in the fan housing.

#### Installing the Top Fan in E3h/E4h Drives

To replace the top fan assembly in E3h and E4h drives, use the following steps. Refer to *Illustration 1.3*.

1. Position the new fan over the pins in the fan housing. Check that the air direction arrows point upward and away from the drive when installed.
2. Feed the fan cables through the cable access hole in the top plate near the fan vent.
3. Attach the in-line cable connectors inside the drive enclosure.
4. Slide the fan housing and 2 fans into position under the retaining clips on top of the drive.
5. Secure 2 screws (T25) in the fan housing.
6. Replace the upper front cover on the drive, and fasten with 4 screws (T25).

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