

Installation Instructions

Back-channel Cooling (In-back/Out-back)

D1h-D2h (FC Series FC 102, FC 202, and FC 302)

1.1 Description

The back-channel cooling (in-back/out-back) kit is designed for the VLT® HVAC Drive FC 102, VLT® AQUA Drive FC 202, and VLT® AutomationDrive, FC 302 D1h and D2h-size frequency converters. Instead of airflow entering the bottom of the unit and exiting the top, the kit directs air in from and out of the back of the unit. See *Illustration 1.1*.

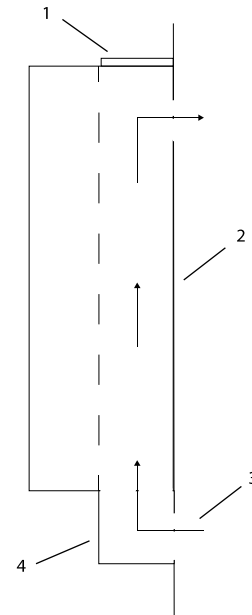
The kit contains the following parts:

Base duct assembly

- Duct enclosure (1)
- Gasket, left side enclosure (1)
- Gasket, right side enclosure (1)
- Gasket, top of enclosure (1)
- Gasket, back of enclosure (1)
- Gasket, base of enclosure (1)
- Grill (1)
- Gasket, grill (1)
- Cover, base of duct enclosure (1)
- Cover, back of duct enclosure (1)
- Nuts, M5 (21)
- Gasket, slot (1)
- Gasket, base cover (1)
- Cover, base of frequency converter (1)
- Screws, M5x12 (16)

Top plate assembly

- Top cover (1)
- Gasket, top cover (1)
- Gasket, cut out (1)
- Screws, M5x12 (16)



130BX518.10

1	Top cover
2	Wall
3	Back-channel airflow
4	Bottom duct assembly

Illustration 1.1 Direction of Airflow with the In-back/Out-back Kit Installed

1.2 Kit Part Numbers

Part number	Kit description
176F3648	D1h, fabricated steel
176F3656	D1h, stainless steel
176F3649	D2h, fabricated steel
176F3657	D2h, stainless steel

Table 1.1 Part Numbers for all the D1h/D2h In-back/Out-back Kits

1.3 Preparing for Installation

⚠ 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 the specified time after power has been removed before performing service or repair work, could result in death or serious injury.

1. Stop motor.
2. Disconnect AC mains, permanent magnet type motors, and remote DC-link power supplies, including battery back-ups, UPS, and DC-link connections to other frequency converters.
3. Wait for the capacitors to discharge fully, before performing any service or repair work. The duration of waiting time is specified in *Table 1.2*.
4. Remove frequency converter from the wall or panel.

Voltage [V]	Power range [kW]	Minimum waiting time (min)
3x400	90–250	20
3x400	110–315	20
3x500	110–315	20
3x500	132–355	20
3x525	75–250	20
3x525	90–315	20
3x690	90–250	20
3x690	110–315	20

Table 1.2 Discharge Time

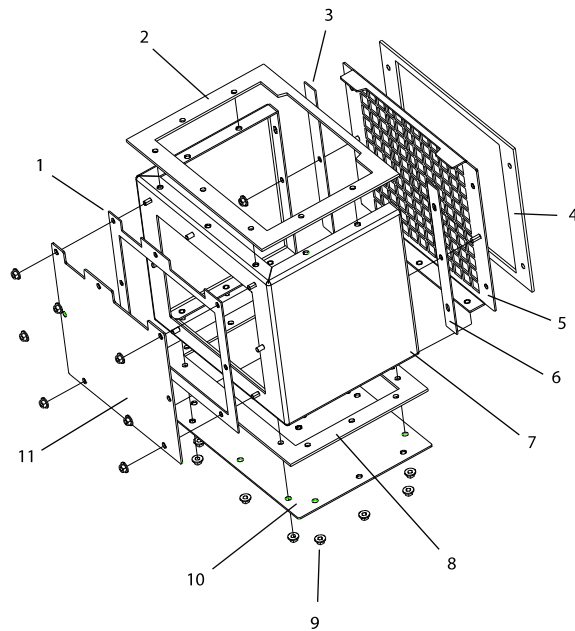
1.4 Installation

1.4.1 Assembling the Duct Enclosure

1. Place the left and right side gaskets (3, 6) against the side of the duct enclosure (7), making sure the holes in the enclosure and gaskets line up. Refer to *Illustration 1.2*.
2. Place the grill (5) on top of the gaskets, with the threaded studs in the grill going through the middle holes in the gasket and into the enclosure. Secure the grill to the enclosure using one nut on each stud. Torque to 2.3 N-m [20 in-lb].
3. Place the gasket (4) on top of the grill.
4. Place the gasket (8) and then the base cover (10) on the bottom of the enclosure. Secure with 12 M5 nuts and torque to 2.3 N-m [20 in-lb].
5. Place the gasket (1) on the back side of the enclosure, making sure the holes in the enclosure and gasket line up.
6. Place the gasket (2) on top of the duct enclosure.

NOTICE

The back cover (11) is left off until the duct assembly is attached to the frequency converter. The opening is necessary to secure the duct assembly to the frequency converter.



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1	Gasket, back of enclosure
2	Gasket, top of enclosure
3	Gasket, left side of enclosure
4	Gasket, grill
5	Grill
6	Gasket, right side of enclosure
7	Duct enclosure
8	Gasket, base of enclosure
9	M5 nuts
10	Cover, base of duct enclosure
11	Cover, back of duct enclosure

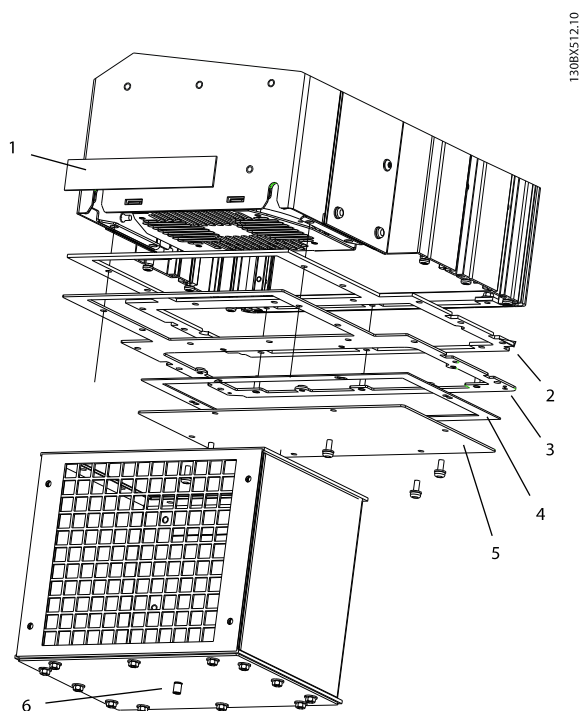
Illustration 1.2 Assembling the Base Duct

1.4.2 Installing the Duct Assembly

1. Place the gasket (1) over the 2 slots at the back of the frequency converter near the base. Refer to *Illustration 1.3*.
2. Remove gland plate (5) from the base of the frequency converter by removing 6 M5x12 screws.
3. Remove base cover and gasket from the frequency converter by removing 6 M4.8x19 screws and 3

M5x12 screws. Retain the screws, but discard old base cover and gasket.

4. Place the gasket (2) onto the new base cover (3). Then place the new base cover onto the base of the frequency converter. Secure the new base cover using the screws from the old base cover. Torque to 2.3 N-m [20 in-lb].
5. Reinstall the gland plate to the base cover.
6. Secure the gland plate to the frequency converter using 6 M5x12 screws. Torque to 2.3 N-m [20 in-lb].
7. Make sure the gasket on top of the duct enclosure is in place, and place the top of the duct assembly over the opening at the base of the frequency converter. Using the opening at the back of the duct assembly, secure the duct assembly to the frequency converter using 4 M4.8x19 screws. Torque to 2.3 N-m [20 in-lb].
8. Attach the back cover to the duct assembly and secure with 7 M5 nuts and torque to 2.3 N-m [20 in-lb].

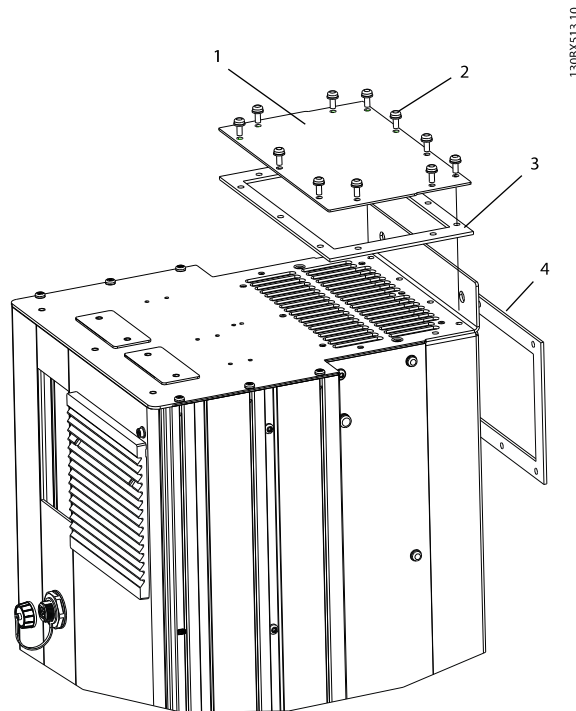


1	Gasket, slot
2	Gasket, base cover of frequency converter
3	Cover, base of frequency converter
4	Gasket, gland plate
5	Gland plate
6	Drain hose fitting

Illustration 1.3 Installing Duct Assembly, Back View of Duct Shown

1.4.3 Installing Top Plate

1. Place the gasket over the grill opening on the top of the unit. Refer to *Illustration 1.4*.
2. Place the top cover over the gasket and secure it using the 11 screws included in the kit. Torque to 2.3 N-m [20 in-lb].

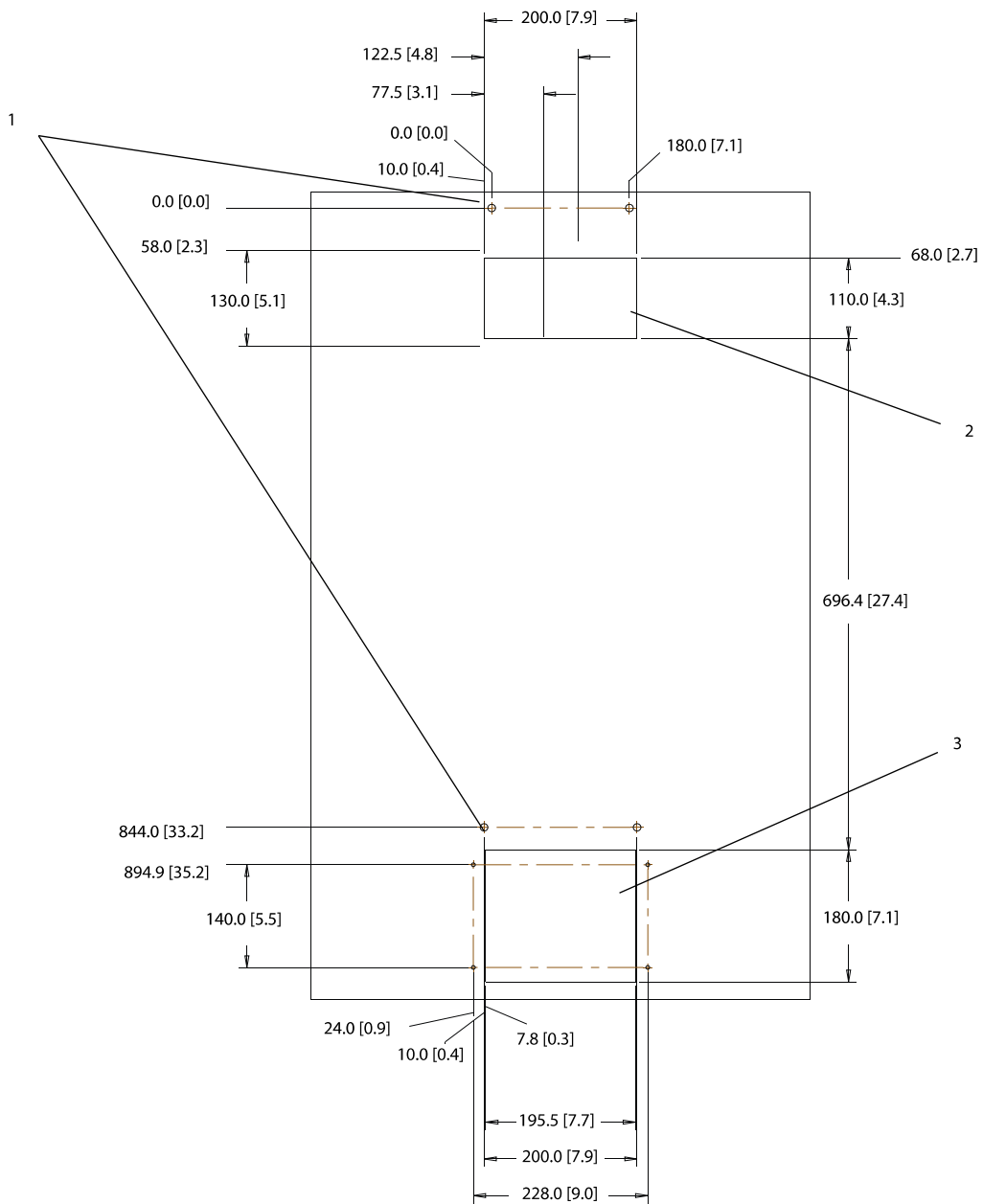


1	Top of unit
2	Top cover gasket
3	Top cover
4	M5x12 screws (11)

Illustration 1.4 Installing Top Sealing Plate

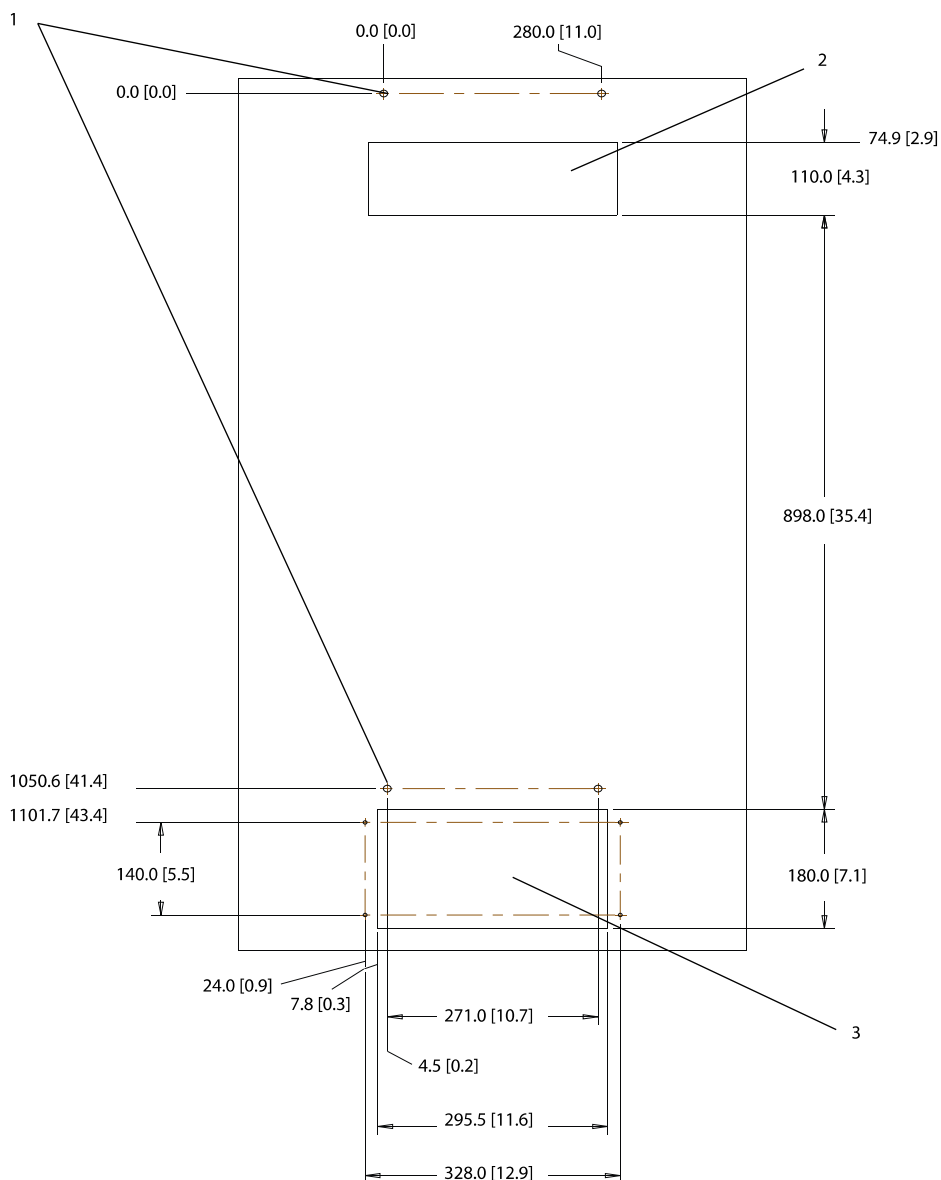
1.4.4 Creating Vent Openings

1. Using the back vent dimensions, create an intake and exhaust opening in the wall that mates to the top and bottom vent openings of the unit. Refer to *Illustration 1.5 - Illustration 1.6*.
2. Reinstall the D-frame unit. Create a tight seal between the wall opening and the unit by inserting the cut out gasket between the two.
3. Reconnect the wiring. For additional set-up information, refer to the Operating Instructions.



1	Frequency converter mounting holes (4)
2	Rear exhaust vent
3	Rear intake vent

Illustration 1.5 Vent Dimensions, D1h



1	Frequency converter mounting holes
2	Rear exhaust vent
3	Rear intake vent

Illustration 1.6 Vent Dimensions, D2h

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