



# iC7-Aqua and HVACR Frequency Converters

FA02-FA08/FB03-FB08/FK03-FK08 (1.3-170 A)





# 1 Installation

## 1.1 Safety and Installation Awareness

An installation guide and a safety guide are provided with the drive. Before installing the drive, read all safety guidelines and precautions in the safety guide (BH319740379644). For details on cybersecurity, see *Security Features* in the *iC7 Series HVACR Application Guide* (AB528130368657) or the *iC7 Series Aqua Application Guide* (AB493837940842). More documentation – including a design guide and application guide – can be accessed by scanning the QR code on the front cover.

## 1.2 Required Tools

- Lifting aid
- Measuring tape
- Wrench with extensions and 8, 17, 19 mm sockets
- Torx and slotted screwdrivers (T15, T20, T25, T30, T40, T50, SL1, and SL2)
- Wire crimper
- Sheet metal punch and/or pliers for cable entry plate

## 1.3 Verifying the Shipment and the Contents

Make sure that the items supplied and the information on the product label correspond to the order confirmation. The product label is placed on the top of the drive. Use a Data Matrix ECC 200 compatible barcode reader to obtain the model code, code number, serial number, and manufacture date from the 2D code on the product label.

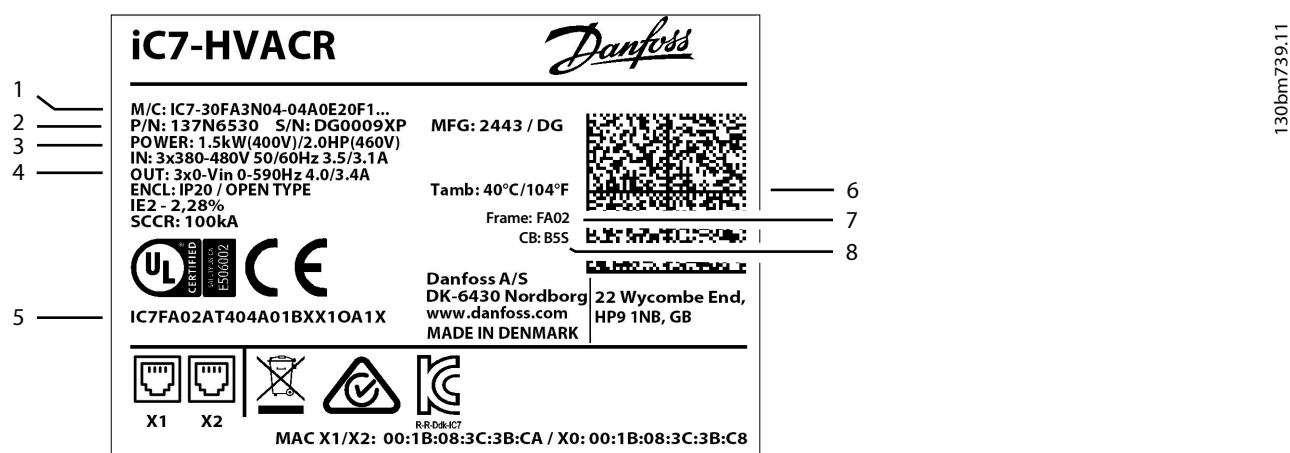


Figure 1: Example of a Product Label

1	Model code (2D code shows the full model code)	2	Code number, serial number, manufacture date (YYWW)
3	Power rating	4	Input and output voltage, frequency, and current
5	Compliance code used on certificate	6	2D code
7	Frame designation	8	Control board designation

## 1.4 EMC-compliant Installation

For EMC-compliant installation, refer to the design guide and follow the electrical installation instructions.

- Use shielded cables for motor output (unshielded cables within metal conduit are acceptable), DC, and control wiring.

- Connect the shield to the enclosures at both ends. If the shield connection points have a voltage potential difference, connect a low-impedance equalizing wire parallel to the shielded cable. Otherwise, break the shield connection on 1 end to avoid ground current loops.
- Ensure that motor and DC cables are as short as possible to reduce the interference level from the entire system.
- Provide a minimum 200 mm (7.9 in) separation, if possible, between mains input, motor cables, and control cables.
- Convey the currents from the motor cable shield back to the unit using an EMC plate with cable clamps or cable glands. Ensure good electrical contact from the EMC plate through the mounting screws to the drive chassis.
- Parts identified with (!) must be installed. See step 4 in the *Illustrations* section.

## NOTICE

### EMC EMISSION LIMITS

This drive may affect radio reception and does not comply with the emission limits for category C1. With the RFI filter disconnected, the drive meets category C4, but not category C2 limits.

- Do not use in residential locations.
- Contact Danfoss for assistance with C4 compliance.

## 1.5 Installing the Drive

### WARNING



#### SHOCK HAZARD

Touching an uncovered motor, mains, or DC connection plug or terminal can result in death or serious injury.

- All plugs and terminal protection covers for the motor, mains, and DC connections must be installed within the IP20 enclosure to provide an IP20 protection rating. If plug and terminal covers are not installed, the protection rating is considered IP00.

The installation location is important. Full output current is available when the following installation conditions are met. For temperatures and altitudes outside this range, consult the *Derating* section in the design guide.

- Maximum surrounding air temperature: 40 °C (104 °F) in low overload or 50 °C (122 °F) in high overload.
- Minimum surrounding air temperature: -30 °C (-22 °F).
- Altitude < 1000 m (3280 ft) above sea level.
  1. Identify the frame and control board designations. See [Figure 1](#).
  2. Ensure that the operating environment and electrical installation meet the following standards:
    - a. Indoor unconditioned/pollution degree 2.
    - b. Overvoltage category 3.
  3. Review the wiring diagram based on the control board designation. See step 1 in the *Illustrations* section.

All wiring must comply with local and national regulations regarding cross-section and ambient temperature requirements. Loose connections can cause equipment faults or reduced performance. Tighten the terminals according to the proper torque value according to step 7 in the *Illustrations* section.

4. Review the fuse specifications. See step 2 in the *Illustrations* section.

This product is suitable for use on a circuit capable of delivering up to 100 kA short-circuit current rating (SCCR) at the respective drive voltage rating. For details, see the product label. For the short-circuit current rating for variants with

built-in disconnect or circuit breaker/combination motor controller, see the design guide. For IEC installations with semiconductor fuses, use suitable branch circuit protection according to local regulations.

5. Review the power cable specifications. See step 3 in the *Illustrations* section.

Use copper wire with a minimum 70 °C (158 °F) rating for Fx02–Fx07 enclosures and 90 °C (194 °F) rating for Fx08 enclosures. For aluminum wire, see the design guide.

6. Install the drive following the numbered steps in the *Illustrations* section. Certain illustrations/steps pertain to specific frame designations and are marked as such. If the illustration or step applies to all variants, the 2nd character in the frame designation is replaced with an x – for example Fx06 indicates FA06, FB06, and FK06.
  - a. Attach the components from the accessory bag to the drive. See step 4 in the *Illustrations* section.
  - b. Mount the drive on or against a solid, non-combustible mounting surface such as concrete or metal. See step 5 in the *Illustrations* section. Ensure proper cooling by providing minimum clearance (C) above and below the drive.
  - c. For frames FB06–FB08 and FK06–FK08, remove the cable entry plate from the base of the drive. Prepare the cable entry plate as shown in step 6 in the *Illustrations* section. Finally, reinstall the cable entry plate.

Some cable entry plates come with pre-drilled holes.

For frames FB06–FB08, the gasket that goes around the cable entry plate shown in step 6.4 in the *Illustrations* section is found in the accessory bag.

- d. Install and connect the motor, mains, and ground cables as shown in step 7 in the *Illustrations* section. For frames FB06–FB08, insert the stripped cable until the cable housing touches the plastic wall (A) as shown in the step 7.6 in the *Illustrations* section.
  - e. Install the control wiring. See step 8 in the *Illustrations* section.
  - f. Route the control cables to the left side of the drive. Secure the control cables using the shaded attachment points as shown in step 9 in the *Illustrations* section.
7. Securely fasten the cover to the drive.
8. Perform initial drive and motor setup. Consult the *iC7 Series Aqua Application Guide* or the *iC7 HVACR Application Guide*.
9. Configure the fieldbus. Consult the appropriate iC7 fieldbus operating guide.

## 1.6 Functional Safety (Safe Torque Off)

The drive is shipped with all safe inputs de-energized. Without extra wiring to the safe I/O terminal blocks (X31 and X32), the STO function is always active and the motor will not turn. For more information, refer to the *iC7-Aqua and iC7-HVACR Functional Safety Operating Guide* (136R0448).

- To disable the STO function, install jumper wires to terminals X31 and X32. See step 8 in the *Illustrations* section.
- To use the STO function, wire a safety device to 1 or both of the safe I/O terminal blocks. See step 1 in the *Illustrations* section. To prevent erroneous faults or warnings from occurring, any unused safe I/O terminal blocks must be disabled using jumper wires or a jumper clip. One jumper clip is included in the accessory bag.

### WARNING

#### RESIDUAL ROTATION

The STO function can be used for any type of motors. 2 faults can occur in the power semiconductor of the drive. A residual rotation can result from the faults. The rotation can be calculated to  $\text{angle} = 360 / (\text{number of pole pairs})$ .

- Ensure that this residual rotation does not pose a safety risk. The situation is not relevant for induction motors.

## NOTICE

A successful commissioning test of the STO function is required after the initial installation and after each subsequent change to the installation or application involving the STO.

### Commissioning test

There are 2 types of commissioning tests based on whether the STO parameter is configured for manual restart (M) or automatic restart (A). For more information on the STO parameter, see the application guide.

- If *Parameter 7.3.1 Safe Torque Off Response = Fault - reset required*, perform the steps marked with an "M".
- If *Parameter 7.3.1 Safe Torque Off Response = Warning - no reset required*, perform the steps marked with an "A".

**Table 1: Commissioning Test for STO Functionality**

Type of test	Commissioning steps	X
M/A	Power on the frequency converter.	
M/A	Verify that no safety faults are present.	
M/A	Start the motor.	
M/A	Without interrupting the mains supply, remove the 24 V DC voltage supply to both STO input terminals using the safety device.	
M/A	Verify that the motor coasts. This process can take some time.	
M/A	Verify that STO activated is shown on the control panel or in the event log.	
M/A	If the STO feedback is used, verify that STO is activated by checking the state of the STO Feedback.	
M/A	Reapply 24 V DC supply to both the STO input terminals.	
M/-	Verify that the motor remains in the coasted state and any connected relays remain activated.	
M/-	Send a reset signal via fieldbus, digital I/O, or the control panel.	
M/A	Verify that the motor starts up and runs within the original speed range.	

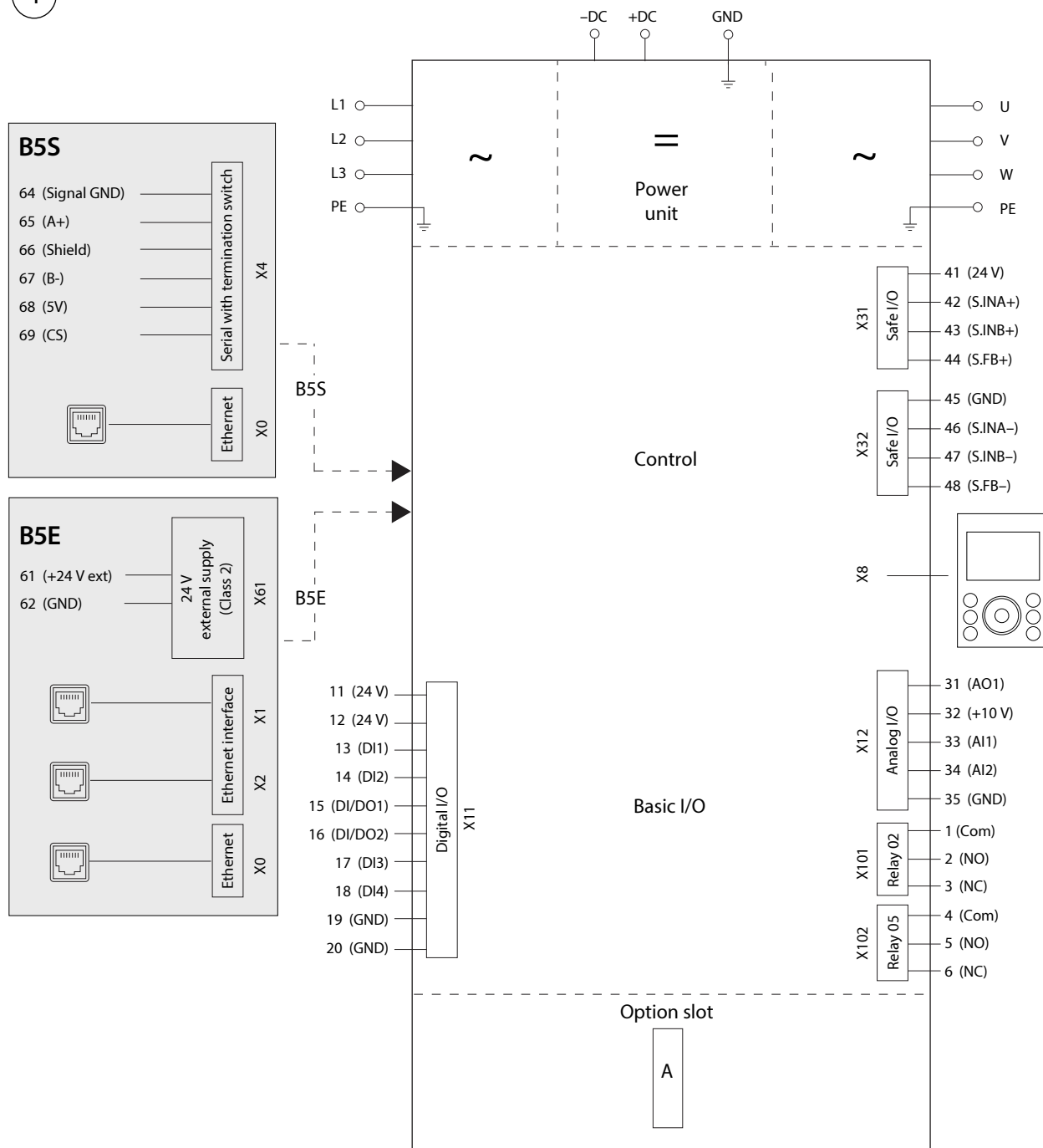
FA02-FA05 drives do not have Safe Torque Off functionality, and is indicated by an "X" in the last character of the compliance code. Terminals X31 and X32 are not present in these drives.

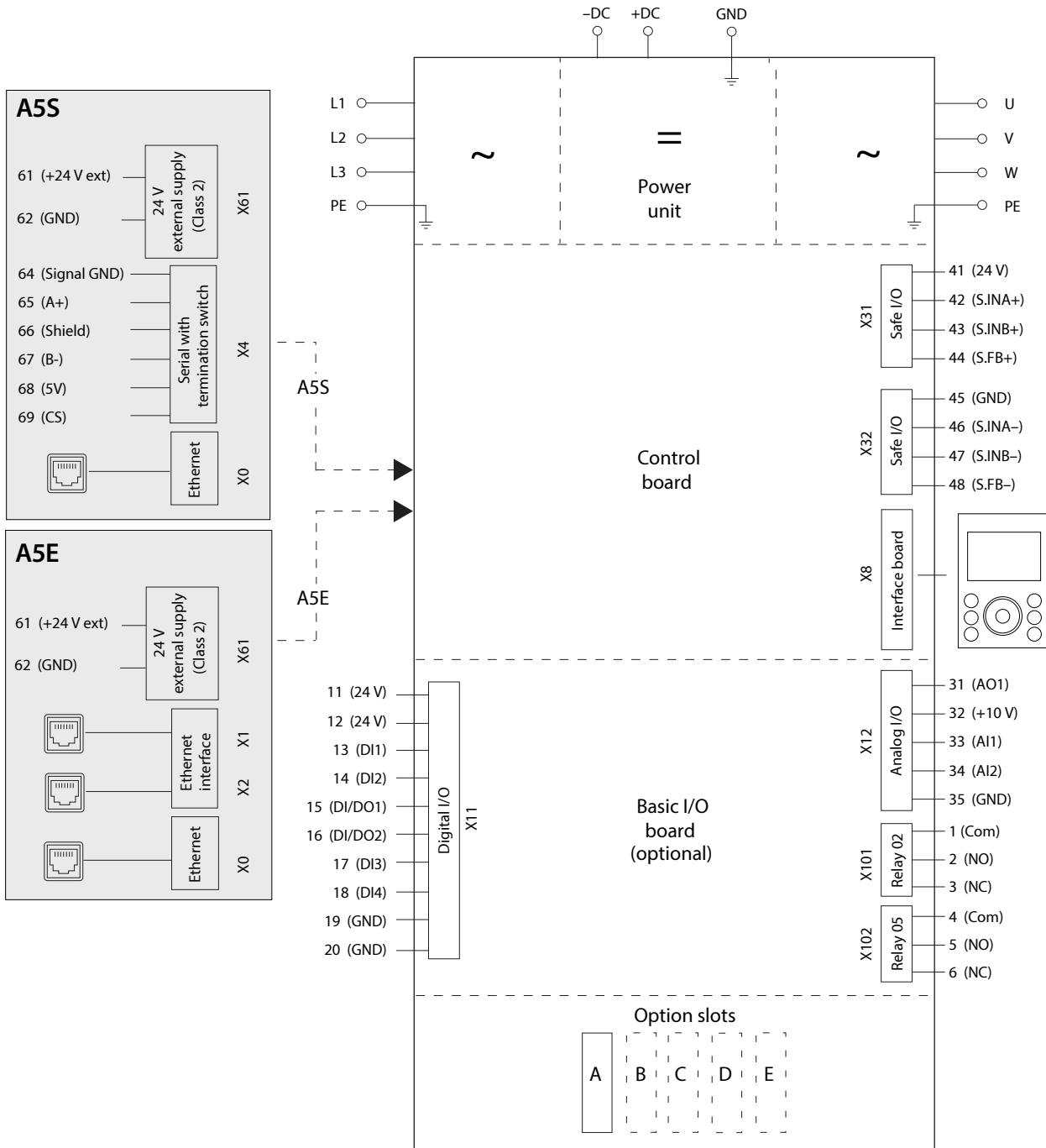
## 1.7 Power Losses and Efficiency

For power loss data including part load losses, see <https://energy.mydrive.danfoss.com>.

# Illustrations

1



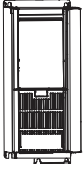
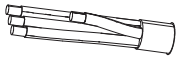
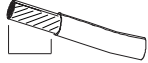
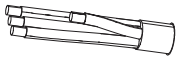
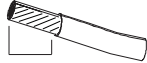


2

		IEC	UL	+	Type 1 L (cu. ft)
FA02	04-01A3	10 A, gG	3 A, RK5		52 (1.8)
FA02	04-01A8	10 A, gG	6 A, RK5		52 (1.8)
FA02	04-02A4	10 A, gG	6 A, RK5		52 (1.8)
FA02	04-03A0	10 A, gG	10 A, RK5		52 (1.8)
FA02	04-04A0	10 A, gG	10 A, RK5		52 (1.8)
FA02	04-05A6	10 A, gG	10 A, RK5		52 (1.8)
FA02	04-07A2	10 A, gG	15 A, RK5		52 (1.8)
FA02	04-09A2	16 A, gG	15 A, RK5		52 (1.8)
FA02	04-12A5	20 A, gG	20 A, RK5		52 (1.8)
FA02	04-16A0	25 A, gG	25 A, RK5		52 (1.8)
FA04	04-24A0	40 A, gG	40 A, RK5		96 (3.4)
FA04	04-31A0	50 A, gG	50 A, RK5		96 (3.4)
FA04	04-38A0	50 A, gG	60 A, RK5		96 (3.4)
FA05	04-43A0	63 A, gG	70 A, RK5		96 (3.4)
FA06	04-61A0	80 A, gG	80 A, T/J		192 (6.8)
FA06	04-73A0	100 A, gG	100 A, T/J		192 (6.8)
FA07	04-90A0	125 A, gG	125 A, T/J		240 (8.5)
FA07	04-106A	160 A, gG	150 A, T/J		240 (8.5)
FA08	04-147A	200 A, gG	200 A, T/J		288 (10.2)
FA08	04-170A	224 A, gG	225 A, T/J		288 (10.2)
FB06/FK06	04-61A0	80 A, gG	80 A, T/J		-
FB06/FK06	04-73A0	100 A, gG	100 A, T/J		-
FB07/FK07	04-90A0	125 A, gG	125 A, T/J		-
FB07/FK07	04-106A	160 A, gG	160 A, T/J		-
FB08/FK08	04-147A	200 A, gG	200 A, T/J		-
FB08/FK08	04-170A	224 A, gG	225 A, T/J		-

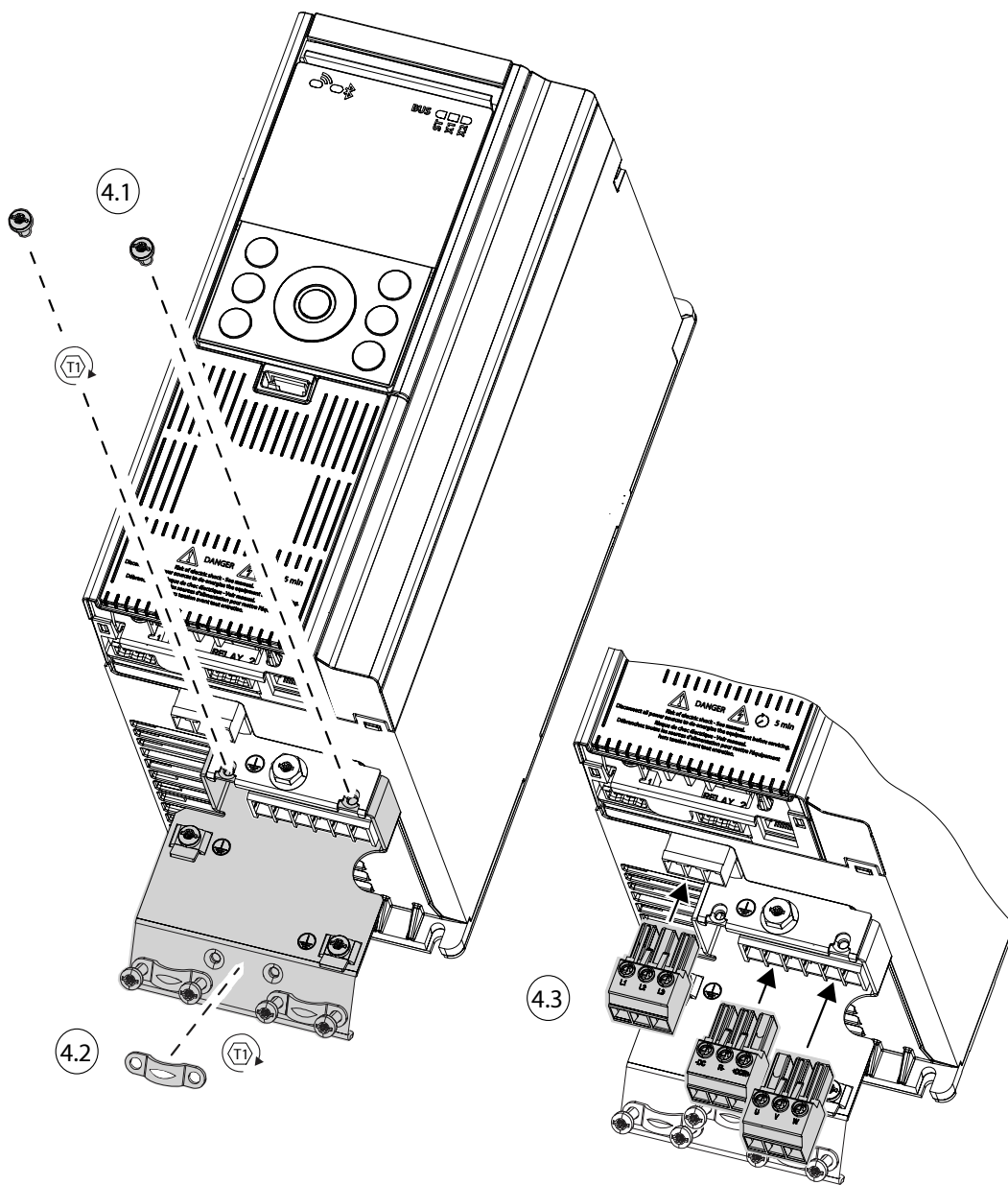
3

e30bm741.17

		L1/L2/L3 (U/V/W)		-DC, +DC	
		 [mm <sup>2</sup> (AWG)]	 [mm (in)]	 [mm <sup>2</sup> (AWG)]	 [mm (in)]
FA02	04-01A3	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-01A8	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-02A4	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-03A0	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-04A0	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-05A6	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-07A2	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FA02	04-09A2	4-6 (12-10)	10 (0.4)	4-6 (12-10)	10 (0.4)
FA02	04-12A5	4-6 (12-10)	10 (0.4)	4-6 (12-10)	10 (0.4)
FA02	04-16A0	4-6 (12-10)	10 (0.4)	4-6 (12-10)	10 (0.4)
FA04	04-24A0	6-16 (10-6)	15 (0.6)	6-16 (10-6)	15 (0.6)
FA04	04-31A0	6-16 (10-6)	15 (0.6)	6-16 (10-6)	15 (0.6)
FA04	04-38A0	6-16 (10-6)	15 (0.6)	6-16 (10-6)	15 (0.6)
FA05	04-43A0	10-25 (8-4)	22 (0.9)	10-25 (8-4)	22 (0.9)
FA06	04-61A0	16-50 (6-1)	17 (0.7)	16-50 (6-1)	17 (0.7)
FA06	04-73A0	16-50 (6-1)	17 (0.7)	16-50 (6-1)	17 (0.7)
FA07	04-90A0	35-95 (2-3/0)	22 (0.9)	16-50 (6-1)	17 (0.7)
FA07	04-106A	35-95 (2-3/0)	22 (0.9)	16-50 (6-1)	17 (0.7)
FA08	04-147A	50-150 (1-300 mcm)	29 (1.1)	35-95 (2-3/0)	22 (0.9)
FA08	04-170A	50-150 (1-300 mcm)	29 (1.1)	35-95 (2-3/0)	22 (0.9)

FB03/FK03	04-01A3	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-01A8	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-02A4	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-03A0	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-04A0	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-05A6	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-07A2	1.5-4 (16-12)	10 (0.4)	1.5-4 (16-12)	10 (0.4)
FB03/FK03	04-09A2	2.5-6 (14-10)	10 (0.4)	2.5-6 (14-10)	10 (0.4)
FB03/FK03	04-12A5	2.5-6 (14-10)	10 (0.4)	2.5-6 (14-10)	10 (0.4)
FB03/FK03	04-16A0	4-6 (12-10)	10 (0.4)	4-6 (12-10)	10 (0.4)
FB03/FK03	04-24A0	4-6 (12-10)	10 (0.4)	6-10 (10-8)	10 (0.4)
FB05/FK05	04-31A0	6-16 (10-6)	10 (0.4)	6-16 (10-6)	10 (0.4)
FB05/FK05	04-38A0	6-16 (10-6)	10 (0.4)	6-16 (10-6)	10 (0.4)
FB05/FK05	04-43A0	10-16 (8-6)	10 (0.4)	10-25 (8-4)	10 (0.4)
FB06/FK06	04-61A0	16-50 (6-1)	17 (0.7)	16-50 (6-1)	17 (0.7)
FB06/FK06	04-73A0	16-50 (6-1)	17 (0.7)	16-50 (6-1)	17 (0.7)
FB07/FK07	04-90A0	35-95 (2-3/0)	22 (0.9)	16-50 (6-1)	17 (0.7)
FB07/FK07	04-106A	35-95 (2-3/0)	22 (0.9)	16-50 (6-1)	17 (0.7)
FB08/FK08	04-147A	50-120 (1-4/0)	29 (1.1)	35-95 (2-3/0)	22 (0.9)
FB08/FK08	04-170A	50-120 (1-4/0)	29 (1.1)	35-95 (2-3/0)	22 (0.9)

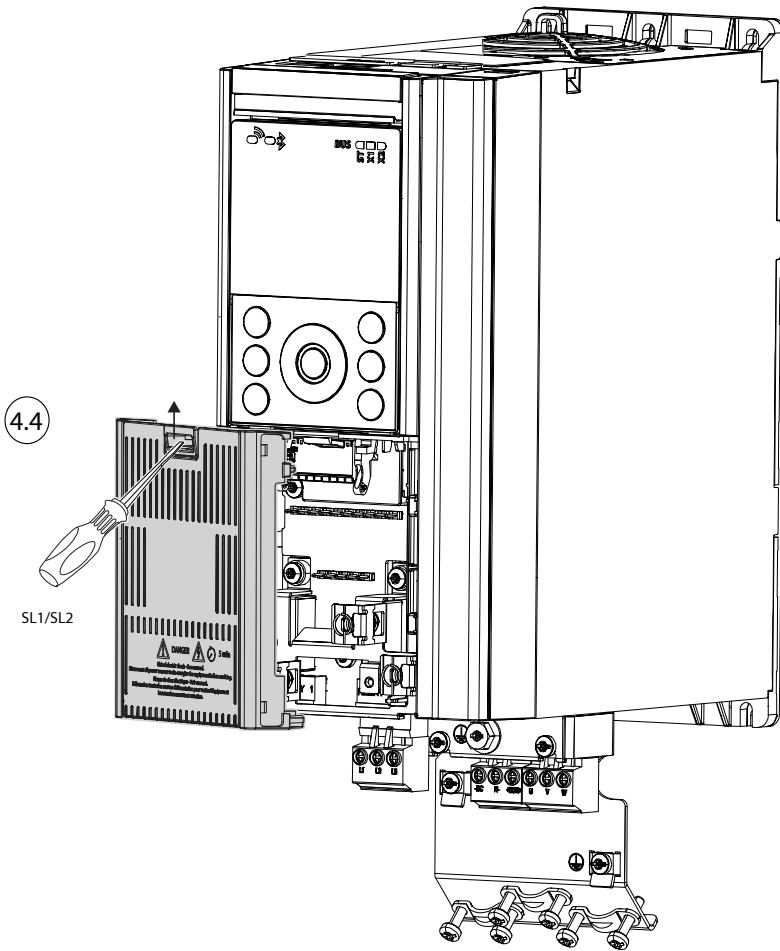
4 FA02-FA05



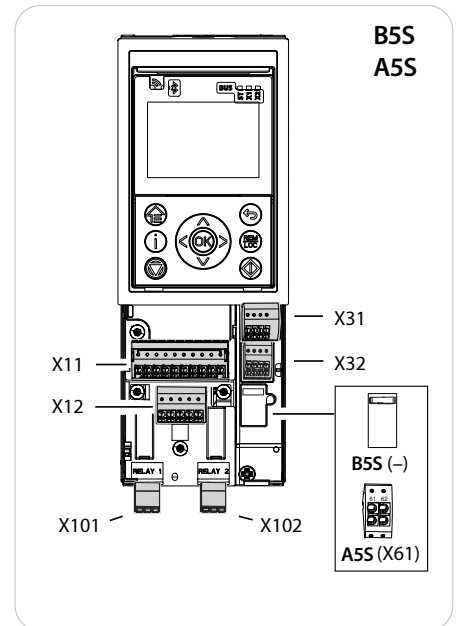
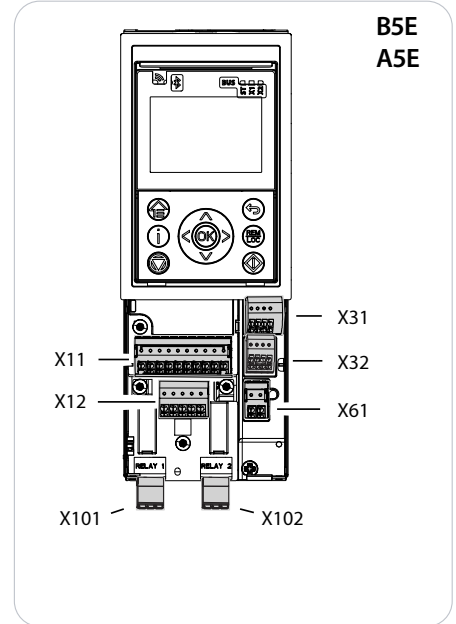
$\left( \overline{T} \right)$  - [2 Nm (18 in-lb)]

FA02-FA05

e30bnd453.10



4.5

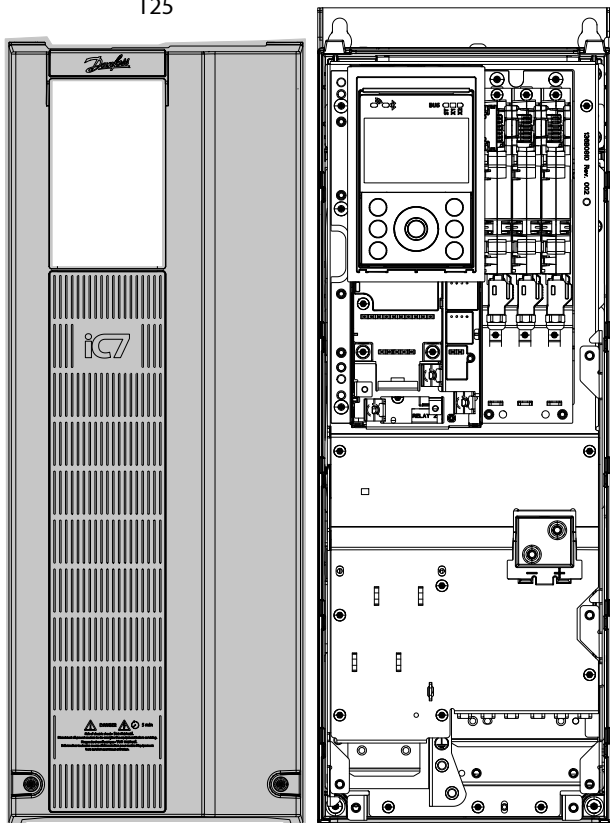


FA06-FA07

4.1

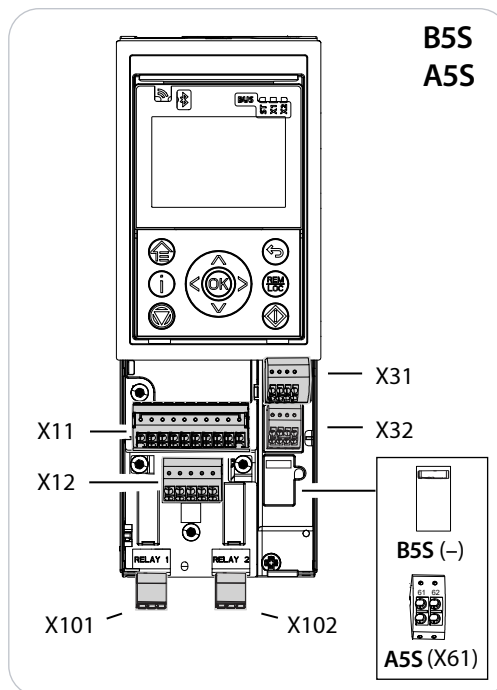
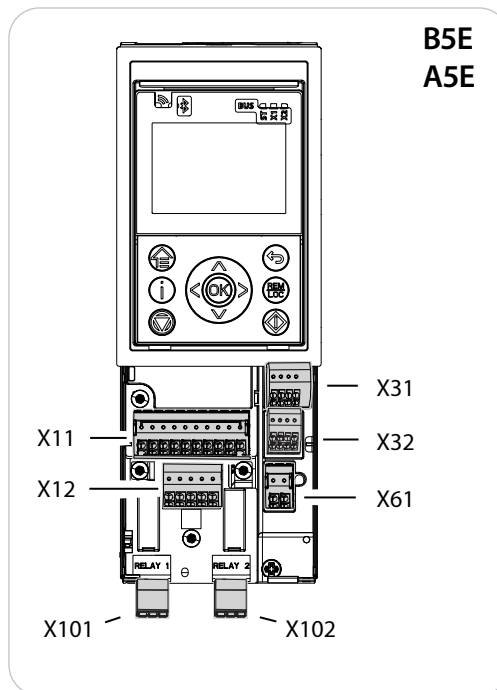


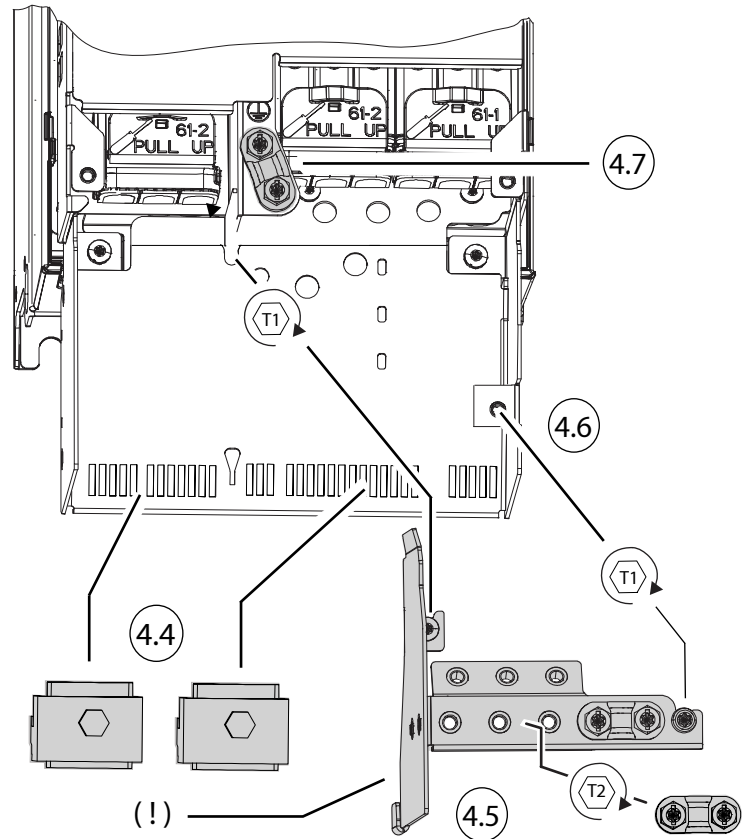
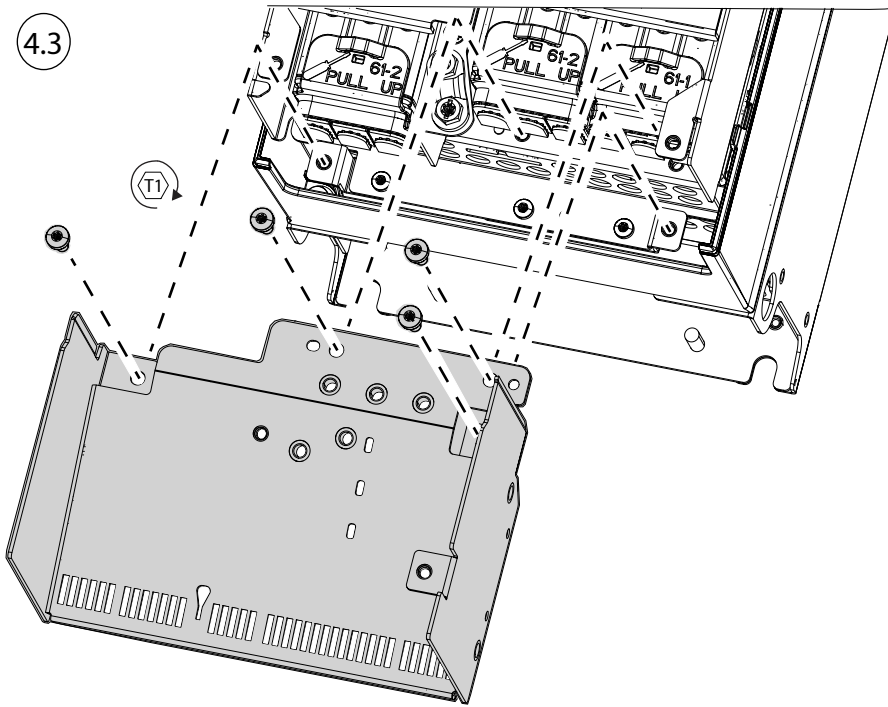
T25



T1 - [3.5 Nm (31 in-lb)]

4.2





$T_1$  - [3.5 Nm (31 in-lb)]

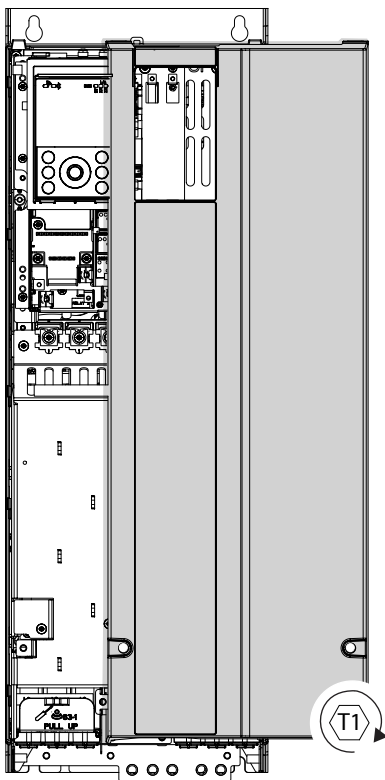
$T_2$  - [2 Nm (18 in-lb)]

FA08

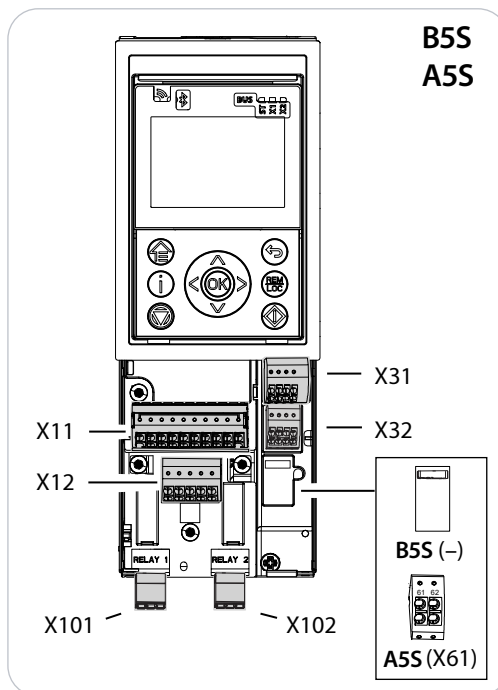
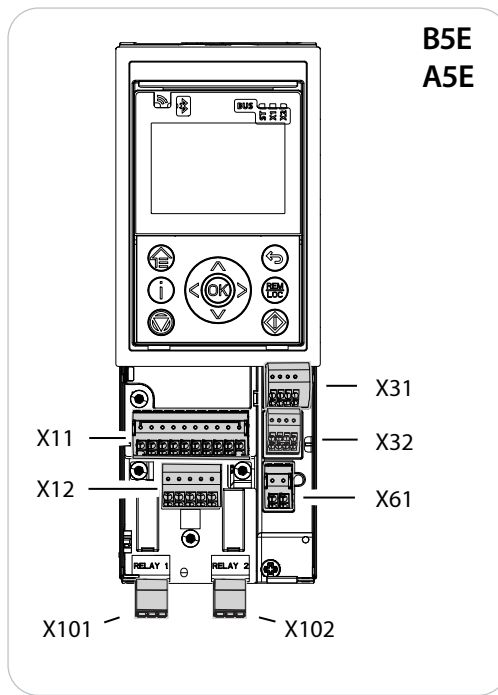
4.1



T25

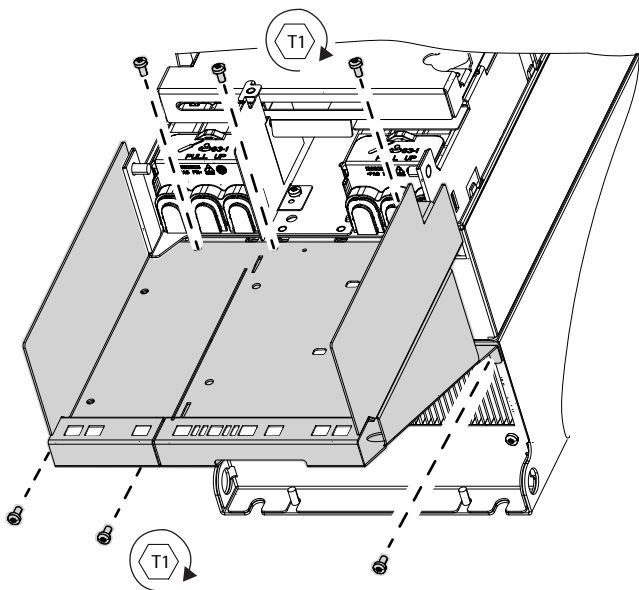


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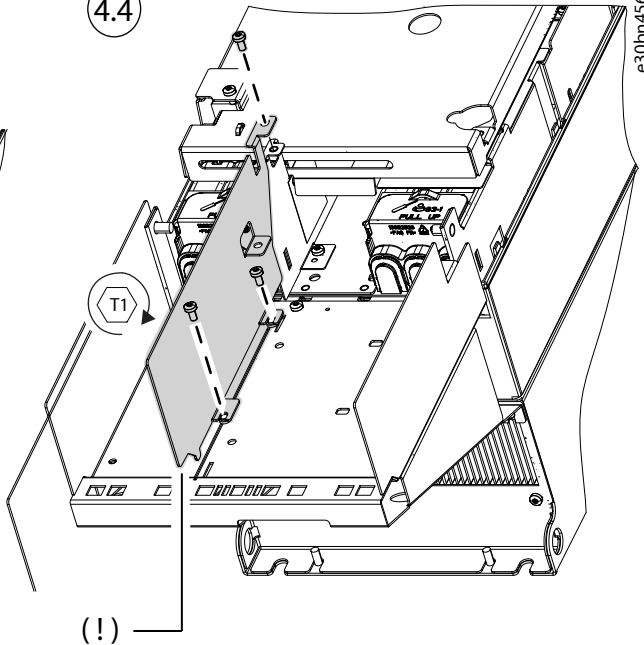


$\text{T1}$  - [3.5 Nm (31 in-lb)]

4.3

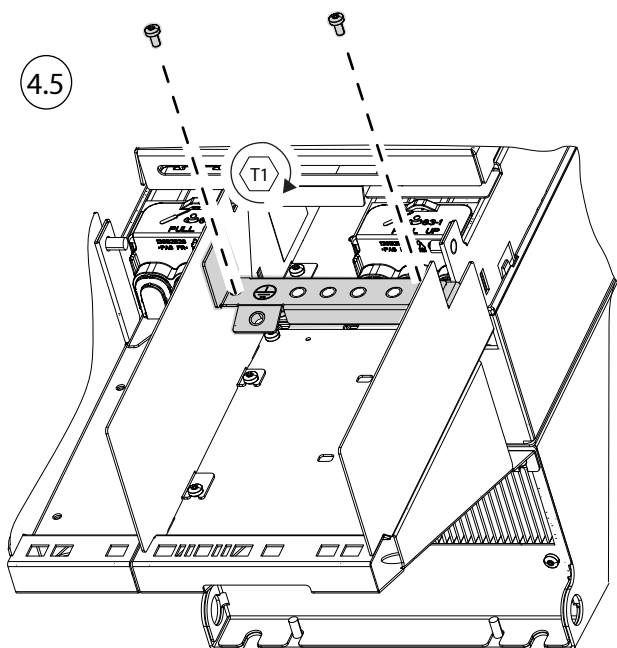


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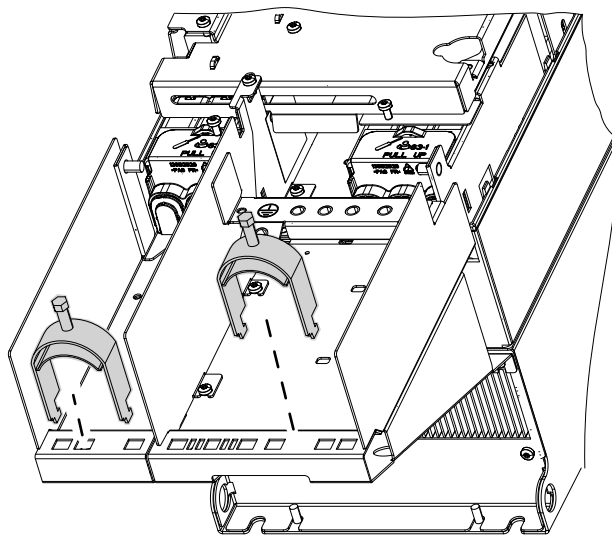


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4.5



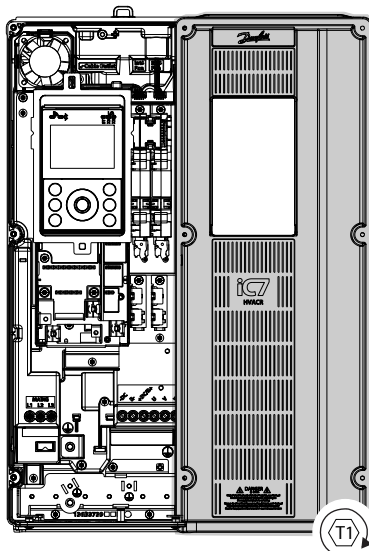
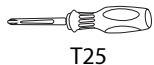
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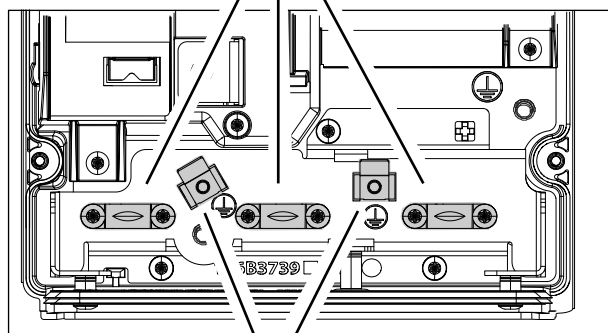
$T_1$  - [3.5 Nm (31 in-lb)]

**FB03**

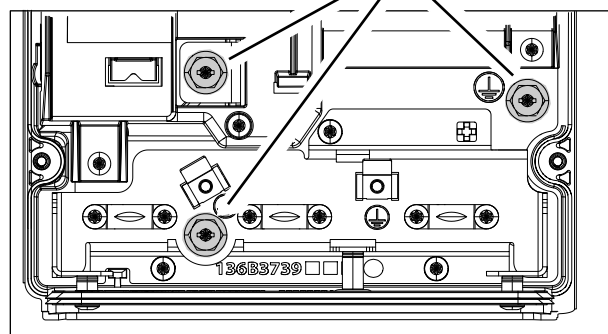
4.1



4.2

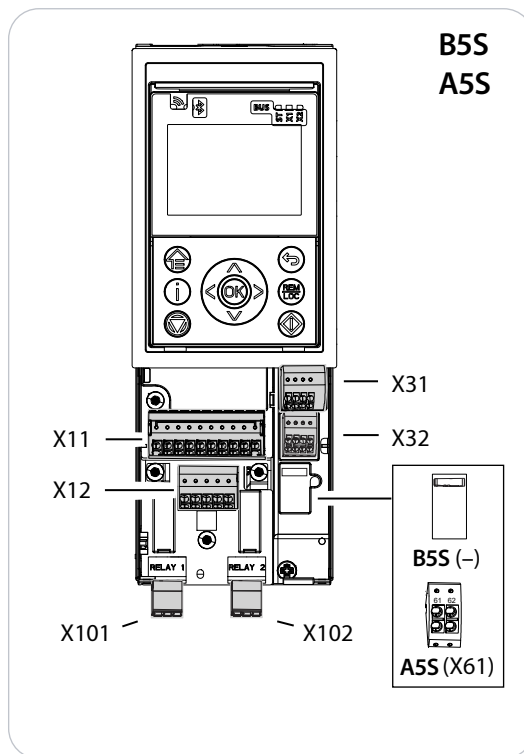
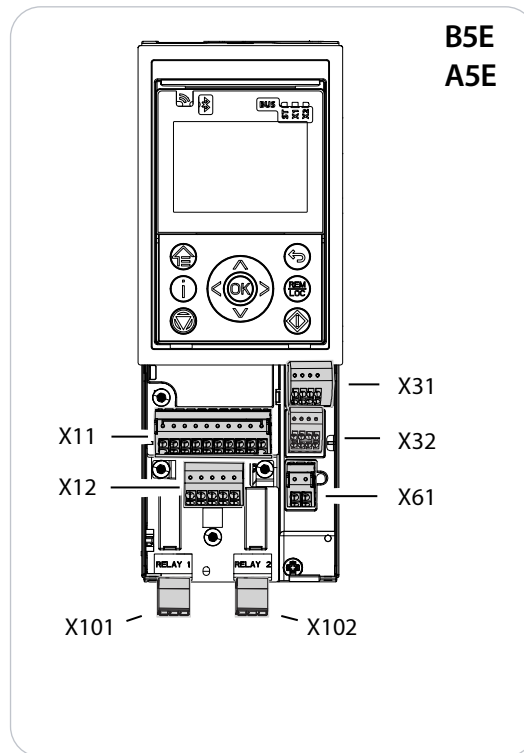


4.3



4.4

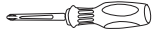
4.5



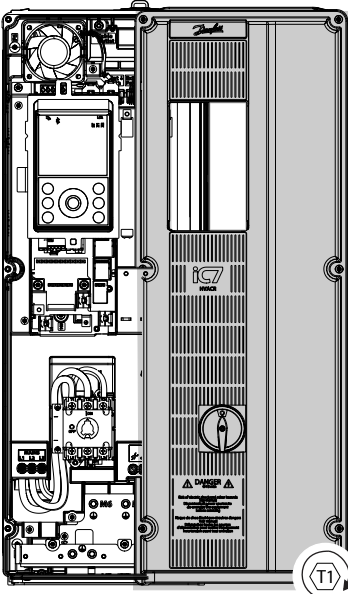
**T** - [3.5 Nm (31 in-lb)]

FB05

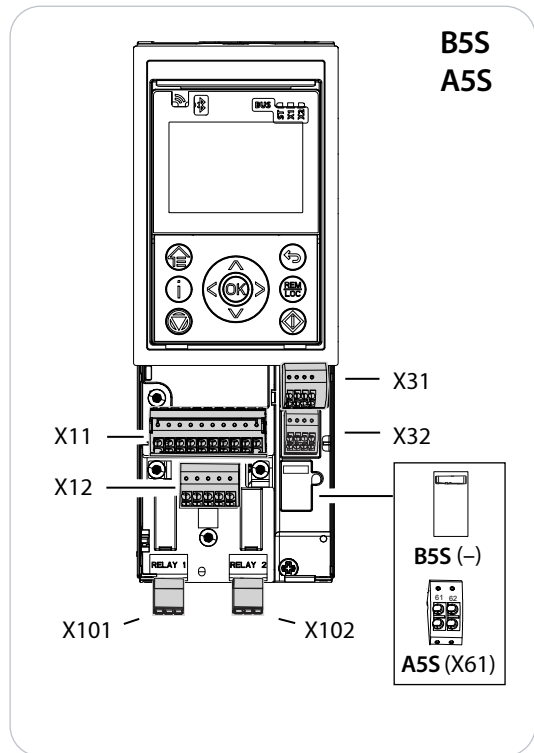
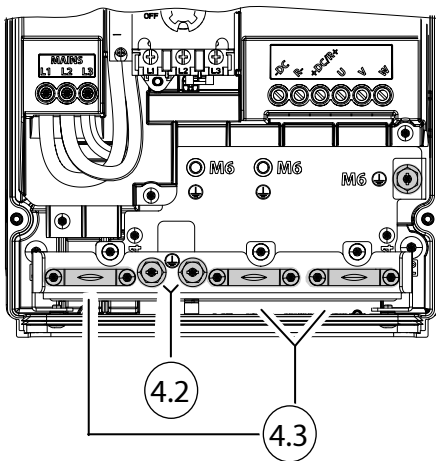
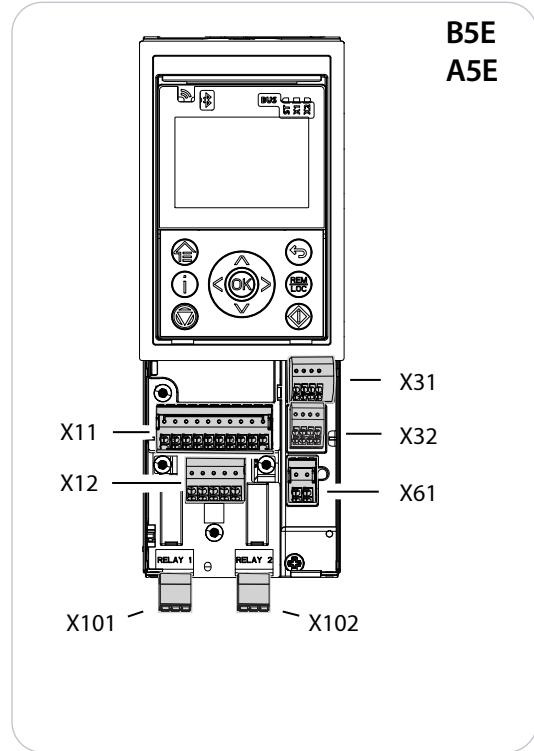
4.1



T25



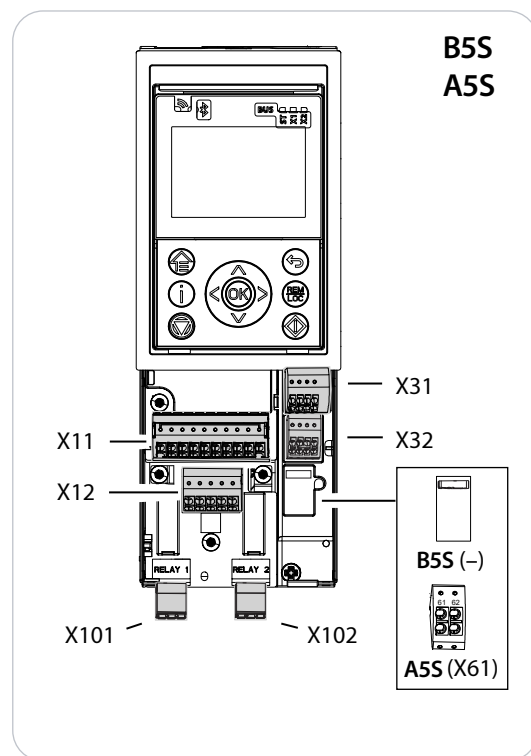
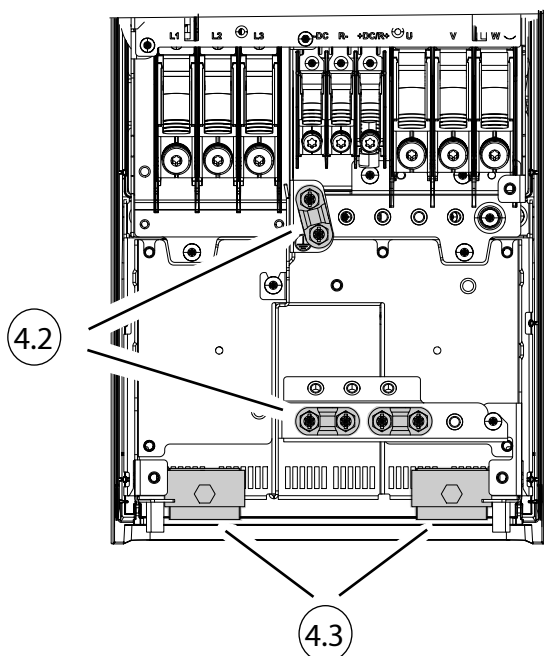
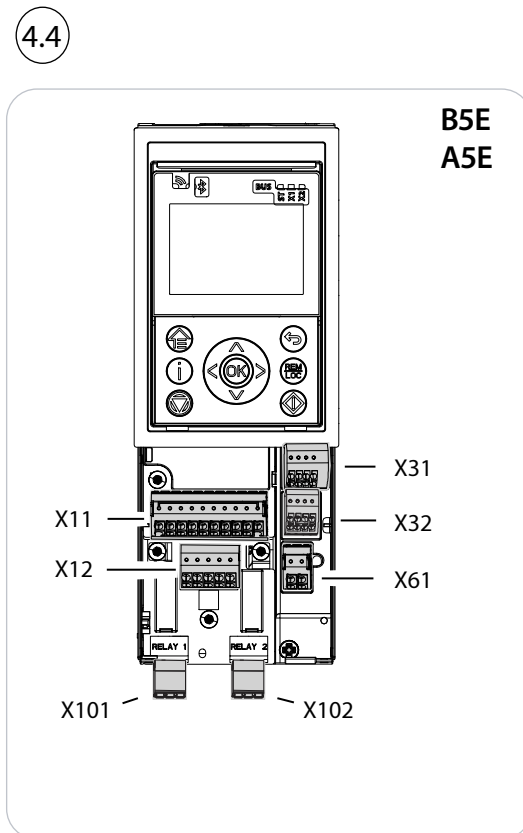
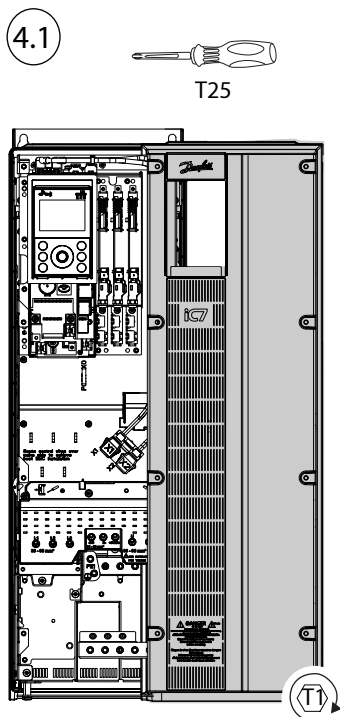
4.4



(T) - [3.5 Nm (31 in-lb)]

FB06–FB07

e30bm844.11

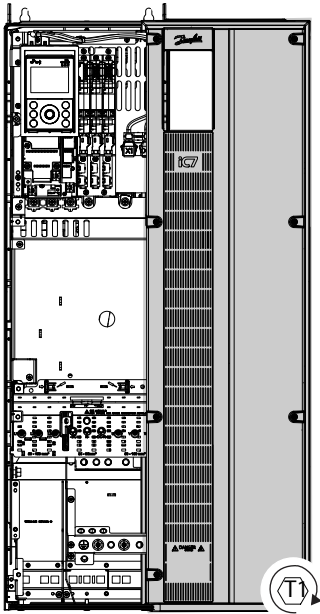
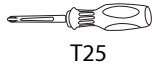


- [3.5 Nm (31 in-lb)]

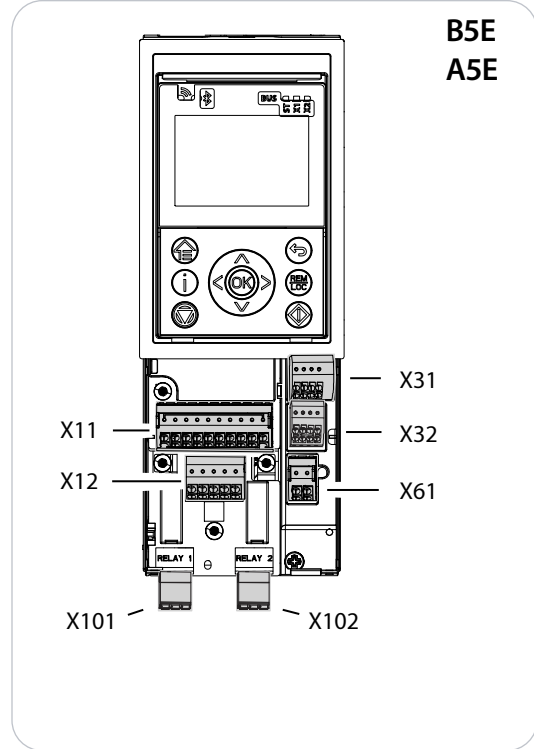
FB08

e30bm845.11

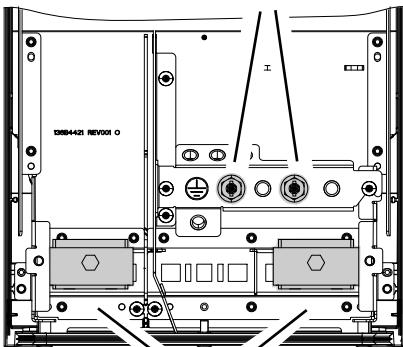
4.1



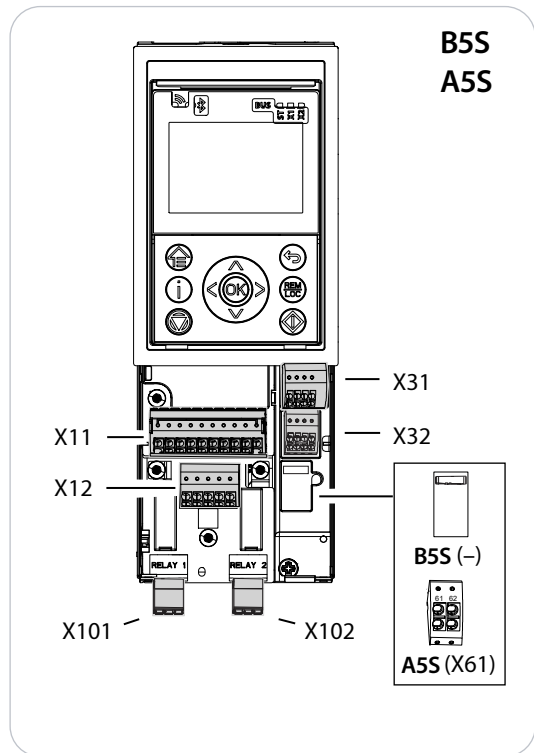
4.4



4.2



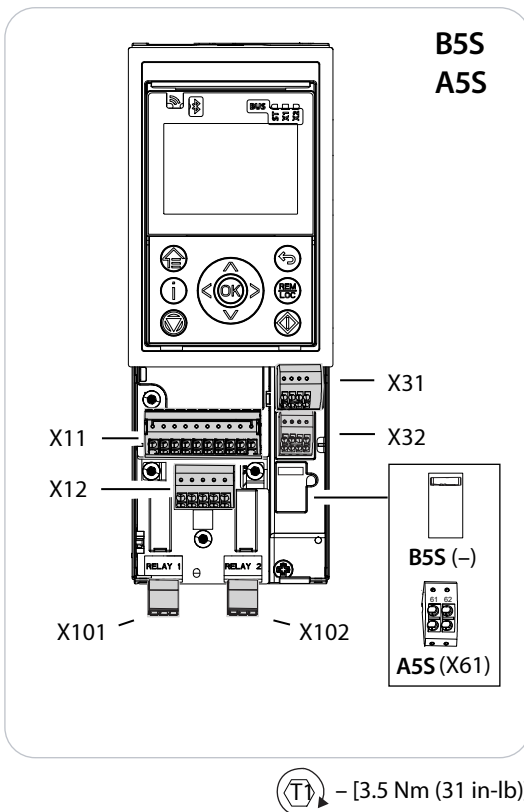
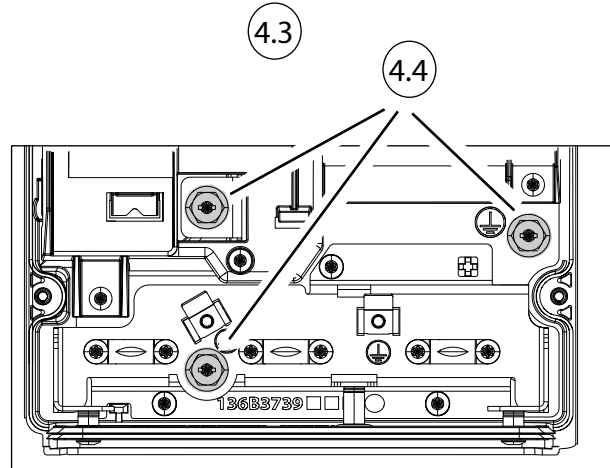
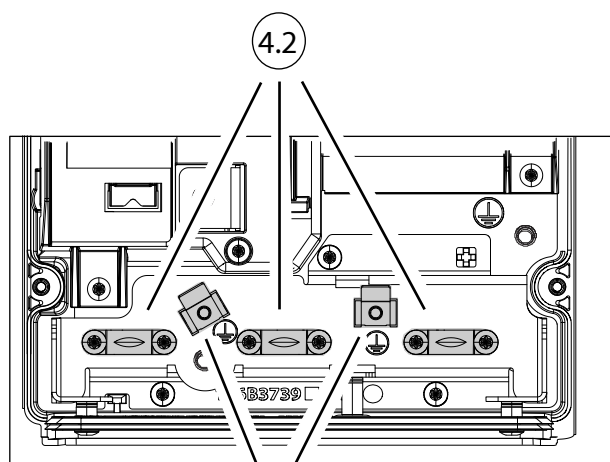
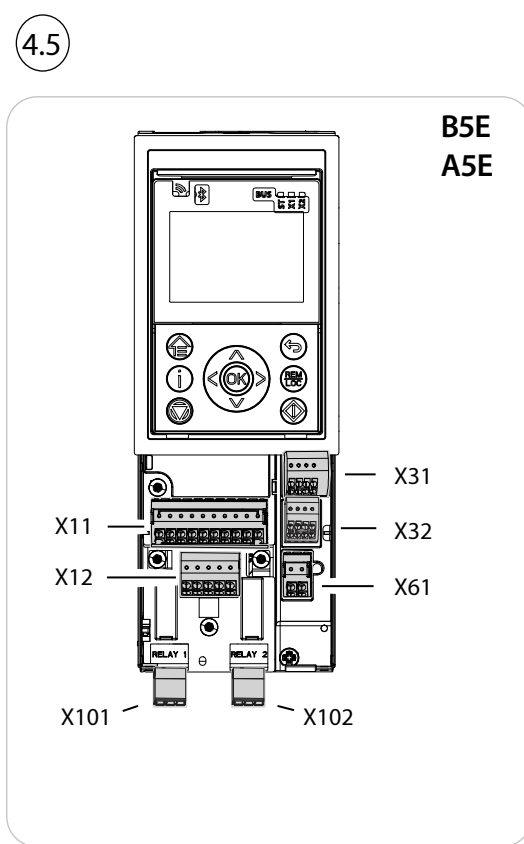
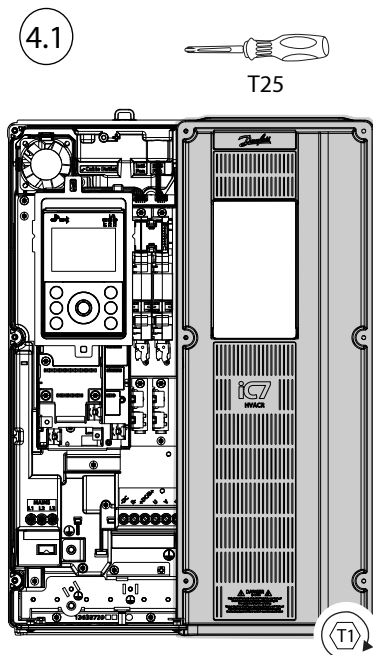
4.3



- [3.5 Nm (31 in-lb)]

FK03

e30bn305.10



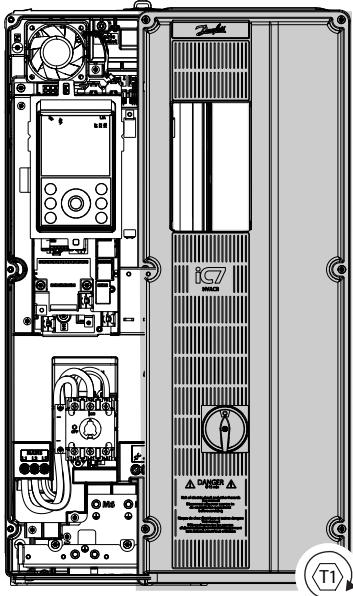
FK05

e30bn306.10

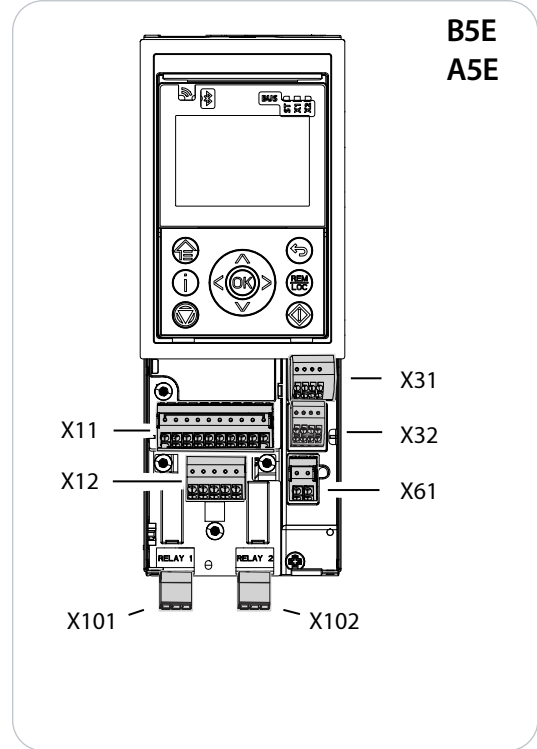
4.1



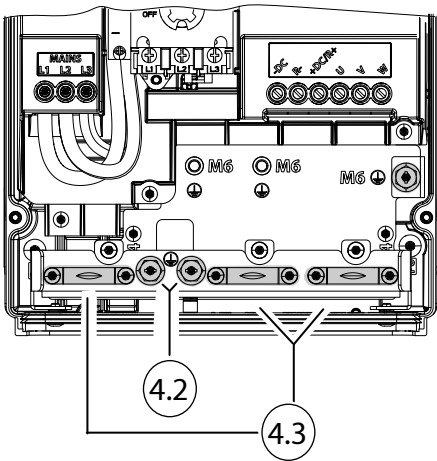
T25



4.4

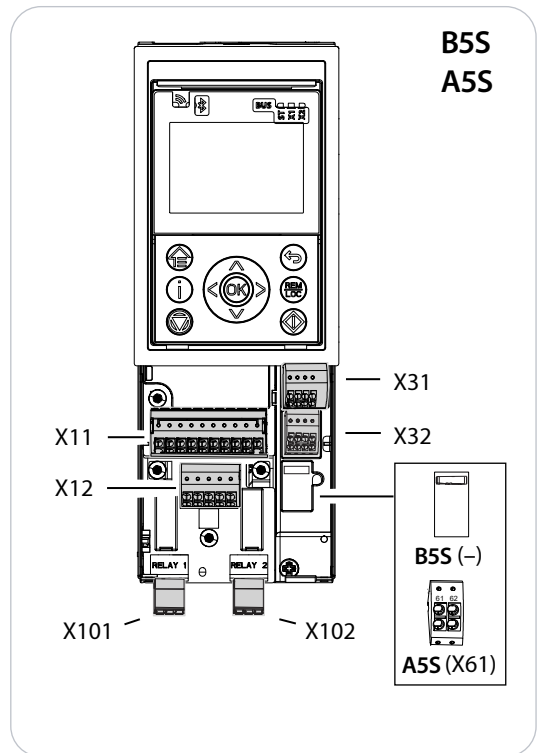


B5E  
A5E



4.2

4.3

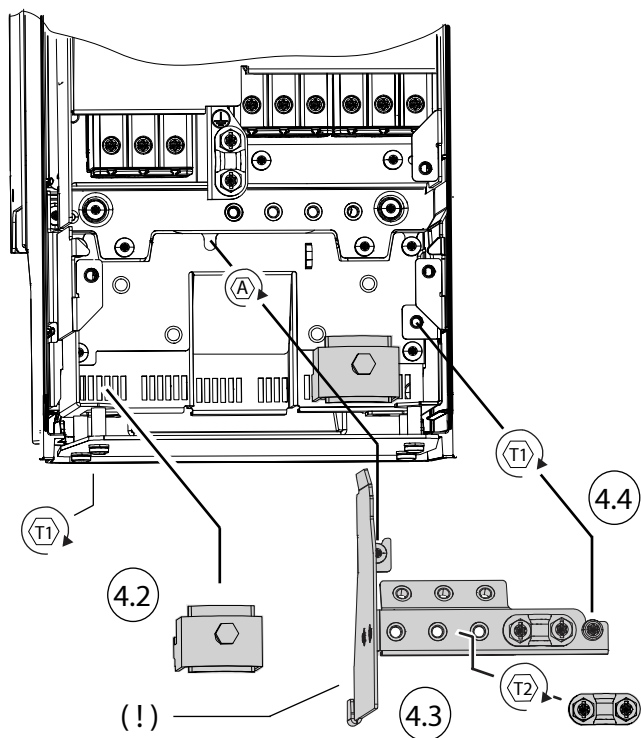
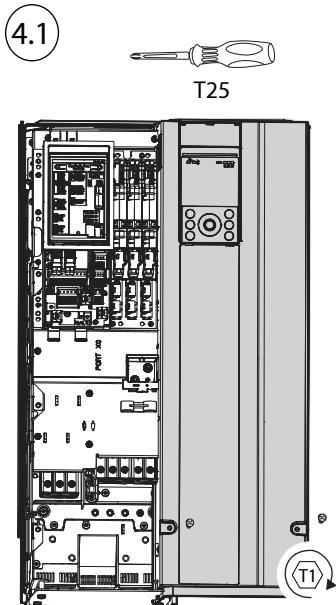


B5S  
A5S

- [3.5 Nm (31 in-lb)]

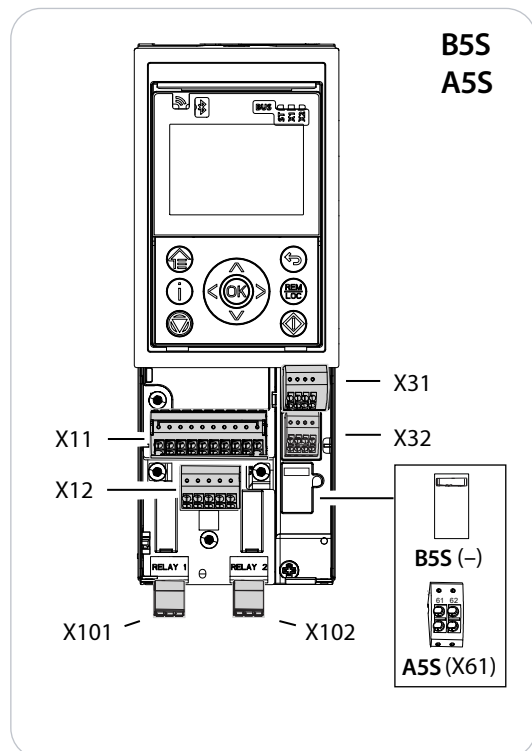
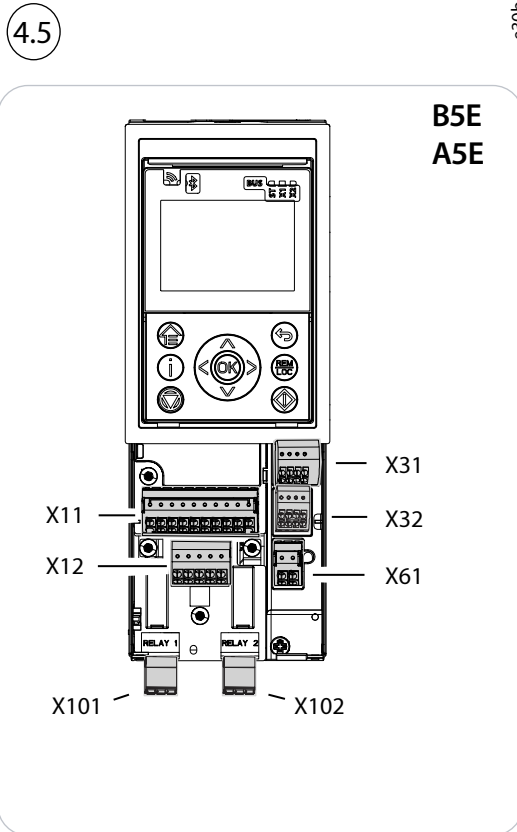
**FK06–FK07**

e30bm744.12



T1 – [3.5 Nm (31 in-lb)]

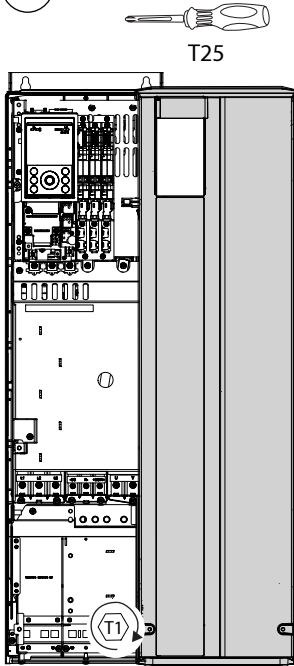
T2 – [2 Nm (18 in-lb)]



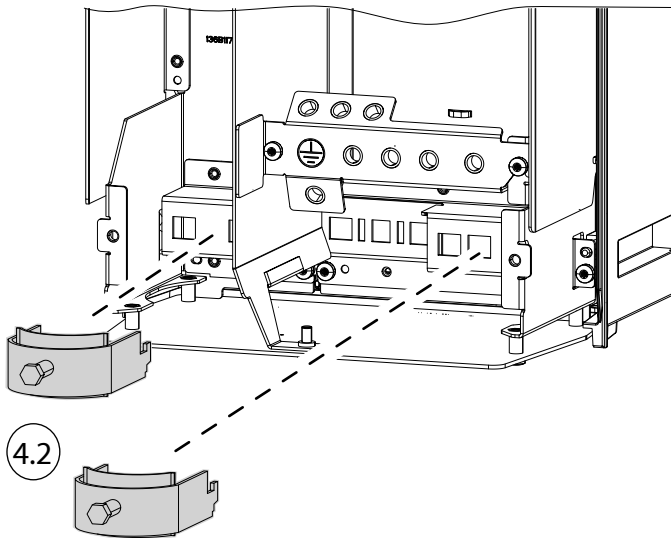
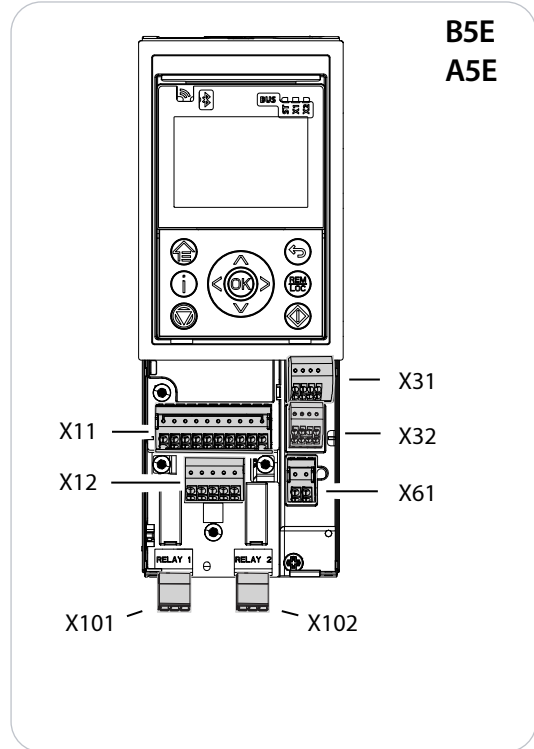
FK08

e30bm745.12

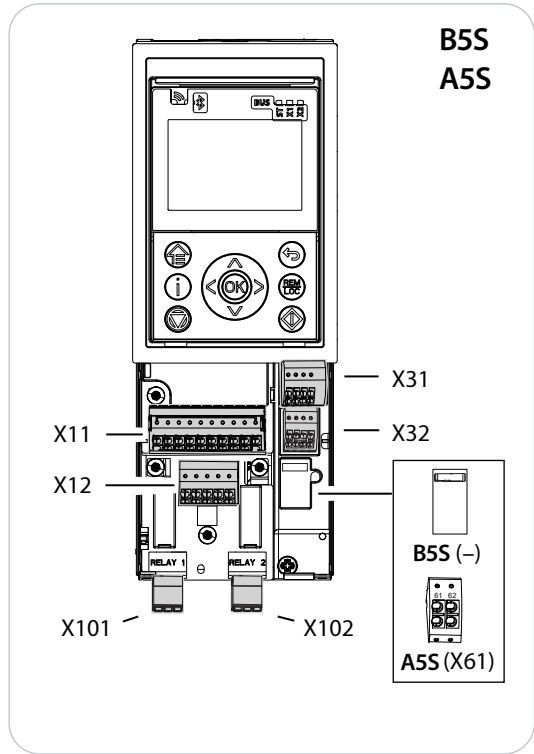
4.1



4.3



4.2

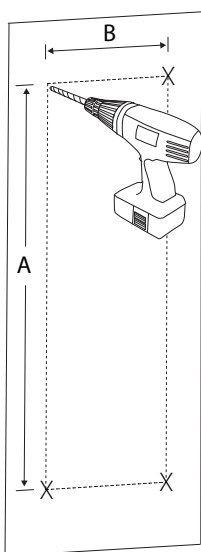


(T1) - [3.5 Nm (31 in-lb)]

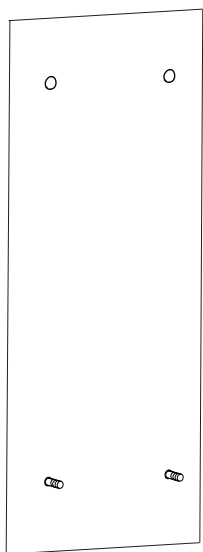
5

[mm (in)]	FA02	FA03	FA04	FA04	FB03/FK03	FB05/FK05	Fx06	Fx07	Fx08
A	257 (10.1)	257 (10.1)	380 (15.0)	380 (15.0)	460 (18.1)	557 (21.9)	535 (21.1)	580 (22.1)	721 (28.4)
B	70 (2.8)	94 (3.7)	105 (4.1)	140 (5.5)	150 (6.1)	187 (7.4)	170 (6.7)	200 (7.9)	200 (7.9)
C	100 (3.9)	100 (3.9)	100 (3.9)	100 (3.9)	100 (3.9)	100 (3.9)	200 (7.9)	200 (7.9)	200 (7.9)
	4 x M5	4 x M5	4 x M6	4 x M6	4 x M6	4 x M6	4 x M8	4 x M8	4 x M8

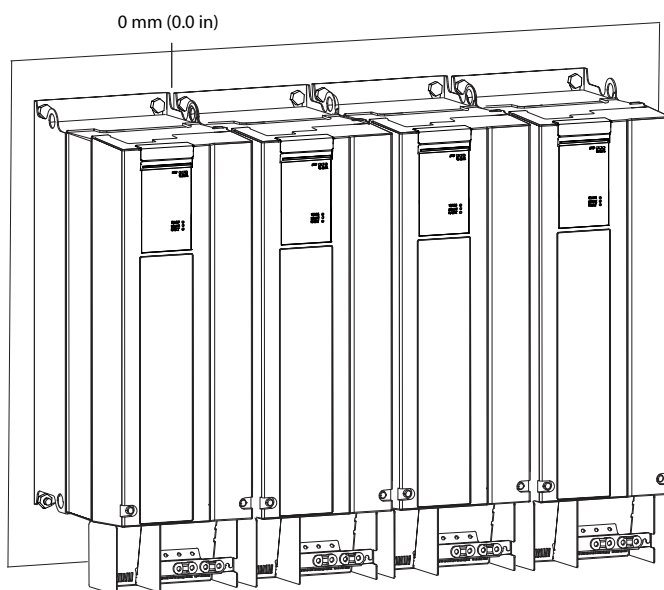
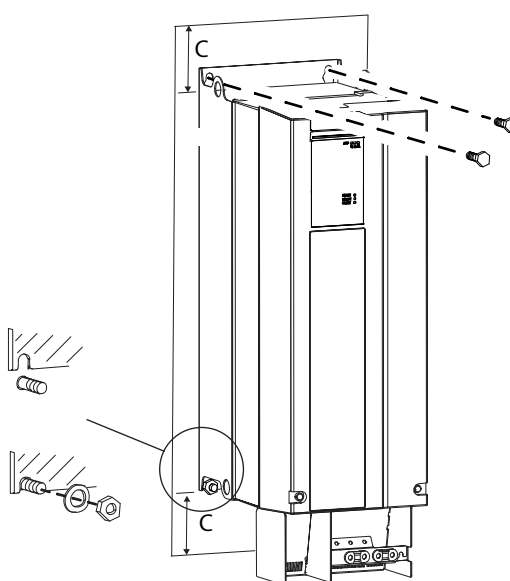
5.1



5.2

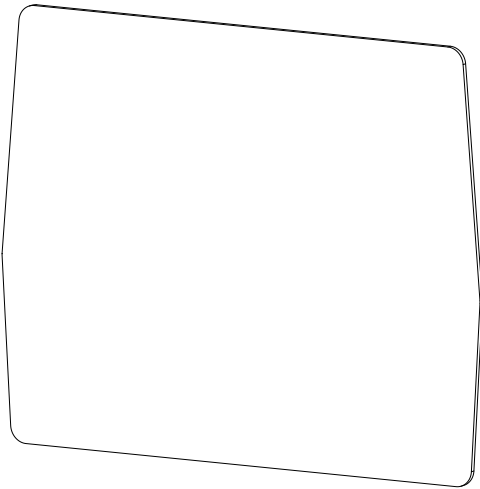


5.3

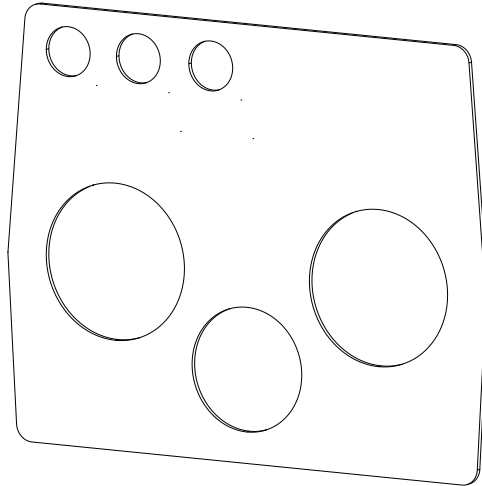


6 FB03–FB08/FK06 –FK08

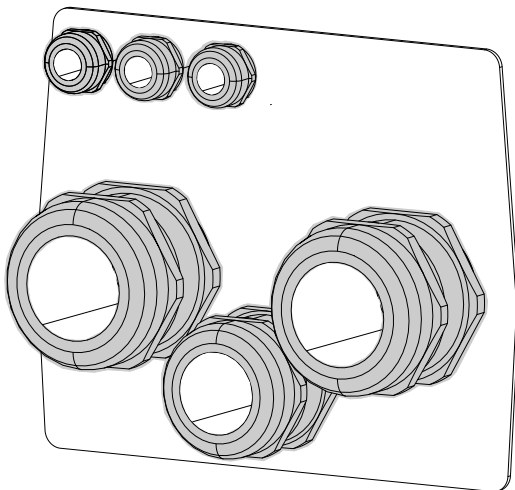
6.1



6.2

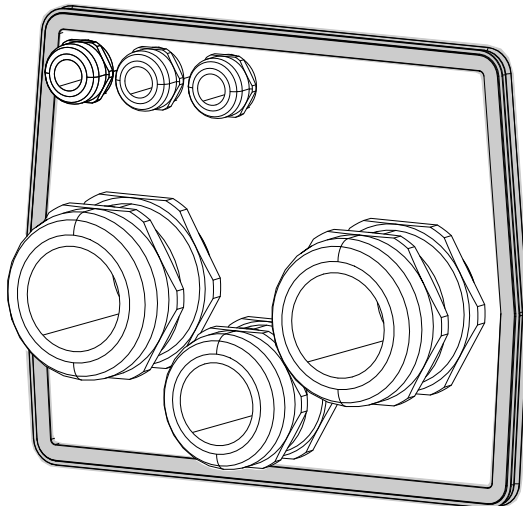


6.3

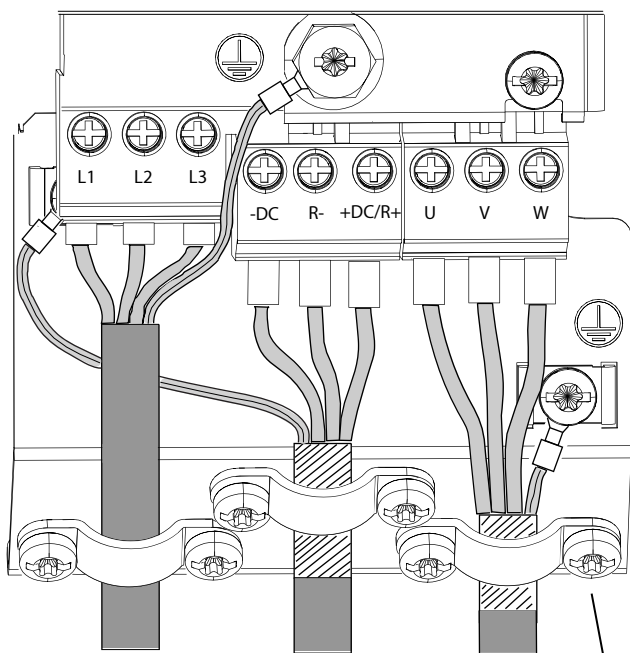


6.4

(FB03–FB08)



7 Fx02– Fx03



1 Nm (9 in-lb)

Fx02 Fx03	L1, L2, L3	0.7 Nm (6 in-lb)
	U, V, W	0.7 Nm (6 in-lb)
	-DC, R-, +DC/R+	0.7 Nm (6 in-lb)
Fx04	L1, L2, L3	1.2–1.5 Nm (11–13 in-lb)
	U, V, W	1.2–1.5 Nm (11–13 in-lb)
	-DC, R-, +DC/R+	1.2–1.5 Nm (11–13 in-lb)
Fx05	L1, L2, L3	2.0–2.5 Nm (18–22 in-lb)
	U, V, W	2.0–2.5 Nm (18–22 in-lb)
	-DC, R-, +DC/R+	2.0–2.5 Nm (18–22 in-lb)
		3 Nm (26 in-lb)

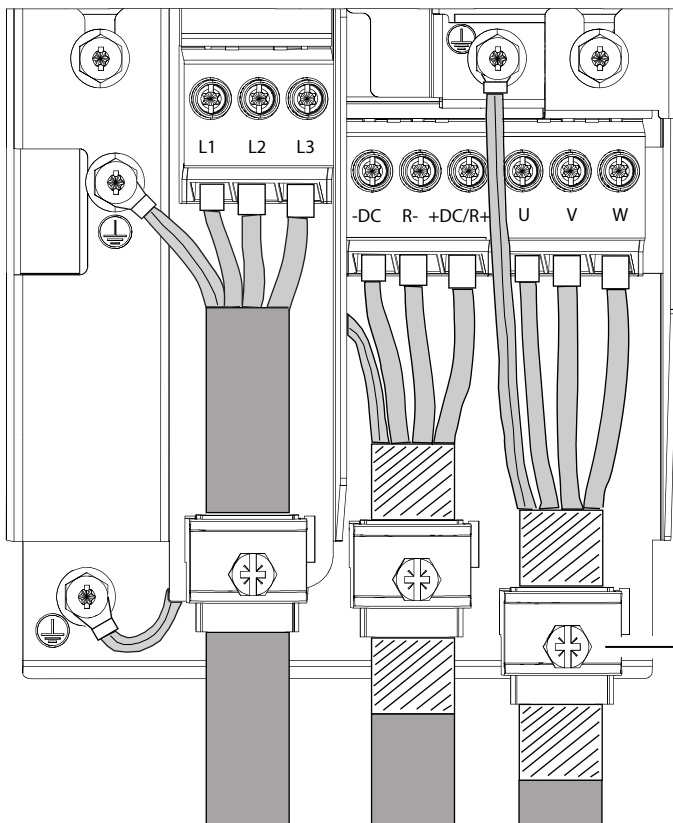


SL1/PZ1/T15

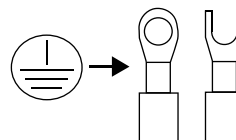


10 mm

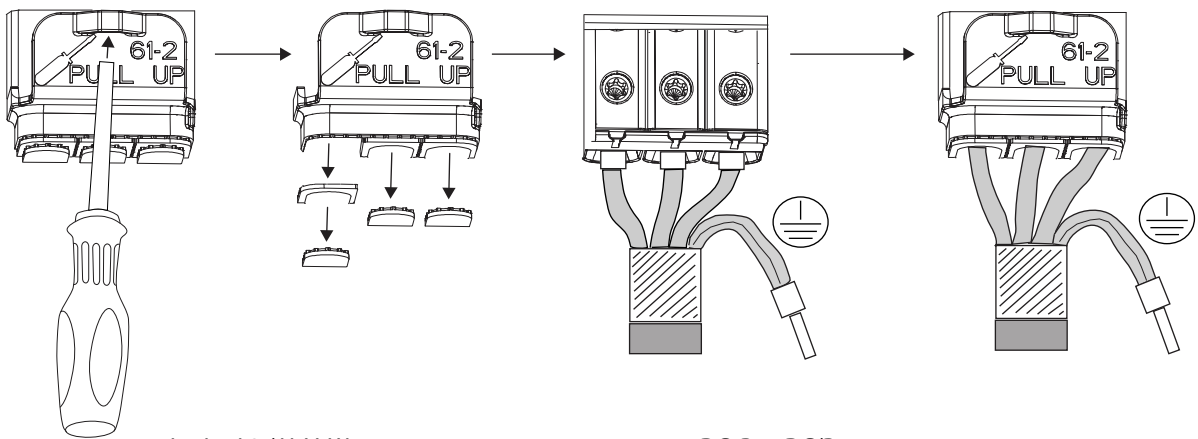
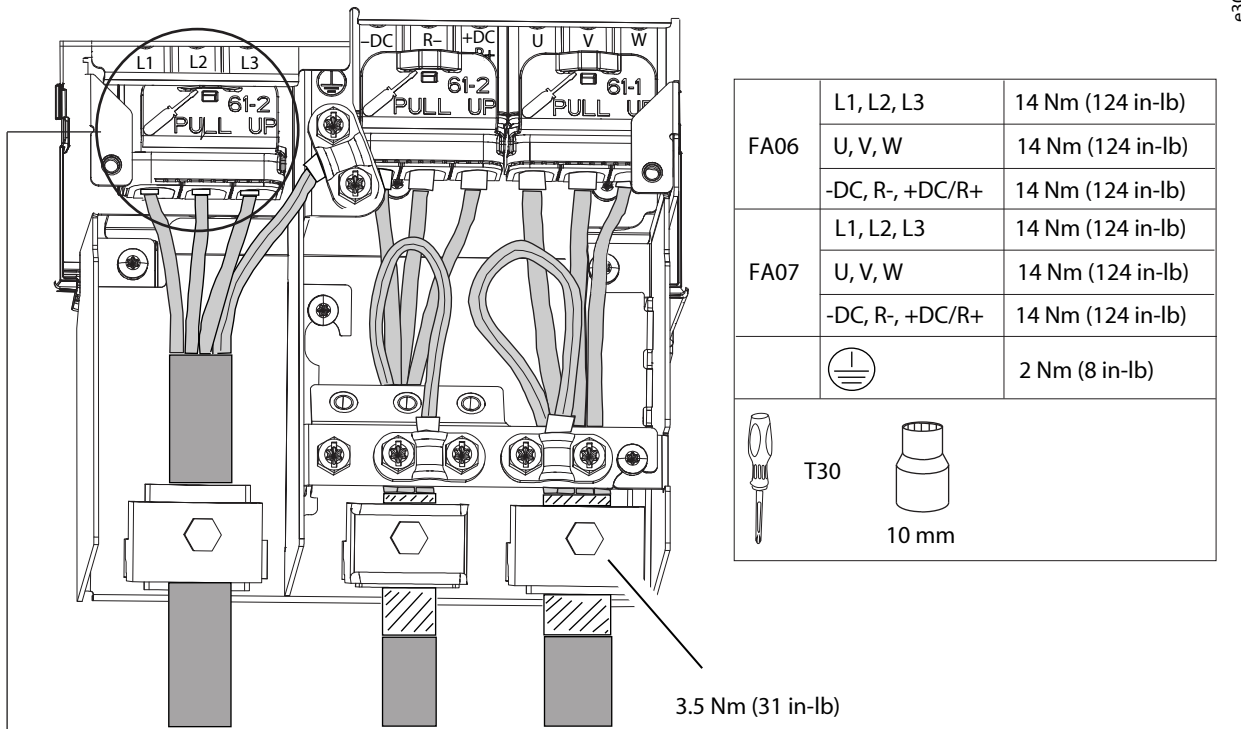
Fx04– Fx05



3.5 Nm (31 in-lb)



FA06-FA07



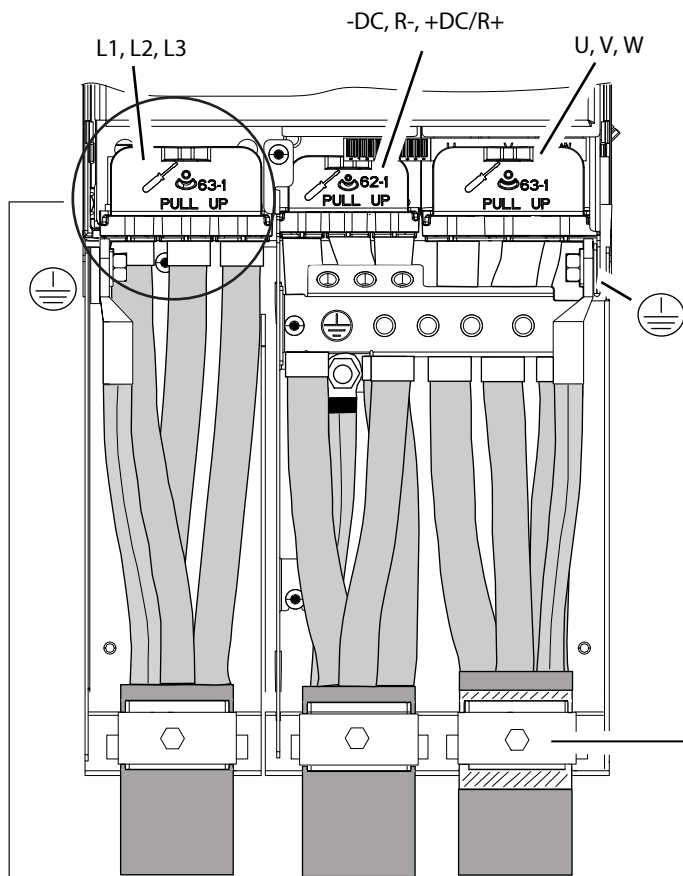
L1, L2, L3 / U, V, W

-DC, R-, +DC/R+

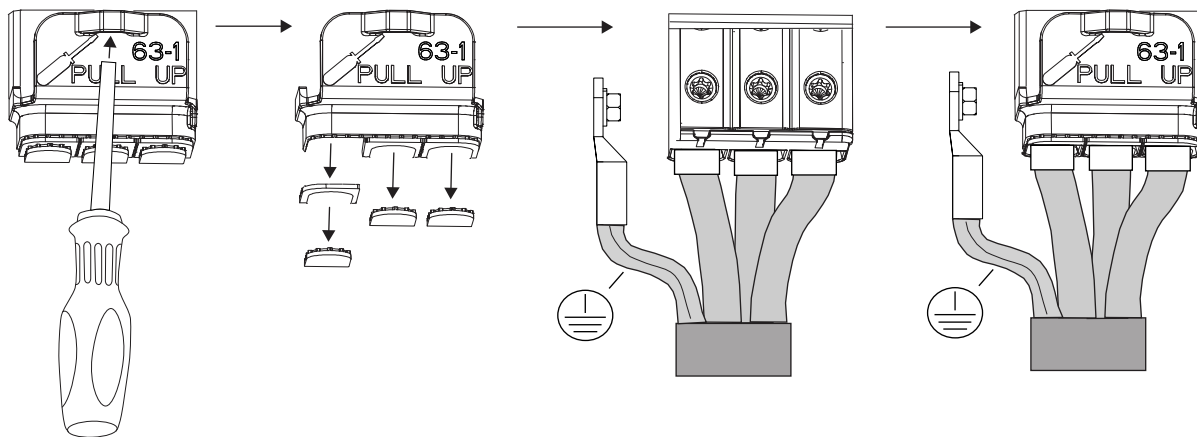
FA06	50 mm <sup>2</sup> (1 AWG)	16 mm <sup>2</sup> (6 AWG)	FA06	50 mm <sup>2</sup> (1 AWG)	16 mm <sup>2</sup> (6 AWG)
FA07	95 mm <sup>2</sup> (3/0 AWG)	35 mm <sup>2</sup> (2 AWG)	FA07	50 mm <sup>2</sup> (1 AWG)	16 mm <sup>2</sup> (6 AWG)

e30b1639.12

### FA08



FA08	L1, L2, L3	20 Nm (177 in-lb)
	U, V, W	20 Nm (177 in-lb)
	-DC, R-, +DC/R+	14 Nm (124 in-lb)
		12 Nm (106 in-lb)
		T30/T40/T50
		13 mm/10 mm



L1, L2, L3 / U, V, W

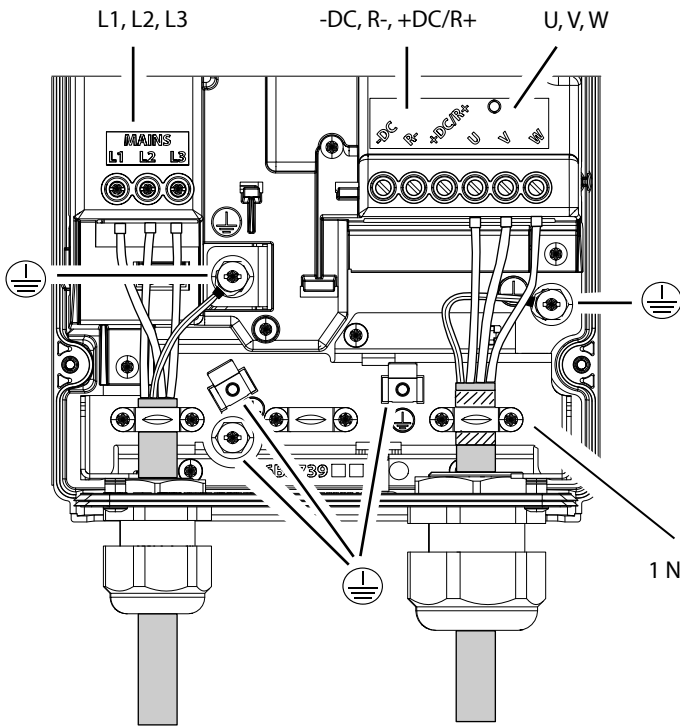
FA08	150 mm <sup>2</sup> (1 AWG)	50 mm <sup>2</sup> (1 AWG)

-DC, R-, +DC/R+

FA08	95 mm <sup>2</sup> (3/0 mcm)	35 mm <sup>2</sup> (2 AWG)

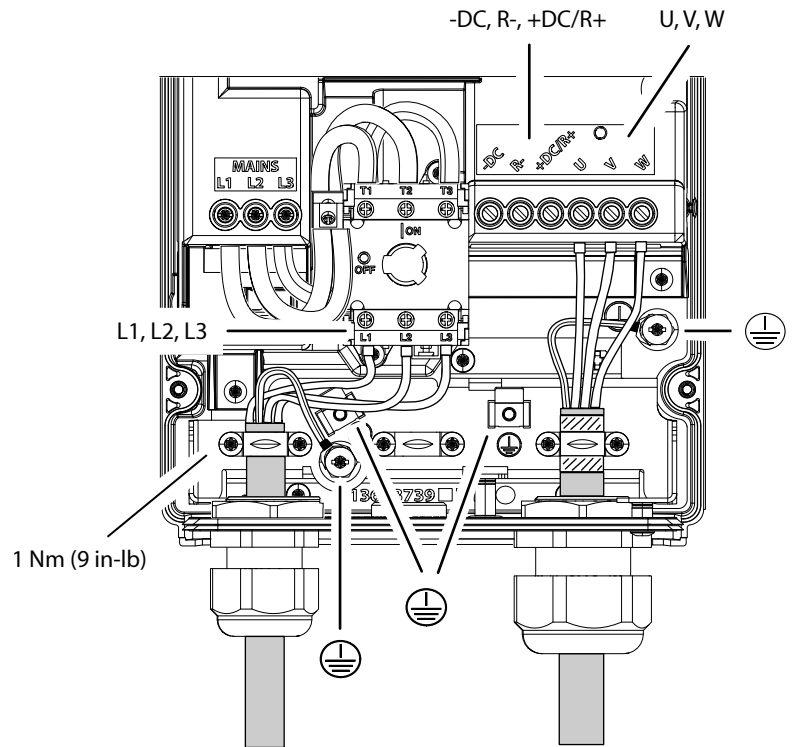
FB03

e30bm955.11



FB03	L1, L2, L3	1.2-1.5 Nm (11-13 in-lbs)
	U, V, W	1.2-1.5 Nm (11-13 in-lbs)
	-DC, R-, +DC/R+	1.2-1.5 Nm (11-13 in-lbs)
		1.2-1.5 Nm (11-13 in-lbs)
	SL1/PZ1 T15/T20	 10 mm

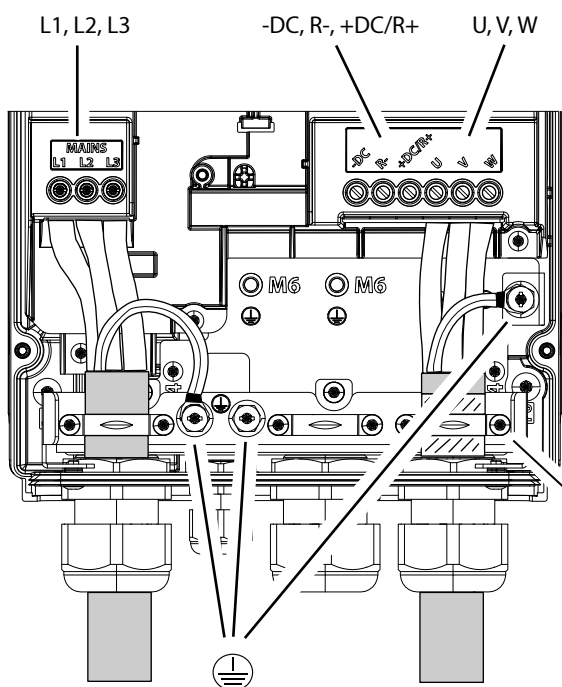
1 Nm (9 in-lb)



1 Nm (9 in-lb)

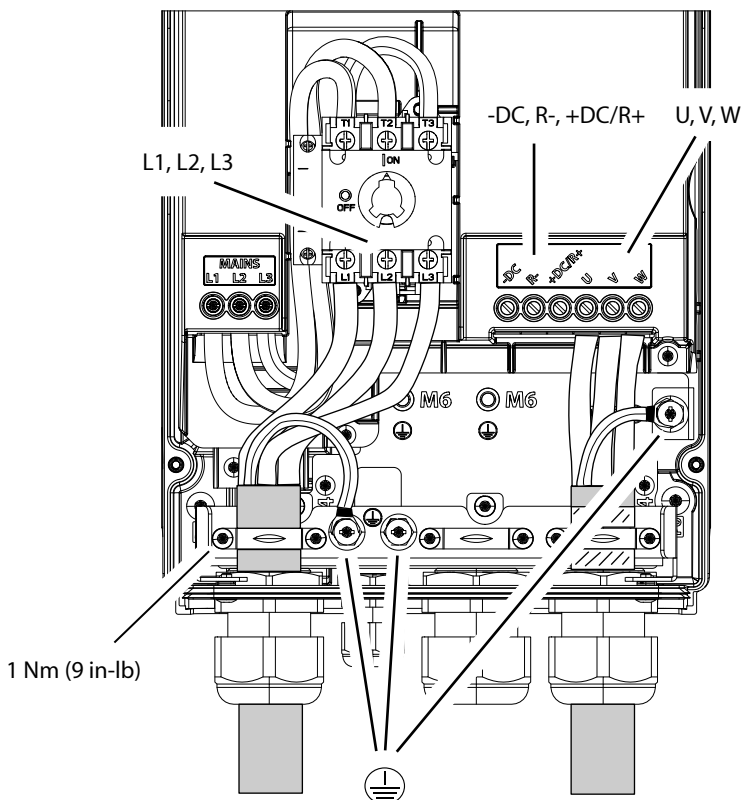
**FB05**

e30bm954.11



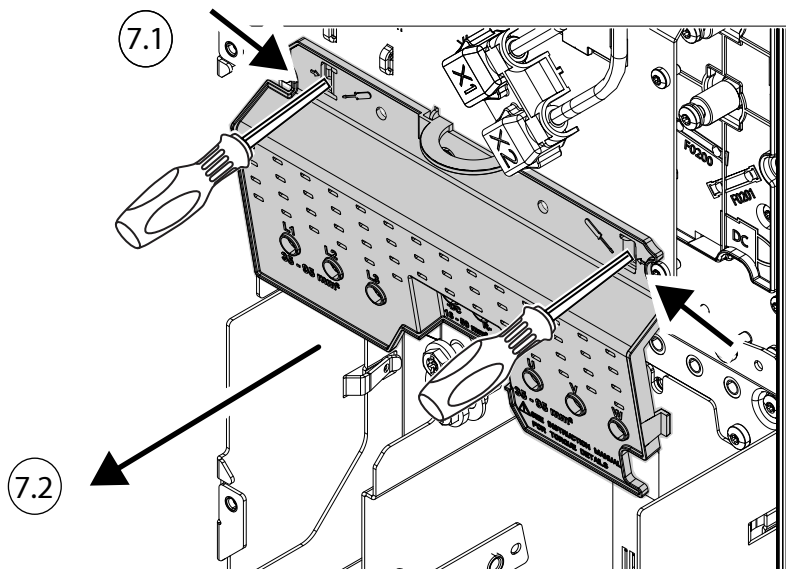
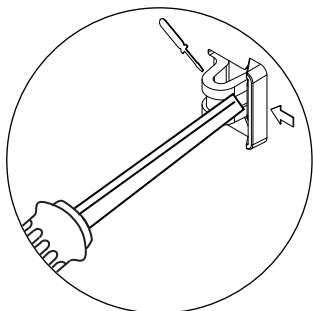
FB05	L1, L2, L3	1.2–1.5 Nm (11–13 in-lbs)
	U, V, W	1.2–1.5 Nm (11–13 in-lbs)
	-DC, R-, +DC/R+	1.2–1.5 Nm (11–13 in-lbs)
		1.2–1.5 Nm (11–13 in-lbs)
	SL1/PZ1 T15/T20	 10 mm

1 Nm (9 in-lb)

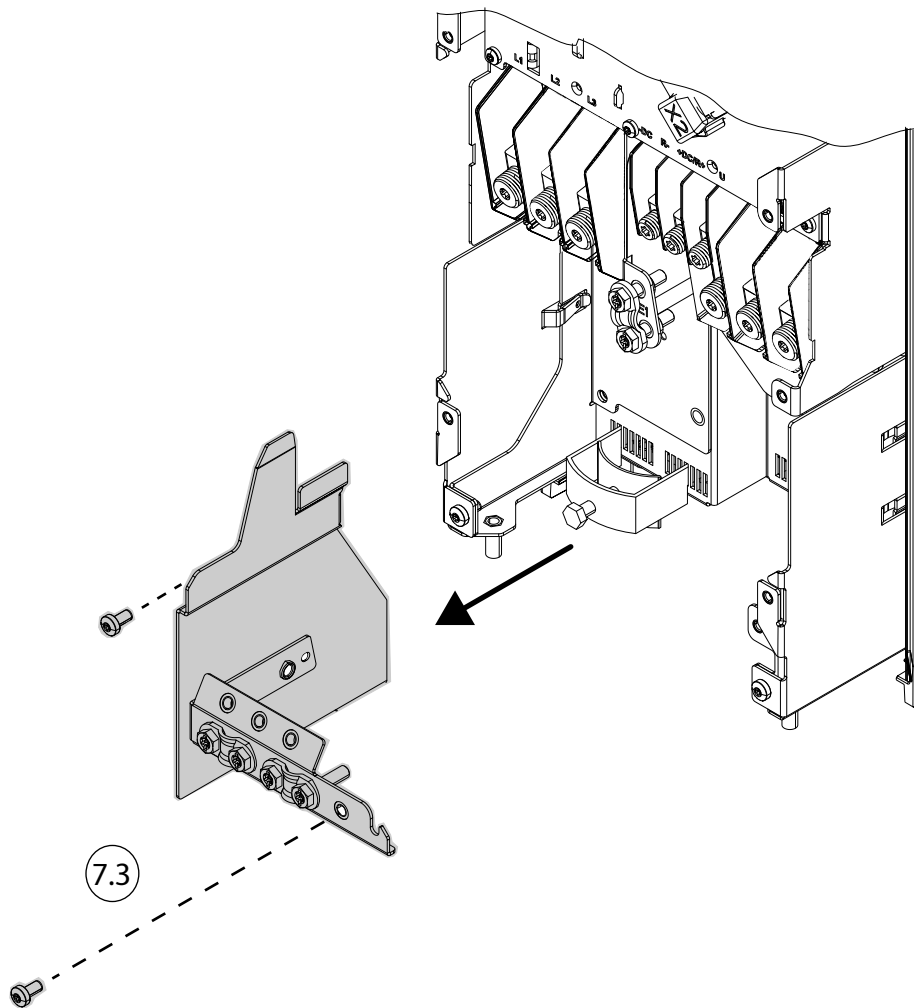


1 Nm (9 in-lb)

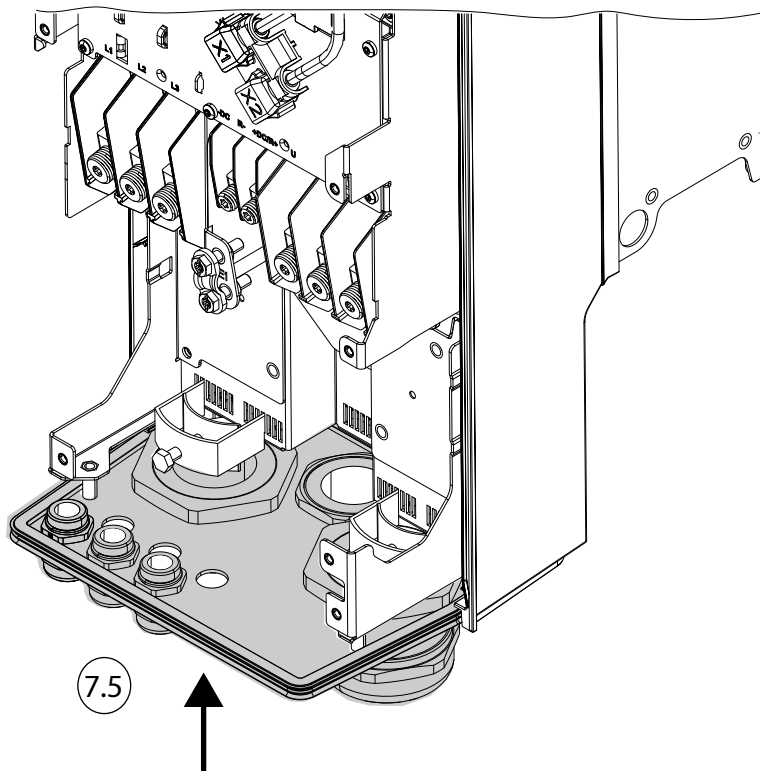
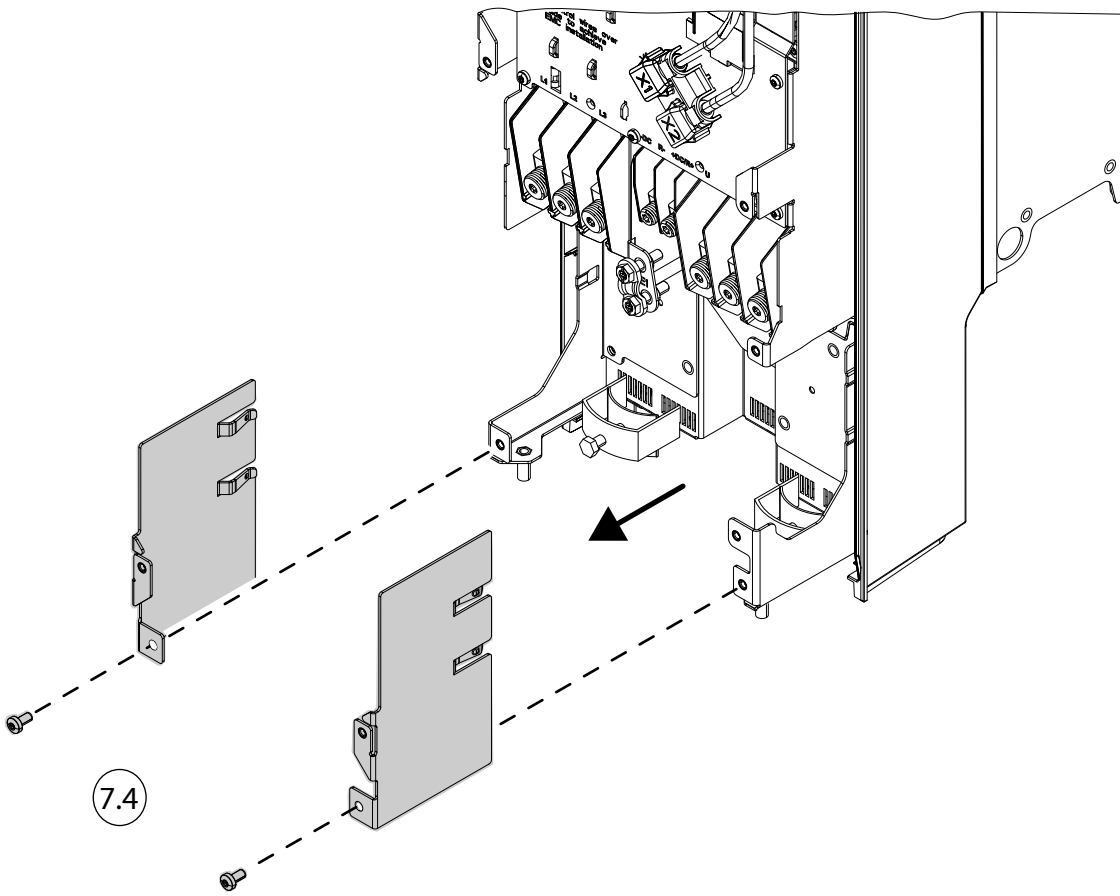
FB06-FB07



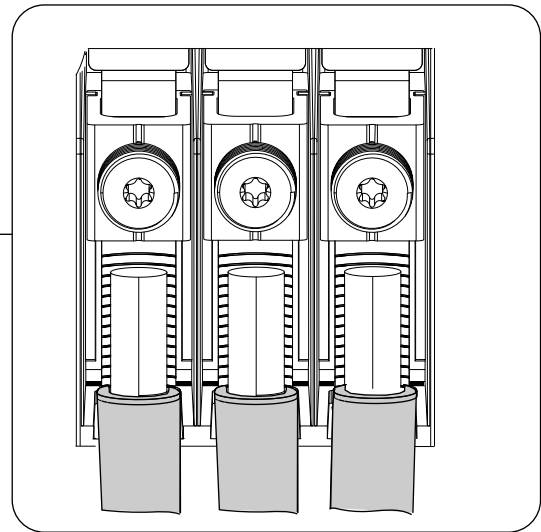
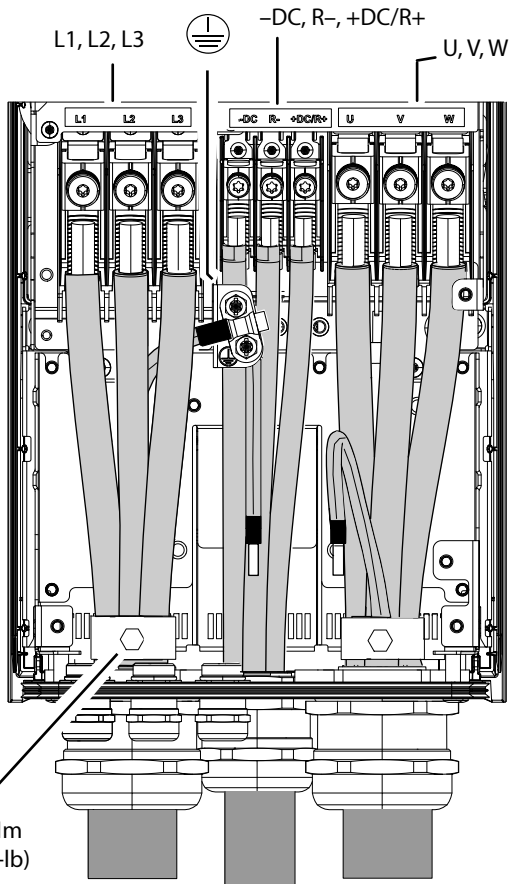
e30bm847.10



e30m848.10

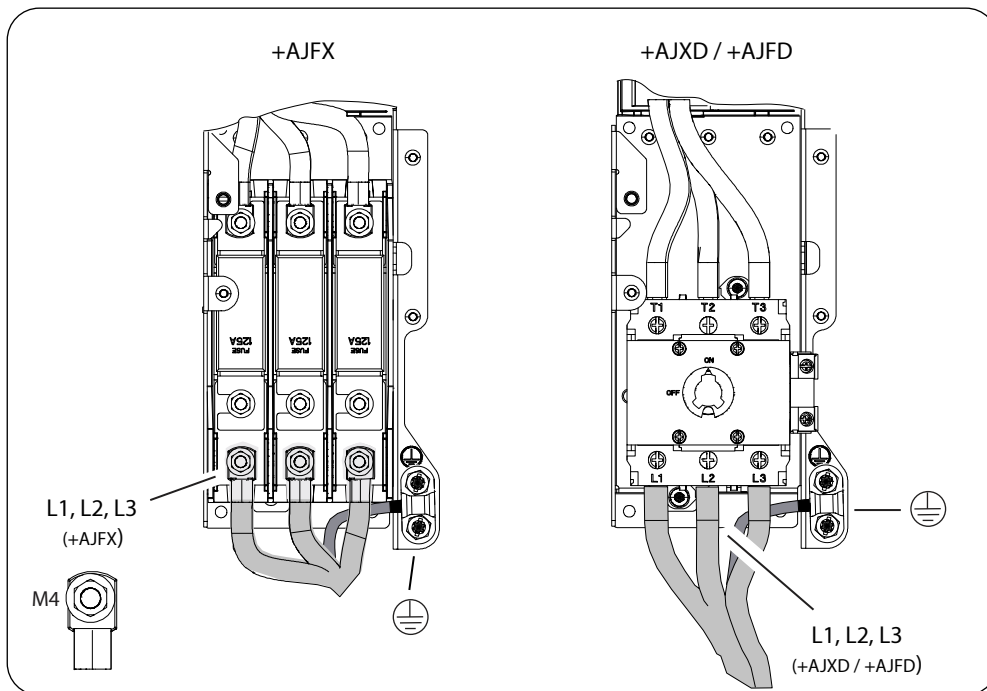
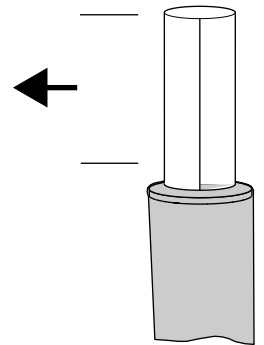


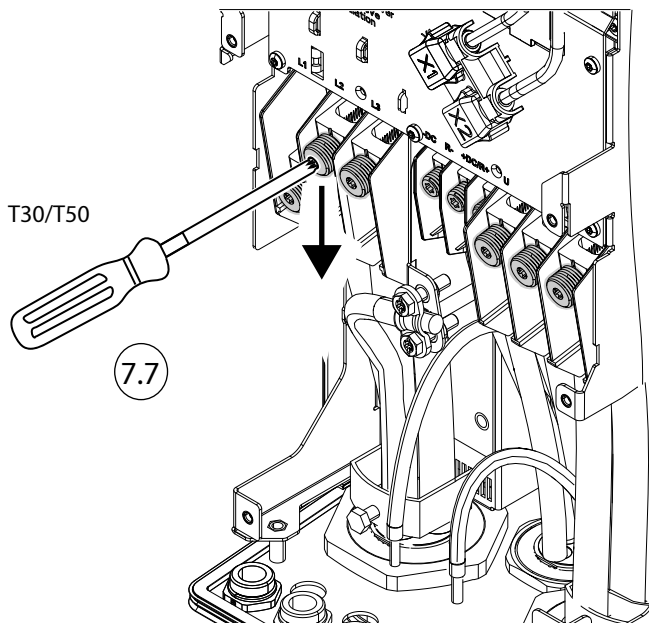
7.6



e30bm849.10

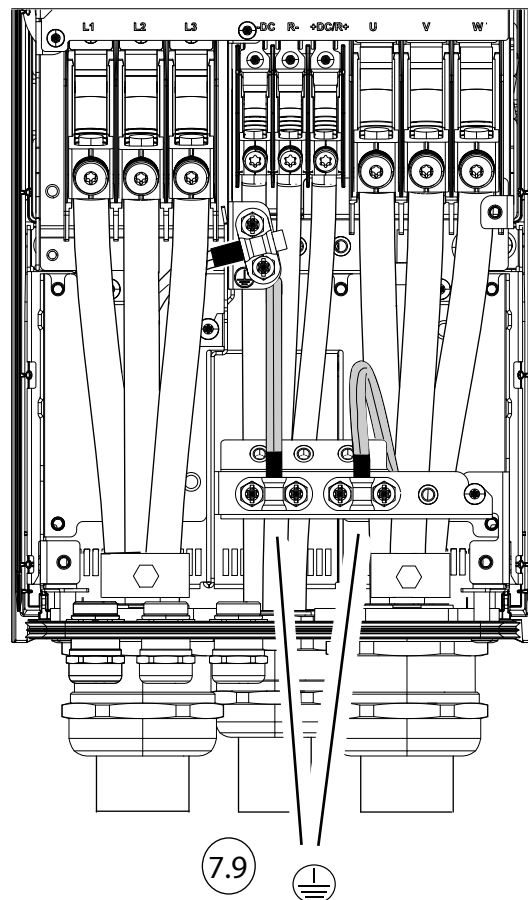
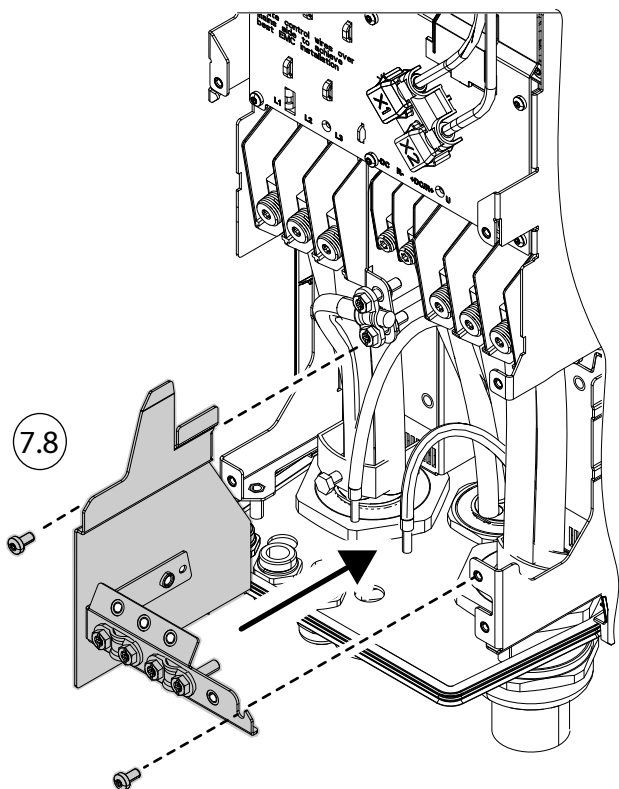
FB06	L1, L2, L3	20 mm (0.8 in)
	U, V, W	20 mm (0.8 in)
	-DC, R-, +DC/R+	20 mm (0.8 in)
FB07	L1, L2, L3	27 mm (1.1 in)
	U, V, W	27 mm (1.1 in)
	-DC, R-, +DC/R+	20 mm (0.8 in)



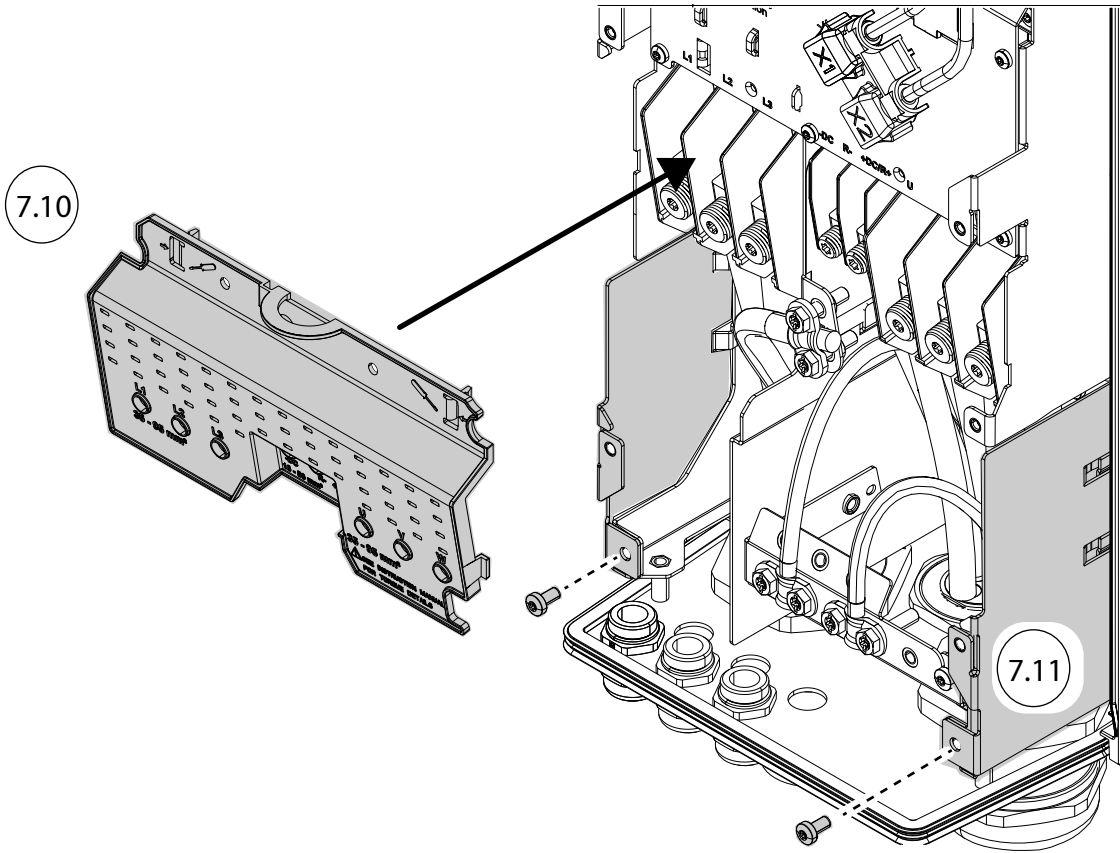


FB06	L1, L2, L3	9 Nm (80 in-lb)	
	L1, L2, L3 (+AJFX)	3 Nm (27 in-lb)	
	L1, L2, L3 (+AJXD)	3 Nm (27 in-lb)	
	L1, L2, L3 (+AJFD)	3 Nm (27 in-lb)	
	U, V, W	9 Nm (80 in-lb)	
	-DC, R-, +DC/R+	9 Nm (80 in-lb)	
FB07	L1, L2, L3	16 Nm (142 in-lb)	
	L1, L2, L3 (+AJFX)	3 Nm (27 in-lb)	
	L1, L2, L3 (+AJXD)	14 Nm (124 in-lb)	
	L1, L2, L3 (+AJFD)	14 Nm (124 in-lb)	
	U, V, W	16 Nm (142 in-lb)	
	-DC, R-, +DC/R+	9 Nm (80 in-lb)	
		10 Nm (22 in-lb)	
	SL1/PZ1 T30/T50 PH2	8 mm 10 mm 5 mm	

e30bm850.10

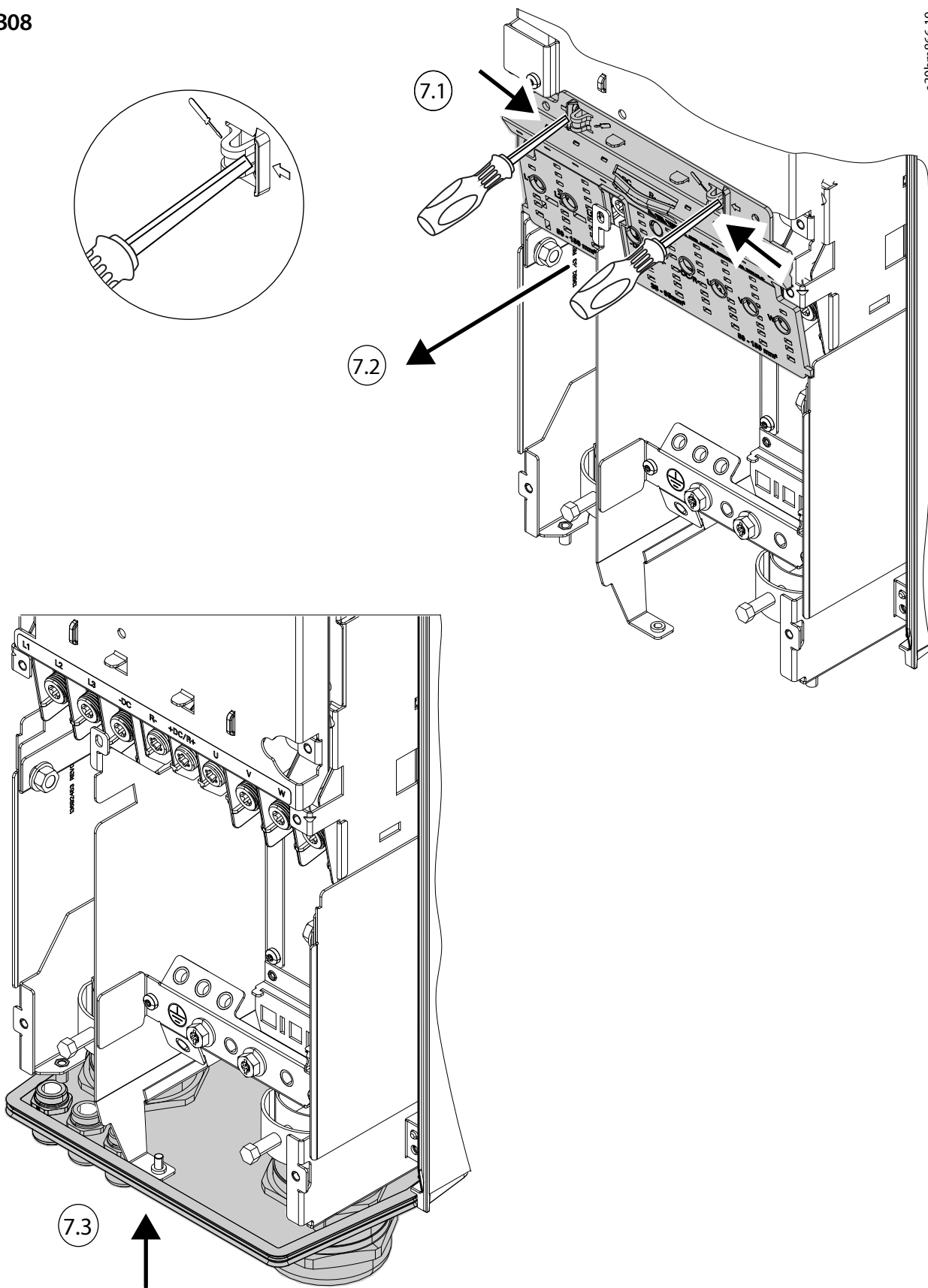


e30bm873.10



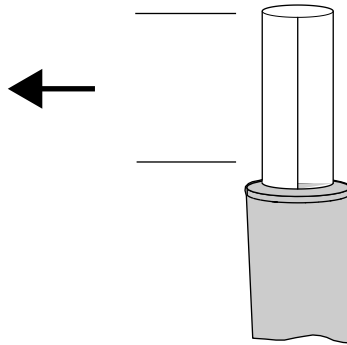
FB08

e30br866.10

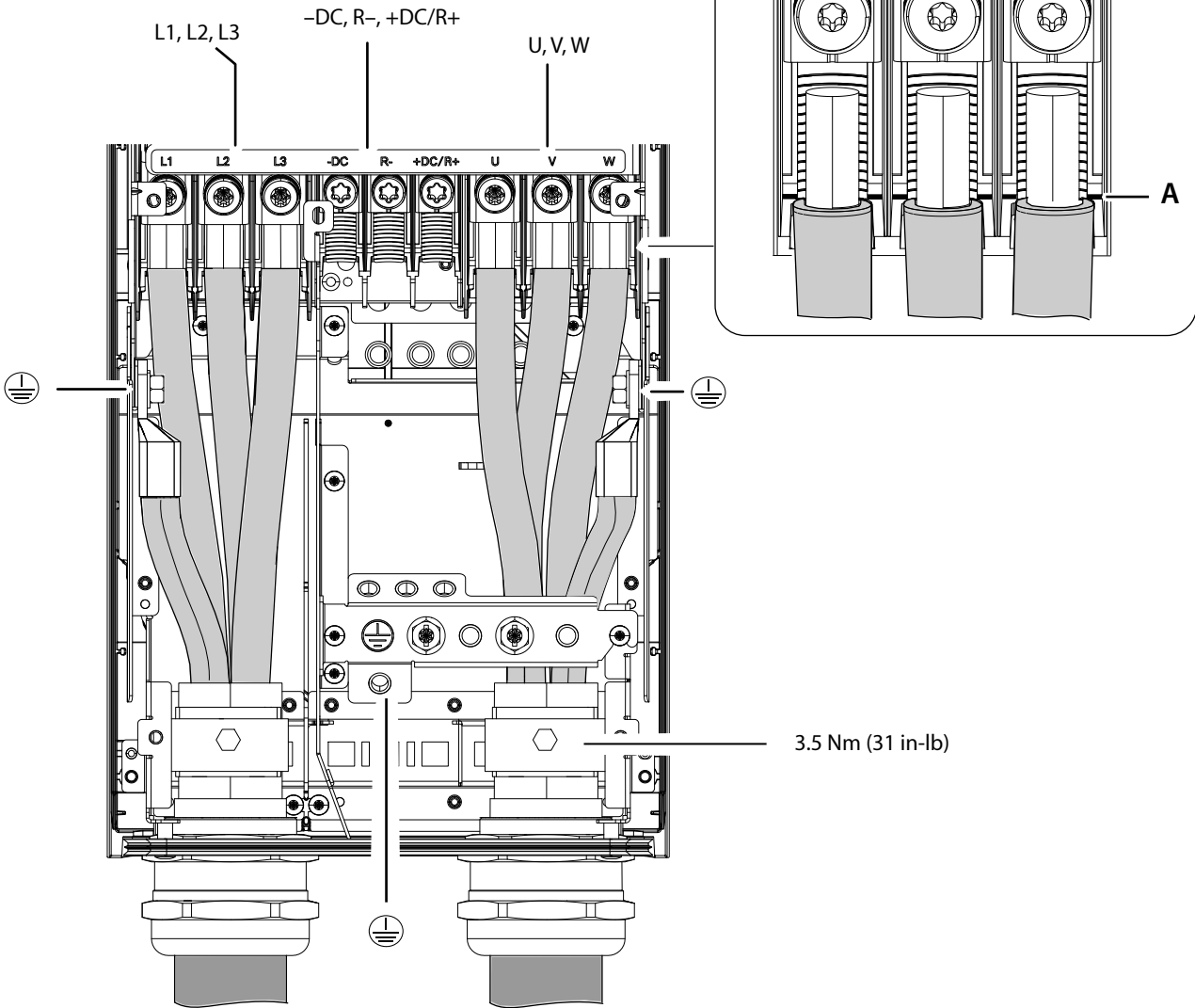


7.4

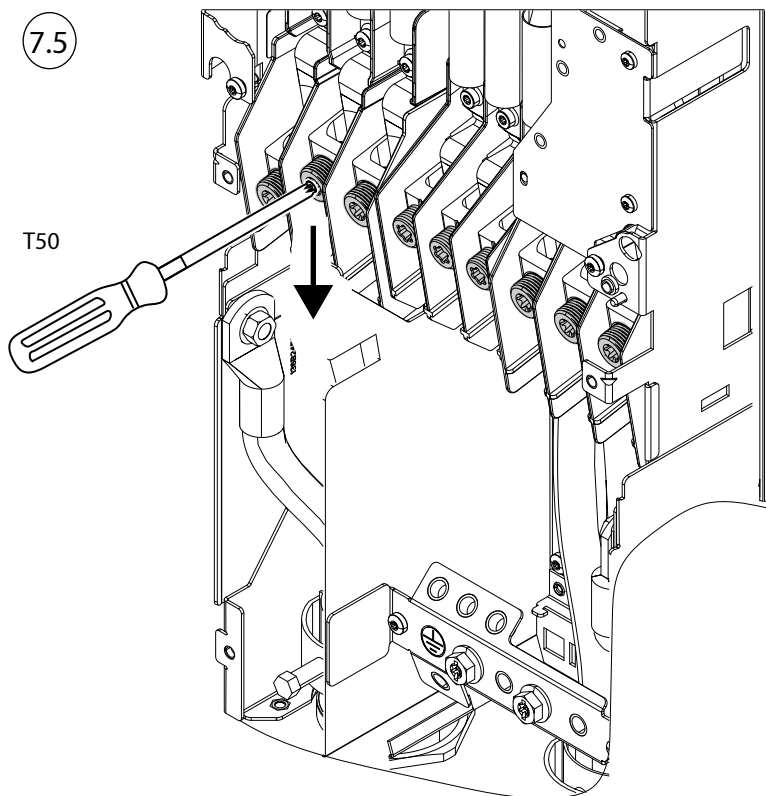
FB08	L1, L2, L3	30 mm (1.2 in)
	U, V, W	30 mm (1.2 in)
	-DC, R-, +DC/R+	27 mm (1.0 in)



e30bm872.10

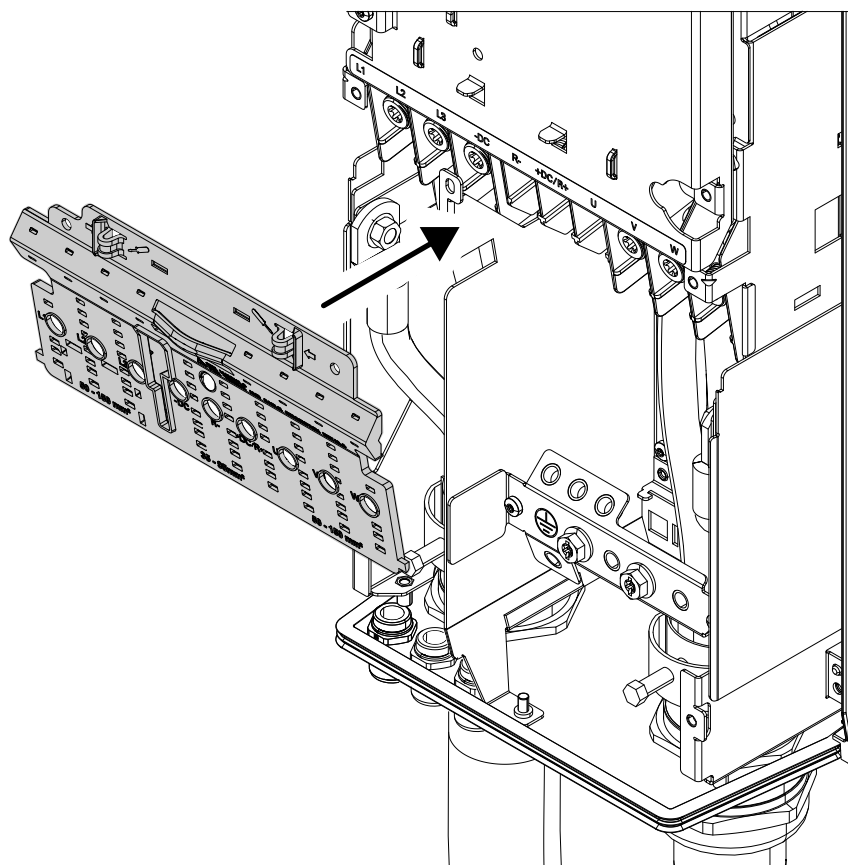


e30bm867.10



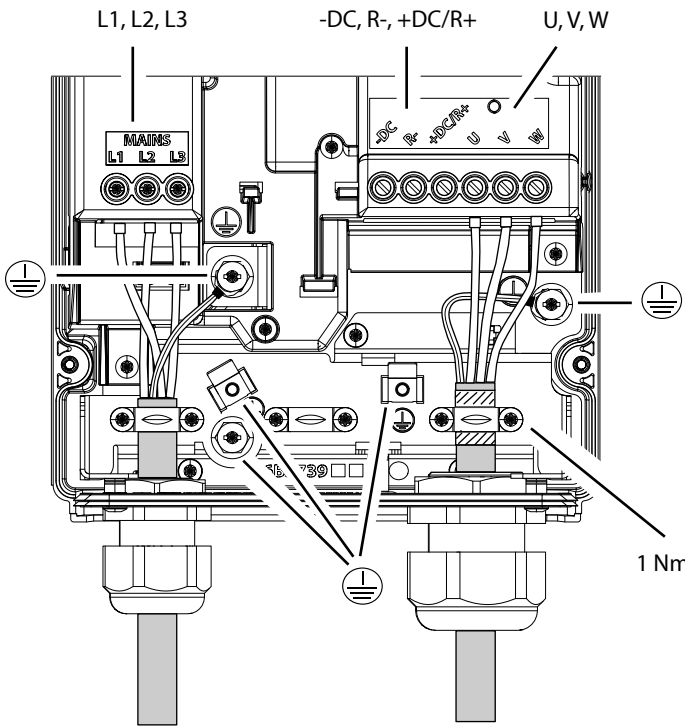
FB08	L1, L2, L3	20 Nm (177 in-lbs)
	U, V, W	20 Nm (177 in-lbs)
	-DC, R-, +DC/R+	16 Nm (142 in-lbs)
		10 Nm (22 in-lbs)
	SL1/PZ1 T50	 10 mm

7.6



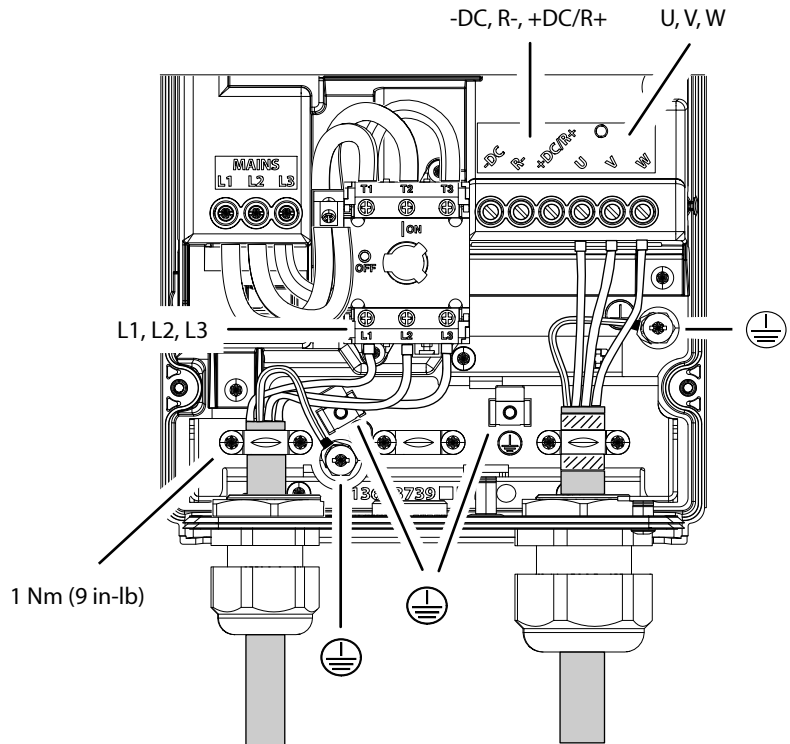
FK03

e30bn307.10



FK03	L1, L2, L3	1.2–1.5 Nm (11–13 in-lbs)
	U, V, W	1.2–1.5 Nm (11–13 in-lbs)
	-DC, R-, +DC/R+	1.2–1.5 Nm (11–13 in-lbs)
		1.2–1.5 Nm (11–13 in-lbs)
	SL1/PZ1 T15/T20	 10 mm

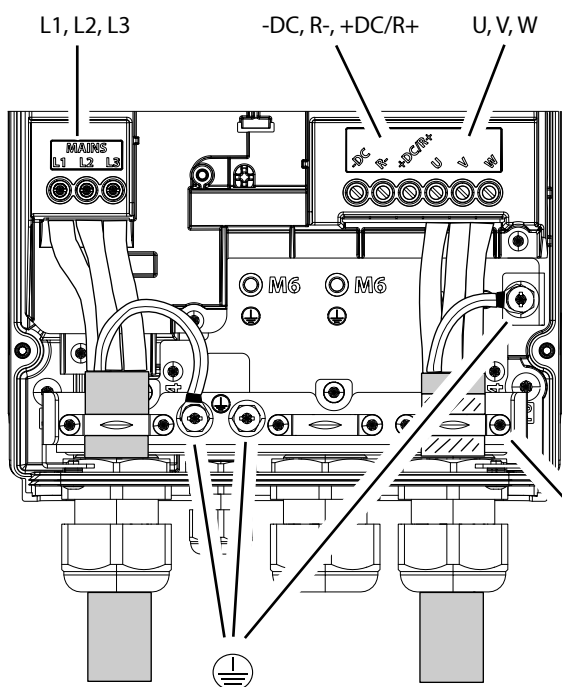
1 Nm (9 in-lb)



1 Nm (9 in-lb)

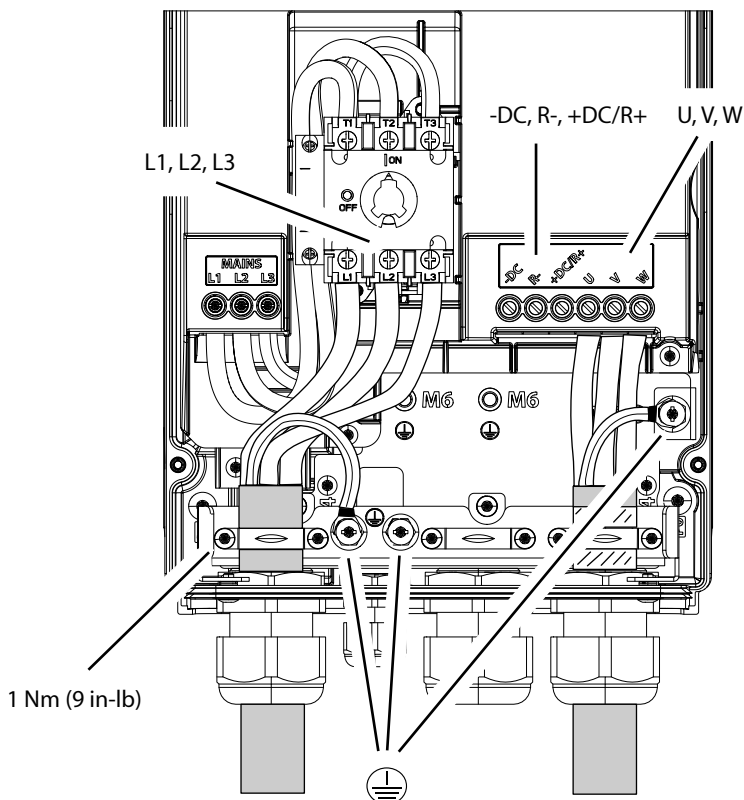
FK05

e30bn308.10



FK05	L1, L2, L3	1.2–1.5 Nm (11–13 in-lbs)
	U, V, W	1.2–1.5 Nm (11–13 in-lbs)
	-DC, R-, +DC/R+	1.2–1.5 Nm (11–13 in-lbs)
		1.2–1.5 Nm (11–13 in-lbs)
	SL1/PZ1 T15/T20	 10 mm

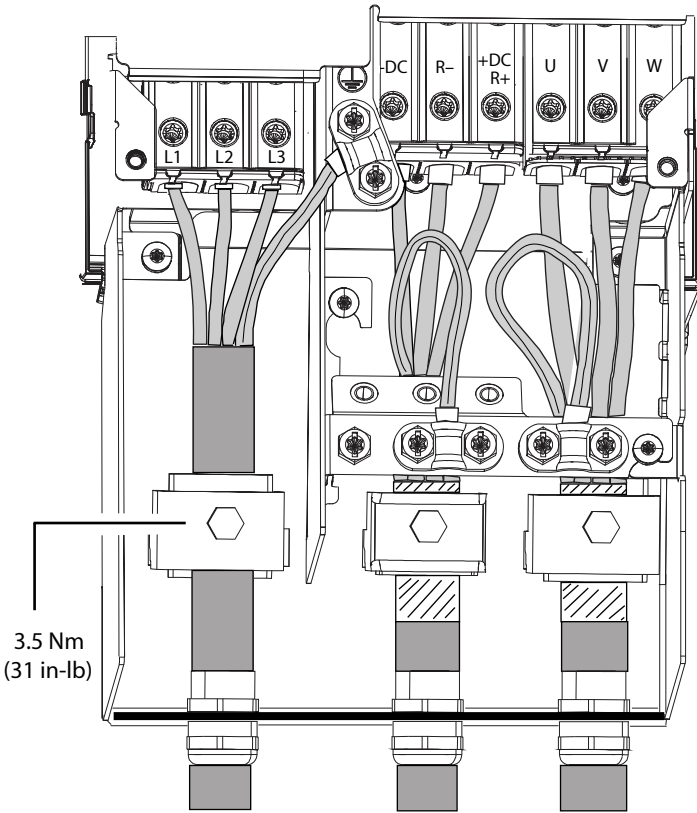
1 Nm (9 in-lb)



1 Nm (9 in-lb)

FK06–FK07

e30bu786.13



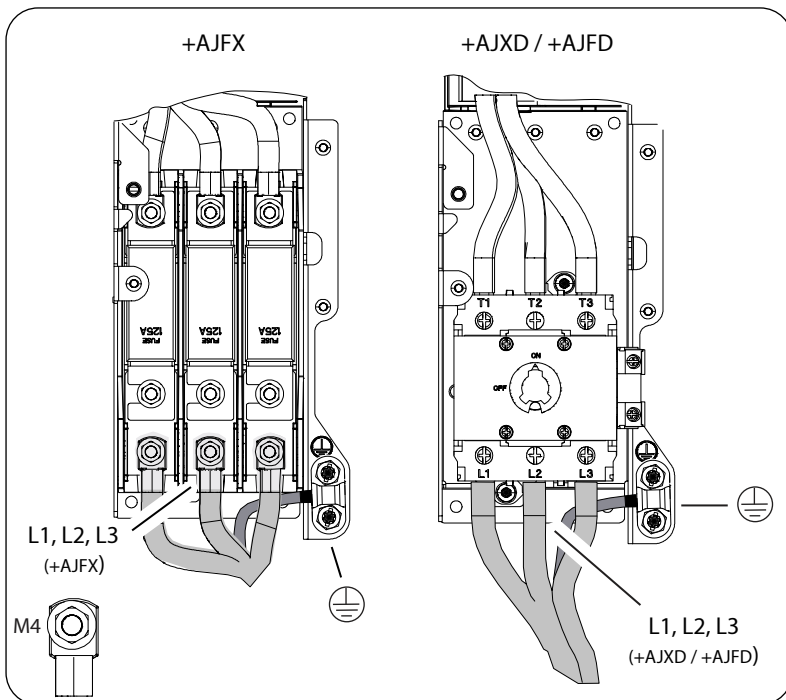
L1, L2, L3 / U, V, W	
FK06	50 mm <sup>2</sup> (1 AWG) – 16 mm <sup>2</sup> (6 AWG)
FK07	95 mm <sup>2</sup> (3/0 AWG) – 35 mm <sup>2</sup> (6 AWG)

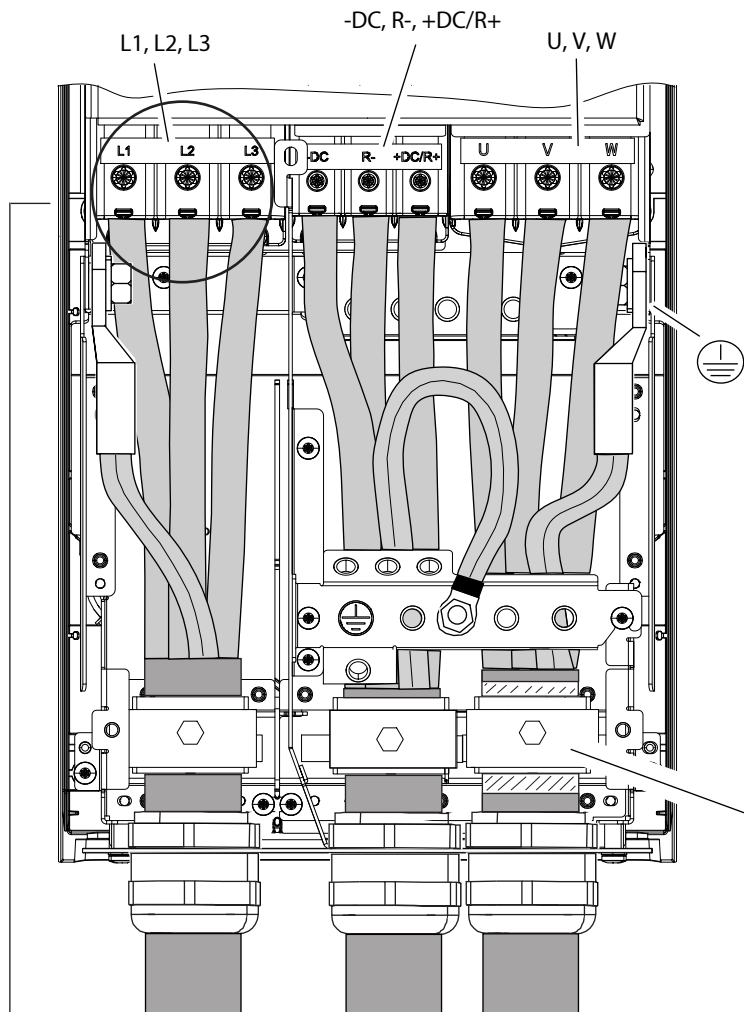
-DC, R-, +DC/R+	
FK06	50 mm <sup>2</sup> (1 AWG) – 16 mm <sup>2</sup> (6 AWG)
FK07	50 mm <sup>2</sup> (1 AWG) – 16 mm <sup>2</sup> (6 AWG)

FK06	L1, L2, L3	14 Nm (124 in-lb)
	L1, L2, L3 (+AJFX)	3 Nm (27 in-lb)
	L1, L2, L3 (+AJXD)	3 Nm (27 in-lb)
	L1, L2, L3 (+AJFD)	3 Nm (27 in-lb)
	U, V, W	14 Nm (124 in-lb)
FK07	-DC, R-, +DC/R+	14 Nm (124 in-lb)
	L1, L2, L3	14 Nm (124 in-lb)
	L1, L2, L3 (+AJFX)	3 Nm (27 in-lb)
	L1, L2, L3 (+AJXD)	14 Nm (124 in-lb)
	L1, L2, L3 (+AJFD)	14 Nm (124 in-lb)
	U, V, W	14 Nm (124 in-lb)

	2 Nm (8 in-lb)	
SL1/PZ1 T30/T50 PH2	8 mm 10 mm	5 mm

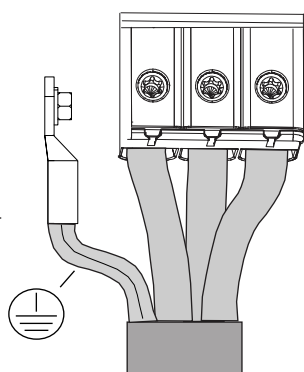


**FK08**



FK08	L1, L2, L3	20 Nm (177 in-lb)
	U, V, W	20 Nm (177 in-lb)
	-DC, R-, +DC/R+	14 Nm (124 in-lb)
		12 Nm (106 in-lb)
	T30/T40/T50	
		13 mm/10 mm

3.5 Nm (31 in-lb)



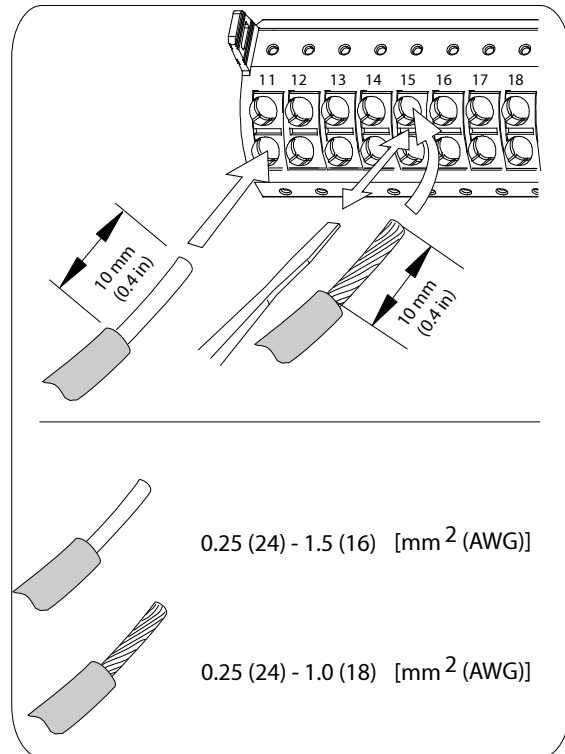
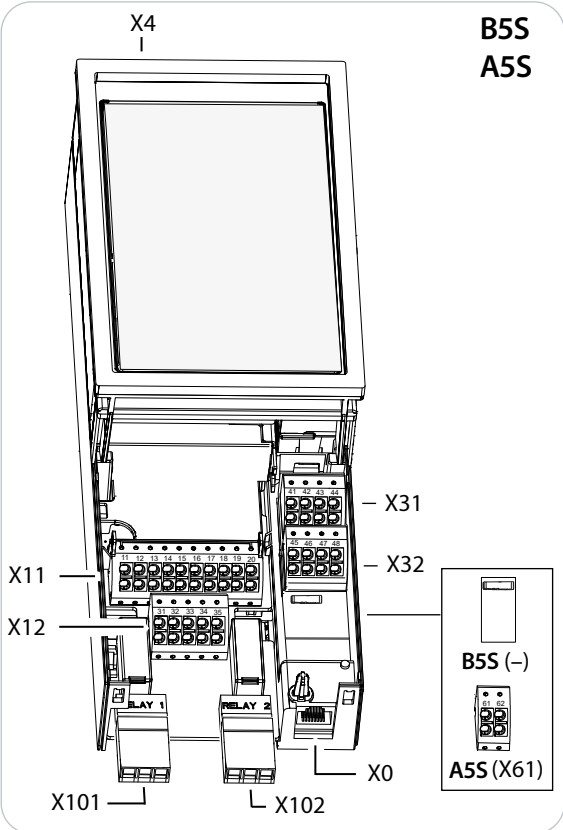
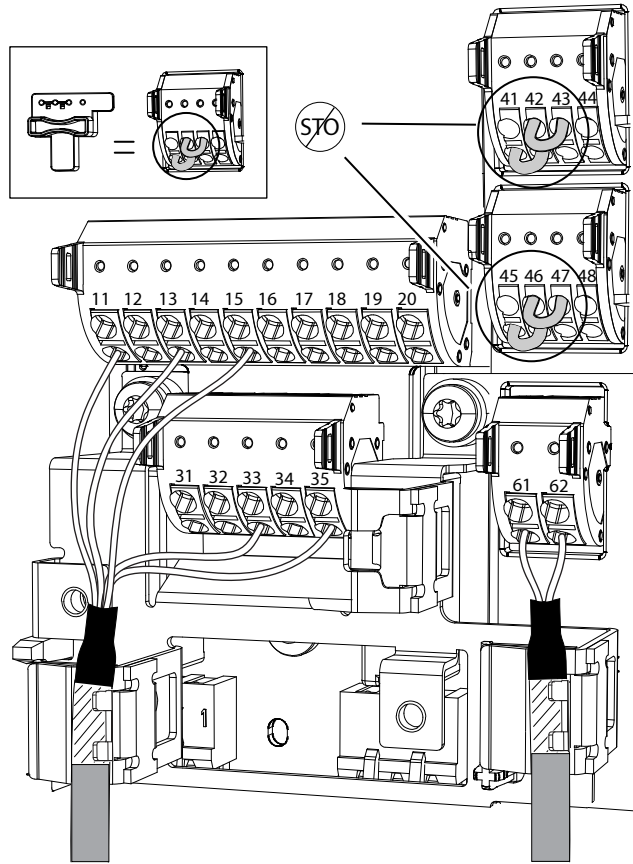
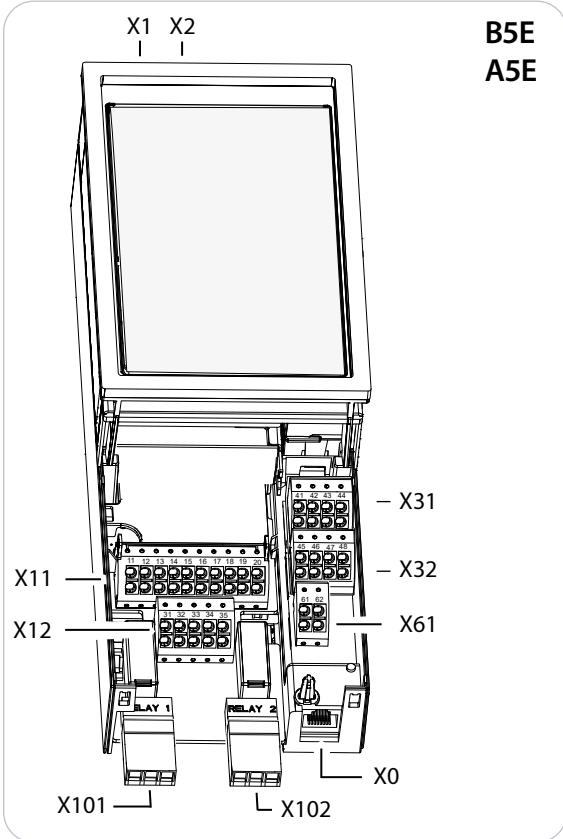
L1, L2, L3 / U, V, W

FK08	120 mm <sup>2</sup> (4/0 mcm)	50 mm <sup>2</sup> (1 AWG)
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-DC, R-, +DC/R+

FK08	95 mm <sup>2</sup> (3/0 AWG)	35 mm <sup>2</sup> (2 AWG)
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8



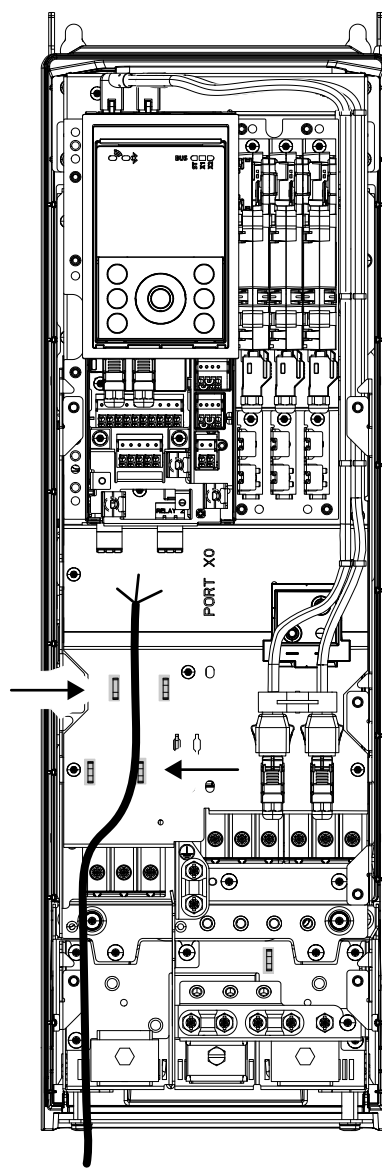
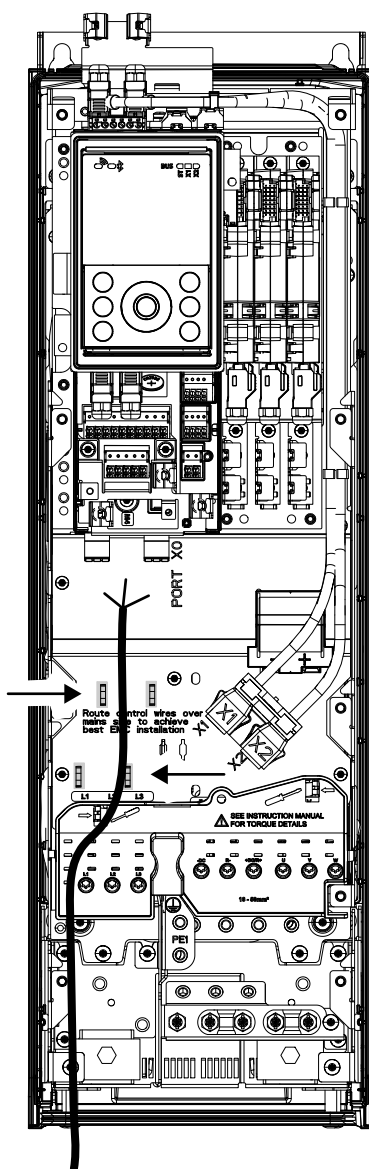
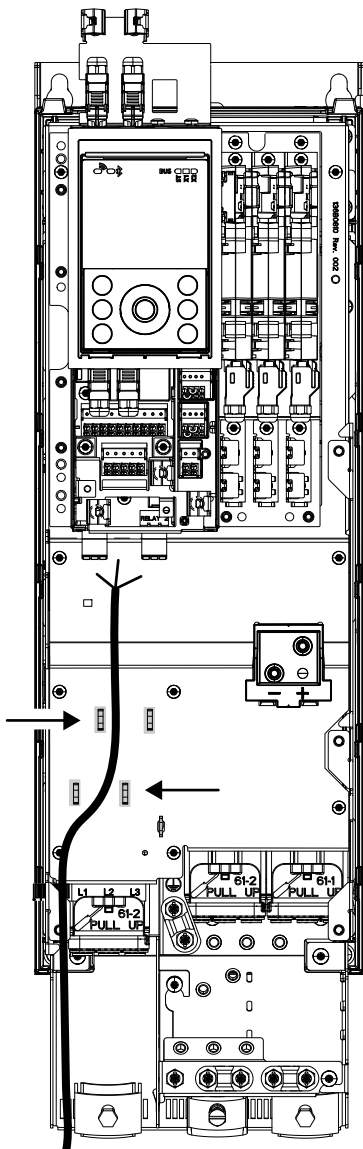
9 FA06-FA08/FB06-FB08/FK06-FK08

e30bm882.10

FAxx

FBxx

FKxx



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 www.danfoss.com

## EU DECLARATION OF CONFORMITY

### Danfoss A/S Danfoss Drives

declares under our sole responsibility that the

**Product category:** Frequency Converter, **iC7-Aqua**  
**Type designation(s):** IC7YYYYYYYYYYYYYY\*\*

are varying numbers or letters indicating drive configurations which impact this Doc.

Character 4-5 (Frame type)	FA, FB, FK
Character 6-7 (Frame size)	02, 04, 05, 06, 07, 08, 09, 10, 11, 12
Character 8 (Cooling type)	A
Character 9-10 (Voltage class)	H4, T4
Character 11-14 (Current rating)	01A3, 01A8, 02M4, 03A0, 04A0, 05A6, 07A2, 09A2, 12A5, 16A0, 24A0, 31A0, 38A0, 43A0, 61A0, 73A0, 90A0, 106A, 147A, 170A, 206A, 245A, 302A, 385A, 395A, 480A, 588A, 658A, 736A, 799A, 893A, 1000, 1120, 1260
Character 15 (Enclosure rating)	1, 2, 4, 5, A, B
Character 16 (RRF class)	B, C, D, E
Character 17 (Brake)	X, 1
Character 18 (Internal fuse)	X, 1, 2, 3
Character 19 (DC-terminals)	X, 1
Character 23 (Functional Safety)	X

\* may be any number or letter indicating drive options which do not impact this Doc.

Covered by this declaration is in conformity with the following directive(s), standard(s) or other normative document(s), provided that the product is used in accordance with our instructions.

- Low Voltage Directive 2014/35/EU**
- EN 61800-5-1:2007+A1:2017+A11:2021 Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy.
- EN IEC 61800-5-1: 2023\* Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy.  
\* only for F807A14, P\*10AH4 (\* indicates A, B or K)

Date: 05 March 2026 Place of issue: Grasten, DK Signed by: Name: Henrik Lorenzen Title: Product Owner	Date: 05 March 2026 Place of issue: Grasten, DK Signed by: Name: Mari Haapala Title: Vice President
---	---

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**EMC Directive 2014/30/EU**  
 EN IEC 61800-3:2022

Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods.

**RoHS Directive 2011/65/EU including amendment 2015/863.**  
 EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

**Commission Regulation (EU) 2019/1781 under the Ecodesign Directive 2009/125/EC including amendment in Commission Regulation (EU) 2021/341**  
 EN IEC 61800-9-2:2025

Adjustable speed electrical power drive systems (PDS) - Part 9-2: Ecodesign for motor systems - Energy efficiency determination and classification.

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## EU DECLARATION OF CONFORMITY

**Danfoss A/S**  
**Danfoss Drives**

declares under our sole responsibility that the

**Product category:** Frequency Converter, IC7-HVACR  
**Type designation(s):** IC7YYYYYYYYYYYYYYYY\*\*Y

Y are varying numbers or letters indicating drive configurations which impact this DoC.

- Character 4-5 (Frame type) FA, FK, FB
  - Character 6-7 (Frame size) 02, 04, 05, 06, 07, 08, 09, 10, 11, 12
  - Character 8 (Cooling type) A
  - Character 9-10 (Voltage class) H4, T4
  - Character 11-14 (Current rating) 01A3, 01A8, 02A4, 03A0, 04A0, 05A6, 07A2, 09A2, 12A5, 16A0, 24A0, 31A0, 38A0, 42A0, 61A0, 73A0, 90A0, 106A, 147A, 170A, 206A, 245A, 302A, 385A, 395A, 480A, 588A, 658A, 736A, 799A, 895A, 1000, 1120, 1260
  - Character 15 (Enclosure rating) 1, 2, 4, 5, A, B
  - Character 16 (RRI class) B, C, D, E
  - Character 17 (Brake) X, 1
  - Character 18 (Internal fuse) X, 1, 2, 3
  - Character 19 (DCterminals) X, 1
  - Character 23 (Functional Safety) X, A
- \* may be any number or letter indicating drive options which do not impact this DoC.

Covered by this declaration is in conformity with the following directive(s), standard(s) or other normative document(s), provided that the product is used in accordance with our instructions.

- Low Voltage Directive 2014/35/EU** Adjustable speed electrical power drive systems – Part 5-1:  
 EN 61800-5-1:2007+A1:2017+A11:2021 Safety requirements – Electrical, thermal and energy.
- EN IEC 61800-5-1:2023\*** Adjustable speed electrical power drive systems – Part 5-1:  
 Safety requirements – Electrical, thermal and energy.  
 \* only for F807AH4, F810AH4/e indicates A, B or X)

<b>Date:</b> 5 March 2026 <b>Place of issue:</b> Graasten, DK	<b>Signed by:</b>  <b>Name:</b> Arne Fink Hansen <b>Title:</b> Product Owner	<b>Date:</b> 5 March 2026 <b>Place of issue:</b> Graasten, DK	<b>Signed by:</b>  <b>Name:</b> Mari Haapala <b>Title:</b> Vice President
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**Revision No.:** A.8

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**Machinery Directive #2006/42/EU (only applicable for Character 23 equals A)**  
 EN 61800-5-2:2017 Adjustable speed electrical power drive systems - Part 5-2:  
 Safety requirements - Functional

**Character 23:**  
 X = no functionality  
 A = +ABEG1

**EMC Directive 2014/30/EU**  
 EN IEC 61800-3:2023

Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods.

**RoHS Directive 2011/65/EU including amendment 2015/863.**  
 EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

**Commission Regulation (EU) 2019/1781 under the Ecodesign Directive 2009/125/EC including amendment in Commission Regulation (EU) 2021/341**  
 EN IEC 61800-9-2:2025

Adjustable speed electrical power drive systems (PDS) - Part 9-2: Ecodesign for motor systems - Energy efficiency determination and classification

**Batteries Regulation 2023/1542 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC**  
 EN 45554:2020

General methods for the assessment of the ability to repair, reuse and upgrade energy-related products

**Packaging and packaging waste Regulation 2025/40/EU**  
 Article 5  
 Requirements for substances in packaging

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DK-6300 Graasten

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