



KIT BUS ASSEMBLY CONNECTION MOTOR INVERTER

100313, 100313-1.



Installation and servicing of Danfoss Turbocor® compressors by qualified and product trained personnel only. Follow these instructions and sound refrigeration/electrical/servicing practices relating to installation, commissioning, maintenance and service.

<p>Consult the appropriate Danfoss Turbocor Compressors Inc. (DTC) Service Manual on turbocor.danfoss.com for detailed service instructions.</p>	<p>Never power compressor without covers in place and secured.</p> <p>Removing the mains input cover will expose you to a voltage hazard of up to 575V. Ensure the mains input power is off and locked out before removing cover.</p> <p>Before removing top cover, wait at least 20 minutes after isolating AC power to allow the high voltage capacitors to discharge.</p>	<p>Always wear appropriately rated safety equipment when working around equipment and/or components energized with high voltage.</p> <p>This equipment contains hazardous voltages that can cause serious injury or death.</p>	<p>Recover all refrigerant from compressor in accordance with local codes and ensure pressure is fully vented before the removal of refrigerant containing components.</p>
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1 - Introduction:

BUS ASSEMBLY CONNECTION MOTOR INVERTER Removal and Installation Instructions.

2 - Removal Instructions:

1. Isolate compressor power as described in Section "Electrical Isolation of the Compressor" of the Service Manual (M-SV-001).
2. Release the fasteners that secure the Mains Input Cover and remove the cover.
3. Using an appropriately rated volt meter, confirm that the AC voltage is isolated.
4. Wait at least 20 minutes for the DC bus capacitors to discharge.

DANGER: Do NOT touch any components when removing the top cover. This is particularly true for compressors with CE covers because they are coated on the outside for the express purpose of being conductive

5. Release the fasteners that secure the Top Cover and remove the cover, taking particular care not to touch ANY components underneath.
6. Using an appropriately rated volt meter, check the DC bus bars for voltage level. If the voltage is above 5VDC, wait five (5) minutes and recheck until 5VDC or below is achieved.

7. Disconnect 3 phase mains input wiring.
8. For F Series and later compressors, remove the Soft Start Temperature Harness. Refer to Figure 1 (Soft Start J9 Connector).

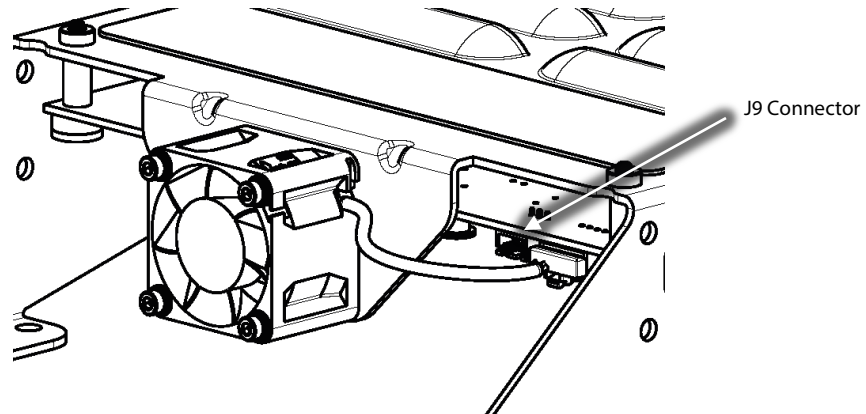


Figure 1 – Soft Start J9 Connector

9. Disconnect the Soft Start ground wire by removing the nuts and mains input ground wire from the ground post on the compressor housing at 3 phase connection point. Refer to Figure 2 (Ground Location).

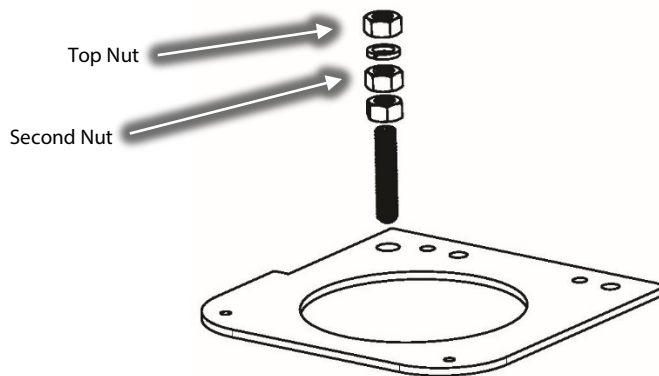


Figure 2 – Ground Location

10. Remove the M5x15 fasteners that secure the Soft Start mounting bracket to the compressor. Refer to Figure 3 (Soft Start Mounting Fasteners).

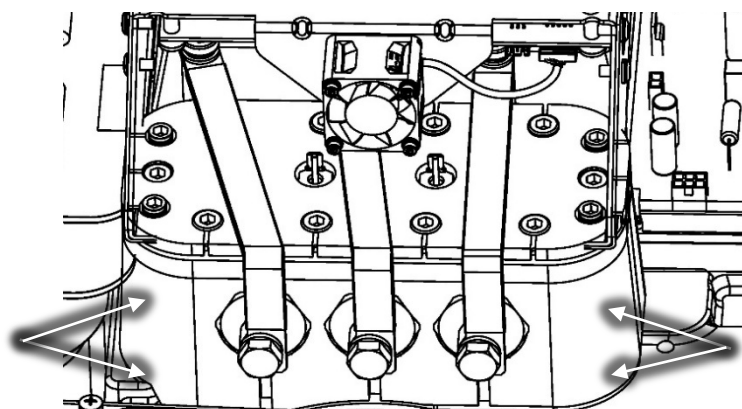


Figure 3 – Soft Start Mounting Fasteners

11. Lift the Soft Start and turn it over, placing it board-side up on the AC Bus Bars. Refer to Figure 4 (Soft Start Lift).

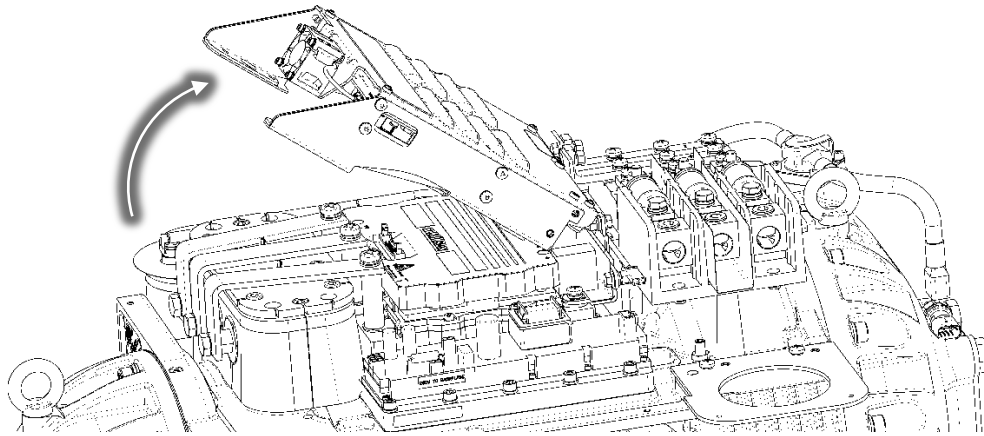


Figure 4 – Soft Start Lift

12. Unplug the cable connectors from the Soft Start board. Refer to Figure 5 (Soft Start Harness Removal).

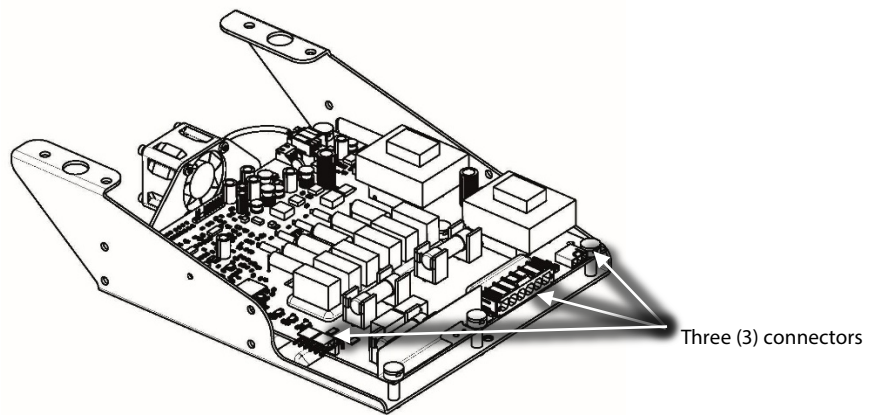


Figure 5 – Soft Start Harness Removal

13. Set the Soft Start aside and place it in a safe location.
14. Disconnect the two (2) connectors from the Thermistor Sensor Feedthroughs. Refer to Figure 6 (Motor Bus Bar Removal).
15. To remove the Motor Bus Bar, remove the three (3) M8x70 fasteners attaching the Bus Bars to the Inverter. Then remove the three (3) nuts or screws (depending on the installed feedthrough) from the Motor Bus Bars to the High-Power Feedthroughs. Continue to Step 16 for Stainless Steel Feedthroughs. For PPS (Polyphenylene Sulfide) Feedthroughs, continue to Step 17.
16. For Stainless Steel Feedthroughs, hold the inner nut with a wrench while loosening the outer feedthrough nut. Failure to do so could place an excessive load on the feedthrough causing internal damage. Continue to Step 18.
17. For the PPS Feedthroughs, use a wrench to hold the feedthrough body to prevent any rotation when loosening. Failure to do so, may loosen the feedthrough. Continue to Step 18.
18. Remove the Motor Bus Bars. Refer to Figure 6 (Motor Bus Bar Removal) for examples of both versions.

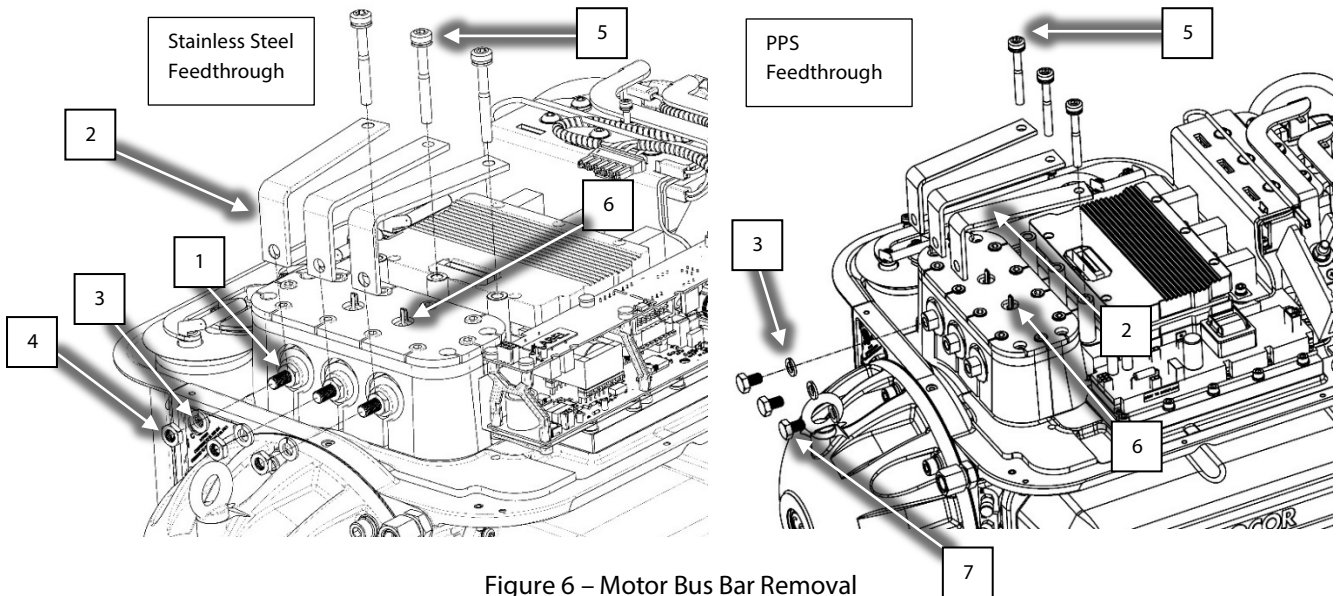


Figure 6 – Motor Bus Bar Removal

No.	Component	No.	Component
1	Inner Nut (3 places)	5	Motor Bus Bar to Inverter Screw (3 places)
2	Motor Bus Bar (3 places)	6	Thermistor Connector (2 places)
3	Lock Washer (3 places)	7	Bus Bar to High-Power Feedthrough Fastener (3 places)
4	Outer Nut (3 places)		

19. Remove the Motor Bus Bars.

3 - Installation Instructions:

1. Refer to Step 2 if the compressor contains Graphite High-Power Feedthroughs. Refer to Step 5 if Stainless Steel Feedthroughs are used.
2. For PPS High-Power Feedthroughs, place the new Motor Bus Bars in their correct locations; they are designed to align to individual bolt patterns and should not be forced.
3. Loosely install the M8x70 fasteners that secure the Motor Bus Bars to the Inverter output through the copper tubes.
4. Install the M10x16 fasteners that connect the Motor Bus Bars to the High-Power Feedthroughs and torque to 14 Nm (10 ft.lb.). Continue to Step 9.

NOTE: Hold the High-Power feedthrough using a 36mm wrench while applying torque to the M10 fasteners to prevent loosening or over torquing the feedthrough assembly.

5. For Stainless Steel High-Power Feedthroughs, slide each of the new Motor Bus Bars over the High-Power Feedthroughs until they make contact with the inner nut.
6. Loosely install the M8x70 fasteners that secure the Motor Bus Bars to the Inverter output through the copper tubes.
7. Back out the three (3) inner High-Power Feedthrough Nuts until they rest against the Bus Bars.

Warning: Be sure that once the inner nut is seated against the feedthrough, it is backed out at least one revolution. Otherwise damage to the feedthrough could occur.

8. Install the outer three (3) High-Power Feedthrough Nuts and lock washers, and torque to 13 Nm (10 ft.lb.). Be careful not to over tighten the fasteners to the High-Power Feedthroughs.

9. Go back and torque the M8x70 fasteners that secure the Motor Bus Bars to the Inverter output through the copper tubes to 14 Nm (10 ft.lb.).
10. Reconnect the two (2) connectors to the Thermistor Sensor Feedthroughs.
11. Reconnect all wiring harnesses to the Soft Start (excluding the J9 Connector).
12. Flip the Soft Start over and align the Soft Start mounting bracket with the holes in the Motor Power Feed Through Cover Plate.
13. Insert the M5x15 fasteners to secure the Soft Start mounting bracket and torque to 5 Nm (44 in.lb.).
14. Attach the J9 connector to the Soft Start Board.
15. Reroute and connect the Soft Start ground wire and other ground cables to the ground post on the compressor housing at 3 phase connection. Refer to Figure 7 (Ground Nuts) for the torque specifications.

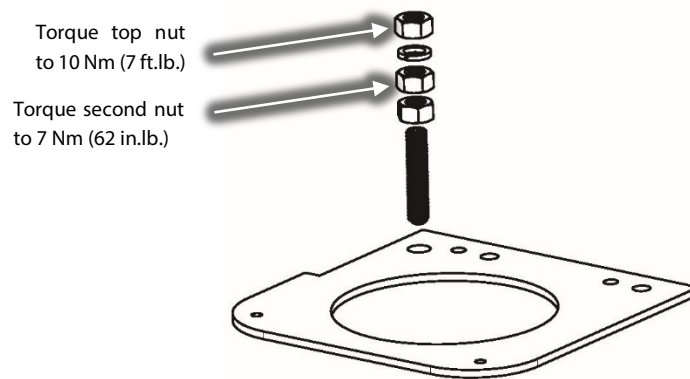


Figure 7 – Ground Nuts

16. Tighten the mains input cables.
17. Ensure that no residue remains on the contact surfaces of Top Cover and casting sides.
18. Place the Top Cover and secure it with the M5x15 fasteners according to the following sequence. Follow the sequence twice. The first time, only tighten the fasteners half way down to allow for adjustments. Torque to 13 in.lb. on the second pass. Refer to Figure 8 (Top Cover Torque Sequence).

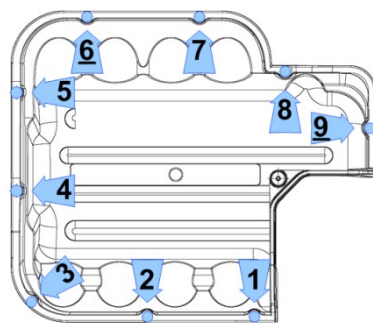


Figure 8 – Top Cover Torque Sequence

19. Ensure that no residue remains on the contact surfaces of the mains input cover and casting sides.
20. Place the Mains Input Cover and secure it with the M5x15 fasteners. Tighten according to Figure 9 (Mains Input Cover Torque Sequence).

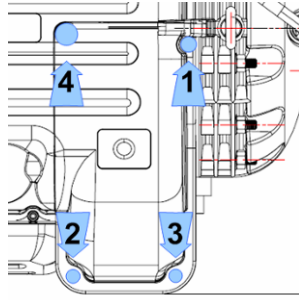


Figure 9 – Mains Input Cover Torque Sequence

21. Follow the sequence twice. The first time, only tighten the fasteners half way down to allow for adjustment. Torque to 13 in.lb. on the second pass. Tighten the # 4 fastener only once and use caution as to not overtighten.
22. Apply mains power to the compressor.

Torque Values	
Component	Torque Value
Soft Start Mounting Fasteners (M5x15)	5 Nm (44 in.lb.)
Motor Bus Bar to Motor (M10x16)	14 Nm (10 ft.lb.)
High-Power Feedthrough Nuts (M10)	13 Nm (10 ft.lb.)
Motor Bus Bar to Inverter (M8x70)	14 Nm (10 ft.lb.)
Top and Main Input Cover Fasteners (M5x15)	1.5 Nm (13 in.lb.)
Ground Post Nut (5/16"-18) (Top)	10 Nm (14 ft.lb.)
Ground Post Nut (5/16"-18) (Middle)	7 Nm (62 in.lb.)

4 - Kit Contents

QTY	Part(s) Description	Picture(s)
3	BUS - CONNECTOR	
3	SCREW M8x70 TORX PAN HEAD DBL SEMS	
3	BOLT M10x16 HEX HEAD CAP	
3	WASHER, M10, SPLIT LOCK	
4	SCREW M5X15 TORX PAN HEAD DBL SEMS	
3	NUT BRASS M10 X 1 X 5MM THICK	



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