



## INSTRUCTIONS INSTALLATION OF FIELD INSTALLABLE KITS FOR VLT DRIVES

This Instruction Sheet is for the field installation of input-plate option kits available for the VLT series D and E frames. Some kits are common for all voltages. Refer to the Tables 1 through 4 to confirm that the correct kit part number has been received. NA indicates that drive or option is not available.

Table 1. Input-Plate Option Catalog Numbers for 380 — 500 Volt VLT-5000, VLT-6000 and VLT-8000 Drives.

	VLT Models 380—500 Volts				Fuses	Disconnect Fuses	RFI	RFI Fuses	RFI Disconnect Fuses
D1/D3	5122	4152	6152	8152	176F8442	176F8450	176F8444	176F8448	176F8446
	5152	4202	6172	8202	176F8442	176F8450	176F8444	176F8448	176F8446
D2/D4	5202	4252	6222	8252	176F8443	176F8441	176F8445	176F8449	176F8447
	5252	4302	6272	8302	176F8443	176F8441	176F8445	176F8449	176F8447
	5302	4352	6352	8352	176F8443	176F8441	176F8445	176F8449	176F8447
E1/E2	5352	4452	6402	8452	176F0253	176F0255	176F0257	176F0258	176F0260
	5452	4502	6502	8502	176F0254	176F0256	176F0257	176F0259	176F0262
	5502	4602	6552	8602	176F0254	176F0256	176F0257	176F0259	176F0262
	5552	4652	6602	8652	176F0254	176F0256	176F0257	176F0259	176F0262



Table 2. Input-Plate Option Catalog Numbers for 525—690 Volt VLT-5000, VLT-6000 and VLT-8000 Drives.

	VLT 525—690 Volts				Fuses	Disconnect Fuses	RFI	RFI Fuses	RFI Disconnect Fuses
D1/D3	5042	NA	NA	8052	175L8829	175L8828	175L8777	NA	NA
	5052	NA	NA	8062	175L8829	175L8828	175L8777	NA	NA
	5062	NA	NA	8072	175L8829	175L8828	175L8777	NA	NA
	5072	4102	6102	8102	175L8829	175L8828	175L8777	NA	NA
	5102	4122	6122	8122	176F8442	176F8450	175L8777	NA	NA
	5122	4152	6152	8152	176F8442	176F8450	175L8777	NA	NA
	5152	4202	6172	8202	176F8442	176F8450	175L8777	NA	NA
D2/D4	5202	4252	6222	8252	175L8827	175L8826	175L8825	NA	NA
	5252	4302	6272	8302	175L8827	175L8826	175L8825	NA	NA
	5302	4352	6352	8352	175L8827	175L8826	175L8825	NA	NA
	5352	4402	6402	8402	175L8827	175L8826	175L8825	NA	NA
E1/E2	5402	4502	6502	8502	176F0253	176F0255	NA	NA	NA
	5502	4602	6602	8602	176F0254	176F0258	NA	NA	NA
	5602	4652	6652	8652	176F0254	176F0258	NA	NA	NA

Table 3. Input-Plate Option Catalog Numbers for 380—500 Volt VLT-Automation, VLT-HVAC and VLT-Aqua Drives.

	VLT Models 380-500 Volts			Fuses	Disconnect Fuses	RFI	RFI Fuses	RFI Disconnect Fuses
	Automation (FC-302)	HVAC (FC-102)	Aqua (FC-202)					
D1/D3	P90K T5	P110 T4	P110 T4	176F8442	176F8450	176F8444	176F8448	176F8446
	P110 T5	P132 T4	P132 T4	176F8442	176F8450	176F8444	176F8448	176F8446
D2/D4	P132 T5	P160 T4	P160 T4	176F8443	176F8441	176F8445	176F8449	176F8447
	P160 T5	P200 T4	P200 T4	176F8443	176F8441	176F8445	176F8449	176F8447
	P200 T5	P250 T4	P250 T4	176F8443	176F8441	176F8445	176F8449	176F8447
E1/E2	P250 T5	P315 T4	P315 T4	176F0253	176F0255	176F0257	176F0258	176F0260
	P315 T5	P355 T4	P355 T4	176F0254	176F0256	176F0257	176F0259	176F0262
	P355 T5	P400 T4	P400 T4	176F0254	176F0256	176F0257	176F0259	176F0262
	P400 T5	P450 T4	P450 T4	176F0254	176F0256	176F0257	176F0259	176F0262



Table 4. Input-Plate Option Catalog Numbers for 525—690 Volt VLT-Automation, VLT-HVAC and VLT-Aqua Drives.

	VLT Models 525-690 Volts			Fuses	Disconnect Fuses	RFI	RFI Fuses	RFI Disconnect Fuses
	Automation (FC-302)	HVAC (FC-102)	Aqua (FC-202)					
D1/D3	P37K T7	NA	P45K T7	175L8829	175L8828	175L8777	NA	NA
	P45K T7	NA	P55K T7	175L8829	175L8828	175L8777	NA	NA
	P55K T7	NA	P75K T7	175L8829	175L8828	175L8777	NA	NA
	P75K T7	P75K T6	P90K T7	175L8829	175L8828	175L8777	NA	NA
	P90K T7	P90K T6	P110 T7	176F8442	176F8450	175L8777	NA	NA
	P110 T7	P110 T6	P132 T7	176F8442	176F8450	175L8777	NA	NA
	P132 T7	P132 T6	P160 T7	176F8442	176F8450	175L8777	NA	NA
D2/D4	P160 T7	P160 T6	P200 T7	175L8827	175L8826	175L8825	NA	NA
	P200 T7	P200 T6	P250 T7	175L8827	175L8826	175L8825	NA	NA
	P250 T7	P250 T6	P315 T7	175L8827	175L8826	175L8825	NA	NA
	P315 T7	P315 T6	P400 T7	175L8827	175L8826	175L8825	NA	NA
E1/E2	P355 T7	P355 T6	P450 T7	176F0253	176F0255	NA	NA	NA
	P400 T7	P400 T6	P500 T7	176F0253	176F0255	NA	NA	NA
	P500 T7	P450 T6	P560 T7	176F0254	176F0258	NA	NA	NA
	P560 T7	P500 T6	P630 T7	176F0254	176F0258	NA	NA	NA

### **Kit Contents**

- Assembled input plate
- Modification Label
- Disconnect-handle template (if mains disconnect provided)
- Instruction Sheet 175R5795

### **Required Tools**

- Metric socket set 7—19 mm
- Socket extensions
- Torx driver set T10—T40
- Torque Wrench, 6—170 in-lbs
- Drill (if kit is supplied with a mains disconnect switch)
- Punch (if kit is supplied with a mains disconnect switch)

#### **WARNING**

The frequency converter contains dangerous voltage. Disconnect power and follow lockout/tag-out procedures before working on this equipment.

#### **WARNING**

Devices inside the frequency converter contain stored electrical energy. Wait a minimum of 15 minutes after disconnecting power before working on this equipment.

#### **WARNING**

The input plate contains sharp edges. Use hand protection when removing and installing the input plate.

This procedure can be performed before or after the VLT has been installed. Removal of the door is not required for these modifications (door removal after installation is difficult). Photo 1 shows a D2 frame VLT 5000 with the basic input plate. The wiring will vary depending on the installation.

1. Disconnect power and verify that the incoming power to the VLT is off. Follow lockout/tag-out procedures.
2. Disconnect the incoming power cables from the input terminals. The cables have been removed from the system in the photo for clarity however it is not necessary to remove the power cables from the VLT enclosure. In multi-conductor applications, loosen or remove cable clamps to allow the cables to be removed from the terminals.
3. Loosen, but do not remove, the two 10mm retaining nuts for the EMC screen. The EMC screen can then be lowered to disengage from the input plate. The EMC screen contains slotted mounting holes.

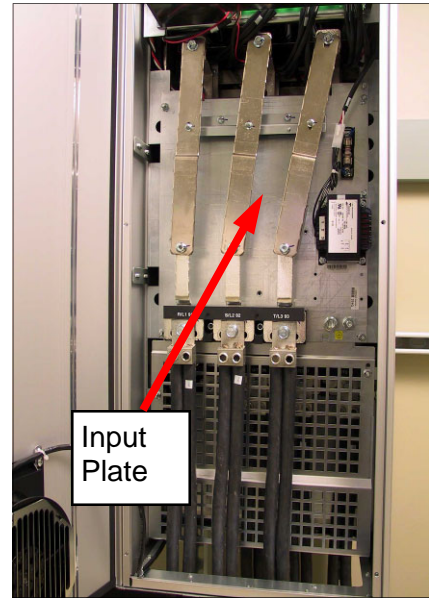


Photo 1. Frame D2 VLT without options

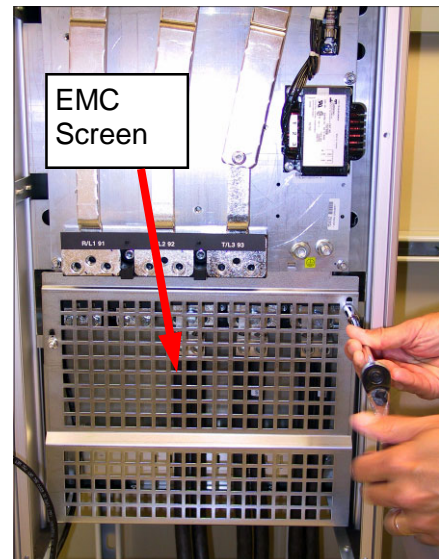


Photo 2. Input Power cables removed

4. Remove the three 13mm retaining nuts that connect the input plate to the input bus bars of the VLT. Exercise caution to avoid damaging control wires that are located near these connections.

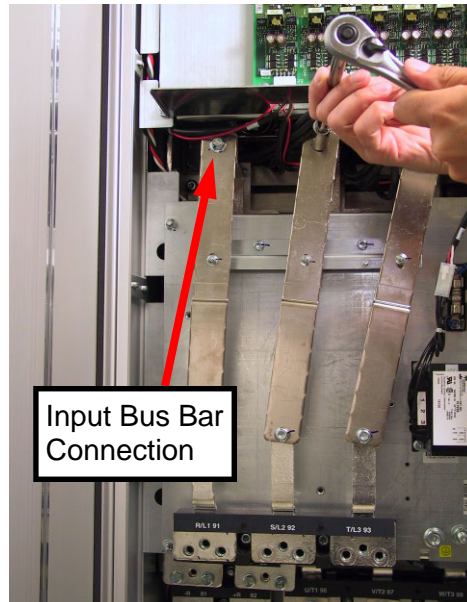


Photo 3. Input Plate Bus-Bars

5. Disconnect the fan transformer wiring harness using the connector as shown in Photo 4.

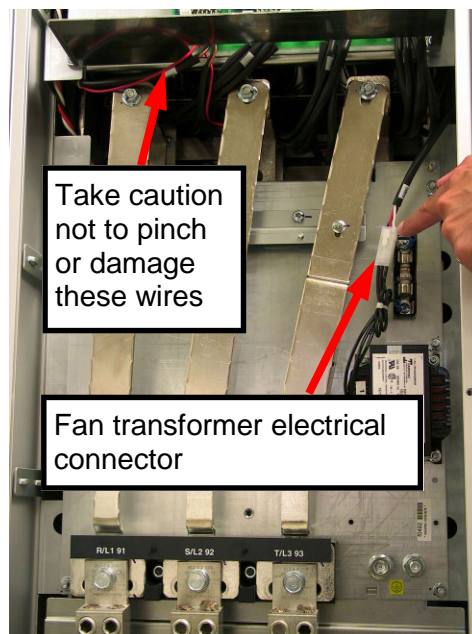


Photo 4. Fan-Transformer wiring-harness connector

6. The input plate is attached to the VLT frame with five 10mm nuts. Remove these retaining nuts as shown in Photo 5. The input plate will be held in place by five studs that are attached to the VLT frame.

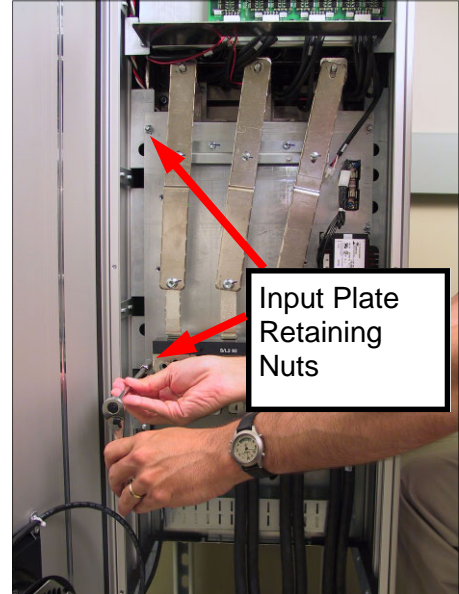


Photo 5. Removing Input Plate Retaining Nuts

7. Remove the input plate as shown in Photo 6. Caution: Bus bars may have sharp edges. Hand protection is recommended. Exercise caution not to damage control wires that are located near the top of the input bus bars.

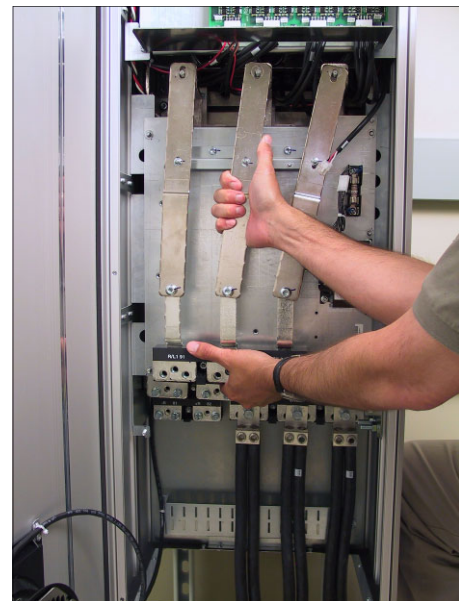


Photo 6. Removing Input Plate



Note: The output bus bars and the fan box will be visible with the input plate removed (Reference Photo 7).

The input plates weigh between 6kg (13lbs) and 30kg (66lbs) depending on which options/features are on the input plates.

**CAUTION**

Guard against damaging the control cables while installing the input plate.

**CAUTION**

The input plates for E1 frames are heavy (20—35 kg, 44—77lbs). If the input plate was supplied with a disconnect switch, remove the disconnect switch from the input plate prior to installation and re-install it on the input plate after the input plate has been installed.

8. Hang the new input plate on the five studs that are mounted on the VLT frame. Photo 8 shows the installation of an input plate with a fused disconnect. The bus bars at the top should line up with the studs located on input bus bars. When the input plate is aligned with all the studs, push the entire assembly on to the frame of the VLT. The input plate is now in place.

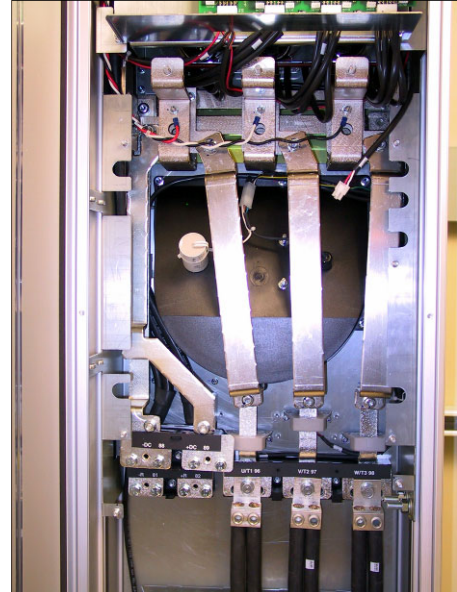


Photo 7. VLT Frame D2 with Input plate removed



Photo 8. Installing of kit containing Disconnect and Fuses



9. The bus bars may need to be adjusted to fit on the studs located on the main input bus bar. To accomplish this, loosen the bus support nuts and the nuts that attach the lower part of the bus bars where they connect to the fuse or the disconnect as shown in Photo 9. This will allow for enough movement to align the top of the bus bar. Photo 10 shows the installation of an input plate with disconnect, fuses and RFI. This input plate will fit without the need for alignment. It is not recommended that the RFI be opened for this installation.
10. Tighten the five 10mm input plate retaining nuts to 35 in-lbs. Tighten the three 13mm bus bar nuts to 85 in-lb. Tighten the 8mm bus bar support nuts to 20 in-lbs.
11. Push the EMC screen up to engage the new input plate and tighten the two 10 mm retaining nuts to 35 in-lbs. The top of the EMC plate is held by two notches on the bottom of the input plate.
12. Reconnect the input power wiring. Tighten all connections to the proper torque specifications.
13. Mark the modification label that was supplied with the kit with the appropriate modification. Install the label next to the VLT product label.

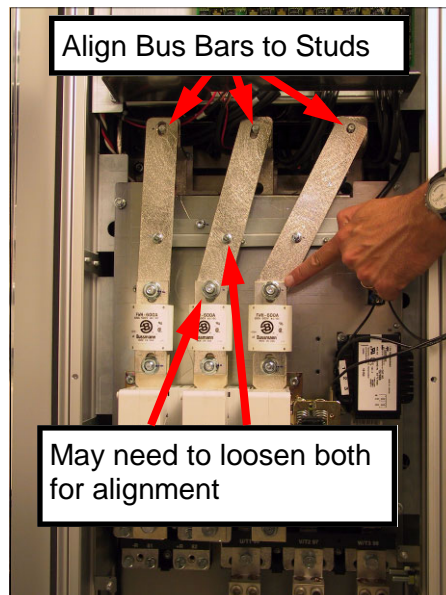


Photo 9. Aligning Bus Bars

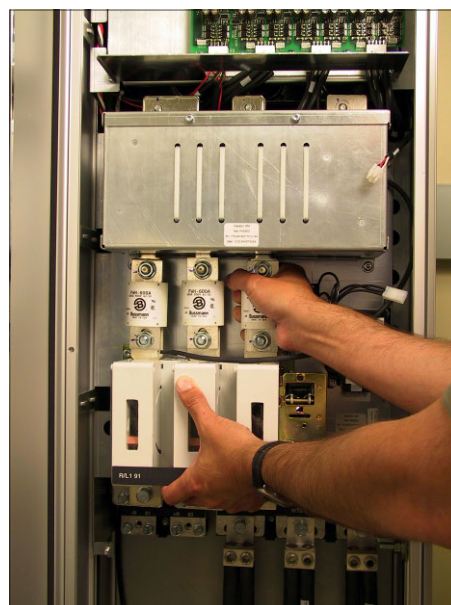


Photo 10. Installing Input Plate with Disconnect, Fuses and RFI

14. Reconnect the fan transformer wiring as shown in Photo 11.



Photo 11. Reconnecting Fan Transformer Wiring

If installing an input plate with an RFI, two additional steps are required.

15. Connect the RFI cable to the gate drive card as shown on Photo 12.
16. Set the RFI switch on the interface card to the "ON" position as shown in Photo 13.

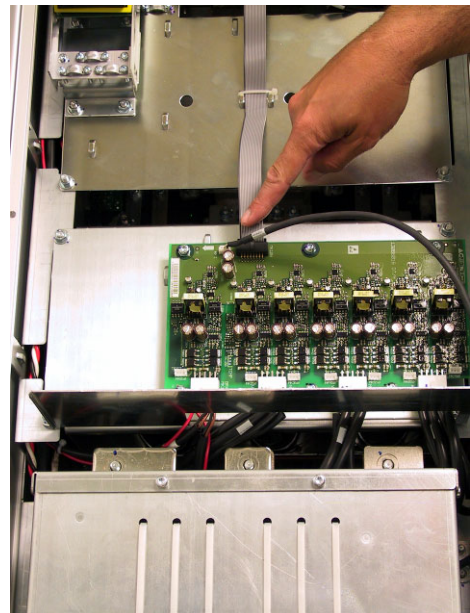


Photo 12. RFI Cable to Gate Drive PCB Connector

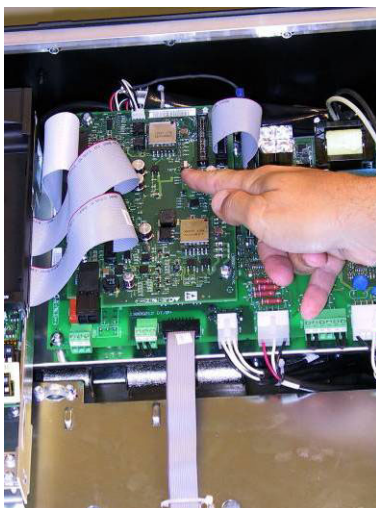


Photo 13: RFI Switch on Control Card

The door of the VLT must be drilled and punched to accommodate the disconnect handle for input plates equipped with a disconnect switch. The door does not need to be removed to perform the handle installation (however the photos below show the work being performed on a door that is not mounted on the drive).

**CAUTION**

Take care to prevent metal particles and debris from entering the VLT while drilling and punching the door.

1. Use the drawing provided with the kit to locate the center of the handle mechanism. Alternatively, the handle shaft may be used with marking compound to mark the point on the door where the initial hole will be drilled.
2. Use a punch to cut a 31mm hole in the door for the handle shaft.
3. Use the template provided with the kit to locate the two 5mm holes for mounting the handle (Reference Figure 1).



Photo 14. Drilling and punching the door to install disconnect han-

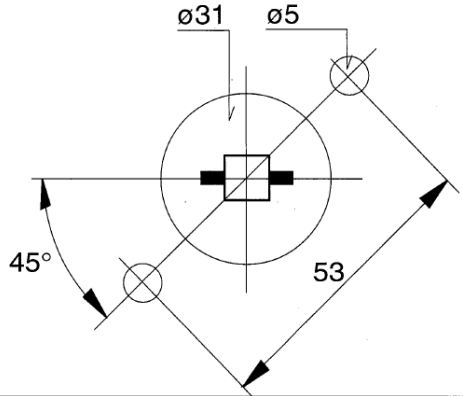


Figure 1. Location of handle-mounting holes for disconnect-switch handle (this figure is not to scale, use the to-scale drawing provided with the kit).

4. Drill the two 5mm holes for mounting the handle.
5. The handle-shaft depth is adjustable. Adjust the shaft to the appropriate depth with the depth collar provided with the disconnect.
6. Use the instructions included with the handle to complete the mounting.



Photo 15. Drilling the 5mm holes for mounting the handle.



Photo 16. The shaft feed-through hole and the 5mm holes for mounting the handle.