

	Document Number	LCS-ENG-P0012 (InTouch #7827373)
	Document Name	E30 FR8 Drive Module Replacement Procedure
	Revision	01

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1.0 Purpose

The objective of this document is to outline the procedure for replacing the drive module in the Sensia E30 frame 8 VSD.

2.0 Scope

This procedure applies to activities related to drive module replacement for frame 8 Sensia E30 VSD. These activities can be carried out in a workshop or at the field.

The module replacement procedure and tools would be similar for all production of the Sensia E30 VSD, frame 8 and above. Minor deviations may exist between generations of drive and frame sizes.

Followings are some pictures of a frame 8 Sensia E30 VSD.



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3.0 Safety Precautions

For the purposes of this manual, all work must be performed by **Qualified Personnel** only. This is someone who is familiar with the installation, construction or operation of the equipment and the hazards involved. In addition, this person must possess the following qualifications:

- Training and authorization to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.
- Training in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses, face shields clothing, etc., in accordance with established safety procedures

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Danger

Potential Severity: Major
Potential Loss: Assets, Personnel
Hazard Category: Electrical

Make sure that proper PPE is worn before any work on the VSD. Failure to do so can cause physical injury or damage to the equipment.



Danger

Potential Severity: Major
Potential Loss: Assets, Personnel
Hazard Category: Electrical

Before any work on the VSD, use a multimeter to make sure that all the power sources are off. The power at the incoming lines (at the top of the fuse disconnect switch), motor terminals and DC bus must be measured to make sure that there is no electrical hazard present.

ENSURE THAT POWER IS TURNED OFF AND LOCKED OUT BEFORE WORKING WITH THE SYSTEM.

USE PADLOCK ON MAIN DISCONNECT HANDLE TO LOCK OUT POWER AND PREVENT ACCIDENTAL ENERGIZING

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4.0 Module Replacement Procedure

The filter change procedure and tools would be similar for all production of the Sensia E30 VSD, frame 8 and above. Minor deviations may exist between generations of drive and frame sizes.

- Tools Required
 - Impact Driver
 - Power Ratchet
 - Socket Adapter – 15mm
 - Socket Adapter – T45

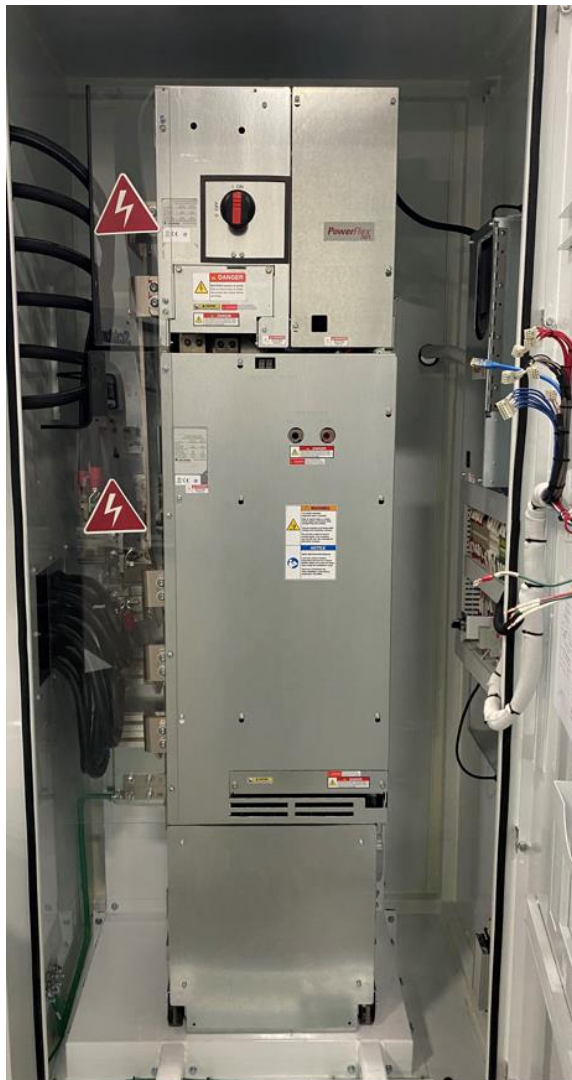


Figure 4-1: Drive module in the enclosure

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Danger

Before working on the drive, make sure there is no incoming power to the drive and the main circuit breaker is turned OFF and pad locked. Also wait for at least 15mins to discharge DC bus of the drive module.

1. Remove the plexiglass barrier of the module shielding the busbar connections
2. Disconnect and remove the DC and AC busbars from the power terminals. (Two DC busbars on top and three AC busbars at the bottom.)



Figure 4-2: DC and AC Busbars at Drive Module

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3. Disconnect all the wires that are connected external to the module:

- 120V power cable to the axial fan
- 240V power cable to the pre-charge board
- 24V cable to the control pod
- INV cable to the control pod

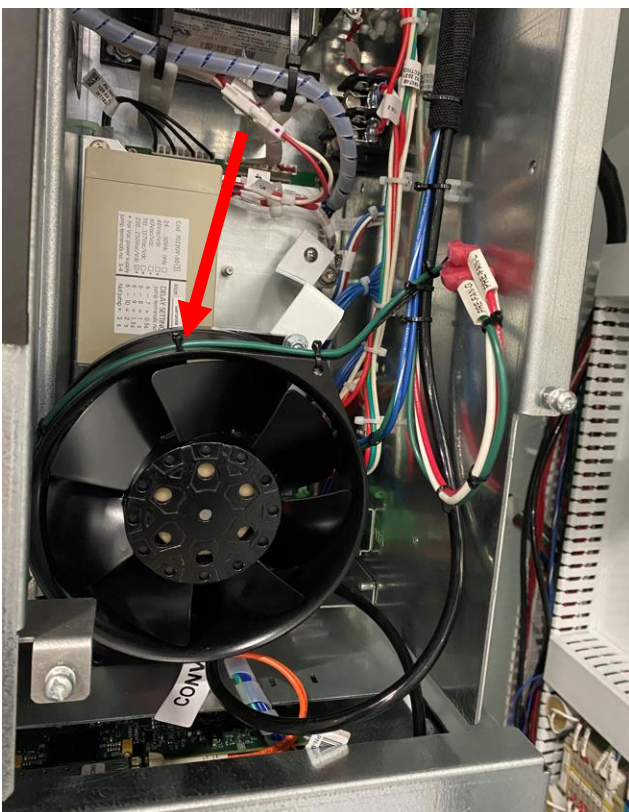


Figure 4-3: 120V power cable to the axial fan

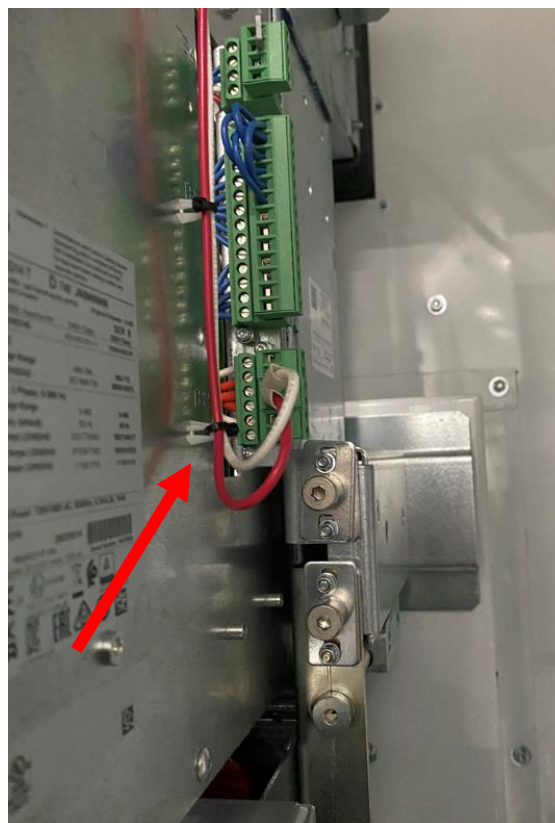


Figure 4-4: 240V power cable to the pre-charge board

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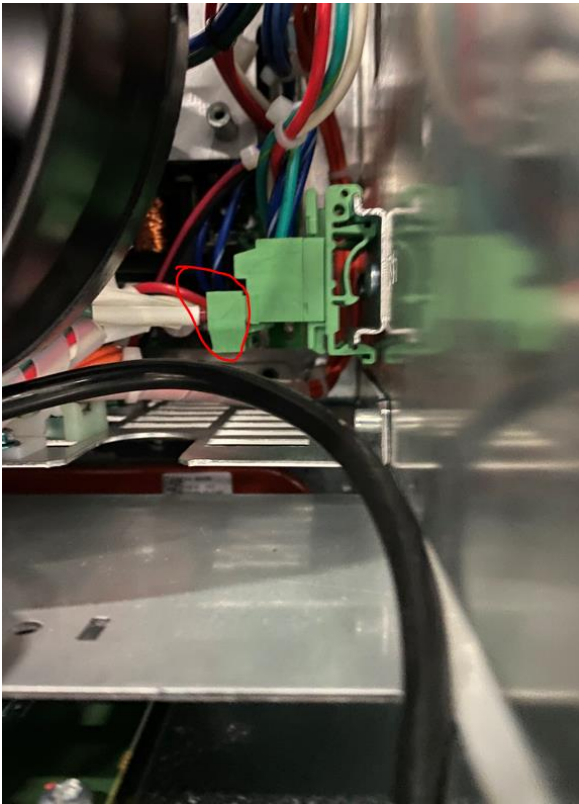


Figure 4-5: 24V cable to the control pod.



Figure 4-6: INV cable to the control pod.

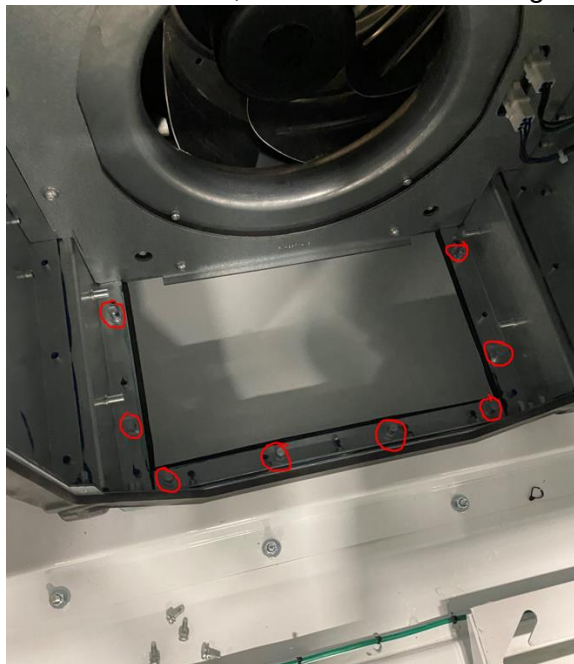
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4. Remove the screws that secure the heatsink fan airway cover to the chassis, then remove the cover.



Figure 4-7: Screws at the heatsink fan airway cover.

5. Remove the bolts that are securing the module to the bottom of the enclosure. These bolts are installed under the module, remove the bolts using the power ratchet.



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6. Disconnect the captive bolts that connect the module chassis to the enclosure frame. These bolts are on both sides of the module.



Figure 4-8: Captive Bolts at the Top (left side)



Figure 4-9: Captive Bolts at the Bottom (left side)

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7. Pull the module carefully to the roll out cart. At least two people are required to pull this drive.



Figure 4-10: Module Placed on the Roll Out Cart

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8. Attach the lifting hardware to the lifting angle of the module.
Using crane, move the old module from the rollout cart and place the new module on to the rollout cart



Figure 4-11: Lifting hardware attached to the lifting angle of the module.

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9. Remove the lifting hardware. Push the new drive module carefully into the enclosure



Figure 4-12: Pushing in new module into the enclosure

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10. After placing the module inside the enclosure, adjust the module so that the holes on the enclosure match with the module. A camera phone can be used for visualization. Once this is done, install back the bolts to mount the module to the bottom of the enclosure.

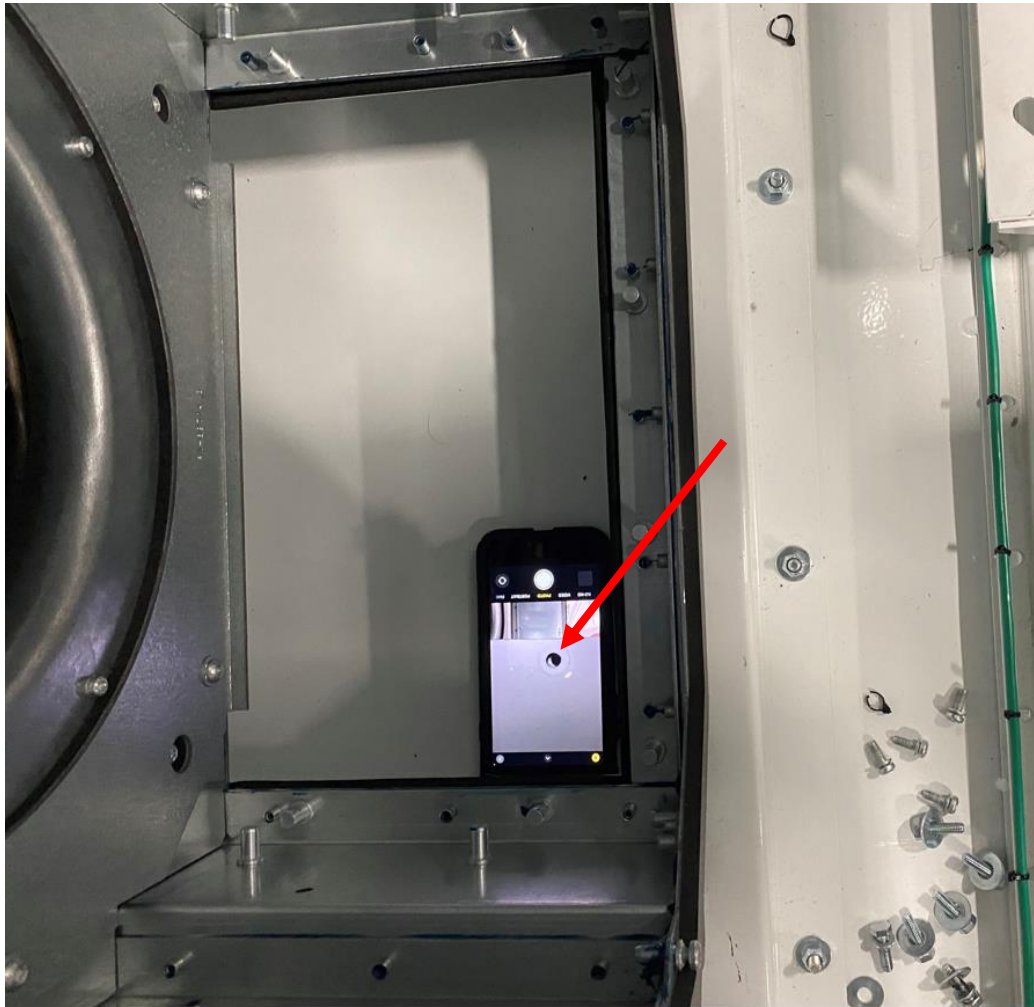


Figure 4-13: Aligning module to the mounting holes

11. To complete the new module installation, follow the above procedure in reverse order.
- Install back the heatsink fan airway cover.
 - Connect back the captive bolts that connect the module chassis to the enclosure frame. These bolts are at both sides of the module.
 - Connect back the cables: 120V power cable to the axial fan, 240V power cable to the pre-charge board, 24V cable to the control pod, and INV cable to the control pod.
 - Install back the ac and dc bus bars.
 - Install back the plexiglass barrier.

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5.0 Revision History

Revision	Change Description	Date Issued	Author
01	Initial	March 2022	Bo Siung Wong