NEW FLYER

# INSTRUCTION TO SERVICE

| ITS: 58874 | |
|---|---|
| **SECTION:** | 260 Battery Compartment |
| **WRITTEN BY:** | Brandt Melville |
| **SUBJECT:** | XE Inspection |

# ITS-58874

**THIS ITS DOCUMENT SHOULD BE RETAINED AND REFERED TO FOR FUTURE MAINTENANCE UNTIL THE NEW FLYER PARTS AND/OR SERVICE MANUAL IS UPDATED TO REFLECT WORK DONE AS A RESULT OF THIS DOCUMENT. ENSURE THAT THIS DOCUMENT IS AVAILABLE FOR PARTS AND MAINTENANCE STAFF GOING FORWARD.**

# Contents

# XE High Voltage Inspection Procedure

Thoroughly read through this document in its entirety before starting your first inspection. Install all panels/covers removed during the inspection at the end of each section using the existing hardware. After verifying the torque on each connection, apply torque marks using the supplied black paint marker. If any bolt is found with insufficient torque, remove the existing torque marks and apply a black torque mark. Ensure the XE High Voltage Inspection Check Sheet is filled out as you carry out the inspection for **each bus**. Ensure to be as descriptive as possible when describing the issues found during the inspection. Take pictures when required to grasp the severity of an issue and provide to the RPSM to submit with the check sheets. The XE High Voltage Inspection Check Sheet can be found in appendix B. A copy of the check sheet without the procedure can be found in the attachments of FSAR 200306-116246 for printing purposes. Once complete, return to your local RPSM to upload into the attachments of the appropriate Reported Incident that can be found linked to FSAR 200306-116246.

## PLC and Siemens Programming

1. Contact your local RPSM for the latest Siemens software package and PLC program.
2. Update the bus with the latest Siemens software and PLC program.

## Lock Out Tag Out

3. Turn the MRS to the off position and wait 5 minutes before proceeding to the next step.
4. Turn the main battery disconnect and HV Interlock switch to the “OFF” position.
5. Follow the High Voltage Safety Guidelines & Procedures as referenced in appendix A and perform a proper Lock Out Tag Out procedure.
6. Wearing proper PPE and using an appropriate voltmeter as per appendix A, confirm that no voltage is present between HVPOS_VEH_FB & HVNEG_VEH_FB before proceeding. These connections are located inside the HV Fuse box inside the inverter rack as seen in Figure 12. Please see Figure

1 below for an example of a High Voltage Fuse Box Layout with HVPOS_VEH_FB & HVNEG_VEH_FB highlighted.

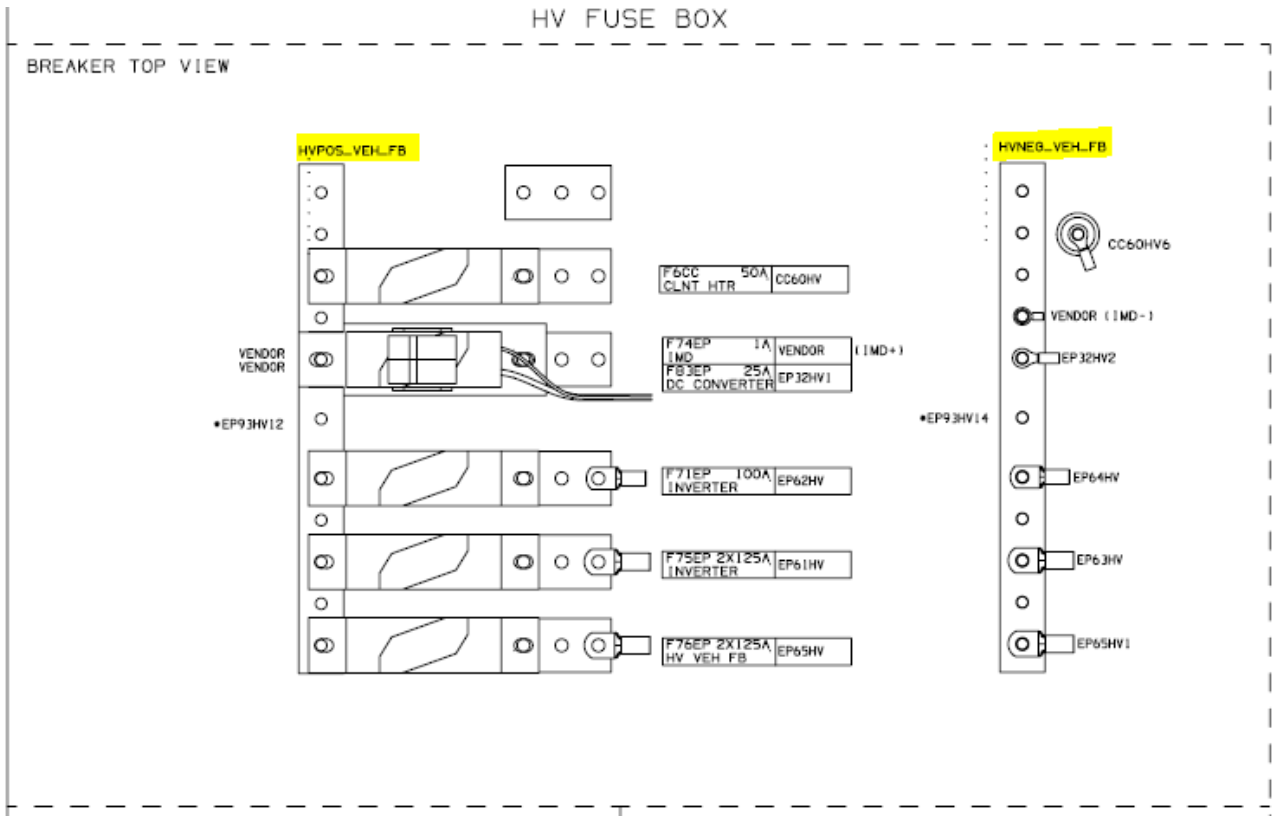



**Figure 1: High Voltage Fuse Box Layout**

☞ **NOTE: Layout of Fuse Box may vary.**

# Air Compressor

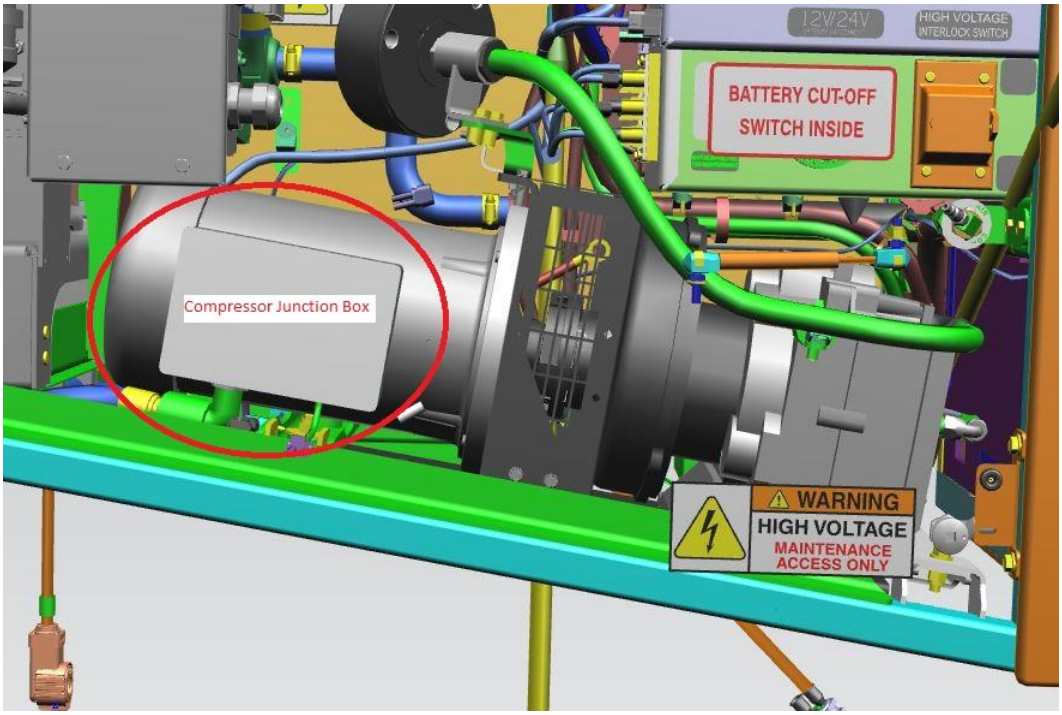



**Figure 2: Air Compressor Junction Box Location**

7. Ensure proper securement of the junction box to the air compressor motor.
8. Remove the front face plate of the air compressor junction box circled in Figure 2 above.
9. Lightly pull on the orange high voltage supply cable to confirm the cable gland is properly secured to the junction box.

⚠**WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

10. Ensure the black distribution block is properly secured to the junction box.
11. Ensure grommets are present on all holes used to route cables to the junction box.
12. Thoroughly inspect all wires for chafing/kinking. Ensure to check where the cables route through the junction box through the grommets.
13. Thoroughly inspect all connections for corrosion.
14. Ensure terminal block connections are torqued to 16 in-lbs.

15. Remove any butt splice and replace with “Closed End Crimped Splice” as seen below in Figure 3 (Except New York Builds).


**Figure 3: Closed End Crimped Splice**

16. Locate the air compressor grounding connection highlighted and circled below in Figure 4.
17. Verify that the air compressor grounding connection has contact to bare metal and is torqued to 17 ft-lbs dry.

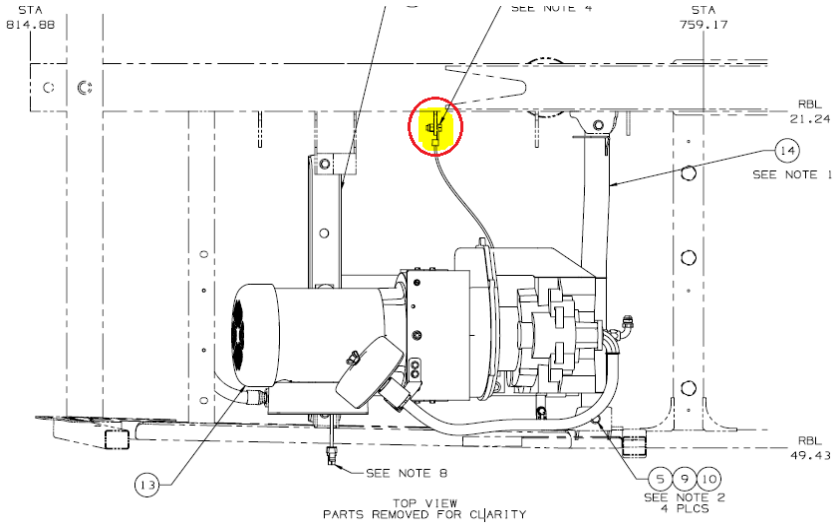



**Figure 4: Top View of Air Compressor**

# PEM Motor Junction Box

18. Locate and remove the access panel to the PEM Motor. The access panel is located on the interior floor at the rear of the bus.

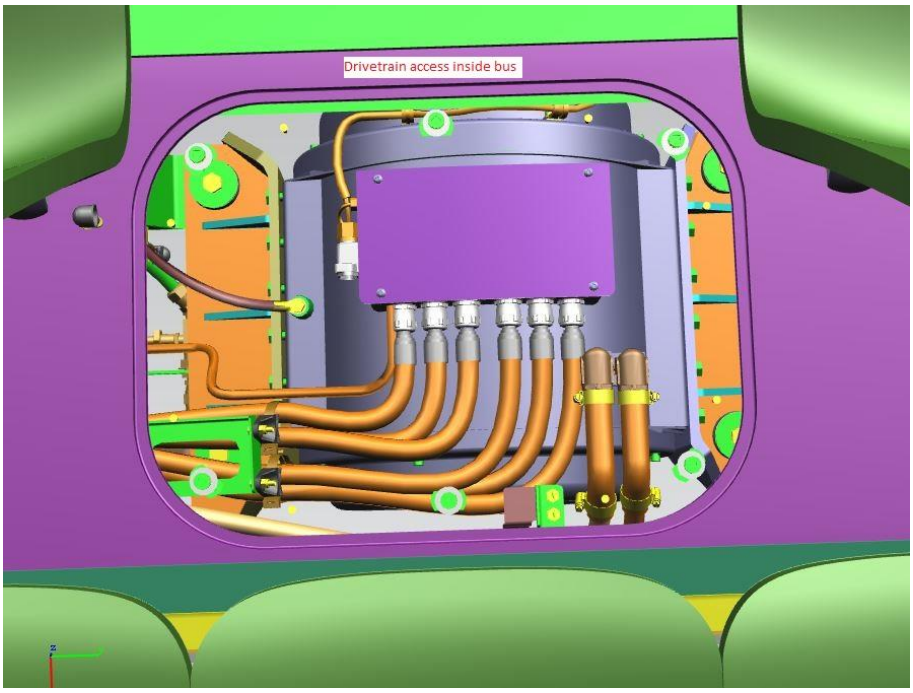



**Figure 5: PEM Motor Junction Box Location**

☞ **NOTE: Standard grade motors will only have 3 High Voltage cables versus the 6 shown above in figure 5 above for a high-grade PEM motor**

19. Remove the PEM Motor Junction Box Cover.

⚠**WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

20. Thoroughly inspect all cables and wires for chafing/kinking.
21. Thoroughly inspect all connections for corrosion.
22. Ensure all forked lugs are fully inserted into the terminal bolt.

23. Ensure proper torque on motor terminal connections.
    A, Standard grade (3 Cables) - 20 Nm
    B. High grade motor (6 Cables) – 10 Nm
24. Ensure all M25 cable glands are torqued to the terminal box with 10 Nm.
25. Re-install the terminal box cover using an X pattern and to 8 Nm.

# Curb Side Charge Receptacle

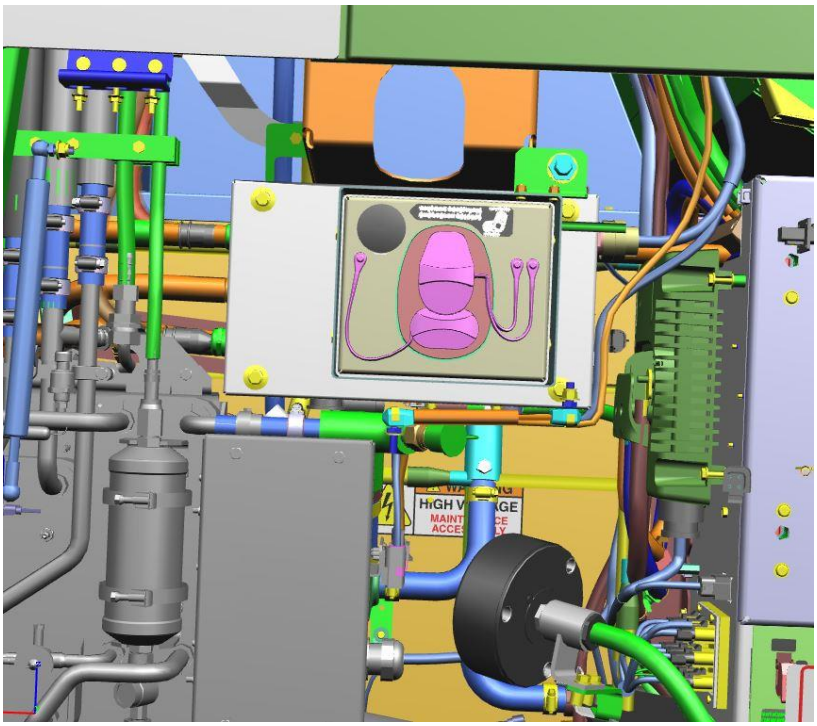


**Figure 6: Curb Side Charge Receptacle Location**

26. Remove the curb side charge receptacle face plate as shown below.

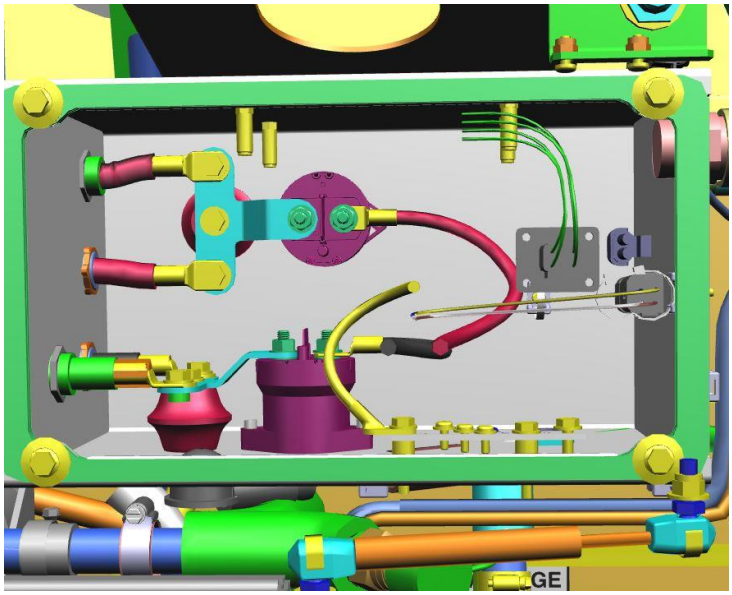


**Figure 7: Curb Side Charge Receptacle Cover Removed**

☞ **NOTE: The Curb Side Charge Receptacle cover will need to be removed for the last section of the inspection so you may leave this cover off when complete.**

⚠**WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

27. Inspect for water/moisture/debris and dry if needed.
28. If any water, moisture or debris is found, replace failed or missing gasket.
29. Lightly pull all cables to ensure proper cable securement to the junction box.
30. Thoroughly inspect all cables and wires for chafing/kinking.
31. Thoroughly inspect all connections for corrosion.
32. Ensure all power connections are torqued to 90 in-lbs.

# Street Side Charge Receptacle

☞ **NOTE: If your bus does not have dual side plug in charging capabilities, you may skip to the next section.**

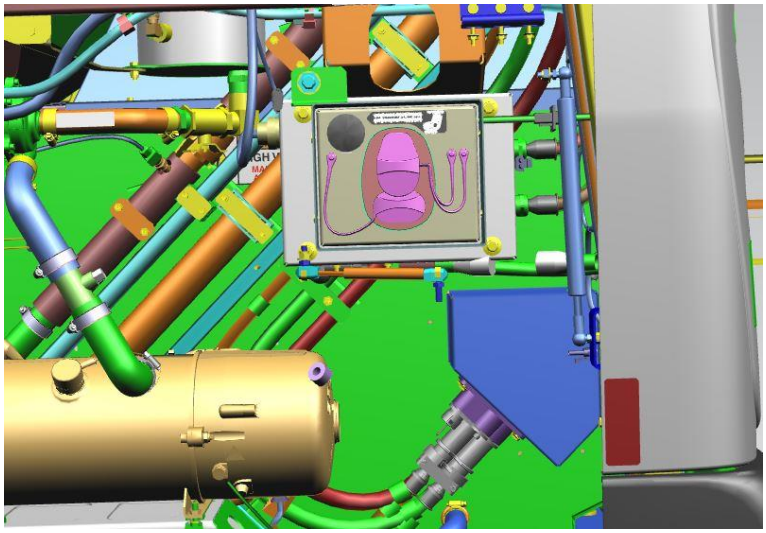


**Figure 8: Street Side Charge Receptacle Location**

33. Remove the street side charge receptacle face plate as shown below.

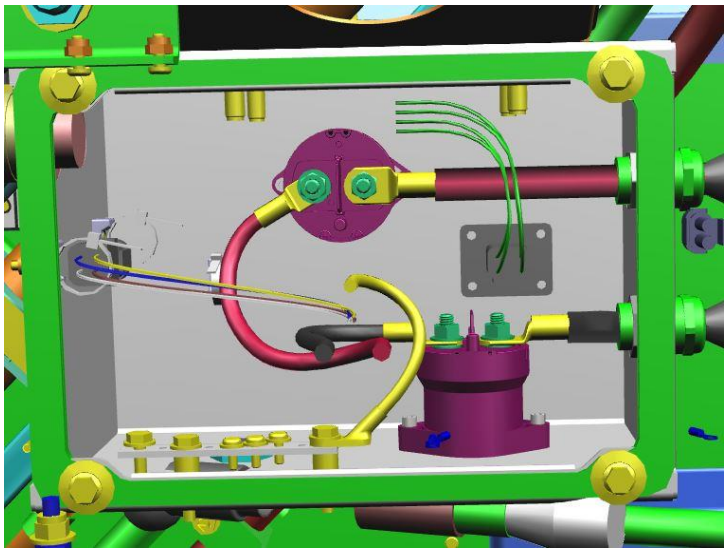


**Figure 9: Street Side Charge Receptacle Cover Removed**

**⚠WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

34. Inspect for water/moisture/debris and dry if needed.
35. If any water, moisture or debris is found, replace failed or missing gasket.
36. Lightly pull all cables to ensure proper cable securement to the junction box.
37. Thoroughly inspect all cables and wires for chafing/kinking.
38. Thoroughly inspect all connections for corrosion.
39. Ensure all power connections are torqued to 90 in-lbs.

# Battery Chiller

40. Locate the battery chiller assembly on the roof of the bus as seen below in Figure 10.

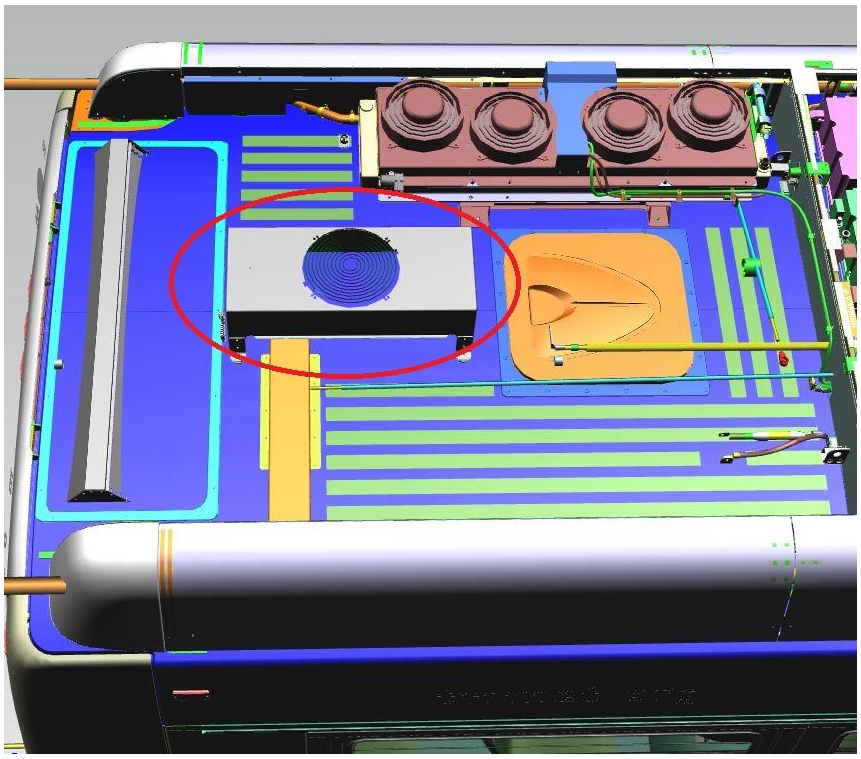


**Figure 10: Battery Chiller Location**

☞ **NOTE: Layout of roof components may be different than shown in Figure 10.**

⚠**WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

41. Thoroughly inspect all cables and wires for chafing/kinking.
42. Thoroughly inspect all connections for corrosion.
43. Verify the #8 fitting on the left side of Figure 11 below is torqued to 17.5 ft-lbs dry.

⚠**WARNING: Figure 11 below is facing the rear of the bus**

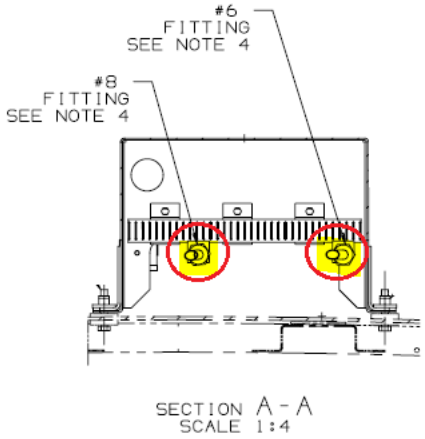



**Figure 11: Rear Facing Section View of the Battery Chiller**

44. Verify the #6 fitting on the left side of Figure 11 below is torqued to 12 ft-lbs dry.

# Inverter Rack

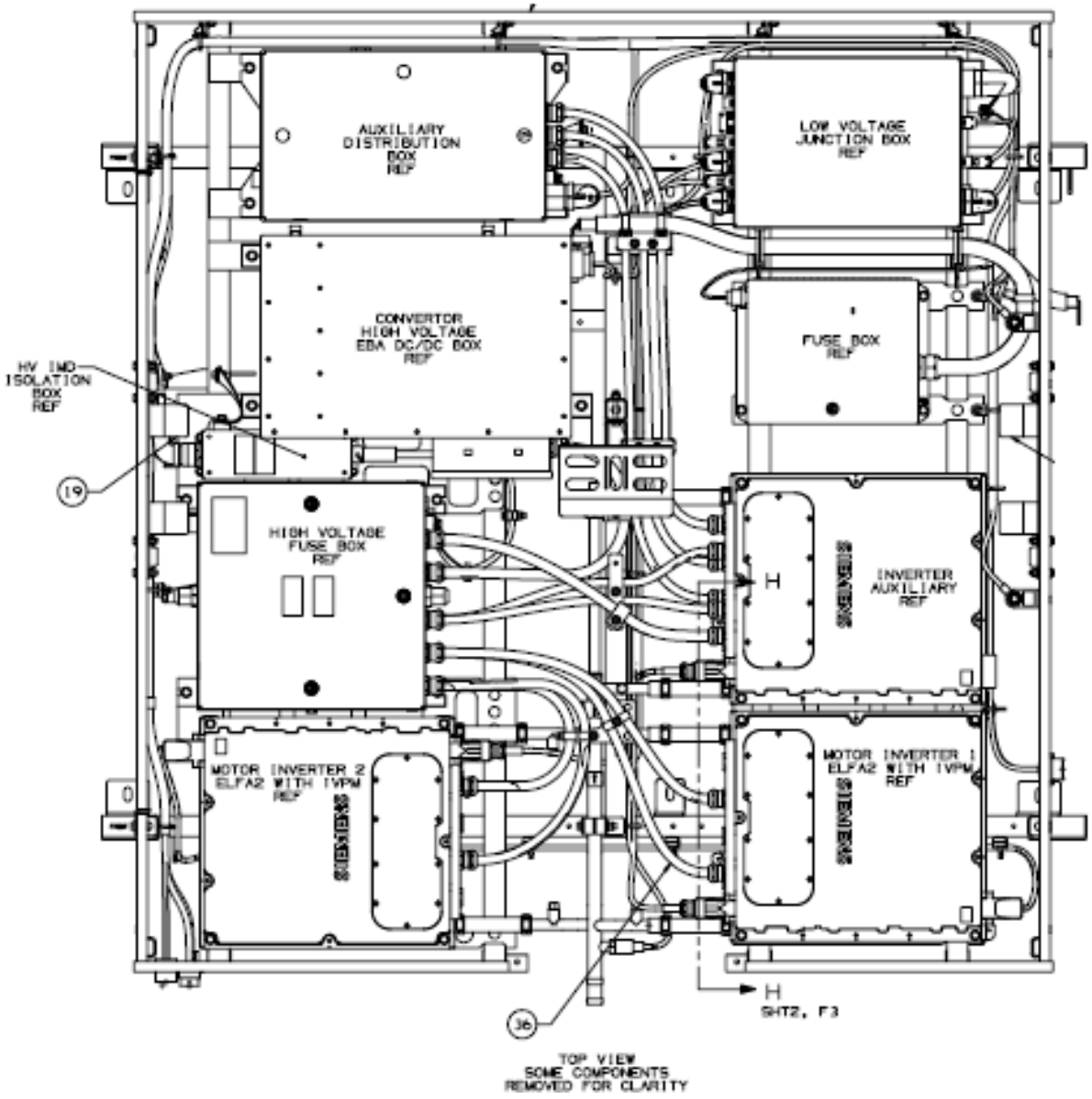



**Figure 12: High Grade Inverter Rack Layout**

☞ **NOTE: Layout may vary slightly depending on build. Standard grade layouts do not include Motor Inverter 2.**

45. Remove the Inverter Rack cover.

# Inverters

46. Ensure all M25 cable gland connectors on all Inverters are torqued to 16 ft-lbs.
47. Ensure the upper M8 bolts securing the grounding strap at each inverter and circled below in Figure 13 are torqued to 11 ft-lbs.

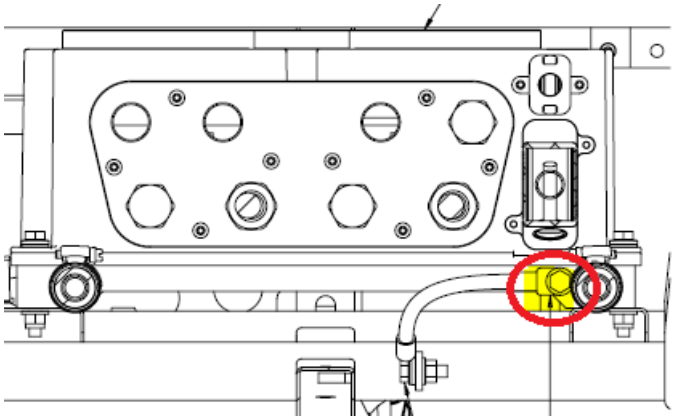


**Figure 13: Inverter Upper Grounding Connection**

48. Ensure the lower 5/16 bolts securing the grounding strap at each inverter and circled below in Figure 14 are torqued to 15 ft-lbs.

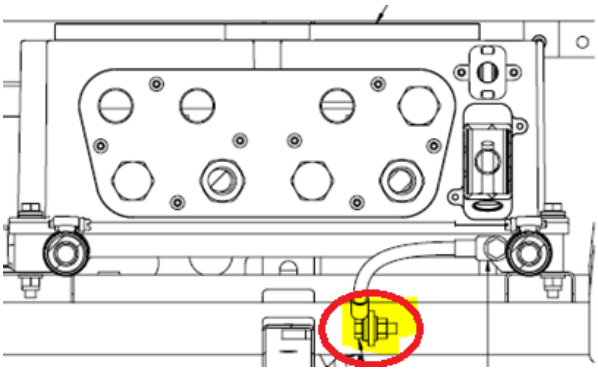


**Figure 14: Inverter Upper Grounding Connection**

# High Voltage Fuse Box

49. Ensure all M25 cable gland retainer nuts on the HV Fuse Box are torqued to 7 ft-lbs.
50. Ensure the M8 bolt at the upper ground strap connection for the High Voltage Fuse Box circled below in Figure 15 is torqued to 13 ft-lbs.

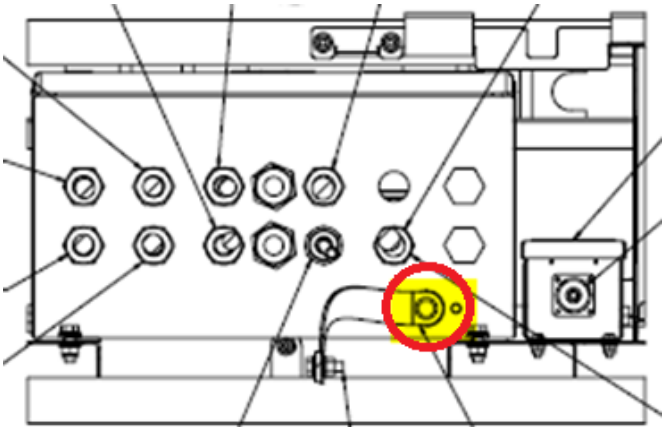


**Figure 15: HV Fuse Box Upper Ground Strap Connection**

51. Ensure the 5/16 bolt at the lower ground strap connection for the High Voltage Fuse Box circled below in Figure 16 is torqued to 15 ft-lbs.

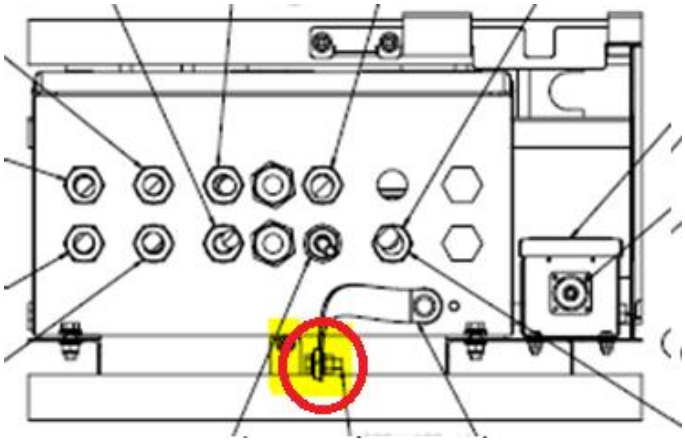


**Figure 16: HV Fuse Box Upper Ground Strap Connection**

52. Remove the High Voltage Fuse Box Cover.

⚠**WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

53. Lightly pull all cables to ensure proper cable securement to the High Voltage Fuse Box.
54. Thoroughly inspect all cables and wires for chafing/kinking.
55. Thoroughly inspect all connections for corrosion.
56. Ensure the two largest HV power cables are torqued down to 13 ft-lbs.
57. Ensure all other electrical connections torqued to 10 ft-lbs.

# Auxiliary Distribution Box

58. Ensure all M25 cable gland retainer nuts on the Auxiliary Distribution Box are torqued to 7 ft-lbs.
59. Ensure the M8 bolt at the upper ground strap connection for the High Voltage Fuse Box circled below in Figure 17 is torqued to 13 ft-lbs.

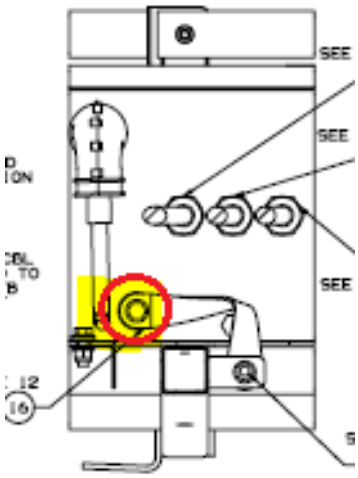



**Figure 17: Aux Distribution Box Upper Ground Strap Connection**

60. Ensure the 5/16 bolt at the lower ground strap connection for the High Voltage Fuse Box circled below in Figure 17 is torqued to 15 ft-lbs.

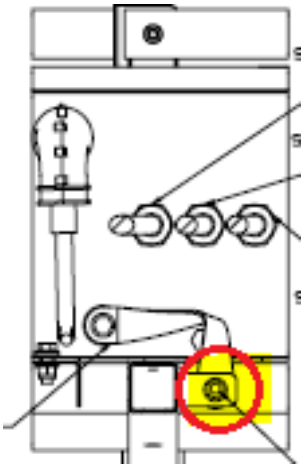


**Figure 18: Aux Distribution Box Upper Ground Strap Connection**

# Motor Inverter Cooling Fan

61. Verify the chassis connection highlighted below is clean to bare metal and torqued 30 to 37 ft-lbs

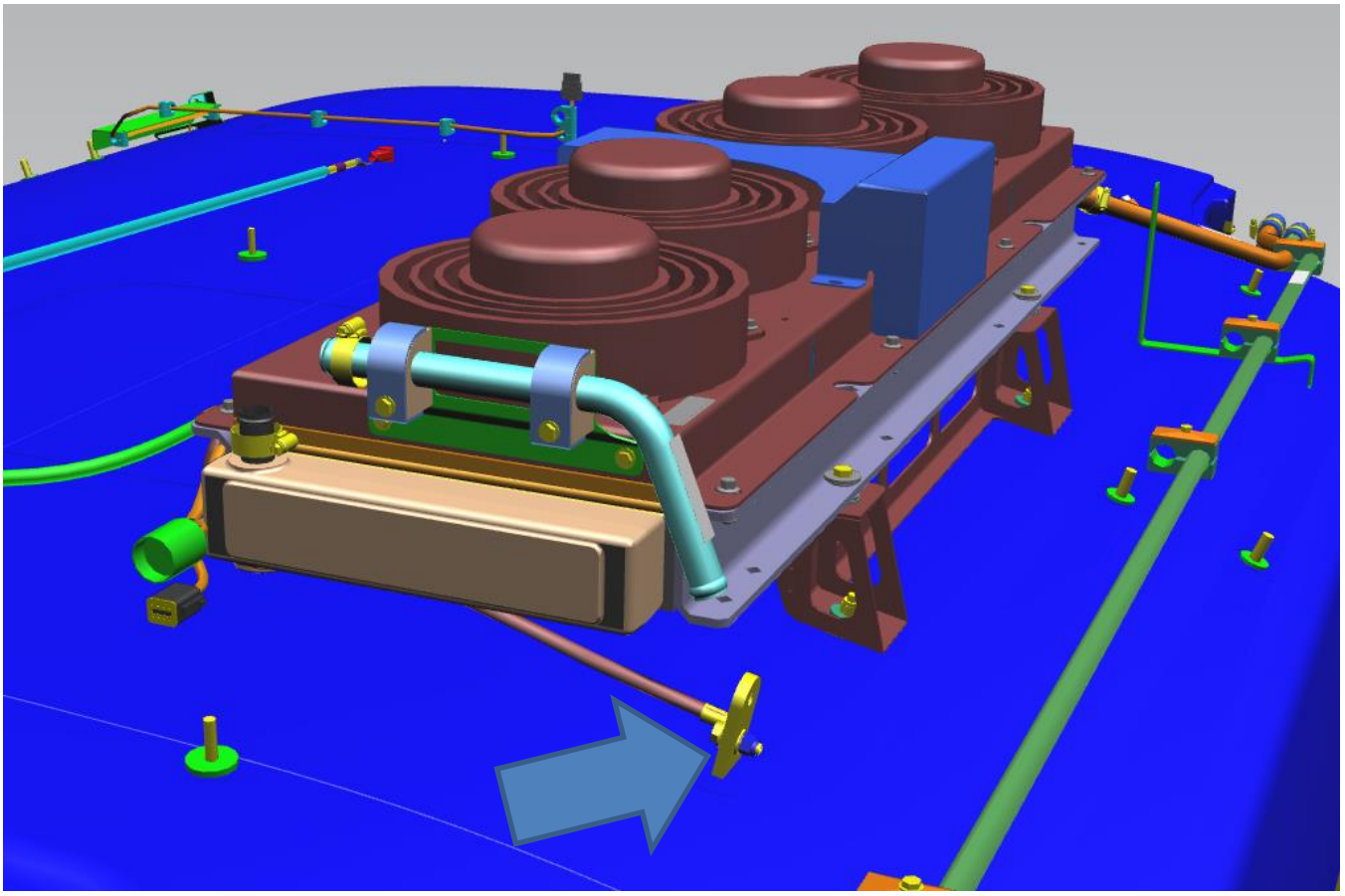


**Figure 19: Motor Inverter Cooling Fan Grounding Point. Parts removed for clarity.**

# Rear mount HVAC Unit

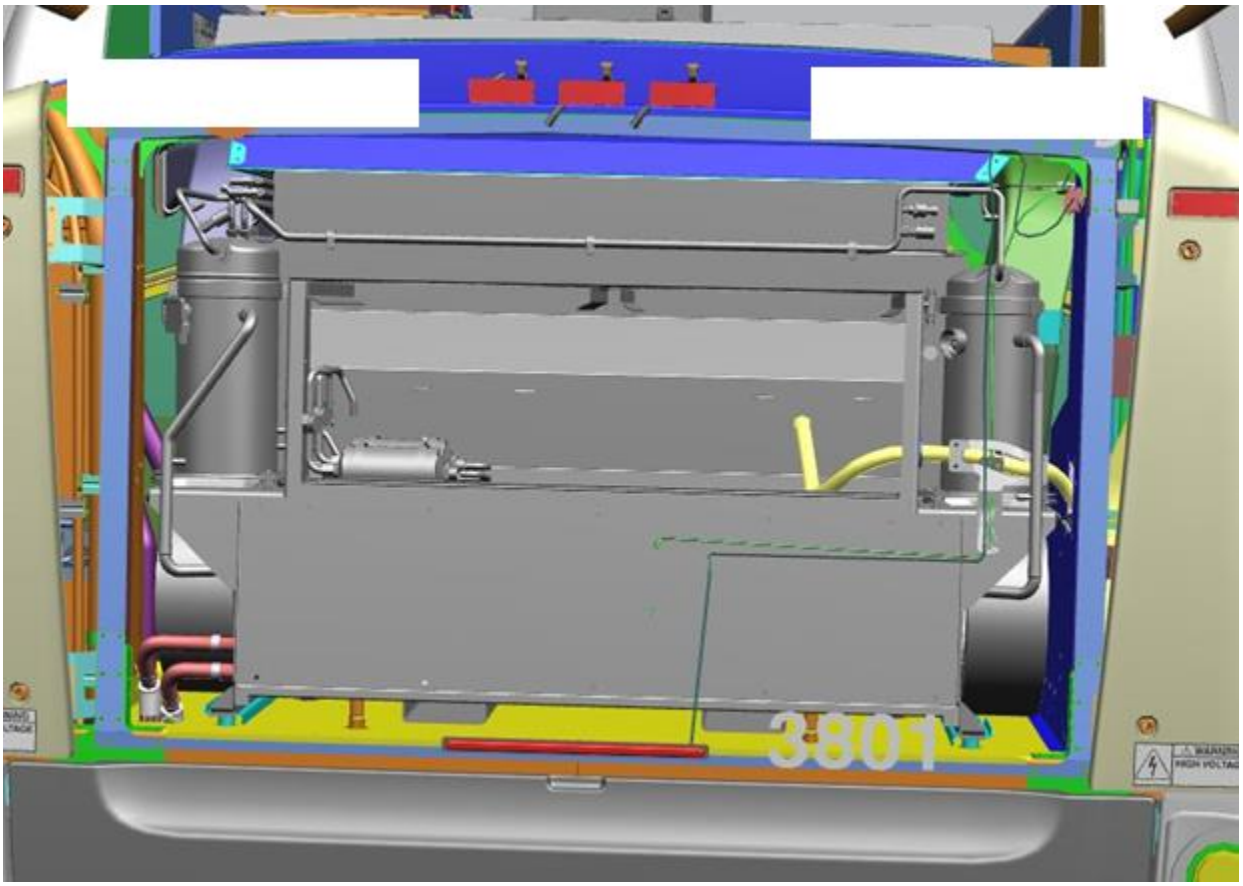



**Figure 20: HVAC Location**

62. Ensure proper securement of High Voltage cable to the HVAC Unit.

# Electric Auxiliary Heater

63. Locate the electric auxiliary heater on the rear of the bus beside the rear mount HVAC.
64. Remove the heater head cover to access the high voltage connections.

**⚠WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

65. Verify the orange high voltage cable secured to the contactor and circled in yellow below in figure 21 is torqued to 5.9 ft-lbs.

**Figure 21: High Voltage Positive Auxiliary Heater Connection**

66. Lightly pull on the orange high voltage cable circled below in figure 22 and connected to the terminal block to ensure proper cable securement.

**Figure 22: High Voltage Negative Auxiliary Heater Connection**

☞ **NOTE: The remaining task of the inspection is to verify proper high voltage cable orientation of the Electric Auxiliary Heater. Due to past issues with these cables not being built to print, we can not rely on the labels. To accomplish this task, we must verify continuity between <u>one</u> of the Electric Auxiliary Heater cables and another location that is connected to the same supply. This will confirm for us that the end of the cable at the Electric Auxiliary Heater cable is labelled and installed correctly. All SR's will use a connection point inside the Curb Side Charge Receptacle Box to verify continuity. Use the table below to determine weather or not to use the positive or negative high voltage supply.**

| SR | Polarity |
|---|---|
| **2144** | HVPOS |
| **2143** | HVPOS |
| **2165** | HVPOS |
| **2145** | HVPOS |
| **2207** | HVPOS |
| **2208** | HVPOS |
| **2221** | HVPOS |
| **2211** | HVPOS |
| **2297** | HVPOS |
| **2317** | HVPOS |
| **2318** | HVPOS |
| **2304** | HVPOS |
| **2182** | HVPOS |

| SR | Polarity |
|---|---|
| **2296** | HVNEG |
| **2313** | HVNEG |
| **2315** | HVNEG |
| **2212** | HVNEG |
| **2213** | HVNEG |
| **2360** | HVNEG |
| **2326** | HVNEG |
| **2352** | HVNEG |
| **2362** | HVNEG |
| **2344** | HVNEG |
| **2375** | HVNEG |
| **2363** | HVNEG |
| **2319** | HVNEG |
| **2382** | HVNEG |
| **2374** | HVNEG |
| **2403** | HVNEG |

67. Use the table above to determine weather or not you will be verifying continuity on the positive or negative cable of the Electric Auxiliary Heater.
68. Connect one end of your digital multimeter to the high voltage Electric Auxiliary Heater connection appropriate to your SR. Refer to Figures 21 and 22 for positive and negative connection location.
69. Connect a long cable to your digital multimeter and run it over to the Curb Side Receptacle Box.

**⚠WARNING: Using appropriate PPE, confirm that there is no voltage present on any connection point.**

70. You will be connecting the opposing end of your digital multimeter to one of the contactor terminals in the Curb Side Receptacle Box. If your SR's polarity listed in the table above as HVPOS, connect your digital multimeter to the bus side of the positive contactor located in the Curb Side Charge Receptacle Box. If your SR's polarity is listed as HVNEG, connect your digital multimeter to the bus side of the negative contactor located in the Curb Side Charge Receptacle Box. Refer to the highlighted and labeled connections in Figures 23, 24 and the appropriate wiring diagram for your SR.

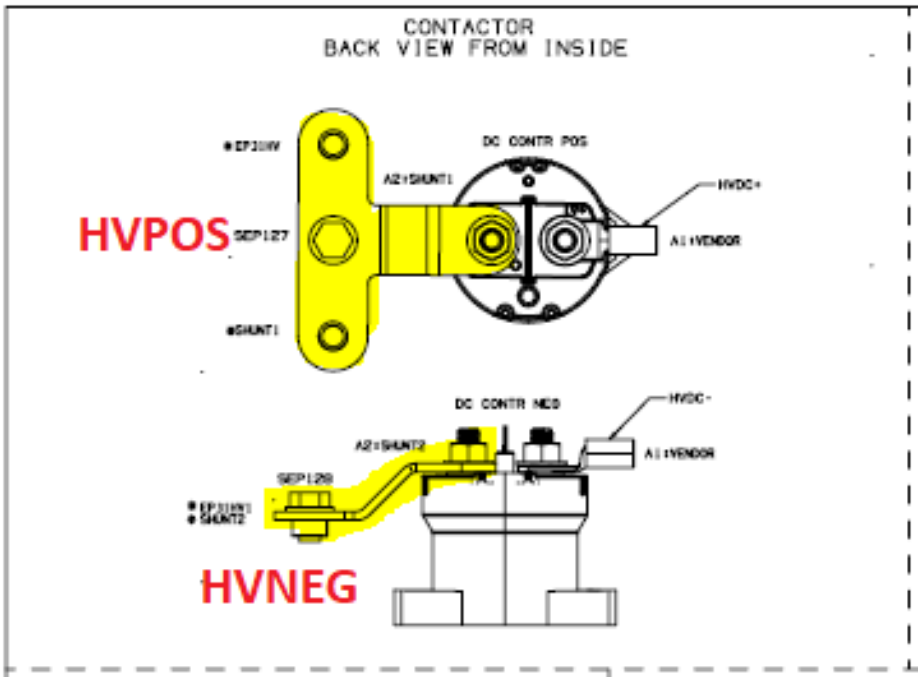



**Figure 23: HVPOS & HVNEG Charge Receptacle Contactor Locations (Dual Side Charging)**

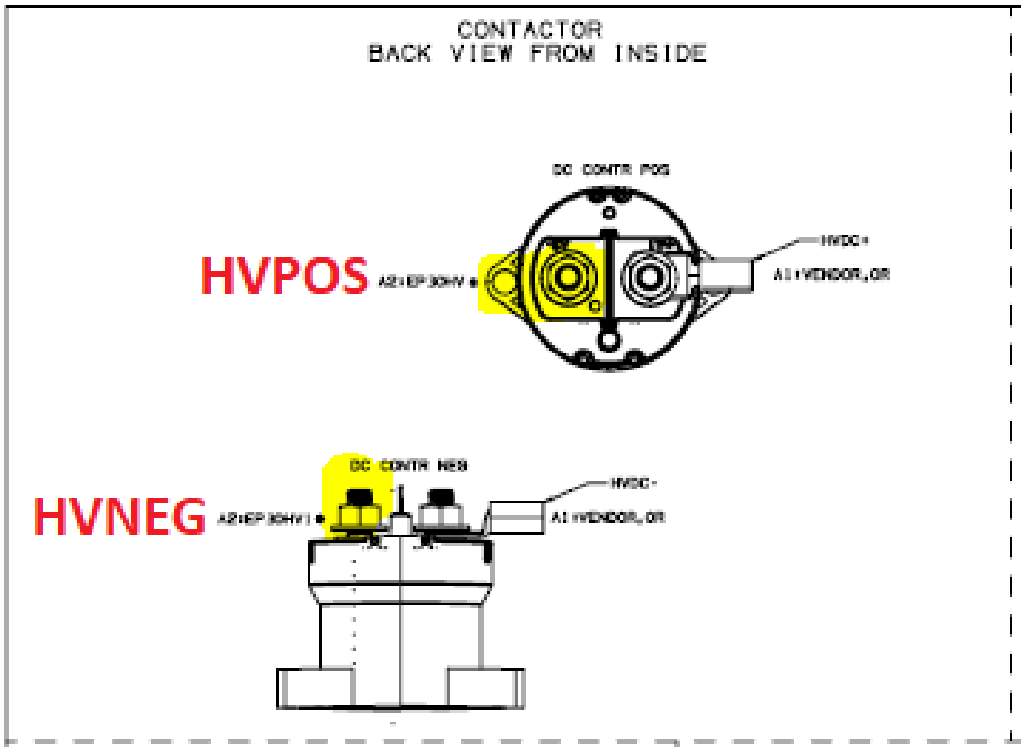



**Figure 24: HVPOS & HVNEG Charge Receptacle Contactor Locations (Single Side Charging)**

71. Using your digital multimeter, verify continuity between the two points appropriate to your SR. If you do not get continuity between the two appropriate points, contact TSS and complete a diamond 1 on the Electric Auxiliary Heater Cable installation.

## LABOUR ESTIMATE

| | Operation | People | Hours | Labor Time |
|---|---|---|---|---|
| 1 | Inspect various systems in XE buses to ensure long term reliability. | 1 | 9.0 | 9.0 |

## PARTS REQUIRED

| Item | Part Number | Description | Qty. per Coach | Units | Notes |
|---|---|---|---|---|---|
| 1 | 121202 | PAINT MARKER BLACK | 0.5 | EA | |

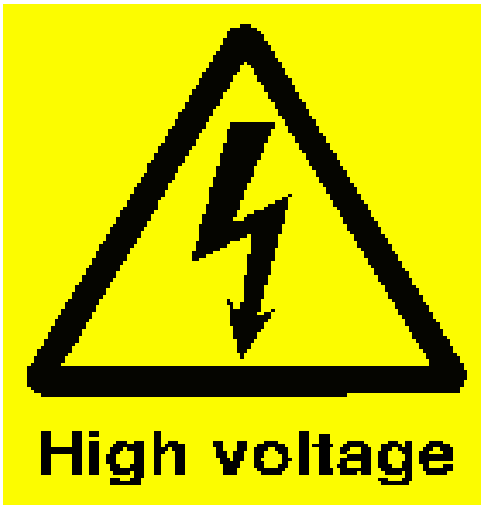
## TOOLING REQUIRED

| Item | Part Number | Description | Qty. per Coach | Units | Notes |
|---|---|---|---|---|---|
| 1 | N/A | Digital Multimeter with long test lead | 1 | EA | |

# Appendix A – NFIL Spec 532295 - High Voltage Safety Guidelines & Procedures for New Flyer Battery Bus

The following provides general guidelines in relation to safety and best practices when completing installation or servicing work on any New Flyer battery bus vehicle platform.

This document is not meant to supersede the actual released installation and assembly drawings and where conflicts arise, the released engineering drawings take precedence.




**Introduction**
The utmost concern, while working with High Voltage (HV) systems, is the safety of yourself, other personnel and the potential of damage to property. To minimize these risks, it is crucial to be properly trained and always maintain a very alert, questioning and disciplined attitude without fail. As soon as your guard is lowered, then the potential of an accident is probable that can hurt or kill yourself or someone else and possibly damage property.

**What is High Voltage (HV)?**
Any form of voltage that is greater than 50 volts if the person's skin at the electrical contact points is not compromised and not wet.

**Equipment Required**

The following equipment shall be required:

| |
|---|
| Digital Multimeter (DMM), 1000 volt Category III, 600 volt Category IV, |
| 10Megohm impedance or greater with insulated case or rubber holster |
| Clamp-on current probe, 1000 volt Category III, 600 volt Category IV |
| High Pot Tester (Hi-Pot) |
| Phase rotation meter |
| Personal Protection Equipment (PPE) appropriate for 700volt DC & 230 |
| volt AC with Class 00 or higher HV gloves with compatible leather over |
| gloves. Appropriate safety glasses as well as the face shield. The PPE |
| shall also meet the required Arc Flash & Arc Blast requirements. Before |
| use, inspect the PPE in accordance with this guideline. |
| Adequate lighting |
| HV insulated mat |
| Two fused HV clip leads 10 inches long |
| Safety barricade with warning lights & "Danger High Voltage" signs |
| Belt tool pouch (use only to carry small components up/down a ladder) |
| Torque Screwdriver set |
| Imperial torque nut driver set |
| Metric torque nut driver set |

**Equipment Calibration**

All test equipment must be within their calibration interval and recorded such with the respective serial numbers. These records must be available to the Checker.

**Personnel Requirement**
Only trained personnel shall supervise and perform High Voltage system testing, checkout and troubleshooting. Two personnel (one called the Checker & the other called Monitor/Recorder) shall perform Checkout Procedures, together, to ensure safety of themselves, others nearby & for the protection of vehicle & property. Refresher training shall be provided to these personnel on a regular basis and when new systems are to be checked by them. The training of the personnel shall consist of:

| |
|---|
| HV & low voltage basics, intermediate & advanced electricity |
| HV & low voltage electrical systems of the vehicle |
| Shop safety practices & procedures |
| First aide including CPR & the use of the shop defibrillator |
| How to release a victim that can't let go HV |
| Quickest method of shutting down HV |
| Firefighting and emergency procedures |
| HV & arc flash safety |
| Organized & tidy placement of equipment & tools allowing for |
| unrestricted movement |
| Operation of Hi-pot |

To ensure effectiveness of training, exams of the trained material shall be required with a high passing mark of at least 80% and a retraining of the missed 20 % on a one to one basis.

**Checker Function**
**(Caution:** The Checker must not have any health conditions that can be exacerbated when startled and must not have any electronic implants.)

| |
|---|
| Directed by the Monitor/Recorder |
| Performs all preparations & checks |
| Wears PPE as specified by the Checkout Procedure |
| Performs all restorations |

**Vehicle Inspection**
It is necessary that the vehicle to be checked out, first be visually inspected of all systems, workmanship and with special attention to ensuring there is no HV cable or equipment damage or chafing.

**High Voltage Checkout Preparation**
(1) The scope of the work must be accurately defined such as a Checkout Procedure that requires systematic steps with sign offs. Before a Checkout is performed, the Supervisor, Checker and Monitor/Recorder must conduct a briefing of what shall transpire, identify potential hazards, resist pressures of "is it done yet?", anticipate problems and question possible events. If an unexpected electrical hazard or fault occurs, during any time of the Checkout, it must be immediately reported to the supervisor. After the Checkout is completed the same group should review the results and processes and make proposed modifications to the procedures if required.

(2) Install Safety barricade with warning lights & signs indicating "Danger High Voltage" around the vehicle perimeter and ensure no personnel are within the fenced perimeter during the checkout procedure.
(3) It shall always be the goal to check the systems as much as possible with all HV power OFF and Locked Out/Tagged Out and proven as de-energized by voltage measurement using the DMM. The functionality of the DMM must be proved before and after the verification of no HV present. Then, if possible, the HV systems should be challenged by trying to energize them while checking that no HV appears.
(4) When it is necessary to perform tests of HV systems with the power ON, then the Working Live procedure must be followed.
(5) The test personnel shall always rehearse the actions required in case of any possible accident scenarios.
(6) Before beginning the Checkout Procedure, the test personnel shall remove all their jewelry (including pierced ones), watches and any electrically conductive objects on them.

**PPE Requirements**
The PPE voltage class, Arc Flash and Arc Blast rating shall be compatible with the voltage and Arc Flash capability of the systems being tested. Appropriate leather glove protectors shall be worn over the HV rubber gloves.

**PPE Care & Testing**
Rubber insulated PPE shall be periodically cleaned and tested in accordance with 29 CFR 1910.137 and the appropriate ANSI/ASTM standards. HV gloves, sleeves and mats shall be tested every 6 months. PPE apparel shall be cleaned and maintained in accordance with the manufacturer's instructions. A record of the PPE testing shall be maintained and available to the users.

**PPE Inspection**
Inspect PPE equipment, before use, for any degradation or damage and ensure that the HV gloves have been tested every 6 months. Also perform an air pressure test on the HV gloves before and after each use. If during PPE use a potential damaging incident occurred to the PPE, stop further testing and inspect the PPE. If at any time the PPE is defective, reject it, and obtain an accepted one.

**PPE Storage**
PPE apparel should be stored lying flat, undistorted, right-side out and not folded in protective containers. The HV mats can be rolled with an inside diameter greater than 2 inches.
Rubber HV gloves should be stored in cool, dark, dry, and free from damaging chemicals or vapors. The glove cuffs should face downwards, without folding, in the appropriate glove bag and hung vertically.

**Insulated Tools**
Insulated tools should be visually inspected for insulation damage before and after each session of use.

**Lockout/Tagout Procedure**
The Lockout/Tagout procedure should be followed that is specified in the respective checkout procedure. When removing the lock and tag:
(1) The locks and tags shall be removed by the installer of them or under her/his supervision.
(2) If the installer of the locks and tags is not available, then her/his supervisor:
(a) Ensures that the installer of the locks and tags in not in the facility
(b) Contacts the installer to inform her/him that the locks and tags will be removed

(c) Reminds the installer of the lock and tag removal when she/he resumes work

**Stored Energy**
Personnel must always remember the characteristics of stored energy devices such as capacitors and batteries and when energy is available from.

**Working Live**
To maximize safety, it is always important to perform the maximum amount of HV checkout in the de-energized state.
When it is necessary to work with HV equipment while energized or to verify whether HV is present, the utmost care and safety procedures must be utilized including:
(1) Wearing appropriate PPE with protector gloves over top of the HV rubber gloves
(2) Ensure all personnel, except the Checker and Monitor/Recorder, are clear of the vehicle
(3) Kneeling or standing on HV insulated mat

**Energizing & De-energizing Procedure**
It is critical that before any HV system is energized that a visual check be performed to ensure that all possible HV compartments are closed and there is no debris, tools or test equipment lying on HV terminations. If there is a certain sequence of energizing and de-energizing the HV system, then all personnel involved must be trained in this sequence. (**CAUTION:** Never try to connect or disconnect circuit components such as cables, fuses, connectors, etc while there is current flowing in the circuit.)

**Electrical Injuries**
Electrical injuries should be immediately reported to the first aide personnel and the supervisor. Other than electrostatic shocks, even non-injurious electrical shocks should be reported to the supervisor. These should be immediately investigated and documented to determine the cause and prevent the occurrence in the future.

# Appendix B – XE High Voltage Inspection Check Sheet

| Section | Step # | Page # | Inspection | Issue (Y/N) | Issue Description (List Quantity if Applicable) | Signature of Approval |
|---|---|---|---|---|---|---|
| Air Compressor | 7 | 4 | Securement of Junction box to the Air Compressor | | | |
| | 9 | 4 | Securement of Cable to Junction Box | | | |
| | 10 | 4 | Distribution Block Securement | | | |
| | 11 | 4 | Grommets Present | | | |
| | 12 | 4 | Wire/Cable Damage | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 13 | 4 | Corrosion on Wire/Cable Connections | | | |
| | 14 | 4 | Cable Connection to Terminal Block – 16 in-lbs | | | |
| | 15 | 4 | Closed End Crimped Splice | | | |
| | 17 | 5 | Proper Grounding of Air Compressor | | | |
| PEM Motor Junction Box | 20 | 6 | Wire/Cable Damage | | | |
| | 21 | 6 | Corrosion on Wire/Cable Connections | | | |
| | 22 | 6 | Forked Lugs Fully Seated into Terminal Bolt | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 23 | 7 | Motor Terminal Connection Torque<br>Standard Grade - 20 Nm<br>High Grade - 10 Nm | | | |
| | 24 | 7 | M25 Cable Glands Torqued to 10 Nm | | | |
| Curb Side Charge Receptacle | 27 | 8 | Water/Moisture/Debris Found Inside Receptacle Box | | | |
| | 29 | 8 | Cable Securement to Junction Box | | | |
| | 30 | 8 | Wire/Cable Damage | | | |
| | 31 | 8 | Corrosion on Wire/Cable Connections | | | |
| | 32 | 8 | Power Cable Connections Torqued to 90 in-lbs | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Street Side Charge Receptacle | 34 | 9 | Water/Moisture/Debris Found Inside Receptacle Box | | | |
| | 36 | 10 | Cable Securement to Junction Box | | | |
| | 37 | 10 | Wire/Cable Damage | | | |
| | 38 | 10 | Corrosion on Wire/Cable Connections | | | |
| | 39 | 10 | Power Cable Connections Torqued to 90 in-lbs | | | |
| Battery Chiller | 41 | 11 | Cable Damage | | | |
| | 42 | 11 | Corrosion on Cable Connections | | | |

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|---|---|---|---|---|---|---|
| | 43 | 11 | #8 Fitting Torqued to 17.5 ft-lbs Dry | | | |
| | 44 | 11 | #6 Fitting Torqued to 12 ft-lbs Dry | | | |
| Inverters | 46 | 13 | 16 ft-lbs On All M25 Cable Glands | | | |
| | 47 | 13 | 11 ft-lbs On Grounding Cable Upper Connection Points | | | |
| | 48 | 13 | 15 ft-lbs On Grounding Cable Lower Connection Points | | | |
| High Voltage Fuse Box | 49 | 14 | 7 ft-lbs On All M25 Cable Gland Retainer Nuts | | | |
| | 50 | 14 | 13 ft-lbs On Grounding Strap Upper Connection | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 51 | 14 | 15 ft-lbs On Grounding Strap Lower Connection | | | |
| | 53 | 15 | Wire/Cable Securement Inside HV Fuse Box | | | |
| | 54 | 15 | Cable/Wire Damage | | | |
| | 55 | 15 | Corrosion on Wire/Cable Connections | | | |
| | 56 | 15 | Two Largest Power Cables Torqued to 13 ft-lbs | | | |
| | 57 | 15 | All Other Electrical Connections Torqued to 10 ft-lbs | | | |
| Auxiliary Distribution Box | 58 | 15 | 7 ft-lbs On All M25 Cable Gland Retainer Nuts | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 59 | 15 | 13 ft-lbs On Grounding Strap Upper Connection | | | |
| | 60 | 15 | 15 ft-lbs On Grounding Strap Lower Connection | | | |
| Motor Inverter Cooling Fan | 61 | 17 | 30-37 ft-lbs On The Motor Inverter Cooling Fan Grounding Point | | | |
| HVAC | 62 | 18 | Cable Securement to HVAC Unit | | | |
| Electric Auxiliary Heater | 65 | 19 | Orange High Voltage Cable Connection to Contactor Torqued to 5.9 ft-lbs | | | |
| | 66 | 19 | Proper Cable Securement of Orange High Voltage Cable to Terminal Block | | | |
| | 71 | 22 | Proper High Voltage Cable Orientation | | | |