



## **Installation Manual # 585432**



## **VN Classic Sleeper**

# Table of Contents

|                                |             |
|--------------------------------|-------------|
| <b>Introduction</b>            | <b>1-3</b>  |
| <b>Before You Start</b>        | <b>1-4</b>  |
| <b>Parts List</b>              | <b>1-10</b> |
| <b>Tools Required</b>          | <b>1-12</b> |
| <b>Installation</b>            | <b>1-13</b> |
| <b>Electrical Installation</b> | <b>2-1</b>  |
| <b>Espar Heater</b>            | <b>3-1</b>  |
| <b>Webasto Heater</b>          | <b>4-1</b>  |
| <b>Checklists</b>              | <b>5-1</b>  |

Congratulations. You have chosen the premier no-idle climate control system on the market today—the **NITE® Plus** from Bergstrom.

The **NITE Plus** is a powerful 12V rechargeable DC system that keeps sleeper compartment cool in hot weather and warm in cold weather (with optional heater) without having to idle the truck's engine—and without a genset. It not only dramatically reduces fuel consumption; it's also very environmentally friendly.

Your **NITE Plus** is a self contained, hermetically sealed, compact A/C system that produces approximately 4,600 Btuh and has been quality engineered for years of reliable service. The system operates independently from your truck's engine using its own deep cycle batteries that are completely separated from the truck's starting batteries.

The deep cycle AGM batteries used are the most advanced ever—and will efficiently power the system for 8 to 10 hours. The batteries are then fully recharged after just 4 to 6 hours of driving. Add it all up, and you have a revolutionary no-idle system that will save you money and fuel year after year—the **NITE Plus** from Bergstrom.



**NOTE:**

*The **NITE PLUS** A/C system is designed to maintain a comfortable temperature inside the sleeper without running the engine.*

*For optimal comfort, the curtain between the cab and the sleeper must be closed when using the unit. To enhance cooling efficiency during the day, solar reflectors or curtains should be placed over windshield and all windows to block sunlight from entering the cab and sleeper.*

*The **NITE PLUS** A/C unit will not pull down a hot sleeper that has been sitting in the sun without the factory A/C running. To assist the **NITE PLUS** unit in cooling down the sleeper, start the engine and run the factory A/C until desired temperature is reached. The **NITE PLUS** unit will then maintain a comfortable temperature depending on solar load & ambient temperature.*

- General installation
- Electrical installation
- Heater installation (optional)

[illegible]

1. Lay out all parts and check to make sure you have all parts listed on the parts list.

2. To prevent damage to compressor, keep the **NITE Plus** unit in an upright position at all times. If unit is tipped, place back in upright position for a minimum of 6 hours prior to running.

4. Look through the whole installation manual to get an understanding of the order in which components are installed.

6. You may want to get an assistant to help you to reduce the number of times you have to climb in and out of the cab.

Photo above is representative of kit  
1000113986 only.

## ATTENTION:

**This model truck requires the blower orientation to be changed before installation.**

**Please follow the following steps to change the blower orientation from side discharge to top discharge. You may also reverse these directions to change the orientation from top to side.**

**1**

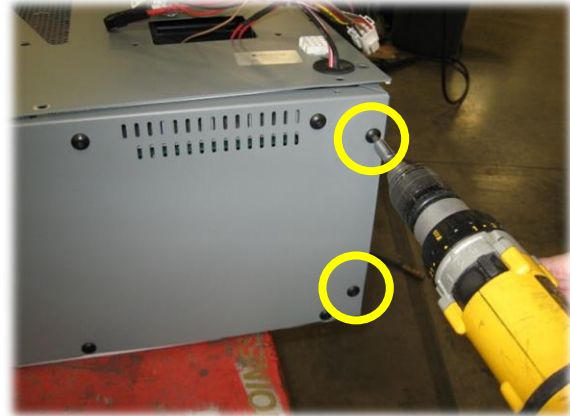
### **Remove Screws From Top Cover**

Remove all the screws that are holding the top cover in place. Also remove the small cover plate that is attached to the center of the cover. This small plate will be used in step #13.

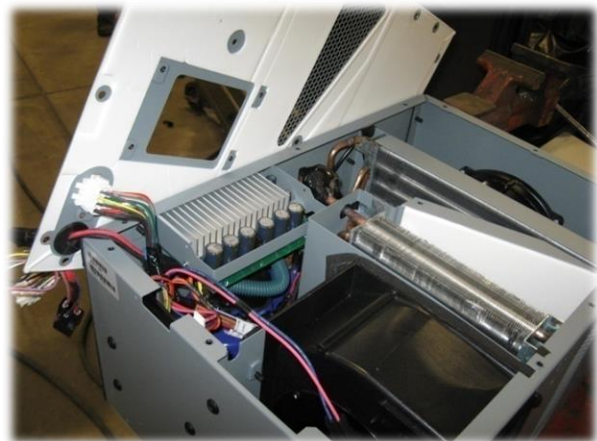


## 2 Remove Two Screws from the Back Panel

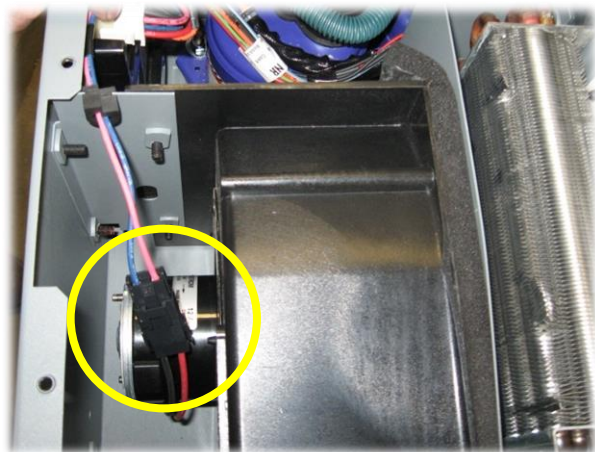
Removal of these screws will provide the additional clearance needed to remove the blower.



## 3 Flip Top Cover Up and Lean it Against the Back Leaving Wires Attached.



## 4 Unplug the Blower Motor Power Wires



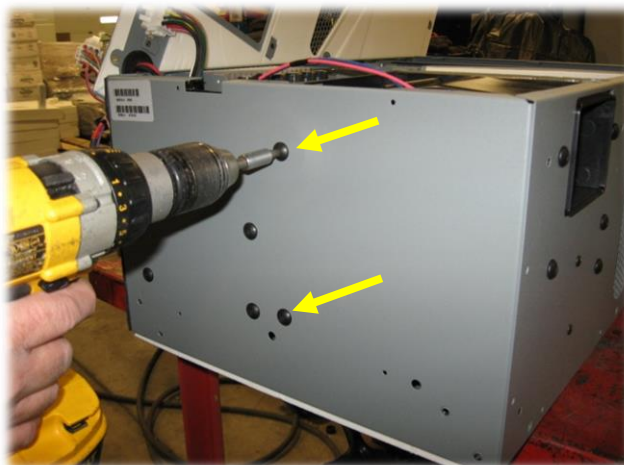


# Before You Start

1-7

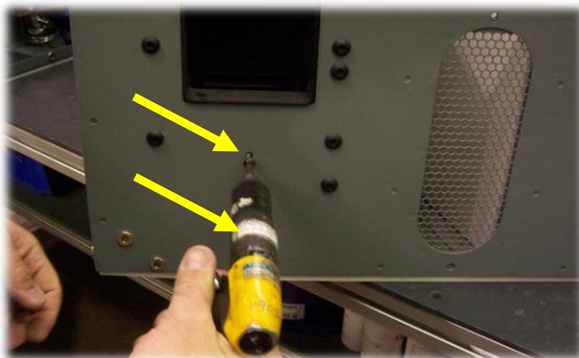
5

**Remove the 2 Screws from the Side Panel that Attach the Blower Mounting Plate**



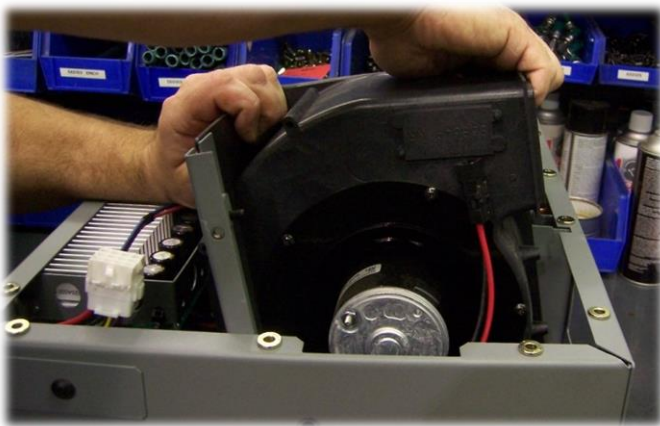
6

**Remove the 2 Phillips Head Screws from the Front Panel Under the Air Outlet**



7

**Remove the Blower From the Unit**



## 8 The Mounting Plate Must be Removed and Turned Around

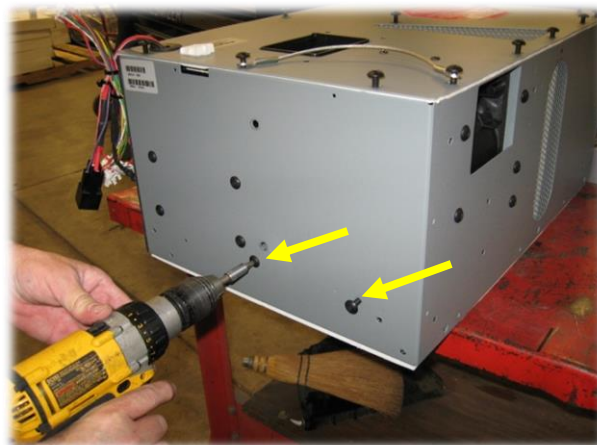


## 9 Place the Blower Back Into the Unit With the Discharge Facing Up



## 10 Reinstall Blower Support Bracket Screws

Because the blower has been rotated, the screws removed in step #5 now need to be reinserted into the new holes indicated in the photo.





11

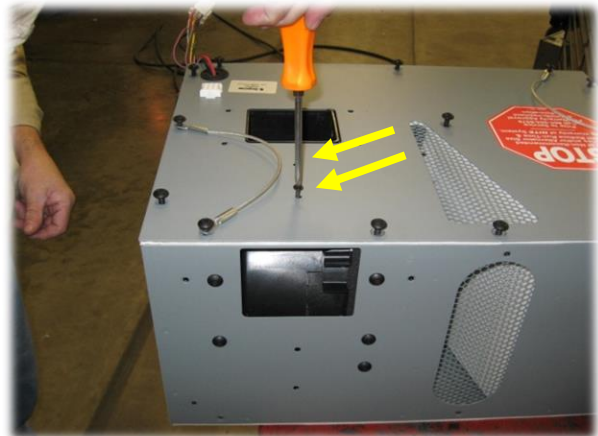
**Reconnect the Wires You Disconnected in Step #4**



12

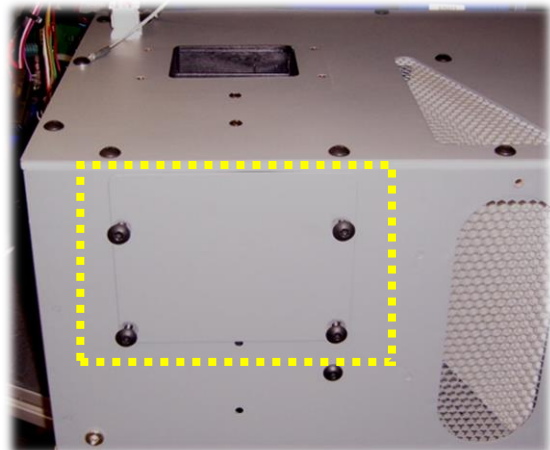
**Reattach the Cover**

Put cover back on the *NITE PLUS* unit and reinsert and tighten all screws except for the 4 screws that attached the small cover plate. Also, since the blower has been rotated, the two screws removed in step #6 should now be inserted in the top cover as indicated in photo.



13

**Attach Small Cover Plate Over Old Air Outlet on Side Panel** Remove the four screws surrounding the opening on the side panel and use them to install the small cover plate that was removed from the top cover in step #1.



# Parts List

# 1-10

| Bergstrom Part #                                   | Part Description                | Quantity |
|--|---------------------------------|----------|
| <b>1000113877 NITE STANDARD KIT A/C ONLY</b>       |                                 |          |
| 1000078163   | ASSEMBLY, NITE UPGRADE UNIT     | 1        |
| 1000014440   | KIT, NITE POWER                 | 1        |
| 1000007552   | POLICY, NITE WARRANTY           | 1        |
| 585421   | MANUAL, NITE OPERATION          | 1        |
| 585511   | CARD, NITE, WARRANTY SURVEY     | 1        |
| <b>1000119244 NITE STANDARD KIT A/C &amp; HEAT</b> |                                 |          |
| 1000078163   | ASSEMBLY, NITE UPGRADE UNIT     | 1        |
| 530713   | KIT, ESPAR HEATER               | 1        |
| 1000014440   | KIT, NITE POWER                 | 1        |
| 1000007552   | POLICY, NITE WARRANTY           | 1        |
| 585421   | MANUAL, NITE OPERATION          | 1        |
| 585511   | CARD, NITE, WARRANTY SURVEY     | 1        |
| <b>1000113986 INSTALL KIT</b>                      |                                 |          |
| 454651   | ANGLE – DUCT COLLAR             | 1        |
| 500105   | LOUVER, CARY 633 WITH 631 BEZEL | 2        |
| 500198   | GRILLE, AIR RETURN              | 1        |
| 560235   | HOSE DEFROST 4.0 X 45"          | 1        |
| 584510   | PLUG BUTTON .5 IN HLE 3L4566    | 2        |
| 870235   | ASSY, MOUNT PLATE 4 BEND        | 1        |
| 1000007614   | DUCT, UPPER                     | 1        |
| 1000007617   | DUCT, STEALTH                   | 1        |
| 1000007618   | DUCT, TRANSITION                | 1        |
| 1000011467   | CONTROL DUCT ASSY               | 1        |
| 1000113415   | WIRE HARNESS NO IDLE CONTROL    | 1        |
| 1000113881   | TEMPLATE, NITE FLOOR            | 1        |
| 1000115617   | CD ROM, NITE INSTALL MANUALS    | 1        |
| 1000113995   | KIT, NITE STANDARD HARDWARE     | 1        |

# Parts List

# 1-11

| Bergstrom Part #                      | Part Description                                  | Quantity |
|---------------------------------------|---|----------|
| B290303                               | CLAMP, HOSE 4.12 I.D.                             | 2        |
| B300571                               | EDGING BULK                                       | 4 FT     |
| B360692                               | GROMMET, NO 6 AND NO 10 HOSE ADAPTER              | 2        |
| <b>1000014440 NITE PLUS POWER KIT</b> |   |          |
| 660706                                | ASSY, WIRE BATTERY CABLE 5300MM BLACK             | 2        |
| 660707                                | ASSY, WIRE BATTERY CABLE 5000MM RED               | 3        |
| 660694                                | ASSY, WIRE BATTERY CABLE 225MM                    | 2        |
| 660678                                | HARNESS, WIRE NO-IDLE POWER                       | 1        |
| 660827                                | WIRE, 16 GAUGE BLACK                              | 1        |
| 651383                                | SEPARATOR 200 AMPS                                | 1        |
| 651225                                | FUSE, MAXI 50 AMP                                 | 1        |
| B230083                               | RING TERMINAL, 5/16                               | 2        |
| B300642                               | WIRE LOOM, .413 I.D. X BULK – BLACK SPLIT PLASTIC | 70 ft.   |
| B300652                               | WIRE LOOM, .625 I.D. X BULK – BLACK SPLIT PLASTIC | 15 ft.   |
| B360113                               | STRAP, CABLE TIE                                  | 50       |
| 709860                                | BLADE TERMINAL                                    | 1        |
| 708000                                | RING TERMINAL, 5/16 16 GAUGE                      | 1        |
| 651462                                | HEAT SHRINK TUBING                                | 10       |
| 670136                                | 5/16 RING TERMINAL, 4 GAUGE                       | 8        |
| 670137                                | 3/8 RING TERMINAL, 4 GAUGE                        | 2        |
| 660706                                | ASSY, WIRE BATTERY CABLE 5300MM BLACK             | 2        |
| 660707                                | ASSY, WIRE BATTERY CABLE 5000MM RED               | 3        |
| 660694                                | ASSY, WIRE BATTERY CABLE 225MM                    | 2        |

- 1) Drill Bit Set
- 2) Hole saws (1", 1-5/8", 2", 2-1/2" and 4-3/4" )
- 3) Electric/Air Drill
- 4) Screwdrivers/Assorted Bits (Flat Head & Phillips Head)
- 5) Impact Gun
- 6) Air saw/Jigsaw (Cutting Sheet metal)
- 7) Torx Head (T30) Bit
- 8) Metric Wrenches
- 9) SAE Wrenches
- 10) 1/4", 3/8" Drive Ratchets
- 11) SAE Socket Set
- 12) Metric Socket Set
- 13) Wire Cutters
- 14) Terminal Crimpers
- 15) Wire Strippers
- 16) Razor Knife
- 17) Electrical Tape
- 18) Cable Cutters
- 19) #4 Professional Grade Cable Crimpers
- 20) Cable Strippers
- 21) Work Light
- 22) Torque Wrench up to 50 in/lbs
- 23) U-barrel Crimper
- 24) Pop Rivet Gun

1

## Prepare the Work Area

Start by disconnecting the ground wire from the starting batteries. Set up your work light, clear the sleeper compartment of loose items, and remove the divider curtain if there is one. Then remove the mattress. Remove the cargo net and net hooks from the side walls (circled).



2

## Roll Floor Insulation Back

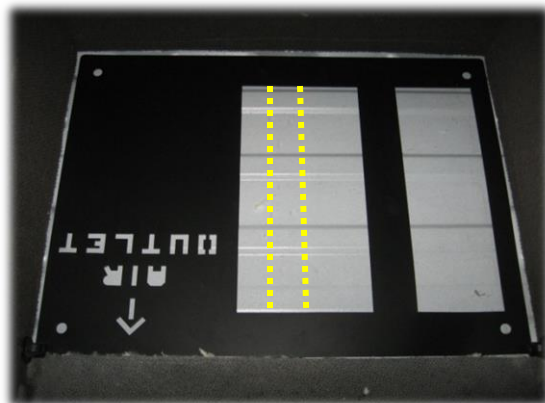
Pull up the floor insulation and remove as shown.



3

## Determine Location for NITE PLUS Unit Mounting Plate

Position the provided template as shown. Check under the truck for any obstructions. **NOTE: Do not cut through cross member indicated by dotted line.**





4

## Mark and Cut Holes in Truck Floor

Mark the two rectangular openings in the template. Drill starter holes in all four corners of the two areas marked for cutting. **NOTE** location of cross members prior to drilling holes. Use air saw/jigsaw to cut through truck floor.



5

## Cutouts Complete

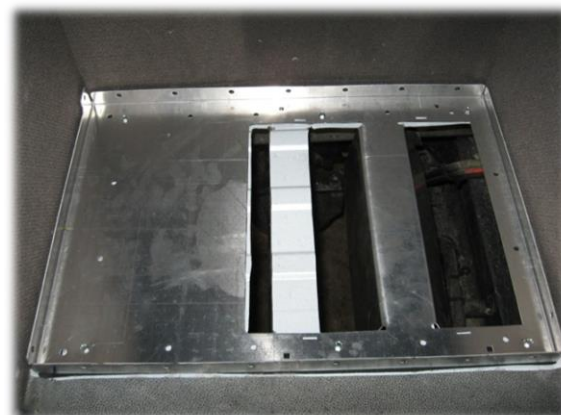
Once the cutouts are completed you can remove the template.



6

## Install NITE PLUS Mounting Plate

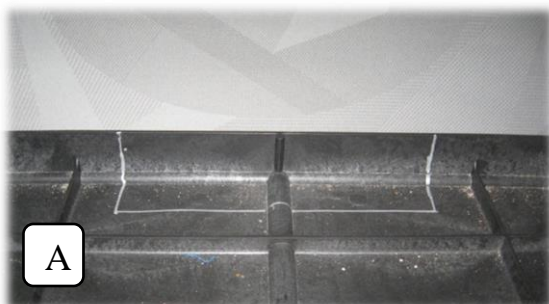
Position the **NITE PLUS** mounting plate as shown, with the condenser openings, over the holes cut in the truck floor. Bend the larger air deflector to 90° to allow clearance of cross members. Attach to the floor through the predrilled holes using self-tapping screws.



7

## Determine Location for *NITE PLUS* Duct

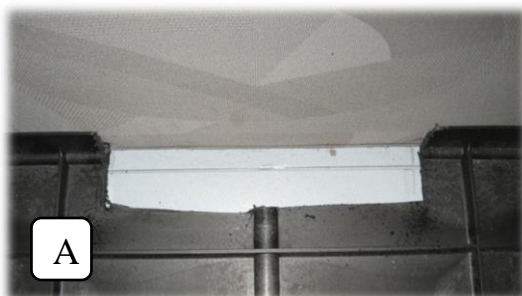
Dotted line indicates the area to be cut (A). Raise bunk and mark a 13 ½" x 2" rectangle in the center of the underside of the bunk against the back wall. Use air saw to cut out marked area (B).



8

## Mark and Cut Support Under Bunk

Lower the bunk. Using the hole cut in the previous step, trace the location of the opening onto the lower support (A). Raise the bunk and now enlarge the marked area to 13 ½" x 5" (B). Using air saw cut out the marked area.



9

## Drill Hole for Flex Duct

Mark location for a 4" hole in the center of the back wall above the *NITE PLUS* unit. Use hole saw to cut as shown.



10

## Apply Protective Edge to Hole

Pull carpeting forward and apply split loom around edge to protect from sharp edges.



11

## Prepare and Install Unit

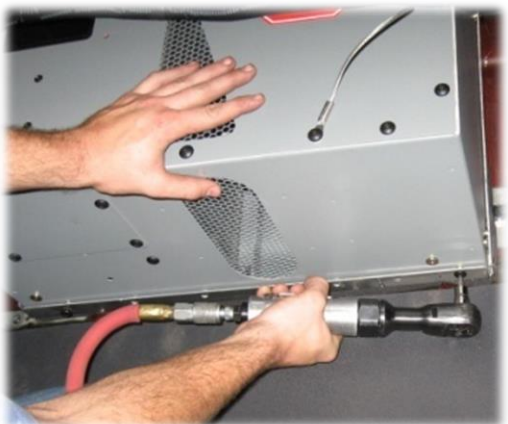
Remove the three screws shown in the illustration from the front bottom of the **NITE PLUS** unit, and one screw from the right-side bottom corner. The unit is now ready to be placed in the truck. Place **NITE PLUS** Unit into Position carefully lift the **NITE PLUS** unit by the two strap handles and set it on top of the aluminum mounting plate. Be Careful to keep **NITE PLUS** unit level at all times. Be careful not to catch or pull on the wiring harness.



12

## Attach NITE PLUS Unit

Install screws through the lip on the mounting plate into the **NITE PLUS** unit.



13

## Attach Metal Flange Adapter to Elbow.

Attach with 3 hex head self-drilling screws. Seal around flange with silicone sealant. Then attach the elbow to the top of the *NITE PLUS* unit using #30 torque screws.



**NOTE:** If you will be installing the optional ESPAR heater please review step 17 of the heater control panel installation instructions before proceeding.

14

## Feed Control Wiring Through NITE Duct

Take the *NITE* duct and thread the end of the wiring harness with the 5 prong black plug through the opening from the backside to front. Attach the control panel to the wiring harness using the wires with a 5-prong plug—make sure the connection is tight and secure. (The other three wires are not used in this particular installation.)





15

## Attach Control Panel to *NITE* Duct

Push wiring behind duct, and mount the control panel to the duct using  $\frac{3}{4}$ " black Phillips head screws through the pre-drilled holes. Tighten carefully. **When finished make sure switch is in the off position!**



16

## Run Wiring behind *NITE* Duct

Place the wiring harness along the channel on the back of the duct. Secure wiring in channel with tape. The duct is now ready to be attached.





17

## Attach Transition Duct to the *NITE* Duct

After the controls are installed fasten the transition duct to the bottom of the *NITE* duct using four 1" 5/16 self-tapping screws. Apply silicone sealant (not included in kit) around seam.



18

## Attach Flexible Duct to Transition Duct

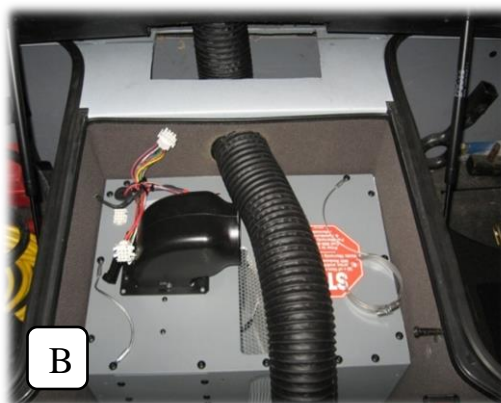
Attach the end of the flexible duct that is coming out of the top of the bunk pan to the transition duct. Tighten hose clamp to secure flex duct to transition duct.



19

## Install *NITE* Duct

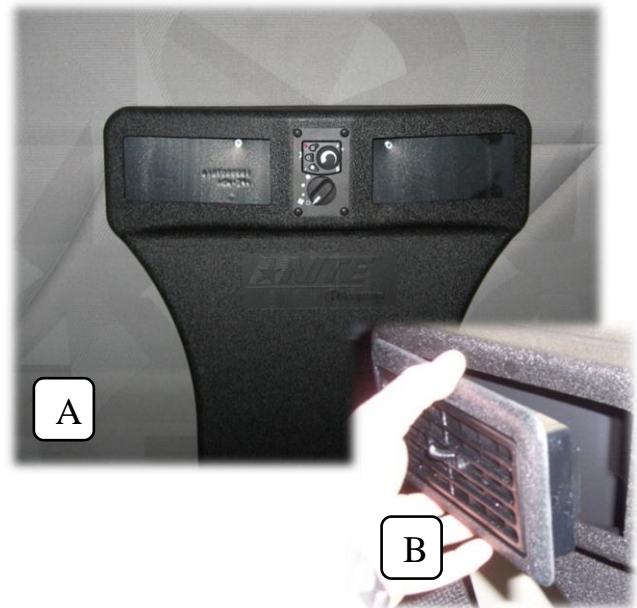
With bunk in raised position, lower the assembled *NITE PLUS* duct down through the opening in the top of the bunk (A). Position the height of the *NITE PLUS* duct so that the flex duct and wiring, runs directly through the 4" round hole cut in the support wall (B).



20

## Attach *NITE* Duct to Back Wall of Sleeper

Press the top of the duct up against the back wall. Make sure the duct is square and level against the back wall. Use 1" 5/16 hex head self-tapping screws to attach top of duct to back wall. Place 3 - 5 screws in each duct opening and install at different angles (A). Take care not to over tighten. Snap both louvers into place (B).



21

## Attach Flexible Duct to Elbow Duct

Cut flex duct to length and insert the open end onto the round end of the elbow unit. Tighten hose clamp to secure flex duct to elbow.



22

## Attach Control Cable to Unit

Snap control cable harness, coming from the *NITE PLUS* duct, into plug on top of *NITE PLUS* unit – it only fits one way.

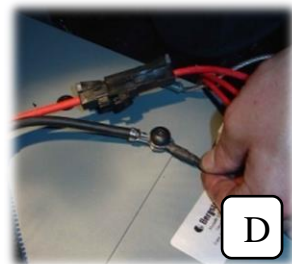
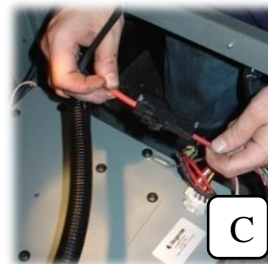
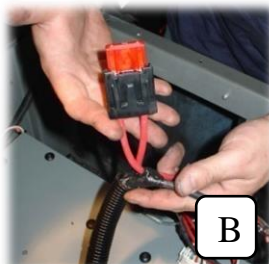


23

## Install the *NITE PLUS* Unit Power Harness

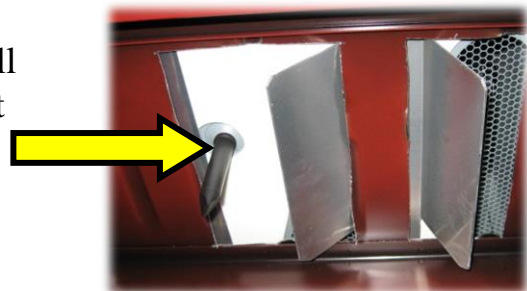
Take the power harness and place the protective split plastic loom around it. Drill 2" hole in convenient location to run cables. Install provided grommet into hole in the floor (A). Make sure to use this grommet to protect cables as you run the cables from the *NITE PLUS* unit, down through the frame rails to the *NITE PLUS* batteries. Secure with zip ties. Insert a 50 amp MAX fuse in the fuse holder at the *NITE PLUS* unit end of the power harness (B). Plug the positive end into the positive plug on the *NITE PLUS* unit (C). Remove a screw from the *NITE PLUS* unit surface, place it through **BOTH** of the negative ring terminals and re-attach to the *NITE PLUS* unit (D).

**NOTE: DO NOT USE THE SCREW HOLDING CARRYING STRAP FOR GROUNDING!**



24

**Install Drip Tube Under Truck** All drip tubes are the same but photo may not represent actual application



***NITE<sup>®</sup> Plus***

**SECTION 2**  
**ELECTRICAL**  
**INSTALLATION**

**NOTE:** Bergstrom does not condone putting batteries under the sleeper bunk. The floor is not designed to carry that amount of weight and even deep cycle AGM batteries can emit gas under certain circumstances. Bergstrom can only support batteries being placed in battery boxes or tool boxes designed to support the weight of the batteries outside the cab of the truck.

1

## Available Battery Boxes Options

Refer to [www.nitesystem.com](http://www.nitesystem.com) for styles and part numbers. Aluminum clamp-on boxes include between rail and vertical box styles. Steel battery boxes require frame drilling and must be attached to frame rail with bolts (see instructions in the following steps 2 and 3).



Steel Battery Box  
(2 required)



Vertical  
Clamp-On Box

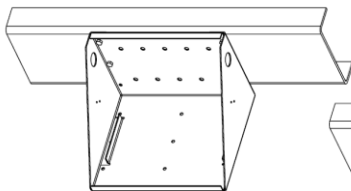


Between Rail  
Clamp-On Box

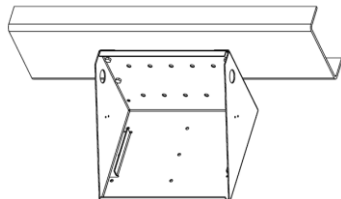
2

## Steel Battery Box Installation

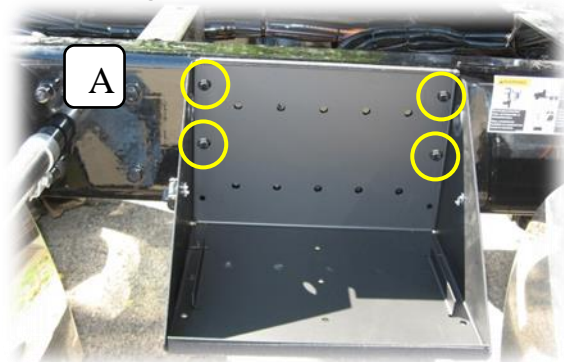
Locate the battery box on the frame as close as possible to the sleeper NITE Phoenix unit. When positioning the box, always keep the top of the box as close to the top of the frame rail as possible – **Some manufacturers recommend no drilling within 2" of top or bottom of frame rail. Check truck manufacturer guidelines prior to drilling.** Using box as template, mark and drill a minimum of 4 holes. Always use the holes in the rear outer corner area where you have double walled steel. Of the 3 holes available on each side of the outer most edge of box, choose the top and center holes on each side (see photo A). Drill frame rail using  $\frac{1}{2}$ " HS bit. Install box with  $\frac{1}{2}$ " grade 8 bolts and hardware provided. Tighten securely.



Correct



Incorrect





3

## Attaching Hold-down Brackets

Set two batteries side-by-side in the battery box and place a hold-down bracket on top, with the u-channel facing up. Take two 5/16" bolts, place a 5/16" flat washer on each, and then put the bolts through the outer holes. Tighten each bolt securely from underneath using the supplied nuts and washers. Repeat the procedure for the other two batteries.



4

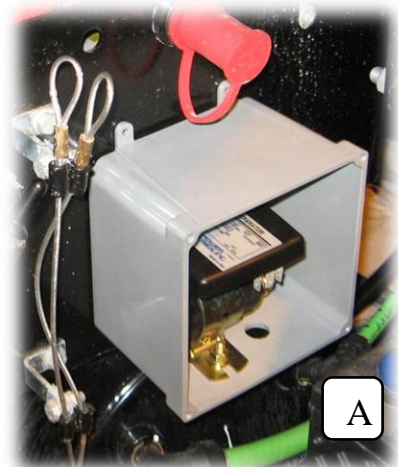
## Mounting the Separator

Mount separator in battery compartment or in supplied 6 x 6 x 4 enclosure.

**Mount enclosure first.** Mark and drill two 3/8" holes in the back of the box, to use for mounting. Secure with 3/8" bolts/ washers/ lock nuts. **DO NOT USE THE OUTSIDE TABS FOR MOUNTING THE BOX!!**

**Mount separator inside enclosure.** Mark and drill two 1/4" holes in bottom side to mount the separator, attach with 1/4" bolts / washers / lock nuts. You must also drill two 1/2" holes directly under the posts of the separator where the cables will connect.

**NOTE: The separator ties into the truck's starting batteries and gives priority to the starting batteries. It then charges the NITE aux batteries. The aux batteries begin charging after the starting batteries reach 13.2V.**



5

## Preparing Cables

The batteries are wired series/parallel for 6V or parallel only for 12V. See diagrams on pages 2-3 to 2-6.

**NOTE: Before proceeding – Make sure the NITE PLUS control switch is turned off. Disconnect the truck batteries.**



6a

## Directions for Wiring a 6-Volt Series/Parallel, 4 Battery *NITE Plus*

Step 1: Install the two short battery cables provided in the kit. These cables connect the positive (+) of one battery to the negative (-) of the other to create a set or bank. We refer to this as a series connection. **DO NOT connect any other cables or wires to these terminals.**

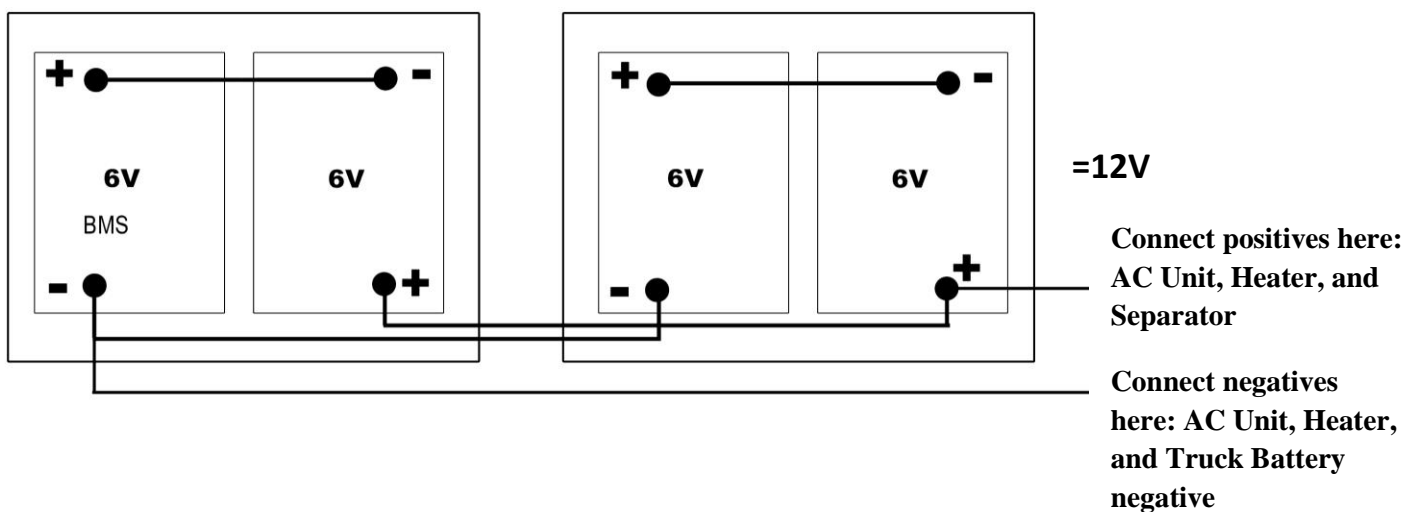
Step 2: For the positive to positive parallel connections, measure and cut a piece of red cable to the proper length. Attach a ring terminal to each end using a professional grade crimper. Place heat shrink around each terminal and heat.

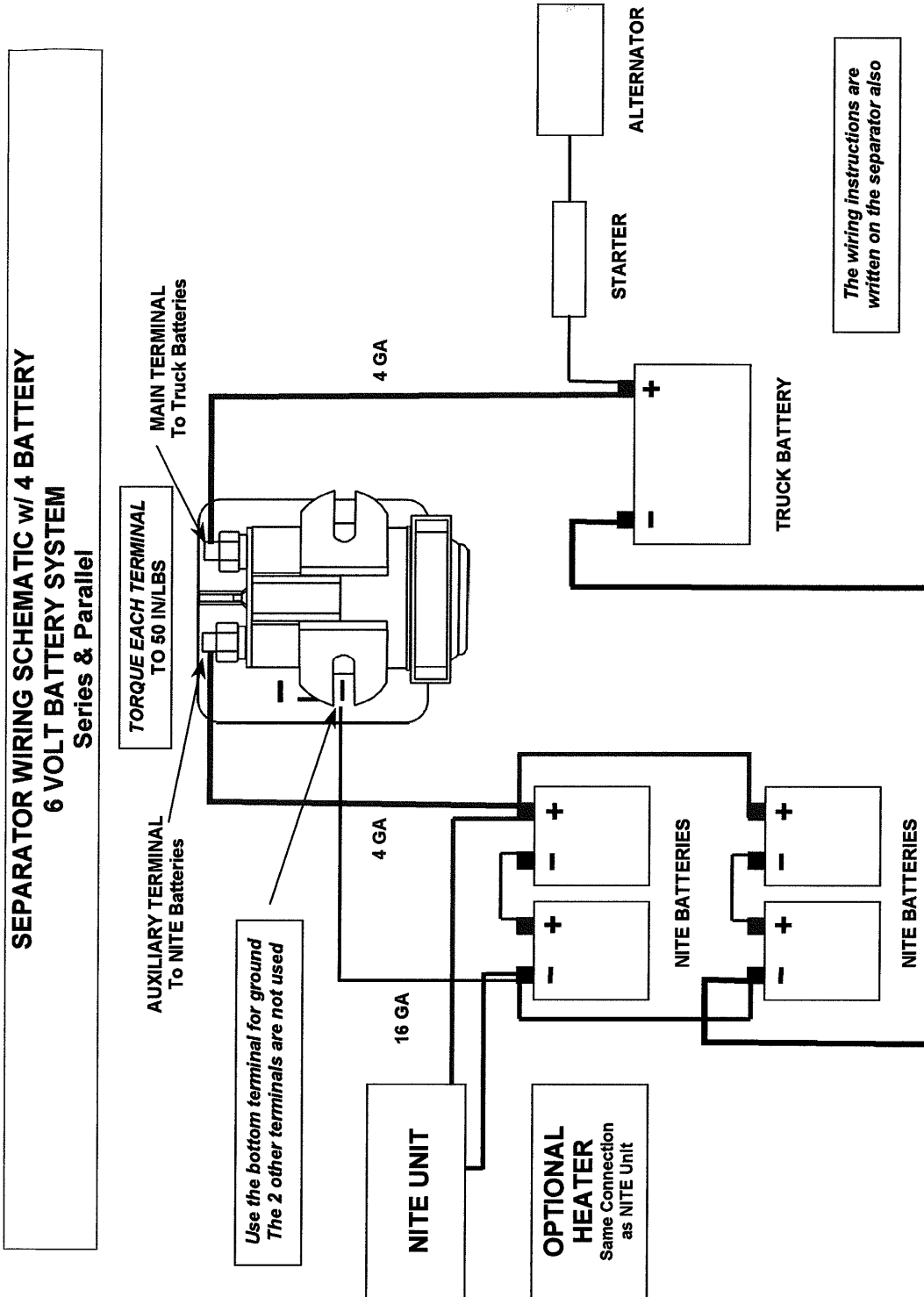
Then loom it. Use this cable to connect the positive (+) of one bank of batteries to the positive (+) of the other bank of batteries.

Step 3: Repeat procedure for the negative to negative connection using a black cable. Then loom it. Use this black cable to connect the negative (-) of one bank of batteries to the negative of the other bank of batteries.

**Now proceed to step 7.**

***Do NOT use truck frame as a ground***





6b

## Directions for Wiring A 12-Volt Parallel, 4 Battery *NITE Plus*

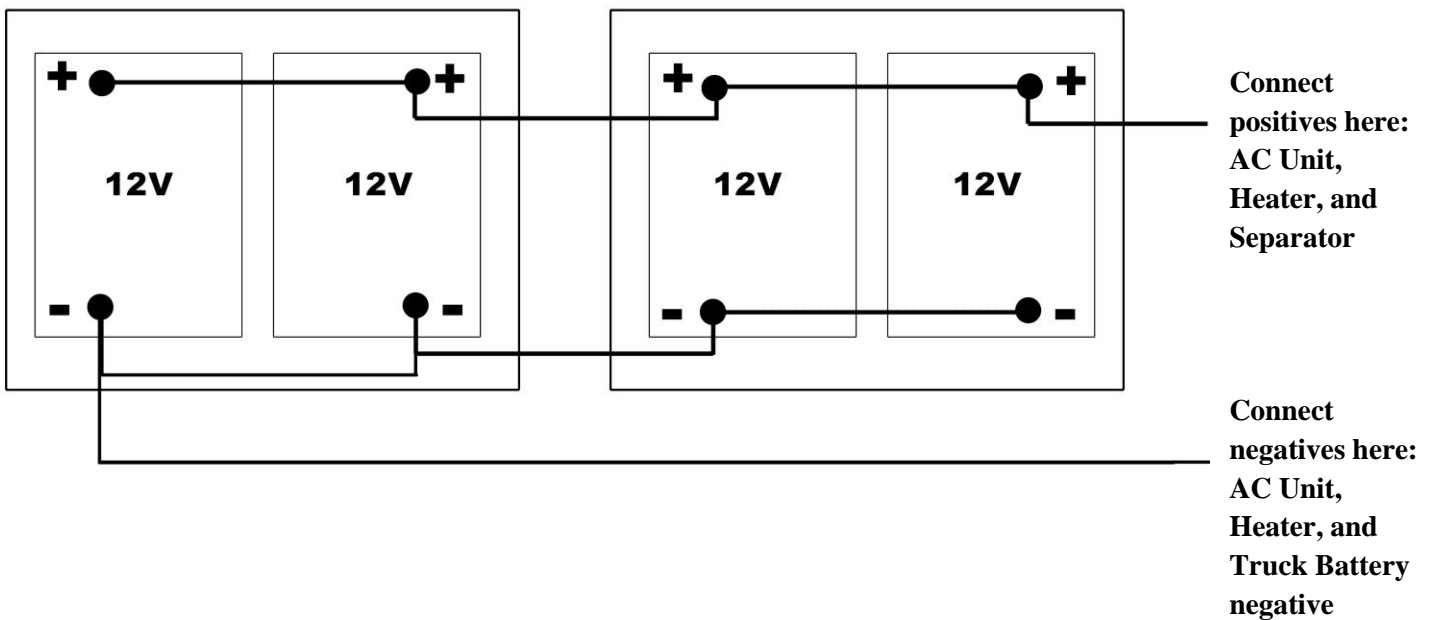
**Parallel is all positives connected together and all negatives connected together.**

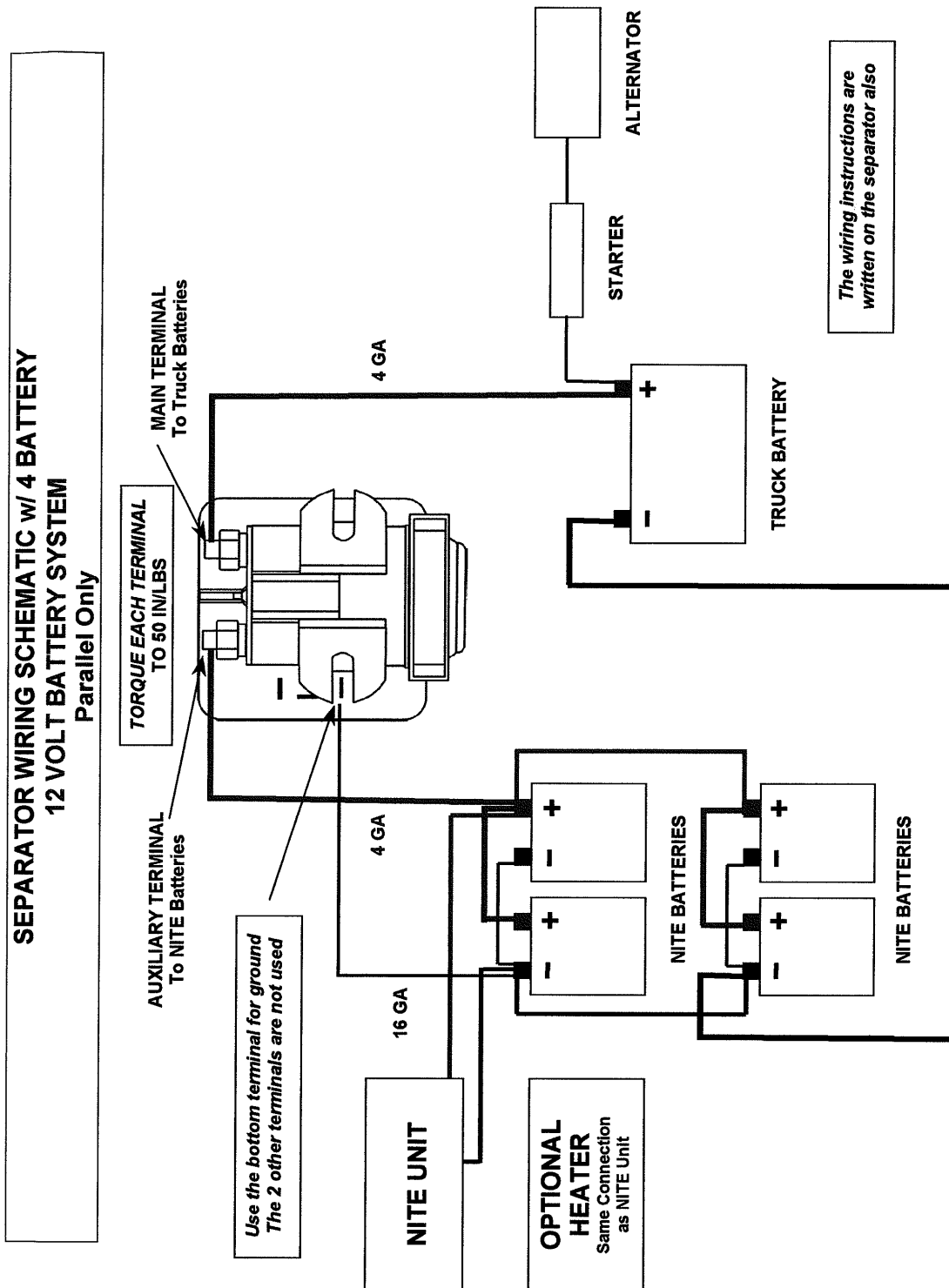
Step 1: For the positive (+) to positive (+) parallel connections measure and cut pieces of red cable to length. Attach a ring terminal to each end using a professional grade crimper. Place heat shrink around each terminal and heat. Then loom it. Use these cables to connect all positive (+) terminals on all 4 *NITE Plus* batteries.

Step2: For the negative to negative connections repeat procedure using black cables. Then loom it. Connect all negative (-) terminals of the 4 *NITE Plus* batteries together.

**Now proceed to step 7.**

***Do NOT use truck frame as a ground***



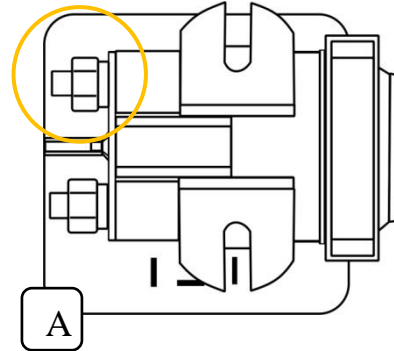




7

## Connect Separator to the Truck Batteries

Add ring terminals and protective looms to ONE END of the negative and positive cables, leaving about an inch of the cables exposed for proper identification. DO NOT CUT cables at this time...you will do that in a later step.



8

## Run Cables to Truck Batteries

Attach the positive cable to the main battery terminal of the battery separator (photo A above). Attach the negative cable to the negative terminal on the *NITE Plus* batteries (see diagrams on pages 26 or 28). Zip tie the cables together every 1 ½ feet. Run the cables along the frame rail and over the transmission to the other side to the truck batteries.



9

## Attach Cables to Truck Batteries

Cut the cables to the proper length and crimp ring terminals. Attach negative side to truck battery. Zip tie all wires to secure them in place.

**DO NOT CONNECT POSITIVE TRUCK BATTERY CABLE YET. WE WILL CONNECT THIS CABLE LATER.**

**See Diagrams  
on Pages  
2-3 to 2-6**

## 10 Connect NITE Plus positive power cable to auxiliary battery location.

*Before connecting positive cable make sure blower control switch is in OFF position.*

Install 100 amp fuse between power cable and AGM positive battery post as shown.

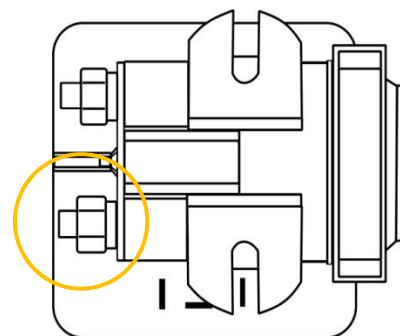
*Do not tighten posts at this time.*

NITE Plus  
Positive cable  
and 100 amp  
inline fuse



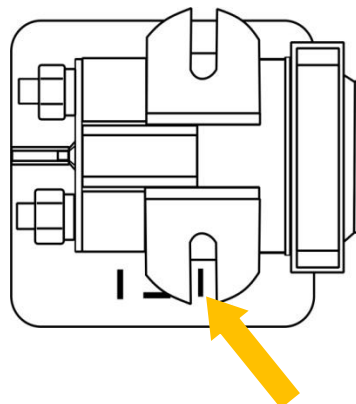
## 11 Connecting NITE Plus Batteries to Battery Separator

Using red battery cable, measure and cut to proper length. Crimp ring terminals and heat shrink. Connect one end to the most appropriate positive (+) terminal of the **NITE Plus** batteries. Connect the other end to the auxiliary terminal of the battery separator.



## 12 Grounding the Separator

Connect one 16 gauge black wire from the male spade terminal marked “ground” to the negative battery terminal of either the truck or **NITE Plus** batteries. Without proper grounding the system will not recharge batteries correctly.



## 13 Complete Electrical Wiring

Recheck and tighten all battery and separator connections. Zip tie cables where necessary. Your wiring should look like the diagram on page 4 or 6.

**This completes the electrical section of the installation. If you are installing the optional ESPAR heater proceed to heater section. If not, your installation is complete and you may reconnect the truck batteries and connect positive cable from battery separator described on page 26. Then proceed to the Checklist section.**

***NITE® Plus***

**SECTION 3**

**ESPAR HEATER**

**INSTALLATION**



1

## Unpack Heater Parts

Take out the parts to the heating unit.

**NOTE: Do NOT use NITE duct or OE ductwork for heater venting.**



2

## Prepare Heater Mounting Location

Choose the most appropriate location to install the heater—in this case we have chosen a side box floor location. **Check underneath truck for any obstructions or supports.** Use the mounting plate as a template to cut an opening in the rubber mat. Cut around the mounting plate, then remove the piece of rubber to expose truck floor.

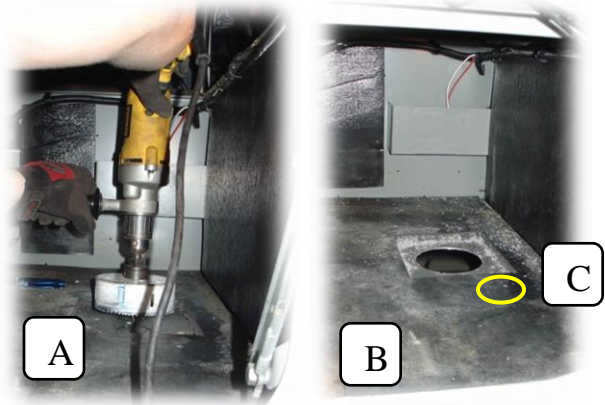




3

## Drilling Outlet Hole for Heat Unit

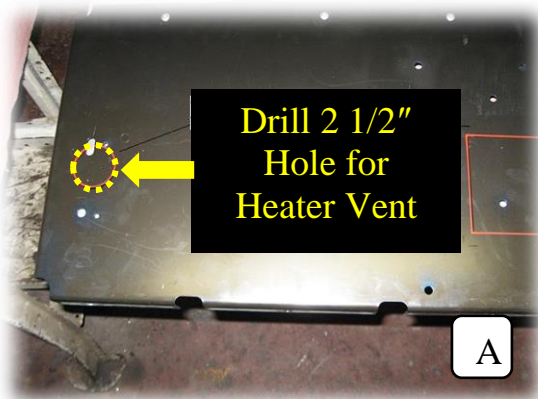
Mark the floor of the truck using the 5 small holes of the mounting plate. Remove mounting plate, place a 4 1/4" hole saw over the middle of the floor marks (A), and drill the outlet hole for the heater, intake, exhaust and pickup tube (B). Also drill a 1/2" hole approximately 1 to 2" from mounting plate corner (C).



4

## Install Sleeper Heat Vent

Select location for the vent in the lower left side of the center support wall closest to heater. Drill a 2 1/2" hole (A) to allow distribution of heat into the sleeper. After hole is drilled, use 5/16" x 1" self-tapping screws to attach heat port then snap louver into place (B).

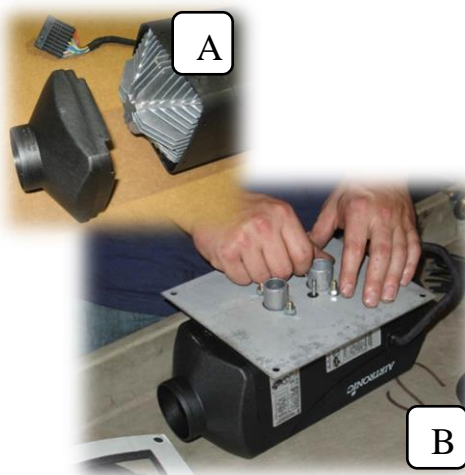




5

## Heater Unit Assembly – Attaching Mounting Plate

Snap end cap on heater unit (A). Place mounting plate over heater unit (B). Attach with flat lock washers and 10mm lock nuts—tighten down securely.



6

## Heater Unit Assembly – Attach Gasket and Fuel Line Connection

Peel off backing from gasket and place gasket over mounting plate edges, sticky-side down. Place small black rubber fuel line connector over the fuel intake tube and push down. Place a small clamp over connector, push to bottom and tighten.



7

## Heater Unit Assembly – Attach Fuel Line

Now take the clear pick up tube, place a small clamp over it, and push the tube all the way to the bottom of the fuel intake tube. Place clamp flush with top of black connector and tighten securely.



8

## Heater Unit Assembly – Identify Intake and Exhaust Ports

Look closely at the two small metal tubes. One has an arrow pointing out away from the unit—this is the exhaust. One has an arrow pointing in towards the unit—this is the intake.



9

## Heater Unit Assembly – Attach Exhaust Hose

Take the heavy duty silver metal hose and place a large, heavy duty clamp over the end of it. Place the hose and clamp over the exhaust tube, push all the way down, and tighten securely.



10

## Heater Unit Assembly – Attach Intake Hose

Take the black flex hose and place a small clamp over the end of it. Place the hose and clamp over the intake tube, push all the way down, and tighten securely.



**Heater is now ready to install in the truck.**

11

## Prepare to Mount Unit

**Check to make sure truck batteries are still disconnected.** Carry unit into truck. It will be mounted over the 4 1/2" hole that was drilled earlier. Make sure hoses and tubes don't get tangled or caught on anything.



12

## Run Power and Fuel Pump Wires Through Floor

Run the power wire and fuel pump power wire through the rubber mat. Next, slip on the grommet, then run the wires out the hole in the truck floor and down under the truck. Seat grommet into hole, and push rubber mat back down.



13

## Run Lines Through Cab Floor

Feed exhaust hose, intake hose, and fuel line through the 4 1/2" hole, making sure they are not bent, crimped or rubbing on the side of the hole.



14

## Mount Heater Unit to Cab Floor

Make sure that the heater unit is set with the fan (intake) end opposite the 2 1/2" hole for the vent/louver drilled earlier. Set unit flush to floor and attach with a self-tapping screw at each corner of the mounting plate.

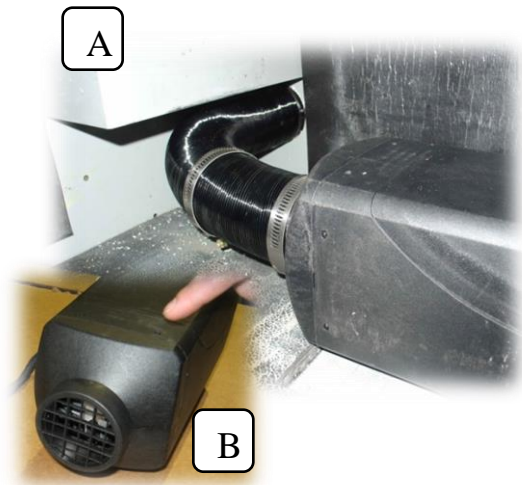




15

## Attach Heat Line to Sleeper Vent

Take the black metallic flex tube, measure and cut length to run from heater unit to louver/vent opening (A). Place two clamps over ends of tube, and clamp tube to heating unit and louver. Tighten clamps securely but do not over tighten. Snap Intake Grill onto intake end of heater (B). Keep this area clear of debris.



16

## Attach Wiring Harness

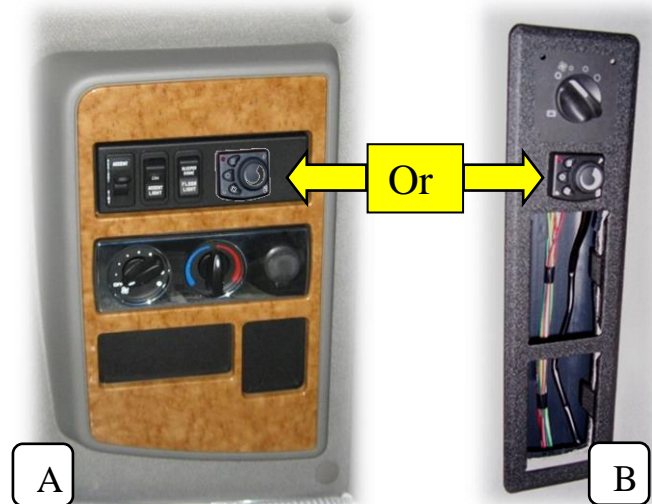
Attach plug end of wiring harness into wiring plug at bottom of heating unit. Be sure the lock-in pin seats securely.



17

## Install Heater Control into *NITE Plus* Control Panel or OEM control panel

You can install the heater control in either the OEM control panel (A) or the *NITE Plus* control panel (B). Remove the faceplate from the location you select and follow steps 18 – 20 for installation instructions.



18

## Attach Template to Faceplate – Drill

Take the sticker template that came with the Espar controller and place it on the panel. Drill holes through panel for wiring and for attaching screw as indicated on sticker. Pull sticker off after holes have been drilled.



19

## Mount Heat Controller and Knob

Now feed controller wiring harness wires through large hole to backside of panel.

Remove controller knob.

Screw controller to panel with small screw (A).

Replace controller knob (B).



20

## Re-attach Faceplate

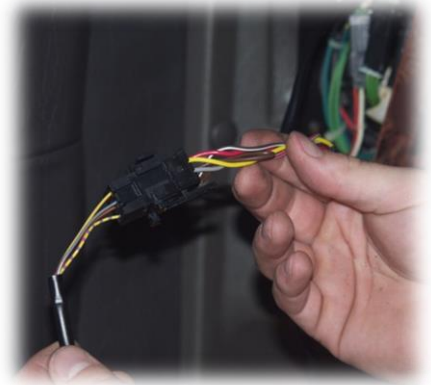
Carefully tuck all wires behind the corner faceplate, and re-attach faceplate with screws that were removed earlier. Run control harness wires from the corner control panel, along bed and in parallel with other wiring down toward the heater.





## 21 Install Connector on Mini Controller Harness

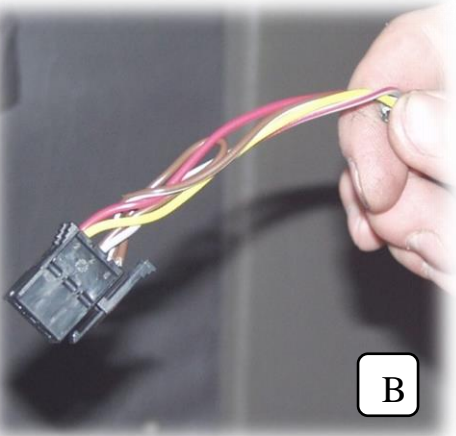
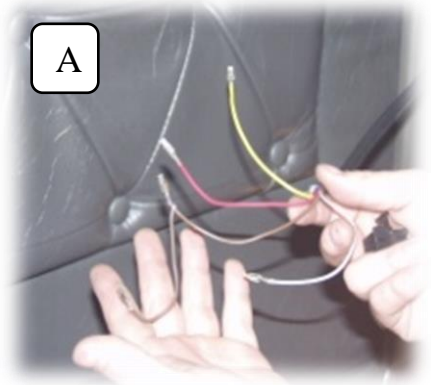
Connect ends of wire harness to plastic connector in this way: 1 = red, 2 = yellow, 3 = brown, 4 = solid grey, 5 = yellow with violet stripe.



## 22 Attach Wire Connector from Heater Control Harness

Route the control cable along the bed towards the heater control panel. Use zip ties as needed. Strip off 6" of black outer jacket from cable coming from heater. Fold all wires back and cut off the outer jacket, the blue, solid gray and solid brown wires. Save the brown wire and make a jumper wire. Strip down ends of solid brown wire. Connect one end of solid brown jumper to brown/white wire. Add clips to ends of wires and crimp on with crimper. On connector, the numbers 1, 3, and 5 are on one side, 2, 4, and 6 are on the other. Insert wires into plug as follows:

1 = red, 2 = yellow, 3 = brown jumper, 4 = gray with red stripe, 5 = other end of jumper including brown/white wire. Now connect the heater control harness to the controller harness.



23

## Finishing Intake and Exhaust Hose Installation

First, attach intake air tube to truck structure with zip ties. Put cap on bottom of intake tube. Next, run exhaust hose toward back of cab (A), attach with clamps to the structure of the truck. Cut off excess exhaust hose, and place End Sleeve on the end of the hose (B).

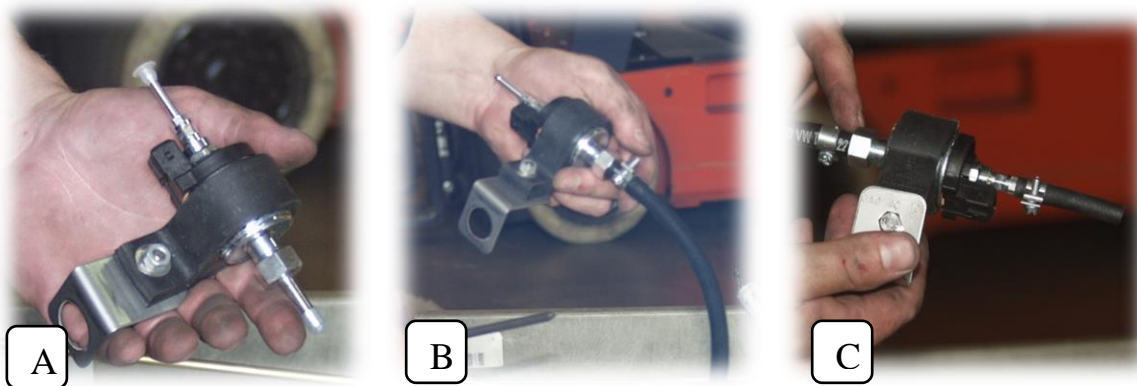


**NOTE: HOT – Keep exhaust hose away from wiring or flammable material.**

24

## Assemble the Fuel Pump Mount and Hoses

Take rubber mount bushing and L bracket and put them together to make mounting bracket for fuel pump. Slide fuel pump into rubber bushing (A). Take plastic caps off both ends of fuel pump. Attach large fuel hose to larger diameter end (B), figure out length needed to go out center hole of L bracket, and cut off excess. Secure with clamp. Attach small precut hose to smaller diameter end of the fuel pump and secure with clamp (C).



25

## Drill Hole in Fuel Tank, Insert Pickup Tube and Mount Fuel Assembly

Use a 1" hole saw to scribe initial location for two outer holes. Drill the two outer 1/4" holes centered on scribe. Then complete drilling the 1" hole. See diagram A. **Option:** When possible drill holes in the fuel sender block off plate. Slide pickup tube into fuel tank through hole, install with bottom washer then put on rubber seal and place metal washer on top of pickup tube followed by pump mounting bracket and nut. Tighten slightly. Put clamp over end of large fuel line from fuel pump, attach to pick up tube and clamp down. Finish snugging up large nut, but do not over tighten. Cut off excess from small feeder tube fuel line and attach to fuel pump. Secure with

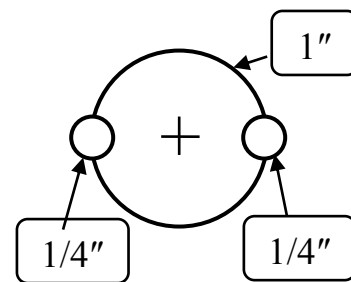
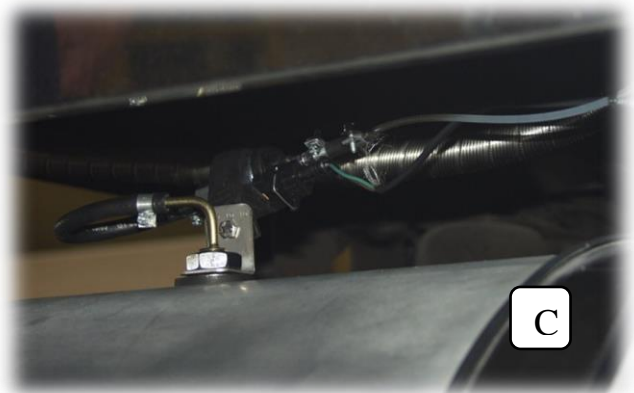


Diagram A

26

## Prepare Power Harness and Attach to Fuel Pump

Measure and cut power harness wires to appropriate length. Strip wires, put on rubber boots, then attach ends and crimp (A). Attach wires to plug: 1 = green, 2 = brown. Make sure rubber boots are seated to keep out moisture (B). Connect the power harness spring loaded plug to the fuel pump (C). Secure all wires and hoses with zip ties.



27

## Run Heater Unit Power Cable to *NITE Plus* Batteries

Take the heater unit power cable, run it under the truck (attach with zip ties where necessary) over to the *NITE Plus* batteries. Strip back outer cover to expose two inner wires.



28

## Attach Connectors

Strip end off brown wire. Before stripping red wire, put the housing for the fuse bracket on, and pull the red wire through. Now strip the end of the red wire, attach fuse bracket and crimp down. Pull red wire back into fuse bracket housing. Push rubber seal into place. Attach ring terminal to ground wire and crimp.



29

## Attach Wires to *NITE Plus* Batteries

Connect heating unit ground wire to ground terminal of *NITE Plus* batteries. Connect heating unit positive wire to positive terminal of *NITE Plus* batteries. Insert 20 amp fuse into fuse bracket. Tighten all connections. **YOU CAN NOW RECONNECT THE TRUCK'S BATTERIES TO TEST THE SYSTEM.**



***NITE<sup>®</sup>Plus***

**SECTION 3**

**WEBASTO HEATER**

**INSTALLATION**





**DO NOT USE NITE DUCT FOR HEAT VENT.**

**ATTN: Refer to Webasto manual for all heater installation instructions.**

[http://techwebasto.com/redirect/heater\\_main/5001118B.pdf](http://techwebasto.com/redirect/heater_main/5001118B.pdf)

***NITE<sup>®</sup> Plus***

**SECTION 5**  
**CHECKLIST**

Now that you've completed installation, it's time to check the systems to make sure everything is working properly. To help you do that, we've prepared a brief description of how the **NITE Plus** operates, and several checklists to help you make sure everything is in working order.

## 1. System and controls overview

The **NITE Plus** has a 3-position control: Low, Medium, and High. For each of these positions, the compressor speed and evaporator blower settings are different. This table shows how the compressor and blower are set for each control position:

| Control Position | Capacity Setting | Blower Speed | Compressor speed |
|------------------|------------------|--------------|------------------|
| 1 (LOW)          | Low              | Low          | Low              |
| 2 (MEDIUM)       | Medium           | High         | Low              |
| 3 (HIGH)         | High             | High         | High             |

**NOTE 1:** *Airflow does not change when switching the control from MEDIUM to HIGH. Only the compressor speed changes.*

**NOTE 2:** *In addition to the evaporator blower and the compressor, the **NITE Plus** also uses a condenser fan. It is located (along with the compressor and evaporator blower) inside the **NITE Plus** unit. It draws air from below the sleeper floor to cool the condenser coil, and then expels the heated air to the outside. The condenser fan speed remains the same for all control positions.*

**NOTE 3:** *Low voltage cutout – unit will turnoff once **NITE Plus** batteries are below 11.3 volts. Also will not start if voltage is too low*

## 2. System components checklist

Follow this table to check that the individual components of the *NITE Plus* run properly when the unit is ON.

| Component           | Function   | How to check it  |
|---------------------|--|--|
| Blower (evaporator) | Blows cold air to the sleeper area through the ducting. This is a 100% recirculating system with two air intakes located on the top and side of the <i>NITE Plus</i> unit. | Switch the <i>NITE Plus</i> control to LOW (Position 1). You should feel air coming from the louvers. Next, switch the <i>NITE Plus</i> control to MEDIUM (Position 2). You should feel an increase in airflow coming out of the louvers.<br><i>NOTE: Make sure nothing is blocking the recirculation air intake opening on the NITE Plus unit.</i>              |
| Fan (condenser)     | Pulls outside air from under the sleeper floor to cool the condenser coil, and then expels the heated air outside.   | Go under the sleeper underneath the truck and check to make sure that air is coming OUT the rectangular condenser air outlet when the <i>NITE Plus</i> unit is running. Then check the triangular inlet to make sure air is going IN.  |
| Compressor          | Compresses and pushes the refrigerant through the <i>NITE Plus</i> unit refrigerant loop.  | The best way to check that the compressor is running is to feel the compressor speed changes when the control is switched from MEDIUM to HIGH. Set the control to MEDIUM, and lift up the bed so you can hear the sound changes. Wait 1 minute. Then set the control to HIGH—you should notice a change in the vibration and sound of the <i>NITE Plus</i> unit. |

### 3. Electrical and temperature checklists

Use the following checklist to check that your *NITE Plus* is operating within the correct electrical and temperature ranges.

#### Electrical power

3.1 Check the *NITE Plus* unit's voltage. On the power supply cables (red and black cables) located close to the unit, there is a black connector from which the voltage can be read. When the *NITE Plus auxiliary (aux)* batteries are fully charged you should read between 12 and 12.5 volts.

3.2 Check the *NITE Plus* unit's current. Set the *NITE Plus* control to HIGH, use a clamp-on inductive ammeter to measure the current on the unit power supply RED cable. You should read between 27 and 35 amps depending on ambient temperature. On a hot day you should read higher amps, on a cool day, lower amps.

#### Temperature

3.3 Air temperature at louvers

First, precondition your sleeper compartment. Turn the *NITE Plus* unit control on and set to high. After the unit has operated for a minimum of 20 minutes, check your *NITE Plus* louver temperatures. With the sleeper curtain closed you should see a temperature difference of 13-25 degrees from the outside temperature. Please keep in mind High solar loads and high humidity will vary the performance of the unit.

3.4 Condenser outlet temperature

The *NITE Plus* unit pulls air from outside under the sleeper floor to cool down the condenser coil. The air is then expelled to the outside, also under the sleeper floor. With the *NITE Plus* running in HIGH, locate the condenser air outlet under sleeper—it is a rectangular opening with a screen. Measure the temperature of the air coming from this outlet. It should be 10° F higher than the outside temperature.

### 4. Separator checklist

4.1 Check to make sure all electrical connections are tight and secure.

4.2 Check to ensure all electrical components/connections have been installed according to instructions and diagrams.



## 4.3 Check voltage with engine OFF

First, check that the voltage on the TRUCK batteries is the same as the voltage on the separator (use the ground terminal to check separator voltage). Both voltages should be approximately 12V.

Next, check that the voltage on the aux batteries is the same as the voltage on the separator (use the ground terminal to check separator voltage). Both voltages should be approximately 12V.

## 4.4 Check voltage with engine ON

With the engine ON, check the voltage at the truck batteries. It should be higher than when the engine is OFF (>13V).

Next, wait for the truck batteries voltage to reach at least 13.2V. You may need to increase the engine RPM to raise voltage. At 13.2V, the separator should close and start charging the aux batteries—you should hear the separator make an audible “click”.

Now check the voltage of the aux batteries. It should be higher than the voltage when the engine is OFF, and should be approximately the same voltage as the truck batteries.

You can double check that the separator is allowing the aux batteries to charge by measuring the amps going to the aux batteries using a clamp-on inductive ammeter. Place it on the 4 gauge cable that connects the separator to the aux batteries positive terminal. It should read >0 amps.

### **NOTE:**

Older starting batteries will change time needed to charge aux batteries and may cause decrease in runtime.

Old batteries do not hold charge long enough requiring alternator to continuously charge starting batteries.

Separator looks for 13.2 volts on start batteries prior to charging aux batteries.