

IMPORTANT DYNASYS TECHNICAL SERVICE BULLETIN

TSB – 01242013-2

To:

Dealers & Service Managers

Re:

Safety Notice and Release of APU Service Upgrade Kit, PN 55-8919-RB

Affected Units:

The following documentation pertains to those APUs that have Shore Power units, part number 54-8919-A or later. For units with a Phillips & Temro Shore Power system, or part number 54-8918, please reference TSB 01242013-3.

Notice:

Hodyon, the makers of the Dynasys APU, recently identified a potential safety risk associated with units in the field. Immediately stop use of affected units until the service upgrade outlined in this bulletin has been applied.

Remedy:

The following documentation details the technical repair process and the associated install instructions. This service upgrade must be applied to all affected units.

Service Upgrade Kit Contents:

APU Retrofit Kit P/N 55-8919-RB (w/ Shore Power)

P/N	Description	Qty
55-8101-F	Upgraded PDC, for mating with Shore Power	1
55-8155-R	Modified Compressor Cover, HVAC	1
55-8121-A	Cable harness, for Shore Power to HVAC Direct	1
54-8519	Wire Assembly, Shore Power Pigtail	1
55-8267-R	Upgraded APU 120VAC Pigtail Harness	1
54-8180	HVAC Warning Label	1
55-8320	Mounting Screw, 10-24 x 0.5", for p-clip installation	1
54-8207 or 54-8208	Heat shrink: black (8207) or red (8208)	1
54-8398	7.5" zip tie (two for installation, one for Shore Power)	3
54-8001	14.5" zip tie, for reattaching PDC cable harnesses to truck frame	15
54-8710	Orange Loom	21.5"
55-8507	Cover, Shore Power	1
54-8511	Dynasys Shore Power Label	1

Allocated Standard Repair Time:

Repair Description	SRT Time (hrs.)
Remove existing PDC; install upgraded PDC & convenience outlet	1.25
Direct mount PDC to HVAC connections; direct to the HVAC PCB	0.50
Remove existing APU 120VAC pigtail harness; install upgraded pigtail harness	1.25
Remove Shore Power, perform service upgrades, and reinstall	0.75

Total Allocated: 3.75

Before You Begin:



Verify that the APU has been completely disabled prior to performing the following service upgrade.
All connectors at the PDC should be disconnected: at the HVAC line, at the Convenience Power line, and at the Block Heater.

Cut all PDC harness zip ties along the truck frame to loosen the PDC to APU cable bundle and prep for removal from the truck.

Cut all PDC harness zip ties inside the bunk to loosen the PDC cables and prep for removal from the truck.

When evaluating wire routing and placement, follow these recommended wire routing and support practices:

- Minimum bend radius for cable assemblies should NOT be tighter than the stated minimum radius
 - o Convenience and block heater cables: 4.5” radius
 - o HVAC Cable: 5.5” radius
 - o APU to PDC Cable: 3.5” radius
- Support all wires and cables within 5” of termination points
- Sharply bending or constricting cables, tighter than radius requirements noted above, can effect current capacity

PDC Removal & Installation of PDC Service Upgrade:

At the bunk floor, where the existing PDC wire bundle is routed to the exterior of the truck and to the APU, cut the wire bundle **with the orange loom ONLY**.

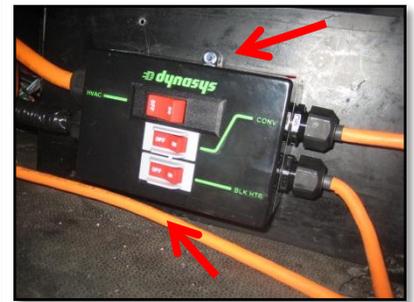
This is the wire bundle that mates the PDC pigtail connections to the back of the APU. DO NOT clip any other wire bundles.

Note: this allows for easier removal of the existing PDC from within the cab, and, allows for quick/clean removal of the existing PDC to APU wire harness from along the truck frame.

Unbolt and remove the existing PDC from the bunk mounting surface; retain mounting bolts for later assembly use.



Locate the 55-8101-F PDC provided with the service upgrade kit.
 Position where previous PDC had been installed.
 Using existing PDC mounting bolts, secure the PDC breaker box into place.



Feed the PDC to APU wire bundle through the bunk floor hole.
Critical inspection & process notes:
Due to the increased size of the wire bundle, the bunk floor hole may need to be enlarged
Do not connect PDC to APU cable to the APU pigtail at this point



Install blocker heater outlet.



Shore Power Removal, Service Upgrade, and Reinstallation:



Before you begin, remove the 30AMP fuse located in the fuse holder at the battery box.



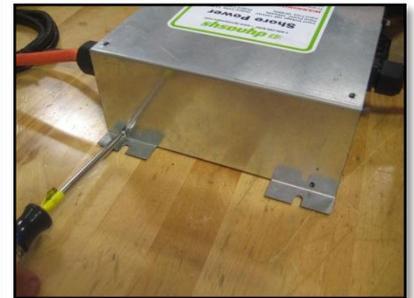
Remove the + and the - cables, located at the Shore Power box.



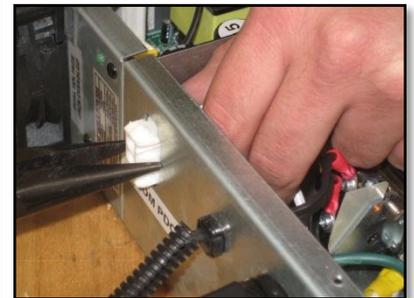
Remove the mounting screws for the Shore Power box, four screws in total; retain screws.
 This allows access to the Shore Power top cover and eventually to the inside of the unit.



Remove the Shore Power top cover, six screws in total; retain screws.
Critical inspection and process notes:
 Remove the four screws from the top of the cover and the two screws from the cover base away from the Shore Power fan.
 Do not remove the screws from the box base by the fan.



Using needle nose pliers, remove the 110 input 'From PDC' mate-n-lock connector.



Note wire locations as pictured.
 Critical process and inspection notes:
 PTWL = 'From PDC' pigtail, wire color, switch location
 WBWL = 'To HVAC' bundle, wire color, switch location
Critical process & inspection notes:
 Black and yellow wires can be used interchangeably

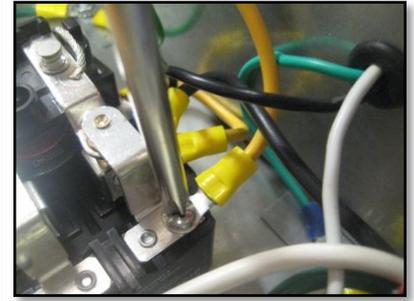
PTY2
 PTGI/WBG1
 WBB2
 WBW3
 PTW3



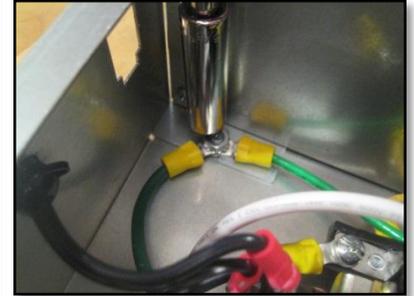
Unscrew the white wire from the pigtail harness at location PTW3; retain screw.



Unscrew the yellow wire from the pigtail harness at location PTY2; retain screw.



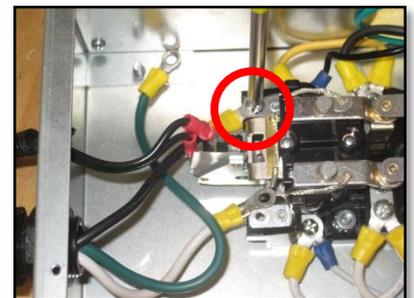
Using a 3/8" socket with extension and a ratchet, remove the green wires from both the pigtail harness and the wire bundle, location PTG1/WBG1; retain the KEPS nut.



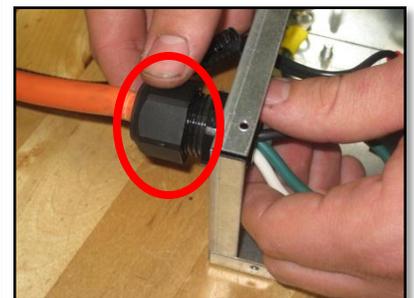
To remove the 'To HVAC' cord, detach the white wire from the wire bundle, location WBW3; retain screw.



To remove the 'To HVAC' cord, detach the black wire from the wire bundle, location WBB2; retain screw.



Loosen wire bundle strain relief nut on the exterior of the Shore Power box. Pull wire bundle through the strain relief.



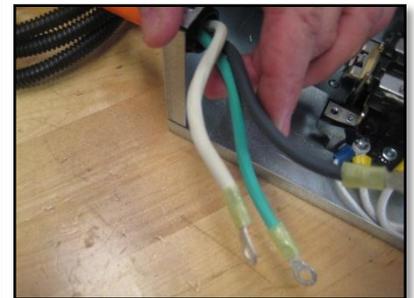
Note the Shore Power box mounting locations, after the 'From PDC' pigtail harness has been removed and the 'To HVAC' wire bundle has been removed.



Locate the 55-8121-A wire harness assembly. Feed the terminated ends through the strain relief nut.



Feed wire bundle from the outside of the Shore Power box inward, at the 'To HVAC' box location.



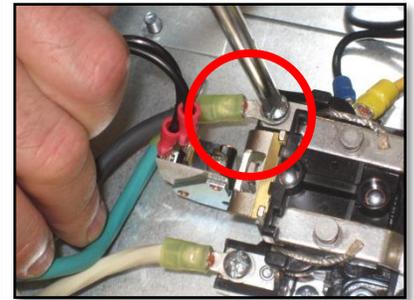
Position the 'To HVAC' wire bundle in place; tighten the strain relief nut. Verify that the wire bundle is secure.



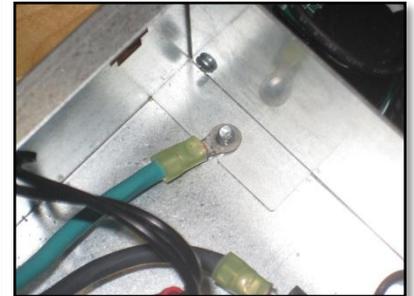
Install the white wire from the 'To HVAC' wire bundle; installation at locating position WBW3.



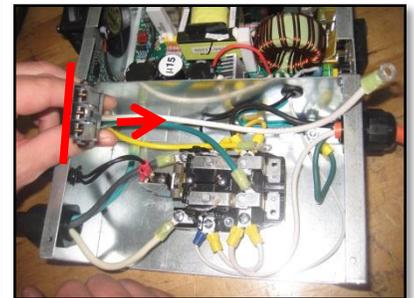
Install the black wire from the 'To HVAC' wire bundle; installation at locating position WBB2.



Install the green wire from the 'To HVAC' wire bundle; locate ring terminal over the grounding stud on the box at location WBG1.



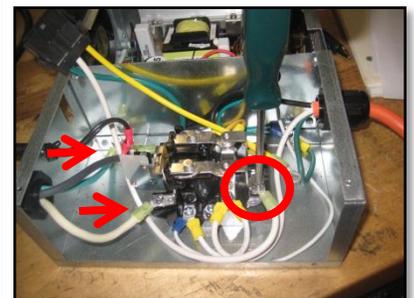
Locate 54-8519 cable assembly with the Molex connector. Position the Molex connector such that the connector straight edge is parallel to the "To HVAC" connector and the Molex tab is facing towards the block heater cable.



Route the green wire from the pigtail harness to the mounting stud at location PTG1; loop ring terminal over mounting stud.
Using a 3/8" socket with extension and a ratchet, reinstall KEPS nut.
Critical inspection and process notes:
Verify that the KEPS nut is secure and that the wires do not move.
Verify that both green ground wires are attached at the stud.



Install the white wire from the pigtail harness; installation at location position PTW3.
Critical process & inspection notes:
Route the pigtail harness white wire under the black and white wires coming from the "To HVAC" wire bundle.



Install the yellow or black wire from the pigtail harness; installation at location position PTY2. Verify wire locations are correct.

Critical inspection and process notes:

Verify all wires are connected and are secure. Verify wires are routed and installed at correct locations.

Note: if the common or line is miswired to the ground position, there is a potential shock hazard as the chassis of the truck can become 'live' w/ respect to the ground. Use an ohmmeter and check from any ground point to any system common or line point (without it operating). If there is continuity, then a wire has been crossed.



Insert the Molex connector through the Shore Power top cover. Verify that the Molex connector 'snaps' into the top cover and that the connector is securely in place.



Reinstall Shore Power top cover and the six enclosure screws.



Note: when determining the Shore Power box placement, verify the Shore Power assembly is positioned upstream from the PDC. After installing the Molex connection from the PDC, add a zip tie to secure the cable harness in place.

Upstream SP Connection:



Acceptable:



Not Acceptable:



Mount the upgraded Shore Power unit; install the four mounting screws.
Reinstall the + and - cables.
Reinsert the 30AMP fuse in the fuse box located at the truck battery.

Bunk Outlet Removal and Installation of Service Upgrade:

Remove the mate-n-lock connector from the outlet to PDC cable harness, thus exposing the harness terminals. This will allow the wire bundle to feed through the convenience outlet mounting plate.

Unsnap the convenience outlet box from the mounting back plate; remove. Feed wires through the mounting back plate.

Note: the existing bunk outlet mounting back plate does not need to be removed from the truck wall; it can be reused as already installed.



Prep the service upgrade convenience outlet for installation:

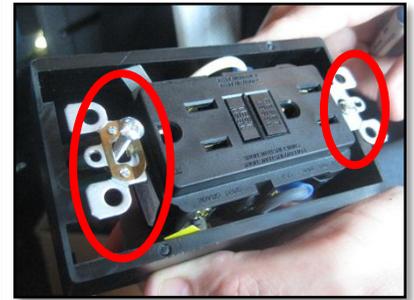
Remove convenience outlet mounting plate from the service upgrade outlet box.



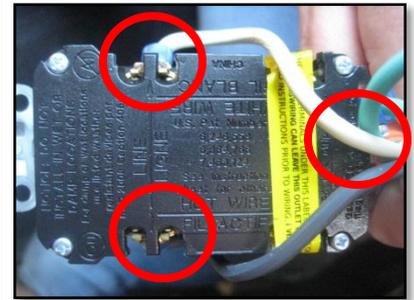
Remove bezel from the top of the outlet.



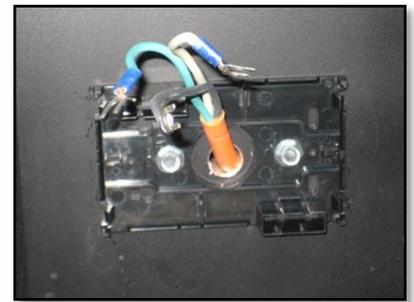
Remove the socket mounting plate screws (X2) from the outlet housing to release the socket and to gain access to the exposed outlet connections.



Unscrew the three terminal connections: black connection at LOAD, white connection at LINE, and the green connection at GROUND.



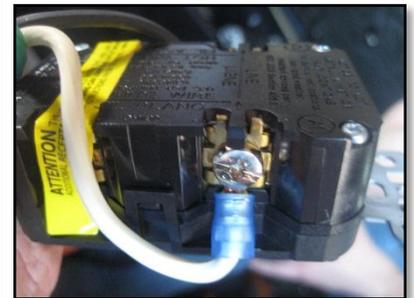
Route the exposed wire terminals from the outlet cable harness through the existing mounting plate hole.
Pull cable from behind the outlet base through to the front.



Slide outlet box cover over cable (verify the socket mounting tabs are facing out, toward the wire connections).
Connect the black wire to the outlet LOAD side; verify screw head is flush and wire is secure.



Connect the white wire to the outlet LINE side; verify screw head is flush and wire is secure.

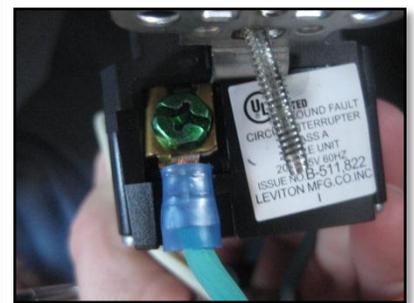


Connect the green wire to the outlet GROUND side; verify screw head is flush and wire is secure.

Critical inspection and process notes:

It is critical to verify connections are tight and properly located; verify screw heads are flush and wires are not loose.

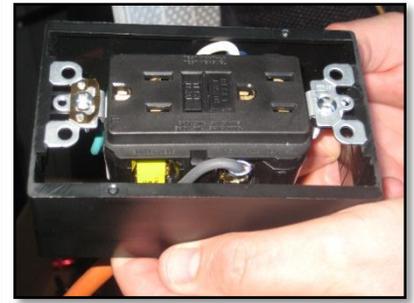
If the bunk outlet is wired incorrectly during installation, the outlet will not work.



Align socket to convenience outlet outer box.
Tighten mounting screws to secure the socket assembly to the convenience outlet housing.



Verify screws are tight and are flush to socket mounting tabs.



Reinstall outlet bezel, verify screws are tight and flush.



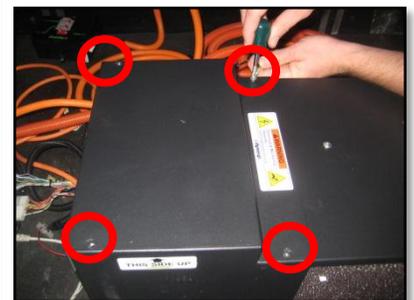
Attach/snap outlet box into place over the mounting plate.



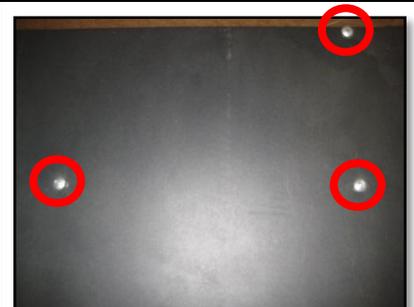
Hardwiring PDC Cable Connections Direct to HVAC PCB:

Remove four screws from HVAC compressor top cover, including the screw that positions the ECM grounding wire in place (retain three of the four screws for later use).

Note: if the HVAC unit has a PCB access plate, leave PCB access plate screws in place.



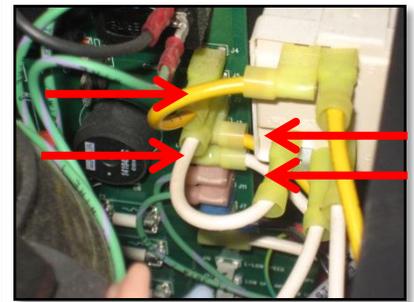
Remove three screws from the heating element top cover (retain screws). This allows for improved access for later assembly processes.



When inspecting the PCB, prior to any repair activities, note the following wire positions:

Note: connections listed are on the right side of the PCB, reading from top to bottom

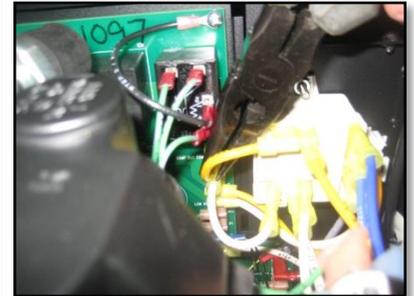
- J4 = yellow wire from the potential relay
- J5 = white wire from the potential relay
- J2 = yellow wire from the AC pigtail harness
- J3 = white wire from the AC pigtail harness



Using needle nose pliers, carefully remove the flag terminals from:

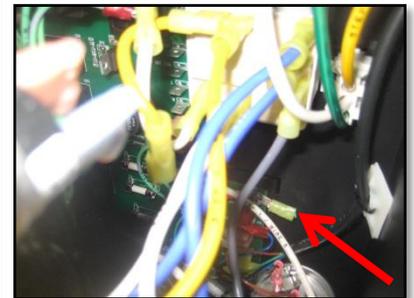
- J4 = yellow wire from the potential relay
- J5 = white wire from the potential relay
- J2 = yellow wire from the AC pigtail harness
- J3 = white wire from the AC pigtail harness

Note: disconnect the flag terminals from the PCB side only; do not remove from the potential relay.



Carefully feeding wire snips into the HVAC cavity, cut green wire that is connected to the AC power pigtail harness; cut the wire just above the ring terminal base.

Do not remove the ring terminal.



Pry tabs at the AC power harness mate-n-lock connector to open the connector; remove the pigtail harness.



On the modified HVAC compressor top cover, 55-8155-R, install strain relief into the top cover hole; orient the strain relief such that the strain relief clip flat base is parallel to the cover.

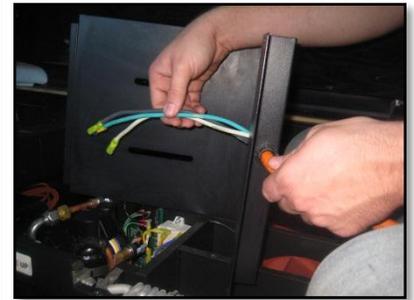
Note: DO NOT ratchet the clip until AFTER the wire bundle has been fed through the strain relief and positioned correctly.



Feed the three-stranded wire bundle from the PDC through the strain relief at the HVAC top cover; feed the bundle from the outside of the cover to the inside.

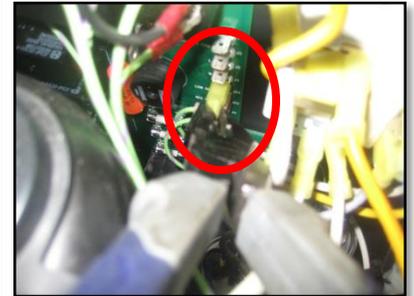
Feed enough cable through the strain relief to allow for sufficient wire slack during the PCB connection process; feed approximately 18" to 24" through the strain relief.

Set top cover to the side in a manner that will allow work while not allowing the cable to chafe on anything and be damaged.



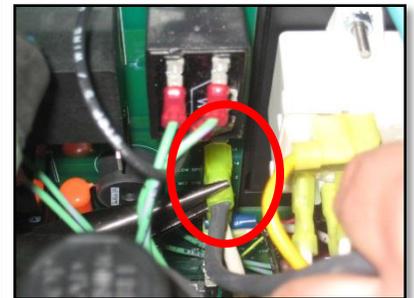
Using either a 12" or a 14" needle nose plier, install:

- White wire from PDC wire bundle to J3



Using either a 12" or a 14" needle nose plier, install:

- Black wire from PDC wire bundle to J2



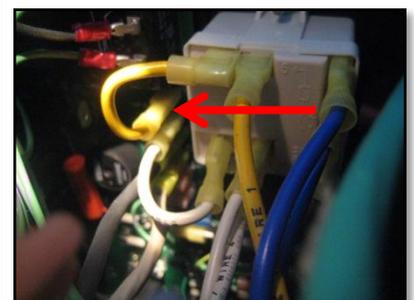
Using either a 12" or a 14" needle nose plier, install:

- White wire from potential relay to J5

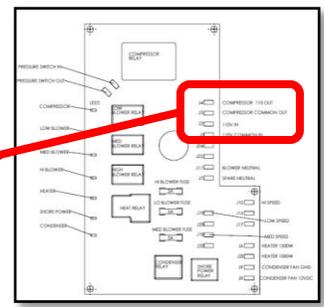
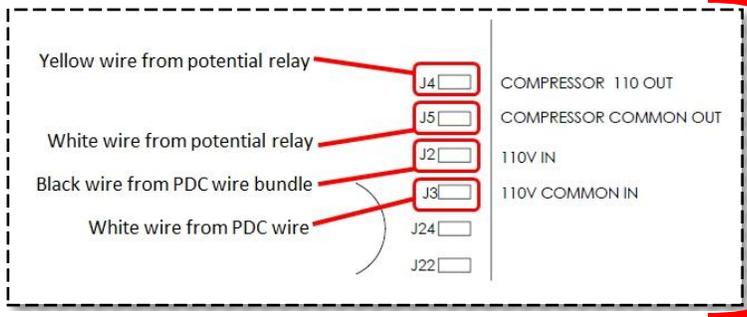


Using either a 12" or a 14" needle nose plier, install:

- Yellow wire from potential relay to J4



Note PCB Connections:



Critical inspection and process notes:
 The terminals are designed to fit snugly; you will feel a solid engagement when the connections are properly in place.
 Perform a visual check of all connections prior to reinstalling the top cover.
 Perform a visual check of the surrounding area within the HVAC box to ensure there hasn't been any physical damage to the surrounding system components.



Remove the screw from the top right location on the PCB; keep the screw fed through the ring terminal of the grounding wire connected to the timer.



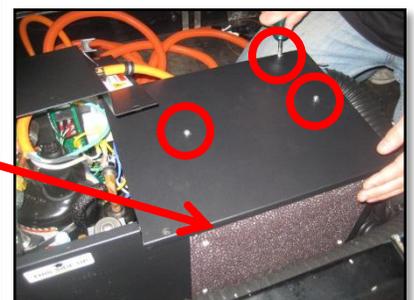
Feed the screw through the ring terminal of the green grounding wire from the PDC wire bundle; reattach through the PCB mounting hole and into the box panel.

Critical inspection and process notes:
 Verify the timer grounding wire and the green grounding wires are secure
 Verify that the install position won't interfere with cover installation
 Verify the screw head is flush
 If the ground isn't secure, the system could experience signal issues.



Reinstall top cover over the heating elements and the blower motor; install the three screws.

Critical inspection and process notes:
 Verify the evaporator screen is tucked in flush under the top cover.



Adhere the 'hot surface' warning label to the top cover.



Reinstall compressor top cover; verify the cover lip is tucked into the base of the HVAC box.



Gently pull cable bundle through the strain relief until at the base of the insulation; install ratcheting clip. Push on clip until it audibly clicks.

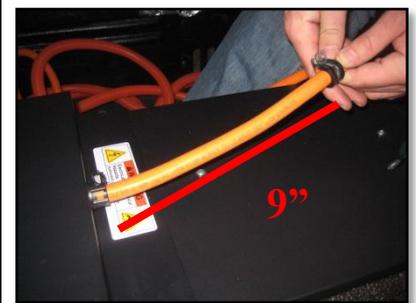
Critical inspection and process notes:

The clip should be installed around the wire bundle insulation only, not around the wires.

The clip will only click once or twice; do not try to force the clip any tighter. Gently tug on the wire bundle to verify it is securely in place within the strain relief; the wire bundle should not move.



Position the p-clip 9" from the strain relief.



Loop wire and attach the p-clip to the HVAC box using kit screw 55-8320.

Critical inspection and process notes:

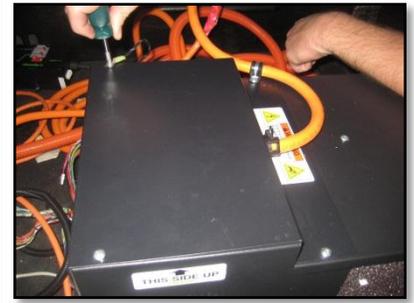
Verify there is a gentle bend in the cable harness, as per illustration.

Do not pull the cable harness tight or at a sharp angle.

Do not place anything between cable and box top.

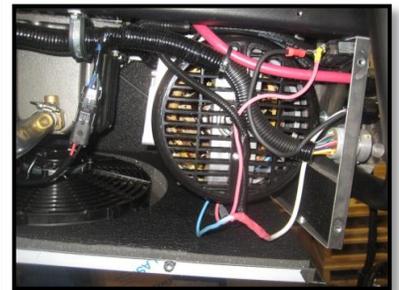


Reattach ECM harness grounding wire to the HVAC box; route to appropriate box location, as the HVAC box position dictates. Insert remaining two screws into the top cover.

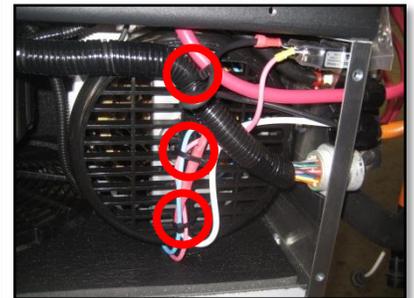


APU 120VAC Pigtail Harness Removal and Installation of Service Upgrade:

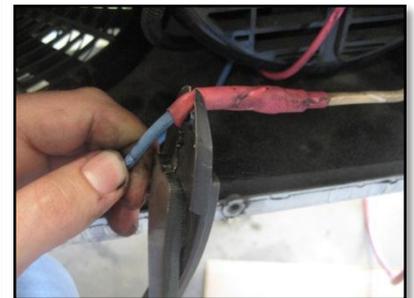
Remove the following: front access panel, tailpipe clamp attached to the left panel elbow, and the lower left side APU panel. Additionally, loosen the tailpipe clamp at the muffler and position the tailpipe vertically. Also remove one bolt from the lower panel assembly to allow access around and under the generator.



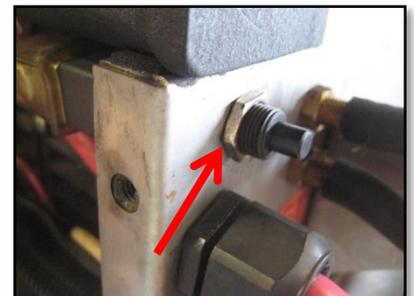
Using wire snips, cut the three zip ties that are securing the generator/pigtail harness wire bundle and the APU battery cable to the plastic generator housing.



With blue generator wire direct left, cut to the left of the pigtail harness butt connector.



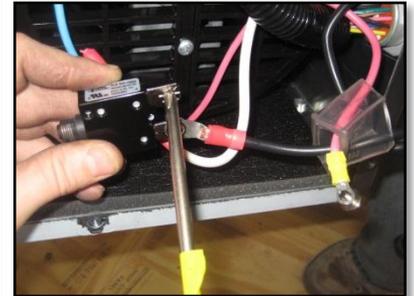
At the rear panel, loosen and remove the 60AMP breaker mounting nut.
Critical process & inspection notes:
 When removing the breaker, hold the breaker body with one hand while gently removing the securing nut on the outside of the rear panel.
 The breaker housing threads are plastic; do not pull or over tighten as the threads may break.



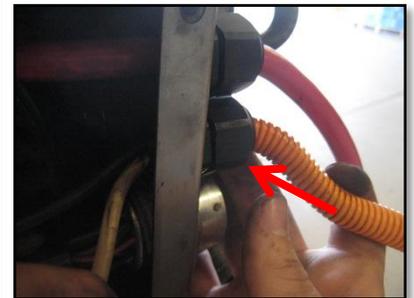
At the 60AMP breaker, pull back breaker boot to expose the attached ring terminals.



Unscrew the ring terminal mounting screws from the breaker for both the red and black wires; retain screws for later assembly.



Loosen the strain relief securing nut (at the external side of the rear panel).



At the existing APU pigtail harness wires, cut both the black and white wires, directly on the inside of the APU rear panel.
Retain the pigtail harness strain relief securing nut for later assembly use.



Feed the black and white wires from the upgraded pigtail harness through the strain relief securing nut (threads facing the rear panel).



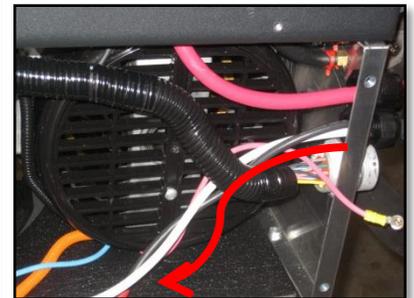
Feed the black and white wire from the upgraded pigtail harness through the strain relief at the rear panel.



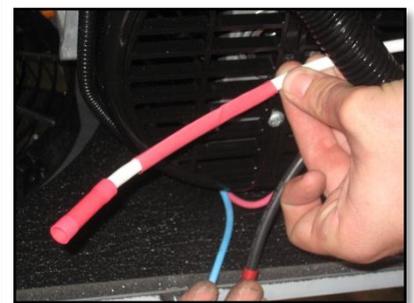
Feed pigtail harness through the strain relief until the orange loom is at the base of the strain relief.
Tighten the securing nut to the strain relief. Verify the pigtail harness is secure.



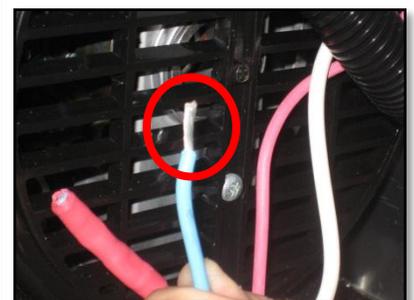
Route the white wire along the generator plastic housing, behind the black APU interconnect harness loom; gently slope the white wire along the outer left portion of the generator housing.



Feed the white pigtail harness wire through the red heat shrink barrel.



Strip ~1/2" of insulation from the end of the blue wire.
Verify that there is sufficient wire strand exposure to fill the butt connector barrel.



Insert exposed blue wire strands into the open butt connector end; crimp. Position red heat shrink over the crimped connections; using a heat gun, secure the shrink in place.



Note: the following process step pertains to those APUs that do not already have loomed generator wires.

When installing the orange loom over the generator wires, install the 9" length over the blue generator wire; install the 11.5" length over the pink wire.

Place a small band of black electrical tape over the base of the orange loom that will be fed in the direction of the generator base; push loom (over the wire) until it meets at the generator base. Perform this operation for both wires.

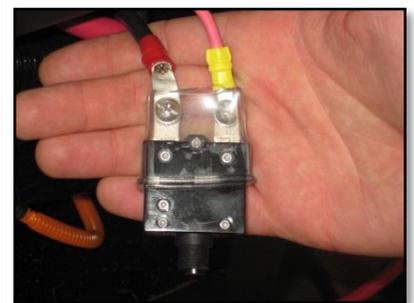


Note: the following process step pertains to those APUs that do not already have loomed generator wires.

On the opposite end of the pink wire, use a piece of electrical tape to enclose the loom end; ensure the electrical tape wraps around both the loom at the wire insulation.



Reattach ring terminals to the breaker. Attach the black pigtail harness wire to the breaker terminal facing away from the generator. Before reattaching the ring terminals to the breaker, verify that the pink wire coming from the generator has been routed up, behind the loomed APU interconnect harness, and towards the rear panel. Verify screw head is flush and wires are secure. Position breaker boot in place over ring terminal connections.



Feed 60AMP breaker through the rear panel; at the rear panel, tighten mounting nut to secure breaker in place.

Note: the breaker housing threads are plastic; do not pull or over tighten as the threads may break.



On the opposite end of the blue wire, use a piece of electrical tape to enclose the loom end; ensure the electrical tape wraps around both the loom and the heat-shrunk connection.



Fold each of the zip ties twice over to form a coil; this permits easier routing through the grates of the plastic generator housing.



Feed one of the zip tie tails through and around a generator grate in the middle-left region of the grate; zip tie the butt connector on the white APU pigtail harness wire and the black loomed capacitor wire harness in place. Clip the zip tie tail.



Feed one of the zip tie tails through and around a generator grate in the middle-middle region; zip tie the pink orange-loomed generator wire, the black pigtail wire, the white pigtail wire, and the interconnect harness loom. Clip zip tie tail.



Verify the loomed generator wires are not crossed underneath the generator. Verify the black wire is attached to the 60amp breaker terminal furthest away from the generator. Verify the wires have been routed and secured appropriately.



Reinstall: lower pan assembly bolt, lower left side APU panel and side panel bolts. Reposition tailpipe into place and install tailpipe clamp at the elbow; retighten the tailpipe clamp at the muffler. Reinstall the front access panel. Attach the PDC to APU cable harness to the APU pigtail harness.



Route wire bundle along the truck frame. Secure with provided zip ties.

Critical process and inspection notes:

For all cable/wire routing, follow the recommended bend radius guide provided

Perform standard APU functionality tests.

Parts Return to Dynasys:

Warranty Reimbursement:

Dynasys Technical Services requests that all dealers and self-installing fleets email one spreadsheet per day of all TSB-01242013-1, TSB-01242013-2 and TSB-01242013-3 service upgrades performed for that day; email list to customerservice@hodyon.com. The spreadsheet should contain the following information:

- APU Serial Number
- APU Hours
- SRT Code for Technical Service Bulletin Performed (TSB-01242013-1, TSB-01242013-2 or TSB-01242013-3)
- Driver Name
- Driver Address, City, State, Zip
- Driver Phone Number
- Driver Email
- Servicing Dealer Name
- Self-Installing Fleet Name
- Dealer RO#
- Dealer Invoice #
- Dealer Invoice Date
- Dealer Invoice Amount
- SRO# (if part return requested)
- Description of work performed

A template for capturing the before mentioned data will be emailed to you.

PLEASE NOTE: ANY ADDITIONAL REPAIRS OR TSBS NEEDING TO BE PERFORMED MUST BE AUTHORIZED BY DYNASYS TECHNICAL SERVICES AND ON A SEPARATE WARRANTY CLAIM AND A SEPARATE DEALER RO#.

Dealers are instructed to retain all removed parts for 30 calendar days, as parts may be required by Dynasys for further evaluation.

Part returns will be requested at the discretion of Dynasys Technical Services. In the instance parts are requested for return to the Dynasys facility, return the removed hardware to:

- Attn: Engineering Services
- 2620 Brushy Creek Loop
- Cedar Park, TX 78613