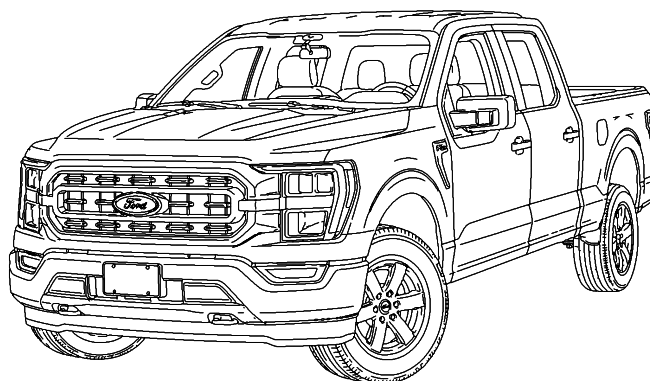


Ford F-150

PSS-23FORD-F150BO

Installation Manual

- Model: Ford F-150
- Model Year: 2018-2024



Ford	Model	Year
	F-150**	2018-2024
**This is only compatible with the Crewcab Factory-Equipped B&O system. Does not fit the B&O Unleashed with headliner or headrest speakers.		

* The specified vehicles have been tested and have met compatibility specs at the time of testing. Compatibility is not guaranteed if the manufacturer has made production changes to the listed vehicles above.

⚠ Warning: Before you begin wiring, remove the ground wire from the negative terminal of the battery. Failing to do so can lead to electric shock, injury or damage to equipment.

Note:

- Design and specifications are subject to change without notice for improvement.

To Ensure Safe Use, Always Follow These Precautions

- The installation of this product requires specialized skills and experience. We recommend that you have the product installed by a professional installer. This is a difficult installation that can be very time consuming.
- Before you use this product, be sure to carefully read this installation manual and the separate user's manual so that you can use the product correctly. Alpine Electronics bears no responsibility for problems that arise as a result of failure to follow the instructions in the manuals.
- This manual includes a number of symbols that are intended to help you use the product safely, to prevent harm to you and others, and to protect against damage to property. These symbols and their meanings are listed below. Make sure you fully understand these symbols before you begin reading the main text.

Explanations of Injury and Damage That May Result from Incorrect Use

 Warning	Ignoring the content marked by this indication and using the product incorrectly is expected to lead to death or serious injury.
 Caution	Ignoring the content marked by this indication and using the product incorrectly is only expected to lead to injury or property damage.

Types of Precautions

 Forbidden	Indicates actions that are forbidden (must not be performed)
 Forbidden	Indicates that disassembly is forbidden.
 Mandatory	Indicates actions that are mandatory (must be performed)
	Marks content that should receive your full attention.

Warning

Do not disassemble or modify the product. Doing so could lead to an accident, fire, or electric shock.



Forbidden

Store screws and other small objects where children cannot reach them. If one of these small objects is swallowed, consult with a doctor immediately.



When replacing fuses be sure to use the fuses with the specified current rating. Failing to do so could lead to an accident or fire.



Mandatory Forbidden

Only connect the product to a 12 VDC negative ground car. Failing to do so could lead to an accident or fire.



Mandatory

Before you begin wiring, remove the ground wire from the negative terminal of the battery. Failing to do so could lead to electric shock or injury.



Do not cut the insulation on a cord and take power from another device. Doing so could lead to fire or electric shock.



Forbidden

Do not install the product in a location where it will obstruct the driver's forward view; interfere with the operation of the steering wheel, gear shift, or the like; or pose a threat to passengers. Doing so could lead to an accident or injury.



Forbidden

When making a hole in the vehicle body, be careful to avoid damaging pipes, the fuel tank, electrical wiring, and the like. This kind of damage could lead to an accident or fire.



When installing and grounding the product, do not use any of the bolts or nuts of the steering wheel, brakes, fuel tank, or the like. Doing so could make the brakes stop working or could lead to fire.



Forbidden

Do not install the product near the passenger-side airbag. Doing so could interfere with the operation of the airbag and lead to an accident or injury.



Forbidden

Bundle cords so that they don't interfere with driving. Wrapping cords around the steering wheel, gearshift, brake pedal, or the like could lead to an accident or damage equipment.



Caution

Connect the product properly according to the instructions. Failing to do so could lead to fire or an accident.



Forbidden

Do not sandwich cords between the seat railing or allow them to touch protrusions. Resulting breaks or shorts could lead to electric shock or fire.



Do not block vents or heat sinks. Doing so could lead to fire or damage equipment.



Use the accessories according to the instructions, and attach them securely. Failing to do so could lead to an accident or damage equipment.



Forbidden

Do not install the product where it may be exposed to water or in a place with high levels of humidity or dust. Doing so could lead to fire or damage equipment.

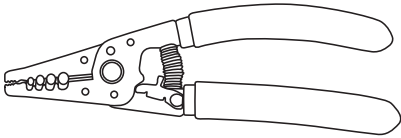
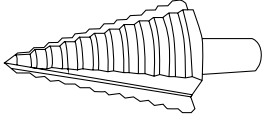
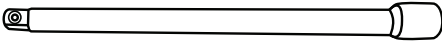
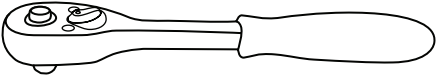
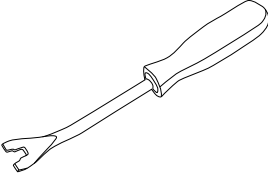
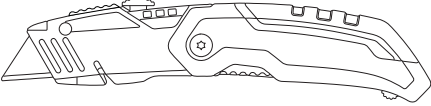
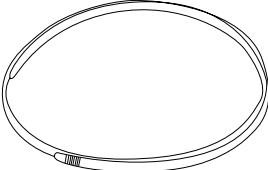
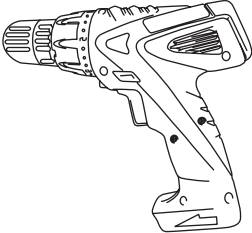
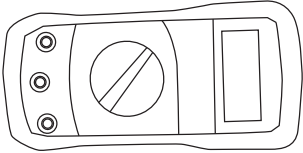
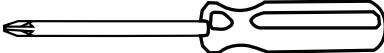
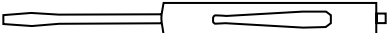
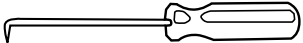
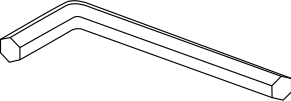


Forbidden

The installation and wiring of this product requires specialized skills and experience. Have the product installed by a professional installer.

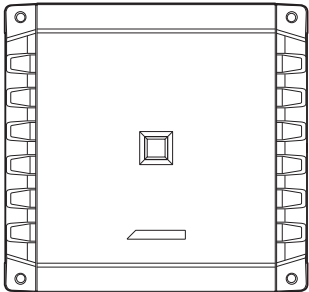
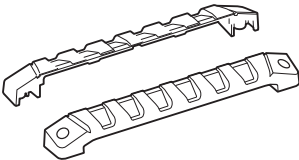
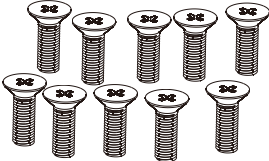
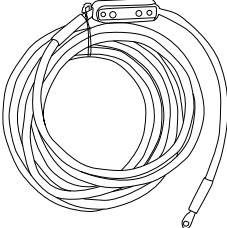
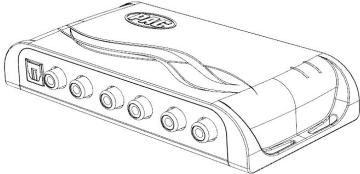


Tools Required

Wire Strippers	Wire Cutters	Step Drill Bit
		
10mm Socket	Extension	Ratchet
		
7mm Socket	Panel Popper	Utility Knife
		
Panel Removal Tools	Wire Fishing Tool	Cordless Power Drill
		
Digital Multimeter	Phillips Screwdriver	Flathead Screwdriver
		
Hook Tool	2mm Allen Wrench (Included With Amp)	
		

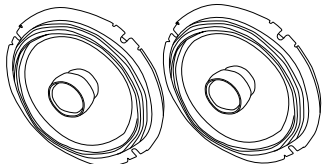
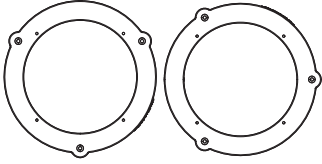
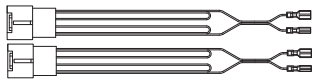
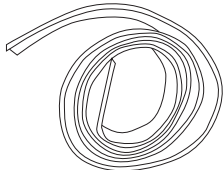
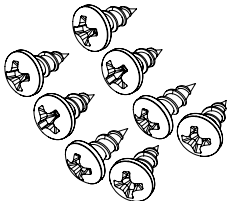
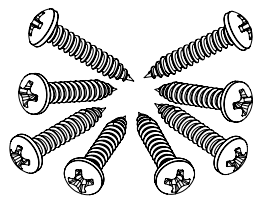
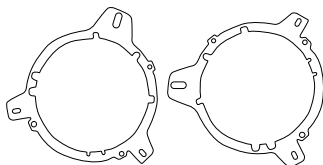
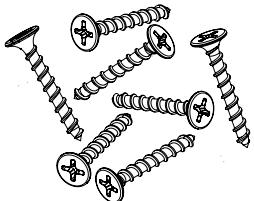
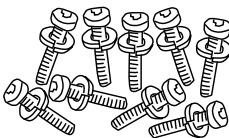
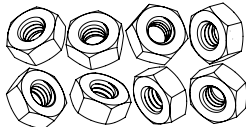
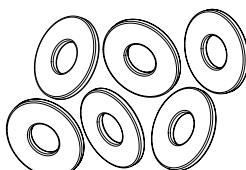
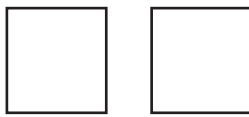
Accessory List

Amplifier & Interface Accessories

5-Channel Amplifier (S2-A55V) 	Amplifier End Caps x 2 	Amp Verification Certificate 
Machine Screw For Mounting Brackets x 10 	3/4" x 4 (Included With Amp) (Not Used) 	1/4" x 4 (For Amp End Caps) 
S2-A55V Owner's Manual 	Power & Ground Wire (ALP-23FORD-PHRN-1) 	PAC Amp Integration Module (AP4-FD31-EXT) 
ALP-15FORD-ISP-K-1 (Tweeter Speaker Wiring) 		

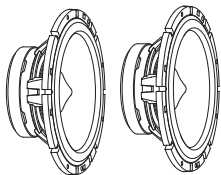
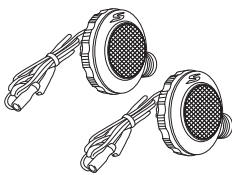
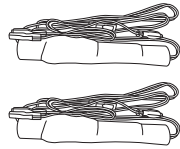
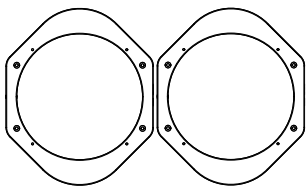
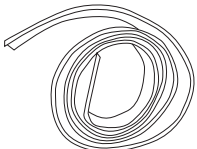
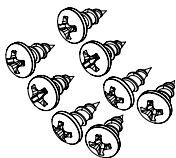
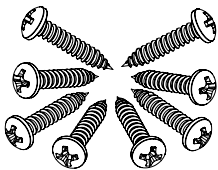
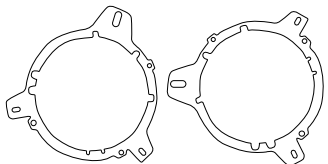
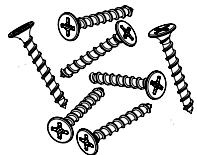
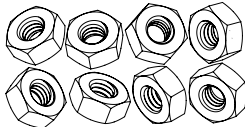
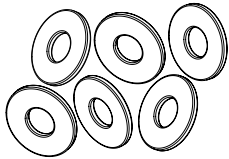
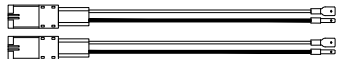
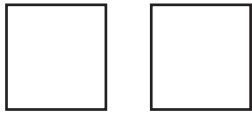
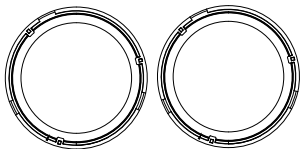
Accessory List

S2-S65 Rear Speakers Components & Installation Accessories

6.5" Coaxial Speakers Rear x 2 (S2-S65)	Rear Door Adapter Kit x 2 (ALP-23FORD-ISP-K-R-1)	Rear Door Speaker Plug Adapter x 2 (ALP-23FORD-ISP-K-R-1)
		
Rear Door Speaker Foam Roll x 1 (ALP-23FORD-ISP-K-R-1)	Rear Door Speaker Mounting Screws x 8 (ALP-23FORD-ISP-K-R-1)	Rear Door Speaker Adapter Screws x 8 (ALP-23FORD-ISP-K-R-1)
		
Universal Adapter Rings x 2 (Not Used)*	12" Speaker Wire With Terminals x 2 (Not Used)*	1-1/8" Screws x 8 (Not Used)*
		
M4x7mm Machine Screws With Split Lock Washers Attached x 8 (Not Used)*	M4 Nuts x 8 (Not Used)*	Flat washers x 6 (Not Used)*
		
Speed clips x 8 (Not Used)*	Warranty Card, Registration Card	
		

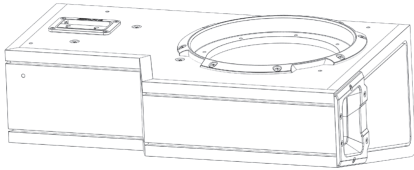
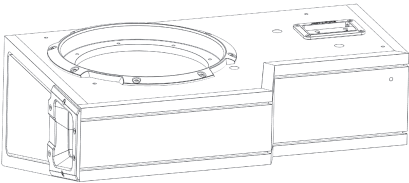
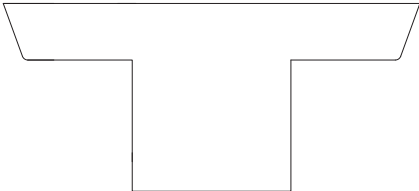
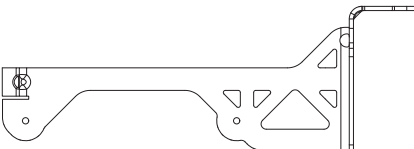
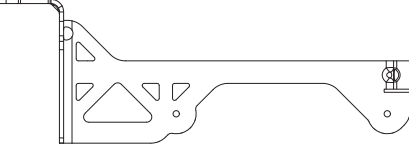
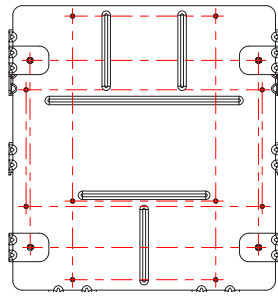
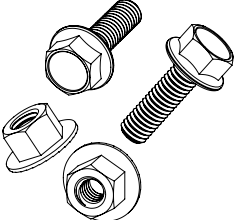
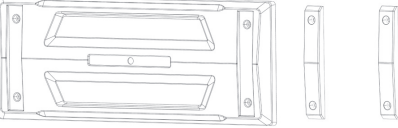
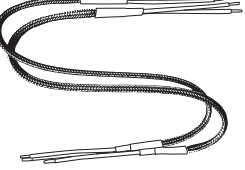
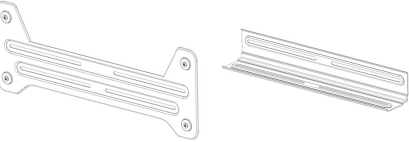
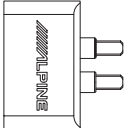
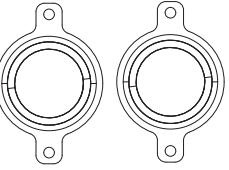
Accessory List

S2-S80C Front Speakers Components & Installation Accessories

8" Component Woofers x 2	Tweeters x 2	Tweeter Crossovers x 2 (S2-80C)
		
Front Door Adapter Kit x 2 (ALP-23FORD-ISP-K-F-1)	Front Door Speaker Plug Adapter x 2 (ALP-23FORD-ISP-K-F-1)	Front Door Speaker Foam Roll x 1 (ALP-23FORD-ISP-K-F-1)
		
Front Door Speaker Mounting Screws x 8 (ALP-23FORD-ISP-K-F-1)	Front Door Speaker Adapter Screws x 8 (ALP-23FORD-ISP-K-F-1)	Universal Adapter Rings x 2 (Not Used)
		
12" Speaker Wire With Terminals x 2 (Not Used)*	1-1/8" Screws x 8 (Not Used)*	Speed clips x 8 (Not Used)*
		
M4 Nuts x 8 (Not Used)*	Flat washers x 6 (Not Used)*	Front Tweeter Speaker Plug Adapters x 2 (ALP-23FORD-ISP-K-F-1)*
		
Warranty Card, Registration Card	Front Tweeter Mounting Rings x 2 (ALP-23FORD-ISP-K-F-1)*	Tweeter (Red/Black) Speaker Wire
		

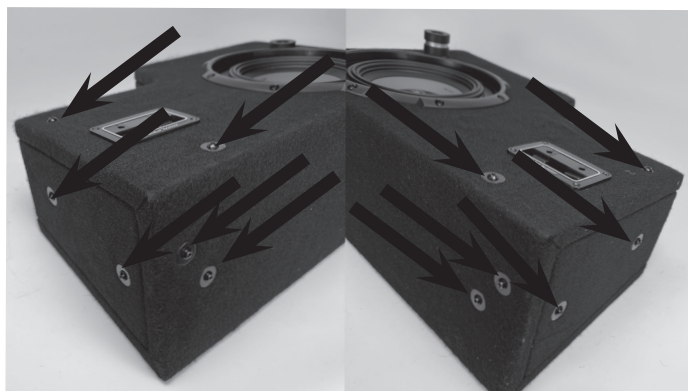
Accessory List

Sub Enclosure/Processor Mounting Parts

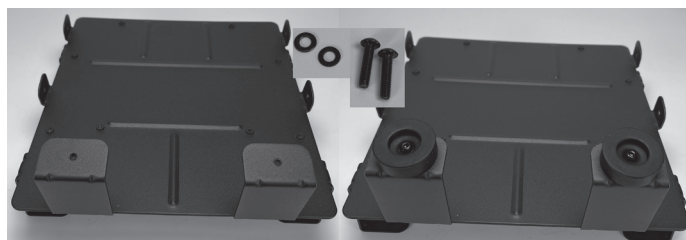
Subwoofer Enclosure Driver Side (S-DB8V-TRK) 	Subwoofer Enclosure Passenger Side (S-DB8V-TRK) 	Sub Box Top Cover (ALP-23F150-CVR-RSH) 
Amplifier Bracket Left x 1 (ALP-23F150-BKT-LSH) 	Amplifier Bracket Right x 1 (ALP-23F150-BKT-RSH) 	Amplifier Tray (ALP-23F150-TRAY) 
Amplifier Mounting Bolts x 4	Mounting Bolts With Nuts x 2 (Each) 	Rubber Mounting Feet x 3 With Mounting Screws & Washers x 3 (Each Enclosure) 
Front Cover/Trim Bars 	2-Channel Subwoofer Speaker Cable (ALP-23FORD-SHRN-2) 	Front/Rear Link Bracket 
PXE Power Reducer Adapter (ALP-23FORD-PHRN-1) (Not Used) 	Front Tweeter Mounting Rings 2015-2020 Adapters x 2 (ALP-15FORD-ISPK-1) 	

Enclosure & Amp Rack Assembly

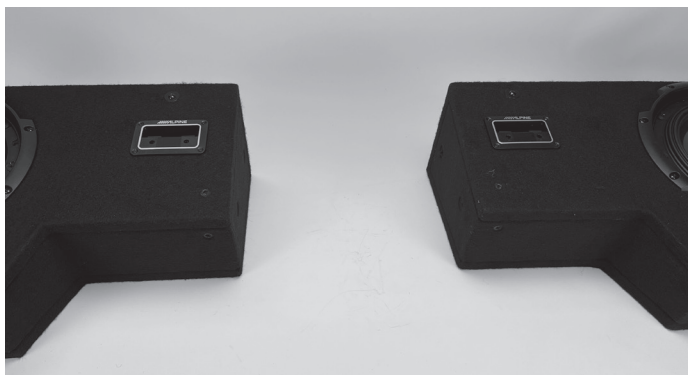
- 1** Installation screws are temporarily installed in both driver and passenger side enclosures. Remove all screws to prepare for assembly.



- 2** Attach rubber mounting feet to the amplifier tray using the included screws and washers. These parts came in the ALP-23F150-TRAY package.



- 3** Place enclosures upside down on a flat surface and set to required width.



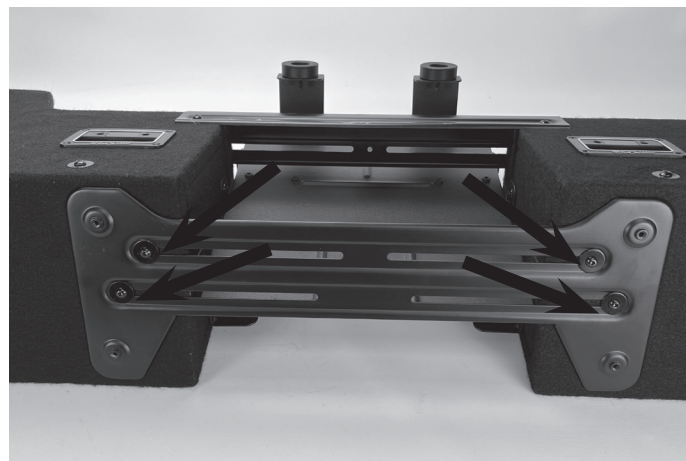
- 4** Align amplifier tray with threaded inserts and secure it using 4 screws washers from Step



- 5** Secure the rear bracket using the supplied M5x20mm screws (x4) and M5x12 washers (4) from Step 1.

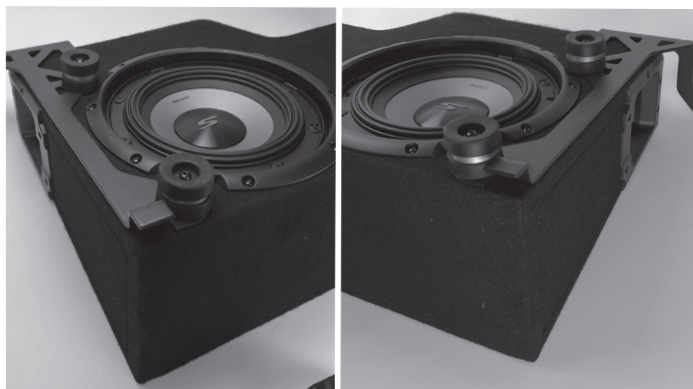


- 6** Rotate the enclosure and attach the front bracket using the supplied M5x20mm screws (x4) and M5x12 washers (x4) from Step 1.

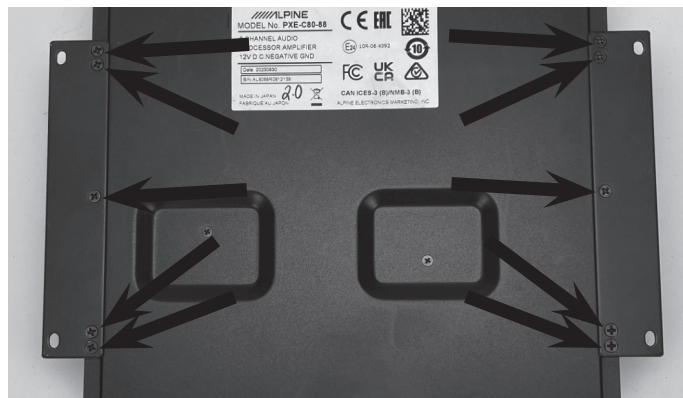


Enclosure & Amp Rack Assembly (Continued)

- 7 Attach the side brackets to each of the enclosures by removing the mounting feet, aligning the brackets to those holes, and re-attaching the feet.



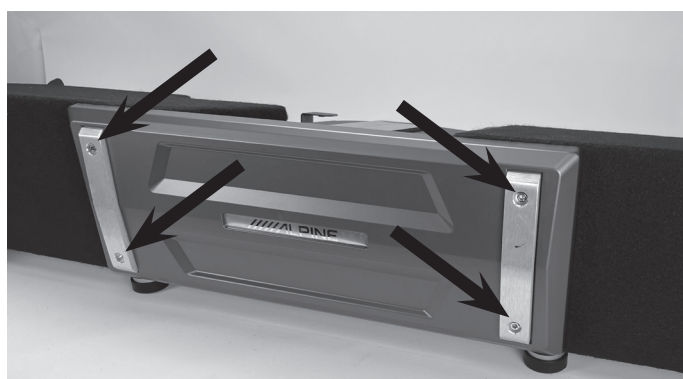
- 8 Use the 10 included machine screws and a phillips screwdriver to attach the mounting brackets to the bottom of the PXE-C80-88..



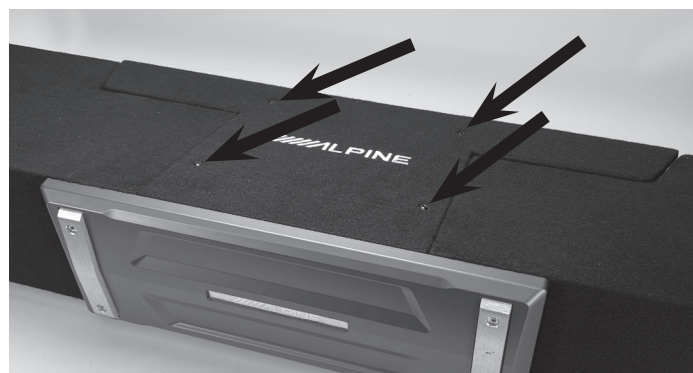
- 9 Align the front cover and trim bars, then install with the supplied M5x20mm screws (x4) with a 4mm hex drive.



- 10 Align the front cover and trim bars, then install with the supplied M5x20mm screws (x4) with a 4mm hex drive.



- 11 The top cover can be aligned to the top of the enclosure and temporarily screwed in. It will need to come off to do the wiring in the vehicle but it's good practice so all the pieces are where they belong.



Disconnecting The Battery/Batteries

- 1 The negative battery terminal is held in by a 7mm nut. Use a ratchet to loosen and remove the terminal.
- 2 Slide the terminal aside making sure it can not touch anything..



- 3 If the vehicle is a hybrid it will also have a battery in the rear that will need to be disconnected. This is located under the rear seat on the passenger side. Use a panel removal tool to release the clips that hold in the cover.
- 4 Use a ratchet and a 7mm socket to remove the 7mm screw that attaches the ground wire and remove the ground wire and ensure that it can't touch anything.

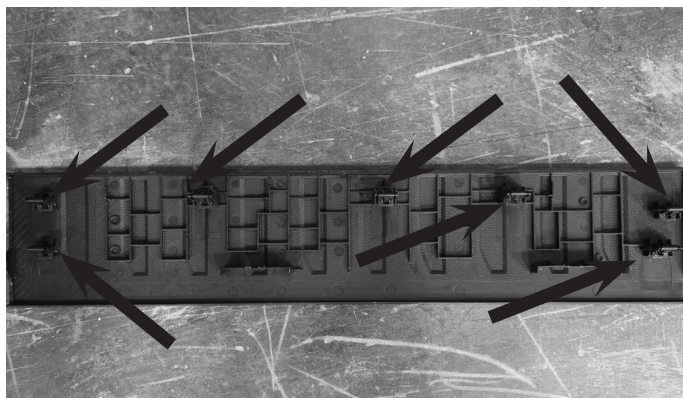


Routing The Wire

- 1 The wiring is going to run along the passenger side of the vehicle. All of those panels need to be removed to run the wires along the factory wiring.



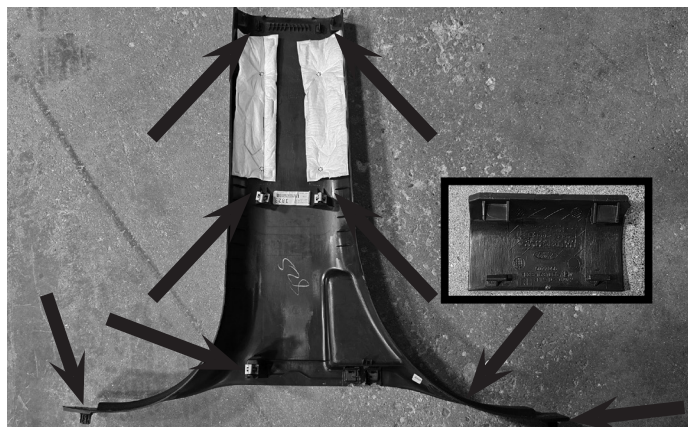
- 2 Use a panel removal tool to release the clips of the lower kick panel. The back side of the panel is shown here to see all the clip locations.



- 3 Use a panel removal tool to release the clips of the kicks panel.



- 4 Use a panel removal tool to release the clips of the D pillar and remove it.



- 5 Use a panel removal tool to release the clips of the back floor panel and remove it.



- 6 Use a panel removal tool to release the 3 clips of the panel below the passenger side dash and remove that. Some trim levels have a module attached to the panel. Remove the two 7mm screws to remove the module and the panel.



Routing The Wire (Continued)

- 7 Remove the glove box by pressing in on the tabs at each side.



- 9 Make an opening in the OEM grommet with a utility knife so there's enough space for the two wires to pass through.



- 8 Now that the panels are removed run the +12V constant and ground wires into the engine bay. There's a small OEM grommet on the passenger side firewall to the bottom right of a much larger wiring harness. Remove the smaller grommet.



- 10 Use a wire fishing tool from the engine bay to reach the passenger kick panel. Tape the +12V constant wire to it and pull it through. The angle to get through is tight so it's better to do one wire at a time and could be easier with an extra set of hands on the other side. Once the +12V constant wire is through leave enough slack and tape the ground wire to it and pull it through.



Routing The Wire (Continued)

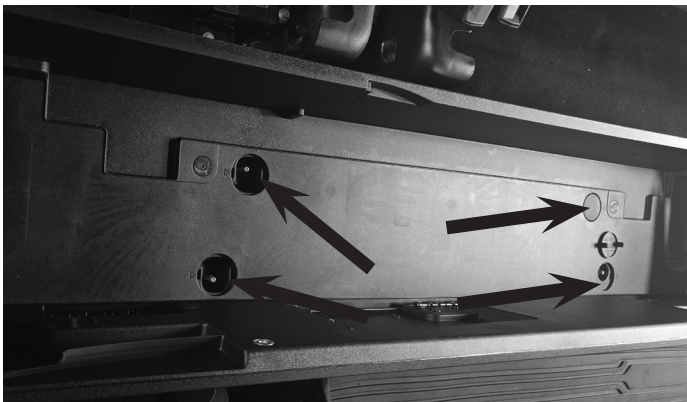
- 11** With both the wires through remove the tape and run them through the OEM grommet. Snap the grommet back into place on the firewall.



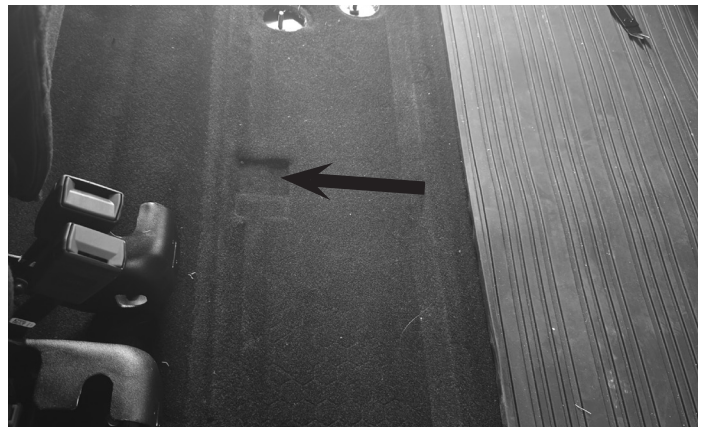
- 12** Continue to route the T-Harness, +12V constant, and ground wires along the factory wiring heading to the back of the vehicle.



- 13** Some trim levels will have a storage compartment under the back seat that will need to be removed. If your vehicle has this, use a panel removal tool to remove the covers to expose the 10mm nuts and remove those with a socket and ratchet.



- 14** Use a utility knife to cut a small incision in the middle of the carpet. Run the wires through this.



Connecting The PAC Module

- 1 Disconnect the harnesses to the OEM amplifier which is located behind the passenger side rear seat.



- 2 Connect the 20 pin and 8 pin harness included with the PAC module to the factory harnesses and plug into the PAC module.



- 3 Plug the RCA's into the other side of the PAC module.



- 4 Mount the module to the back wall of the truck using either velcro or double sided tape (not included).



Mounting The Subwoofer Enclosures & Wiring The Amplifier

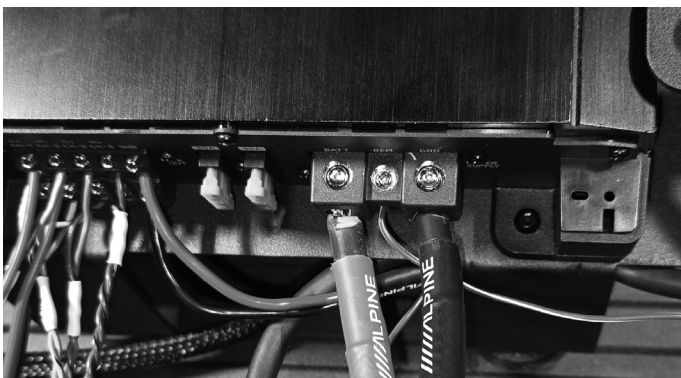
- 1 Lift the sub enclosures and place them in the rear seat. This may be easier with the help of another person. There's an OEM hole in the bracket that holds the rear seat into place. Line up the passenger side and use the included nut & bolt to temporarily hand tighten into place.



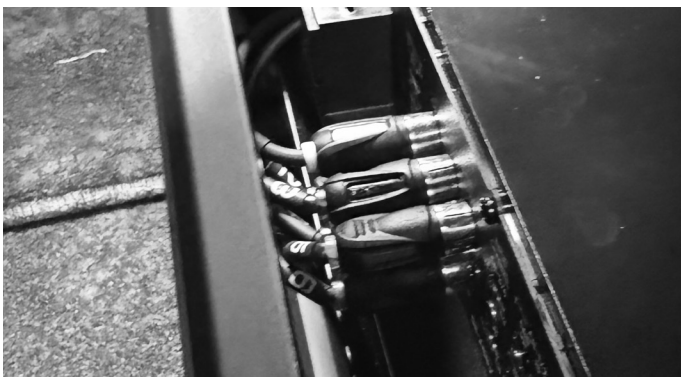
- 2 The drivers side seat bracket also has a hole in it from the factory. With the passenger side still loose line up the sub enclosure bracket with the factory hole and hand tighten the nut and bolt.



- 3 Connect the +12V constant, remote, and ground wires to the amplifier using the included 2mm allen wrench that came with the amp.



- 5 Plug in the RCA's from the PAC module to the amplifier.

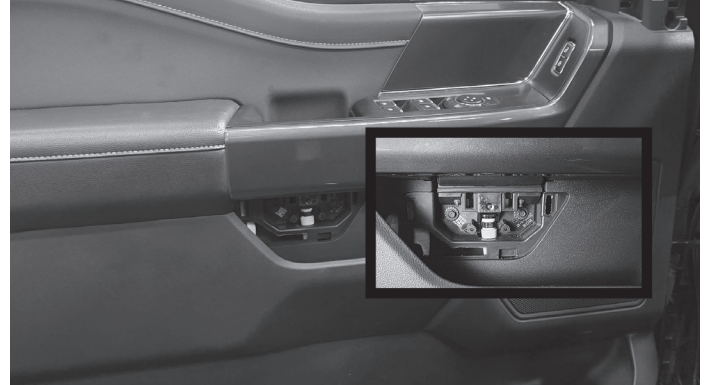
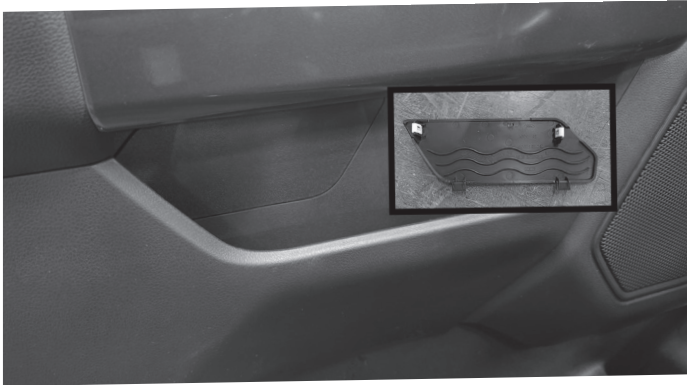


- 4 Connect the speaker wires and the tweeter wires to the amplifier using the 2mm allen wrench that came with the amp. The wiring diagram on page 24 shows the channels and colors. Note the tweeter speaker wires are wired in parallel with channels 1 and 2.

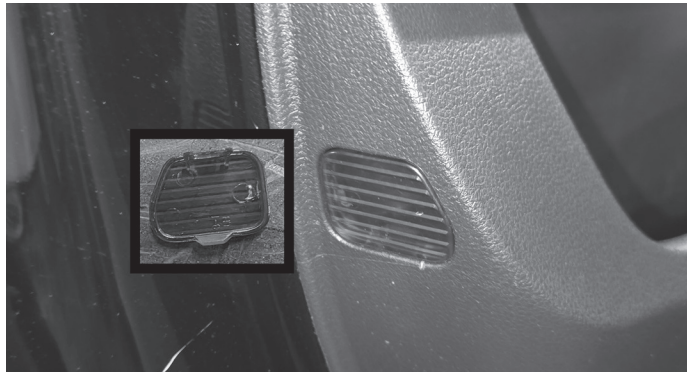


Front Door Speaker Installation

- 1 Remove the center panel using a panel removal tool to unsnap the two top clips. Then slide the panel up to remove it.
- 2 Use a ratchet and a 7mm socket to remove the two 7mm screws behind the panel.



- 3 Use a panel removal tool to unsnap the top clip and remove the lower reflector.
- 4 Use a ratchet and a 7mm socket to remove the 7mm screw behind the panel.



- 5 Use a panel removal tool to release the 4 clips and remove the top corner panel.
- 6 Use a ratchet and a 7mm socket to remove the 7mm screw behind the panel.

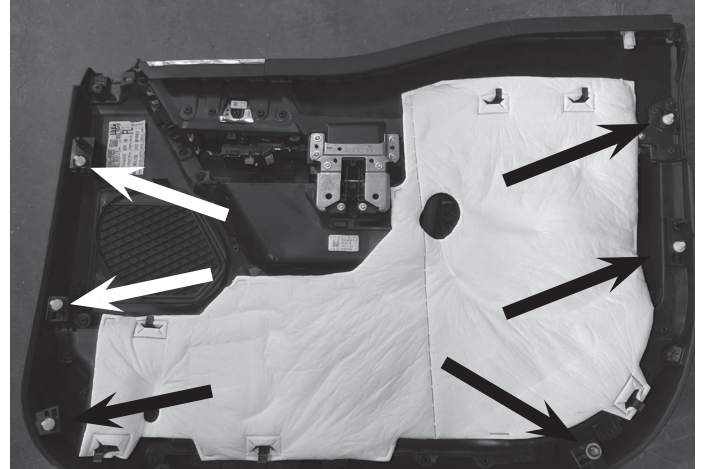


Front Door Speaker Installation (Continued)

- 7 Use a ratchet and a 7mm socket to remove the two 7mm screws at the bottom of the panel.



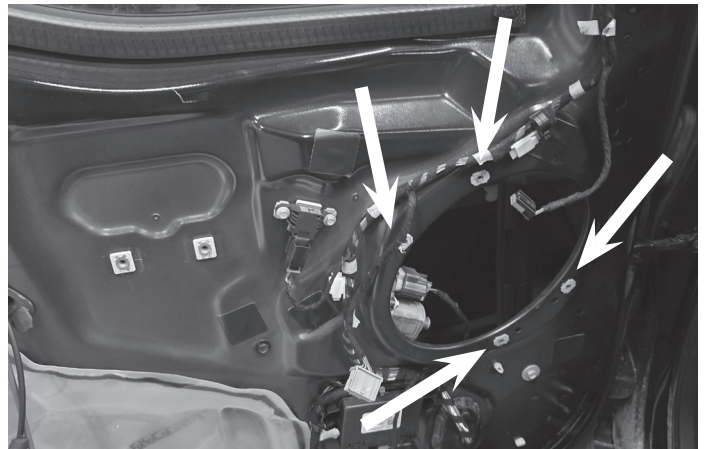
- 8 Use a panel removal tool to release the 6 clips along the sides of the panel.



- 9 Unplug the harness for the door locks, unsnap the door lock button, and release the handle cable. The handle cable has a tab right at the bottom of it that can be released with a flat head screw driver or panel tool.



- 10 Remove the four 7mm screws, unplug, and remove the OEM speaker.



Front Door Speaker Installation (Continued)

- 11** Mount the speaker adapter ring using the 4 OEM screws from the previous step. Plug the adapter into the OEM speaker harness.



- 13** Plug in the woofer terminals. Mount the 8" woofer to the adapter ring. The adapter ring has pre-drilled holes. It can be attached using 4 of the provided door speaker mounting screws and a phillips screw driver.



- 12** Remove the backing from the speaker foam roll and run it along the back outer basket of the 8" woofer.



- 14** Plug all the OEM harnesses back in, mount the door with the OEM clips, and screw in the six 7mm screws to put the door back together. Repeat the process on the passenger side.



Front Tweeter Installation

- 1 There's a small tab at the bottom of the trim panel for the pillar. Use a hook tool to release that panel being careful not to scratch or damage the plastic.



- 2 Use a ratchet and a 10mm socket to remove the two 10mm screws behind the panel. Remove the panel and unplug the factory tweeter.



- 3 Use a phillips screwdriver to remove the 3 factory screws holding the tweeter in place.



- 4 The Alpine tweeter needs to be removed from its housing. Unscrew all the pieces. This is what you will have left.



- 5 Attach the included tweeter mounting ring to the front of the tweeter. This is click and turn in place to hold the tweeter.



- 6 Click the tweeter into place in the OEM mounting ring.

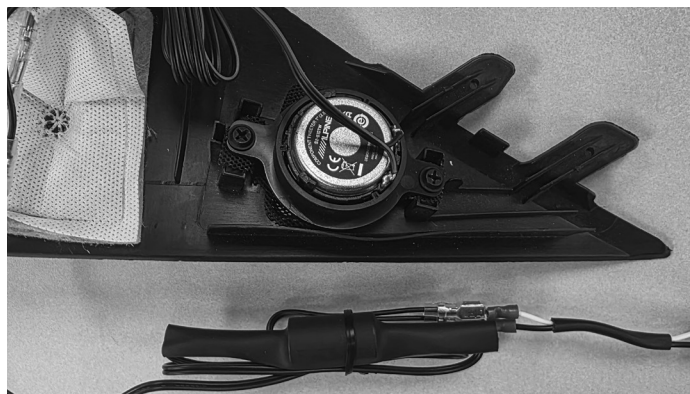


Front Tweeter Installation (Continued)

- 7 Use the 3 phillips screws removed from the earlier step and attach the new tweeter and OEM mounting ring to the pillar.



- 8 If you have a 2015-2020 use the specific adapter for that and attach the tweeter with 2 of the phillips screws.



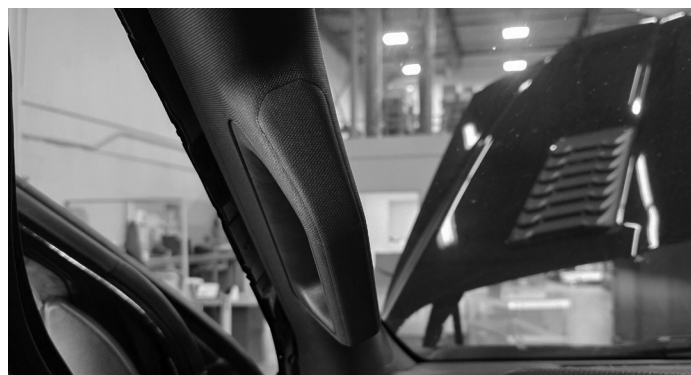
- 9 Plug the front tweeter adapter plug into the OEM tweeter plug. The crossover network for the tweeter will plug into that and the other side goes directly to the tweeter. There's plenty of slack wire to hide the crossover in the cavity behind the panel. For the 2015-2020 make sure to use the correct adapters for that.



- 10 Run the speaker wire along the driver and passenger sides of the vehicle back to the amplifier. The passenger side can be done at the same time as running the power wiring. The drivers side will require a panel removal tool to remove the panels.



- 11 Reattach the factory panel and repeat the process for the passenger side.

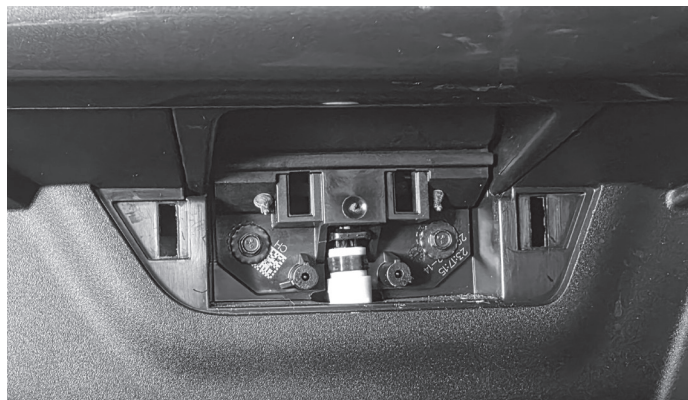


Rear Door Speaker Installation

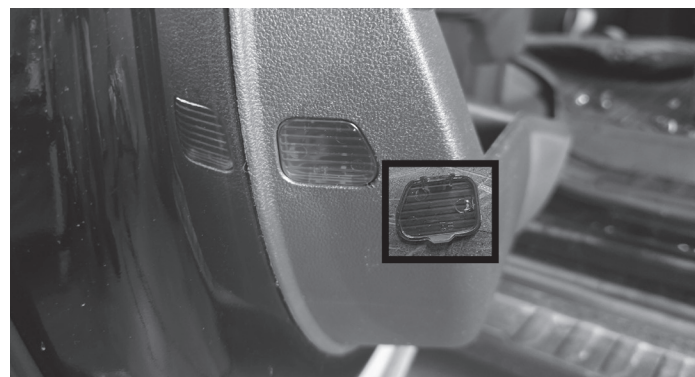
- 1 Remove the center panel using a panel removal tool to unsnap the two top clips. Then slide the panel up to remove it.



- 2 Use a ratchet and a 7mm socket to remove the two 7mm screws behind the panel.



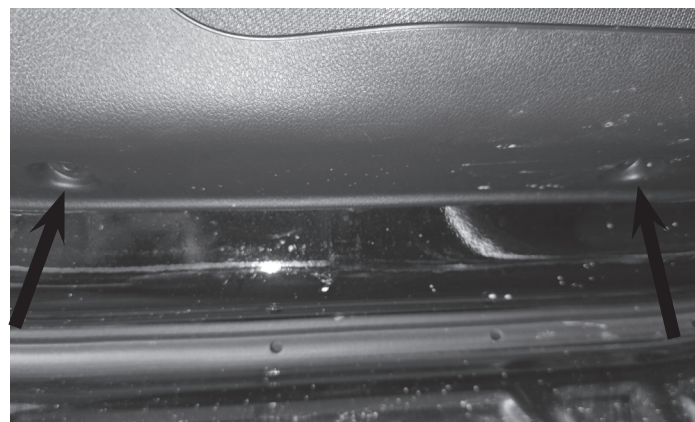
- 3 Use a panel removal tool to unsnap the top clip and remove the lower reflector.



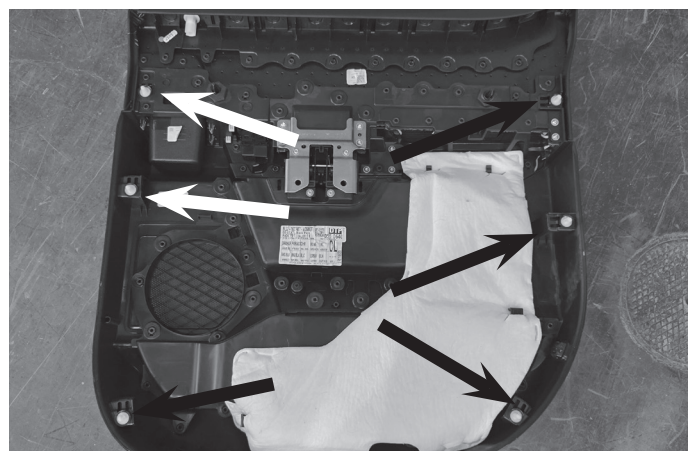
- 4 Use a ratchet and a 7mm socket to remove the 7mm screw behind the panel.



- 5 Use a ratchet and a 7mm socket to remove the two 7mm screws at the bottom of the panel.



- 6 Use a panel removal tool to release the 6 clips along the sides of the panel.



Rear Door Speaker Installation (Continued)

- 7 Unplug the harness for the door locks, unsnap the door lock button, and release the handle cable. The handle cable has a tab right at the bottom of it that can be released with a flat head screw driver or panel tool.



- 9 Mount the speaker adapter ring using the 3 OEM screws from the previous step. Plug the adapter into the OEM speaker harness. Plug in the woofer terminals. Mount the coaxial speaker to the adapter ring. The adapter ring has pre-drilled holes. It can be attached using 4 of the provided door speaker mounting screws and a phillips screw driver.



- 8 Remove the three 7mm screws, unplug, and remove the OEM speaker.



- 10 Plug all the OEM harnesses back in, mount the door with the OEM clips, and screw in the six 7mm screws to put the door back together. Repeat the process on the passenger side.

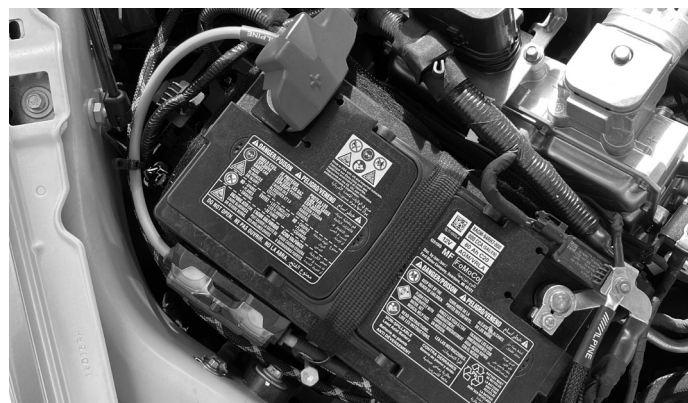


Re-Connect Batteries

- 1 Route the fuse holder to the side of the battery.



- 2 Connect the ring terminal to the +12V side of the battery. This also shows an alternative location for the fuse holder depending on the space in your vehicle. It can be zip tied to the front and wired into place.



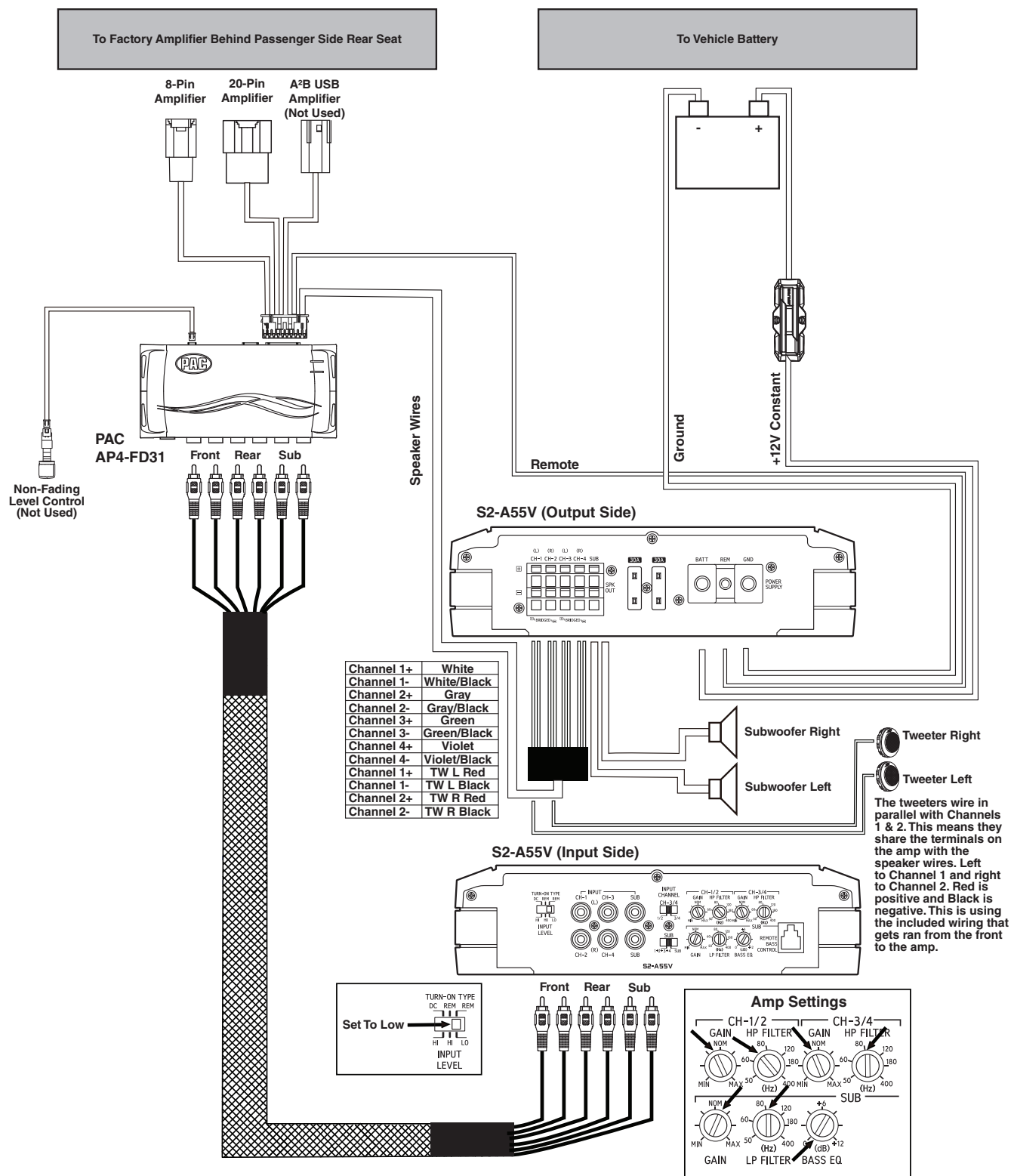
- 3 Re-connect the negative terminal in the rear and snap the cover back into place.



- 4 Re-connect the negative terminal of the front battery.



PSS-23FORD-F150BO Wiring Diagram



Specifications- S2-A55V

		Channels 1/2/3/4	Subwoofer
Power Output	Per Channel, Ref.: 4 Ω , 14.4 V	40 W RMS $\times$ 4	200 W RMS $\times$ 1
	Per Channel, Ref.: 2 Ω , 14.4	60 W RMS $\times$ 4	300 W RMS $\times$ 1
	Bridged, Ref.: 4 Ω , 14.4 V	120 W RMS $\times$ 2	
THD+N	Ref.: 10 W into 4 Ω	$\leq 0.03\%$	$\leq 0.03\%$
	Ref.: 10 W into 2 Ω	$\leq 0.05\%$	$\leq 0.05\%$
	Ref.: Rated Power into 4 Ω	$\leq 0.07\%$	$\leq 0.07\%$
	Ref.: Rated Power into 2 Ω	$\leq 0.01\%$	$\leq 0.01\%$
S/N Ratio	IHF A-wtd + AES-17 Ref.: 1 W into 4 Ω	>83 dB	>83 dB
	IHF A-wtd + AES-17 Ref.: Rated Power into 4 Ω	>98 dB	>98 dB
Frequency Response	+0/-3 dB, Ref.: 1 W into 4 Ω	50 Hz - 40 kHz	10 Hz - 400 Hz
	+0/-1 dB, Ref.: 1 W into 4 Ω	60 Hz - 20 kHz	20 Hz - 300 Hz
Damping Factor	Ref.: 10 W into 4 Ω at 100 Hz	>100	>750
Input Select	Selectable Input Signal Configuration (2ch/4ch Input)	CH-3/4: CH-1/2 or CH-3/4	CH-1+2+3+4 or SUB
Input Sensitivity	RCA Input Ref.: Rated Power into 4 Ω	Hi: 0.5 - 10 V Lo: 0.2 - 4.0 V	Hi: 0.5 - 10 V Lo: 0.2 - 4.0 V
Input Impedance		>10 k Ω	
Dimensions	Width	302 mm (11-7/8")	
	Height	56.5 mm (2-1/4")	
	Depth	210 mm (8-1/4")	
Weight		3.2 kg (7 lb)	

Specifications- S2-S65

Woofers	6-1/2" (16.5cm) PP Cone
Tweeter	1" (2.5cm) Cloth Dome
Maximum Peak Power	240 Watts
Maximum RMS Power	80 Watts
Impedance	4 ohms (DCR 3.7 ohms)
Sensitivity	88 dB SPL (1W@ 1 m)
Frequency Response	55 Hz to 40 kHz
Mounting Depth	2-1/4" (5.8cm)
Cutout Diameter	5" (12.9cm) circle

Specifications- S2-S80C

Woofers	8" (20cm) PP Cone
Tweeter	1" (2.5cm) Cloth Dome
Maximum Peak Power	260 Watts
Maximum RMS Power	85 Watts
Impedance	4 ohms (DCR 3.7 ohms)
Sensitivity	89 dB SPL (1W@ 1 m)
Frequency Response	55 Hz to 40 kHz
Mounting Depth	2-1/2" (6.6cm)
Cutout Diameter	7" (17.8cm) circle

Troubleshooting Guide

Symptom		Possible Cause	Remedy
1	S2-A55V not powering on.	Fuse in the vehicle has blown.	Inspect wiring for shorts and replace fuse.
		Harness is unplugged.	Verify every connection from the installation connections diagram.
		Improper Voltage	Test the power wires at the processor with a digital multimeter and trace from there.
2	Not getting any sound.	Harness is unplugged.	Verify every connection from the installation connections diagram.
		Didn't change the input switch.	Page 24 shows the position of the switch.
		Amp not powering on.	Power wires need to be tested with a digital multimeter to see where the voltage is dropping out.