



INSTRUCTIONS

94100565

2024-07-02



HEATED AND COOLED SEAT KIT

GENERAL INFORMATION

Table 1. General Information

Kits	Suggested Tools	Skill Level ⁽¹⁾
52000667, 52000667DEMO, 52000693	Safety Glasses, Torque Wrench	
<i>(1) Tightening to torque value or other moderate tools and techniques required</i>		

KIT CONTENTS



Figure 1. Kit Contents: Heated and Cooled Seat

Table 2. Kit Contents: Heated and Cooled Seat Kit

<input checked="" type="checkbox"/>	Verify that all contents are present in the kit before installing or removing items from vehicle.				
Item	Qty	Description	Part No.	Notes	
<input type="checkbox"/>	1	Screw	10200004		
<input type="checkbox"/>	2	Seat	Not sold separately		
<input type="checkbox"/>	3	Grab strap	52400296		
<input type="checkbox"/>		Grab strap, CVO	52400350		

GENERAL

Models

For model fitment information, see the Parts and Accessories (P&A) Retail Catalog or the Parts and Accessories section of www.harley-davidson.com.

Verify that the most current version of the instruction sheet is used. It is available at: h-d.com/isheets

Contact Harley-Davidson Customer Support Center at 1-800-258-2464 (U.S. only) or 1-414-343-4056.

Installation Requirements

⚠ WARNING

Do not install these seat kits on motorcycles that are not equipped with an appropriate grab strap and passenger footpegs. If footpegs and grab strap are not installed, passenger could fall from moving motorcycle or grab onto operator, causing loss of control and death or serious injury. (00410b)

▲ WARNING

Rider and passenger safety depend upon the correct installation of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00333b)

NOTE

This instruction sheet references service manual information. A service manual for the year and model motorcycle is required for this installation and is available from:

- A Harley-Davidson dealer.
- H-D Service Information Portal, a subscription-based access available for most 2001 and newer models. For more information see *Frequently ask questions about subscriptions*.

These items are available at your Harley-Davidson dealership:

- Separate purchase of compatible Rider Backrest Mounting Kit (Part No. 52589-09A) is optional.
- Models with multiple electrical accessories may require separate purchase of wire harness. See Table 4, Item 15.

Electrical Overload

NOTICE

It is possible to overload the vehicle's charging system by adding too many electrical accessories. If the combined electrical accessories operating at any one time consume more electrical current than the vehicle's charging system can produce, the electrical consumption can discharge the battery and cause damage to the vehicle's electrical system. (00211d)

▲ WARNING

When installing any electrical accessory, be certain not to exceed the maximum amperage rating of the fuse or circuit breaker protecting the affected circuit being modified. Exceeding the maximum amperage can lead to electrical failures, which could result in death or serious injury. (00310a)

Seat requires up to **4 Amps** of current from the electrical system.

NOTE

Customers with limited sensitivity to hot or cold should not use this product.

PREPARE

1. Remove saddlebag. See service manual.
2. Remove main fuse. See service manual.
3. Remove Original Equipment (OE) seat and grab strap. See service manual.

INSTALL

1. See Figure 2. Install **new** grab strap.
 - a. Install grab strap (2) to studs (1).
 - b. Install custom screws (3).
Torque: 0.9–1.7 N·m (8–15 **in-lbs**) *Thumb nuts*
Torque: 7–11 N·m (62–97 **in-lbs**) *Flange nuts*
 - c. Models with side plate grab may remove side plate.
2. See Figure 7. Locate seat harness connector (5) on underside of seat.
3. See Figure 2. Connect seat harness connector (5) to P&A accessory connector (4).

NOTE

If another accessory is connected, separate purchase of Jumper (Part no. 69203476) may be required.

4. Route wiring beneath seat.
 - a. Make sure wiring will not get pinched when seat is installed.
 - b. Verify harness fuse holder cap is fully seated and secured.
5. See Figure 2. Insert rear of seat through grab strap (2) until seat mounting slot (6, Figure 7) on front underside of seat is behind seat tongue (5).
6. See Figure 2. Slide seat forward until seat tongue fully engages into seat mounting slot (5).
7. See Figure 1. Install seat screw (1). Tighten.
Torque: 5.4–8.1 N·m (4–6 ft-lbs)
8. Install seat. After installing seat, pull up on the seat to verify that it is secure. See service manual.

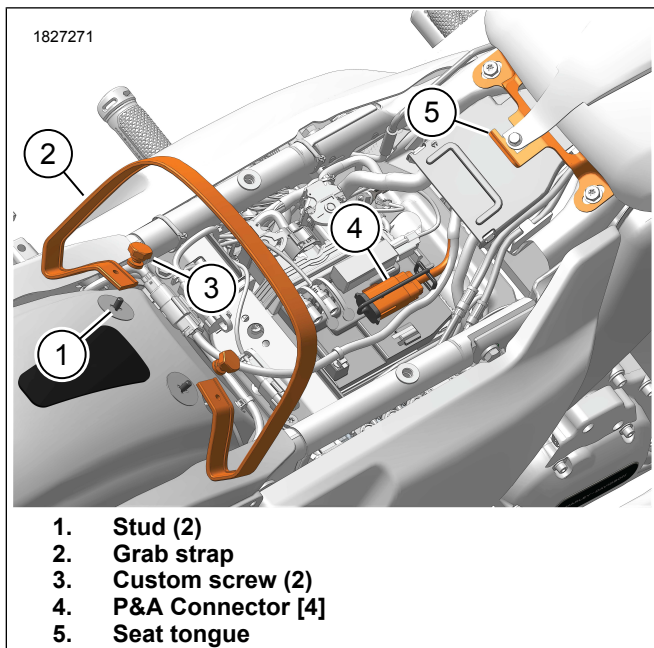


Figure 2. Component Locations

OPERATION

NOTE

- **Seat operation while vehicle's engine is turned off or running below normal operating speed can quickly discharge vehicle battery. This could lead to a subsequent failure to start and could damage the electrical system.**
- See owner's manual for operation of vehicle's accessory circuit.
- Seat is powered from a circuit that is active in vehicle IGNITION and ACCY mode. Operating seat in these mode will begin to drain battery while engine is OFF.
- Fans are only in operation when seat is in cooling mode and rider, passenger or both positions are turned to a power level setting other than OFF.
- Both rider and passenger fans will simultaneously turn on and off. Fans will not operate individually under normal conditions.
- Fan speed will not vary with power level setting.
- Strength of cooling is controlled by the current through heating/cooling element rather than fan speed.
- Seat may take 2-5 minutes to achieve optimal heating effect and 10-20 minutes to achieve optimal cooling effect.
- Seat does not blow air on the rider or passenger.
- When cleaning, take care not to pull switches. A service kit is available to replace switch caps. Refer to Table 4.

Seat Control Switches

1. See Figure 3. Switches (1, 3):
 - a. Controls individual level setting of rider and passenger zones.
 - b. Controls are independent.

- c. Detents on switches allow operator to quickly return to preferred setting.
- d. Rider control (1) is located closest to rider's seating position.
- e. Passenger control (3) is located closest to passenger's seating position.
- f. For rider and passenger control switches, there are three total positions. Downward setting is low power, upward setting is maximum power and middle setting turns off rider or passenger control independently.

2. See Figure 3. Switch (2):

- a. Select "H" for heating.
- b. Select "C" for cooling.
- c. Center OFF position disconnects all power to the seat. This setting should be used when the seat is not in use or in the event the level control switches cannot maintain a comfortable temperature.

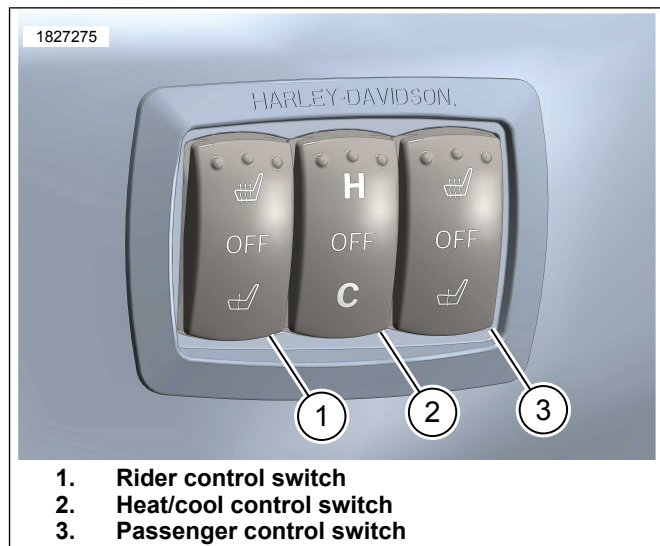
3. Fans:

- a. Both remain OFF whenever heating is pressed.
- b. Both remain ON whenever either rider or passenger is set to a level other than OFF and "C" is pressed.
- c. Fans are always both OFF or both ON.
- d. Fans exhaust the waste heat from underside of heating/cooling element when in cooling mode. Path of air is not through the seating surface.
- e. Fans do not blow air on rider or passenger.
- f. Seat Remote Input / Output - Electronic Seat Controller (RIO-ESC) operates fans at the same speed regardless of level setting.
- g. Seat draws large currents which changes fan speed slightly.
- h. Slight fan speed changes may be audible under low ambient noise conditions. This is normal.

4. Performance Characteristics:

- a. Optimal heating takes 2-5 minutes.
- b. RIO-ESC drives heat to a set temperature based on control switch level setting.
- c. Maximum temperatures may not be achievable in extreme cold conditions due to a maximum power limitation within seat.
- d. Optimal cooling conditions take between 10 and 20 minutes.

- e. RIO-ESC drives cooling as a percentage of full power based on control switch level setting to maximize benefit to rider and passenger under varying ambient temperature.
- f. Maximum performance depends on a healthy charging system since power is limited by system voltage.
- g. Performance will be degraded or shut down at unusually low system voltage. Such as with key turned to accessory mode and battery not at full charge.
- h. Heat is transferred to and removed from occupant through conduction. Choice of clothing will affect performance.
- i. Heating/cooling elements are only located under a portion of seating surface where buttocks make contact. Thigh areas will not be heated or cooled.

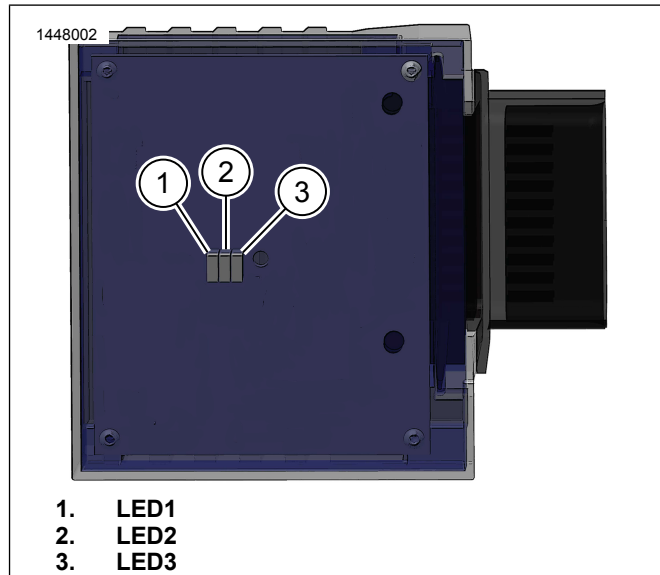


1. Rider control switch
2. Heat/Cool control switch
3. Passenger control switch

Figure 3. Seat Heating/Cooling Control Switches

5. Diagnostics:

- a. See Figure 4. RIO-ESC contains three LED's exposed on backside: these are most easily visible by unclipping RIO-ESC from seat base. Cable strap on RIO-ESC harness must be replaced if cut.
- b. Event codes are displayed in sequential order and continue to sequence so long as power remains applied to the seat. To verify all event codes are identified, monitor LED's until the same event code is reported a second time.
- c. All event codes will clear with a power cycle.
- d. If the cause of event code is still present after cycling power, the RIO-ESC will set the appropriate code again.
- e. Troubleshooting may require rider to physically detach seat from vehicle frame and gain access to RIO-ESC without removing power.
- f. Seat automatically attempts to clear events when cause of event is corrected. Process takes between 5-30 seconds.
- g. Codes remain displayed until power cycling even if fault is cleared and seat is able to self-recover and operate normally.
- h. See Table 3 for event code definition.



1. LED1
2. LED2
3. LED3

Figure 4. RIO LEDs

TROUBLESHOOTING

NOTE

- If operation is not as expected the following steps should be completed.
- If heating or cooling becomes uncomfortable, reduce level setting on switches to a lower setting or OFF position. If heating or cooling remains uncomfortable, or is not reducing, set center Heat/Cool control to OFF.

If vehicle is in motion:

1. Set heat/cool control switch to OFF, wait two seconds before returning to heat or cool mode.
2. If not traveling with a passenger, turn passenger control switch to OFF.

If vehicle is not in motion with engine off and battery fully charged:

1. Check seat's harness fuse.
 - a. If fuse is open, replace fuse with service part listed in Table 2. Do not replace this fuse with a higher rating.
 - b. If fuse continues to open, see dealer.
2. Operate seat.
 - a. Maintain power to seat plug while accessing RIO-ESC to view event code history from controller.
 - b. Because seat operates rider and passenger heating/cooling elements individually and in series, identifying the issue may require operating rider only, passenger only, or combination of both to verify the concern.
3. Record event codes on RIO-ESC.
 - a. These are visible by unclipping the seat RIO-ESC from seat base.
 - b. See Figure 4 and Table 3 for details on event codes. Several events are interrelated.
 - c. It is recommended to continue the following steps regardless of event code.
4. Visually inspect fans for operation and blockage.
 - a. Do not touch fan blade. Fan blade may cause bodily injury if operating or operation suddenly begins.
 - b. Do not insert objects into fan. This can damage the fan and cause bodily injury if operation suddenly begins.
- c. Both fans operate when either control switch is set to a cooling mode above off. Some events will turn fans off.
- d. Unplug fans before clearing a blockage. Fans rotate with little resistance when not powered.
5. If fans are damaged, see REPAIR section. Install fans and verify connector grommets are in place before connecting plugs.
6. Set both seat sections to OFF. Cycle power to seat plug.
7. Set seat to mode of concern and note events.
 - a. This will verify only persistent events are reported.
 - b. See Table 3 for further troubleshooting actions.

NOTE

- *When inspecting connector contacts for debris build-up, verify gasket surfaces of connectors are clean, gaskets are installed and gaskets are seated before inserting plug. Do not clean contacts with abrasives or fluids not recommended for tinned copper contacts, plastic or silicone rubber.*
- *A battery charger may be necessary to prevent battery from discharging while troubleshooting.*
- *Both heating/cooling elements contain a self-resetting inline fuse that limits high temperature operating conditions. If these fuses open, they will close when temperatures return to normal operating levels. This may take 3 minutes to self-clear in average temperature and shaded conditions.*
- *Power cycling is defined by completely removing power to seat. Either by removing and reconnecting seat plug, cycling to OFF on the Heat/cool control switch, or by turning vehicle fully off to verify power to seat is removed.*
- *Controller damage or mis-operation is a possible cause for all event codes and is not explicitly listed in every entry. Trouble shooting actions may require dealer assistance.*

Table 3. Event Codes

LED	Flashes	Code	Detection	Possible Causes	Troubleshooting Actions
1	1	Internal Controller Switch A	Monitored internal chip fault signal	<ul style="list-style-type: none"> • Controller internal damage or misoperation 	<ul style="list-style-type: none"> • See dealer
1	2	Internal Controller Switch B	Monitored internal chip fault signal	<ul style="list-style-type: none"> • Controller internal damage or misoperation 	<ul style="list-style-type: none"> • See dealer
1	3	Internal Controller Switch C	Monitored internal chip fault signal	<ul style="list-style-type: none"> • Controller internal damage or misoperation 	<ul style="list-style-type: none"> • See dealer
1	4	Internal Controller Switch D	Monitored internal chip fault signal	<ul style="list-style-type: none"> • Controller internal damage or misoperation 	<ul style="list-style-type: none"> • See dealer
1	5	Over-current A	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Controller internal damage or misoperation • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • See dealer

Table 3. Event Codes

LED	Flashes	Code	Detection	Possible Causes	Troubleshooting Actions
1	6	Under-current A	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Plug continuity • Heating/cooling pad fuse trip • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • Verify plug is clean and fully seated • Turn seat to OFF and allow both seat sections to return to room temperature for 5 minutes • See dealer
1	7	Over-current C	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Controller internal damage or misoperation • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • See dealer
1	8	Under-current C	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Plug continuity • Heating/cooling pad fuse trip • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • Verify plug is clean and fully seated • Turn seat to OFF and allow both seat sections to return to room temperature for 5 minutes • See dealer
1	9	Over-current D	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Controller internal damage or misoperation • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • See dealer
1	10	Under-current D	Measure heating/cooling element current draw	<ul style="list-style-type: none"> • Plug continuity • Heating/cooling pad fuse trip • Heating/cooling element damage • Harness damage 	<ul style="list-style-type: none"> • Verify plug is clean and fully seated • Turn seat to OFF and allow both seat sections to return to room temperature for 5 minutes • See dealer
2	1	Fan 1 Low Speed	Measured fan feedback signal	<ul style="list-style-type: none"> • Physical drag (blockage) on fan blade • Plug continuity • Harness damage 	<ul style="list-style-type: none"> • Clear blockage • Verify plug is clean and fully seated • Replace fan • See dealer
2	2	Fan 2 Low Speed	Measured fan feedback signal	<ul style="list-style-type: none"> • Physical drag (blockage) on fan blade • Plug continuity • Harness damage 	<ul style="list-style-type: none"> • Clear blockage • Verify plug is clean and fully seated • Replace fan • See dealer
2	3	Fan 1 High Speed	Measured fan feedback signal	<ul style="list-style-type: none"> • Airstream restriction • Damaged fan 	<ul style="list-style-type: none"> • Replace fan • See dealer
2	4	Fan 2 High Speed	Measured fan feedback signal	<ul style="list-style-type: none"> • Airstream restriction • Damaged fan 	<ul style="list-style-type: none"> • Replace fan • See dealer
2	5	Fan 1 Stall	Measured fan feedback signal	<ul style="list-style-type: none"> • Complete blockage on fan blade • Plug continuity • Damaged fan • Harness damage 	<ul style="list-style-type: none"> • Clear blockage • Verify plug is clean and fully seated • Replace fan • See dealer

Table 3. Event Codes

LED	Flashes	Code	Detection	Possible Causes	Troubleshooting Actions
2	6	Fan 2 Stall	Measured fan feedback signal	<ul style="list-style-type: none"> Complete blockage on fan blade Plug continuity Damaged fan Harness damage 	<ul style="list-style-type: none"> Clear blockage Verify plug is clean and fully seated Replace fan See dealer
2	7	Fan 1 Over-current	Measured fan current draw	<ul style="list-style-type: none"> Physical drag (blockage) on fan blade Damaged fan Harness damage 	<ul style="list-style-type: none"> Clear blockage Replace fan See dealer
2	8	Fan 1 Under-current	Measured fan current draw	<ul style="list-style-type: none"> Airstream restriction Plug continuity Damaged fan Harness damage 	<ul style="list-style-type: none"> Verify plug is clean and fully seated Replace fan See dealer
2	9	Fan 2 Over-current	Measured fan current draw	<ul style="list-style-type: none"> Physical drag (blockage) on fan blade Damaged fan Harness damage 	<ul style="list-style-type: none"> Clear blockage Replace fan See dealer
2	10	Fan 2 Under-current	Measured fan current draw	<ul style="list-style-type: none"> Airstream restriction Plug continuity Damaged fan Harness damage 	<ul style="list-style-type: none"> Verify plug is clean and fully seated Replace fan See dealer
2	11	Rider Temp High 3	Measured heating/cooling element temperature	<ul style="list-style-type: none"> Heating/cooling element damage Heating/cooling element above operating temperature limit Plug continuity 	<ul style="list-style-type: none"> Allow seat to cool to room temperature Cycle heat/cool rocker control Verify plug is clean and fully seated See dealer
2	12	Passenger Temp High 3	Measured heating/cooling element temperature	<ul style="list-style-type: none"> Heating/cooling element damage Heating/cooling element above operating temperature limit Plug continuity 	<ul style="list-style-type: none"> Allow seat to cool to room temperature Cycle heat/cool rocker control Verify plug is clean and fully seated See dealer
3	1	Rider Temp High 1	Measured heating/cooling element temperature	<ul style="list-style-type: none"> Heating/cooling element damage Heating/cooling element above operating temperature limit Plug continuity 	<ul style="list-style-type: none"> Allow seat to cool to room temperature Verify plug is clean and fully seated See dealer
3	2	Under Voltage 1	Measured input connector voltage	<ul style="list-style-type: none"> Voltage at seat connector High 	<ul style="list-style-type: none"> Verify vehicle charging system and vehicle battery are healthy Verify seat's main power plug is clean and fully seated See dealer
3	3	Over Voltage	Measured input connector voltage	<ul style="list-style-type: none"> Voltage at seat connector High 	<ul style="list-style-type: none"> Verify vehicle charging system and vehicle battery are healthy See dealer

Table 3. Event Codes

LED	Flashes	Code	Detection	Possible Causes	Troubleshooting Actions
3	4	Rider Low Temp 1	Measured heating/cooling element temperature	<ul style="list-style-type: none"> • Heating/cooling element damage • Heating/cooling element below operating temperature limit • Plug continuity 	<ul style="list-style-type: none"> • Allow seat to warm to room temperature • Verify plug is clean and fully seated • See dealer
3	5	Passenger High Temp 1	Measured heating/cooling element temperature	<ul style="list-style-type: none"> • Heating/cooling element damage • Heating/cooling element above operating temperature limit • Plug continuity 	<ul style="list-style-type: none"> • Allow seat to cool to room temperature • Verify plug is clean and fully seated • See dealer
3	6	Passenger Low Temp 1	Measured heating/cooling element temperature	<ul style="list-style-type: none"> • Heating/cooling element damage • Heating/cooling element below operating temperature limit • Plug continuity 	<ul style="list-style-type: none"> • Allow seat to warm to room temperature • Verify plug is clean and fully seated • See dealer
3	8	Passenger Switch Level High	Passenger switch voltage	<ul style="list-style-type: none"> • Plug continuity • Switch Pack damage 	<ul style="list-style-type: none"> • Verify plug is clean and fully seated • See dealer
3	10	Rider Switch Level High	Rider switch voltage	<ul style="list-style-type: none"> • Plug continuity • Switch Pack damage 	<ul style="list-style-type: none"> • Verify plug is clean and fully seated • See dealer
3	11	Passenger Temp High 2	Measured heating/cooling element temperature	<ul style="list-style-type: none"> • Heating/cooling element damage • Heating/cooling element above operating temperature limit • Plug continuity 	<ul style="list-style-type: none"> • Allow seat to cool to room temperature • Verify plug is clean and fully seated • See dealer
3	12	Rider Temp High 2	Measured heating/cooling element temperature	<ul style="list-style-type: none"> • Heating/cooling element damage • Heating/cooling element above operating temperature limit • Plug continuity 	<ul style="list-style-type: none"> • Allow seat to cool to room temperature • Verify plug is clean and fully seated • See dealer
3	13	Under Voltage 2	Measured input connector voltage	<ul style="list-style-type: none"> • Voltage at seat connector low 	<ul style="list-style-type: none"> • Verify vehicle charging system and vehicle battery are healthy • Verify seat's main power plug is clean and fully seated • See dealer

REPAIR

NOTE

Before replacing fan, remove seat. Power seat in cooling mode to visually inspect function of fans to verify which fan is malfunctioning.

Front fan is for rider and rear fan is for passenger.

Fan Replacement

1. Remove grab strap and seat screw.

NOTE

Be mindful of wiring connections between seat and vehicle.

2. Remove seat.

3. Disconnect seat connector from vehicle.
4. Remove and retain fan screws.
5. Remove fan.
6. Install **new** fan and connect to wiring harness.
 - a. Replace any cable straps previously removed.
7. Install fan screws. Tighten.
Torque: 0.564–0.79 N·m (5–7 **in-lbs**)
8. Connect seat connector to vehicle.

9. Start vehicle or turn to accessory mode.
10. Power seat in cooling mode to verify that the fan is working.
11. Install seat. Pull up on seat to verify that it is secure. See service manual.
 - a. Make sure wiring will not get pinched when seat is installed.
12. Install seat screw and grab strap.

RIO-ESC Replacement

1. Remove grab strap and seat screw.

NOTE

Be mindful of wiring connections between seat and vehicle.

2. Remove seat.
3. Disconnect seat connector from vehicle.
4. Remove RIO-ESC.
5. See Figure 5. Unlock (2) RIO-ESC connector and disconnect.
6. See Figure 6. Install foam blocks (1) to RIO-ESC (2).
 - a. Use a 50:50 mixture of isopropyl/water and clean mounting surface.
 - b. Install foam blocks (1) under LED lights and on top corner.
7. See Figure 5. Connect RIO-ESC to wiring harness and lock (1) connector.
8. Install RIO-ESC into seat base until retention tab locks into place.
 - a. Replace any cable straps previously removed.

9. Connect seat connector to vehicle.
10. Start vehicle or turn to accessory mode.
11. Power seat in cooling mode to verify that the fan is working.
12. Install seat. Pull up on seat to verify that it is secure. See service manual.
 - a. Make sure wiring will not get pinched when seat is installed.
13. Install seat screw and grab strap.

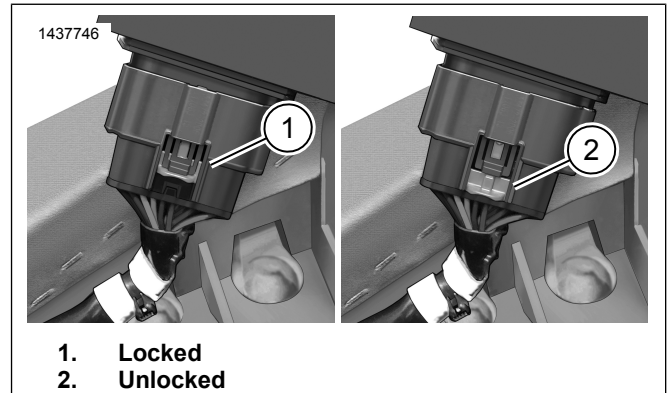


Figure 5. RIO Connector Locked/Unlocked Position

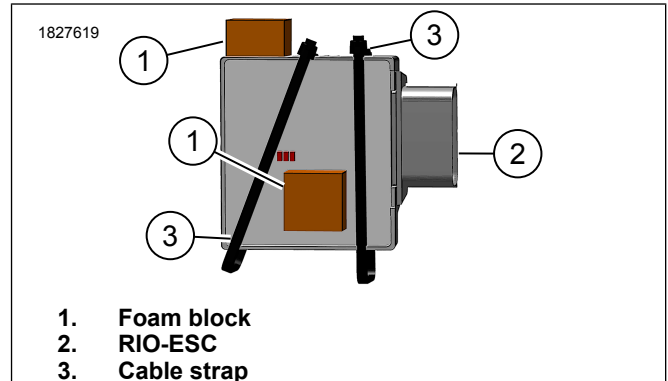


Figure 6. Install Foam Block to RIO

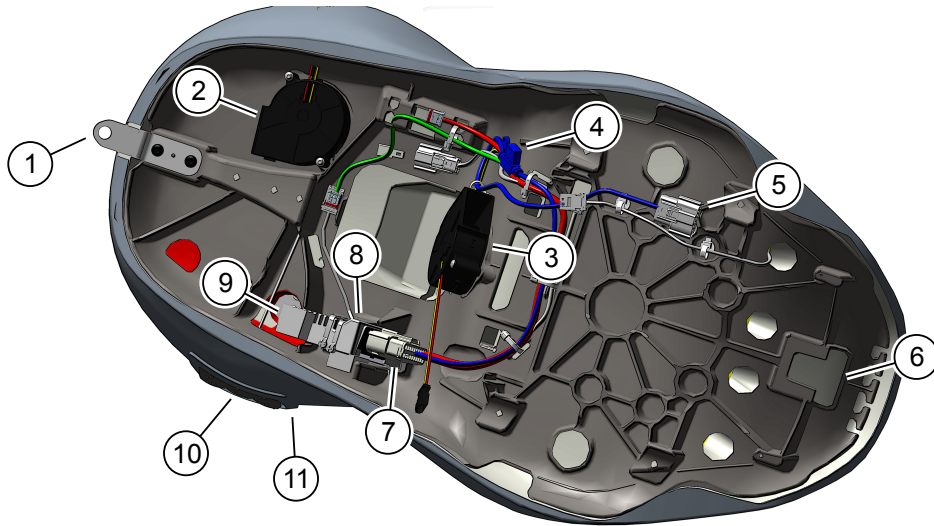


Figure 7. Seat Component Locations

Table 4. Seat Component Locations

<input checked="" type="checkbox"/>	Verify that all contents are present in the kit before installing or removing items from vehicle.				
Item	Qty	Description	Part No.	Notes	
<input type="checkbox"/>	1	Seat tab	N/A		
<input type="checkbox"/>	2	Fan, rear	26800204	Service item	
<input type="checkbox"/>	3	Fan, front	26800204	Service item	
<input type="checkbox"/>	4	Fuse	69200293	Service item	
<input type="checkbox"/>	5	Seat harness	N/A		
<input type="checkbox"/>	6	Seat mounting slot	N/A		
<input type="checkbox"/>	7	RIO-ESC Harness	N/A		
<input type="checkbox"/>	8	RIO-ESC Retention tab	N/A		
<input type="checkbox"/>	9	RIO-ESC	41000740	Service item	
<input type="checkbox"/>	10	Switch pack assembly	N/A		
<input type="checkbox"/>	11	Trim bezel	N/A		
<input type="checkbox"/>	12	Fan screw	10201028	Not shown, Service item	
<input type="checkbox"/>	13	Retainer	73213-07	Not shown, Service item	
<input type="checkbox"/>	14	Cable strap	10006	Not shown, Service item	
<input type="checkbox"/>			10177	Not shown, Service item	
<input type="checkbox"/>			N/A	Not shown, Service item	
<input type="checkbox"/>	15	Jumper	69203476	Not shown, Service item	
<input type="checkbox"/>	16	Switch cap replacement, service kit	99800062	Not shown, Service item	