

MX-5 NC Battery Relocation Kit

By BlackAngelDevelopments



Official Instruction Guide

Safety & Installation Disclosure

READ BEFORE COMMENCING WORK!

⚠ IMPORTANT: This kit is designed for the relocation of automotive batteries. High-current electrical systems are inherently dangerous. Failure to follow these instructions or observe safety precautions can result in electrical fire, explosion, or serious personal injury.

1. Critical Safety Precautions

- **No Smoking or Open Flames:** Lead-acid batteries produce hydrogen gas, which is highly explosive. Ensure your workspace is well-ventilated. Strictly avoid smoking, sparks, or open flames near the battery or vehicle during installation.
- **Fuel System Safety:** Do not install this kit if there are open fuel lines, fuel leaks, or if you are currently performing maintenance on the fuel system. Ensure the workspace is free of combustible vapors.
- **Eye Protection:** Always wear safety goggles. Battery acid is highly corrosive and can cause permanent eye damage.
- **Power Disconnect:** Before beginning, always disconnect the negative (–) terminal of the battery. Do not reconnect power until the entire installation is complete and all connections have been double-checked.

2. Installer Responsibility

This is a retro-fit kit. By proceeding with the installation, you acknowledge the following:

- **Competency:** You possess the mechanical and electrical skills necessary to perform vehicle modifications. If you are unsure, consult a qualified auto-electrician.
- **Cable Routing:** It is the installer's responsibility to ensure power cables are routed away from sharp metal edges. Chafe protection (grommets or conduit) must be used wherever cables pass through bodywork.
- **Fusing:** The included high-amp fuse must be installed as close to the battery as possible to protect the vehicle in the event of an electrical short circuit.

Section 1: Battery Mounting & Enclosure Guidelines

1.1 Scope of Supply and Customization

Because this kit is engineered to accommodate a wide variety of custom vehicle layouts, BlackAngelDevelopments does not supply a battery or a physical mounting bracket. The enclosure and mounting architecture are left to the discretion of the installer to best suit their specific packaging requirements.

1.2 Passenger Compartment Safety Requirements

 **CRITICAL SAFETY WARNING:** When relocating a 12V battery to the vehicle interior—including the trunk/boot space, which lacks a permanently sealed firewall—you must utilize a fully sealed battery unit.

Acceptable battery technologies include **Absorbed Glass Mat (AGM)** or **Lithium-Ion (LiFePO4)**.

Do not reuse the factory engine-bay battery if it is a traditional flooded lead-acid unit. Standard non-sealed batteries pose two severe hazards when mounted inside a passenger compartment:

- 1. **Corrosive Chemical Hazard:** In the event of an accident or roll-over, a non-sealed battery can leak highly corrosive sulfuric acid directly into the cabin.
- 2. **Explosive Gas Off-Venting:** Traditional batteries naturally vent trace amounts of hydrogen gas during charge and discharge cycles. Without a sealed firewall or external vent tube, this gas can accumulate inside the cabin and ignite from a simple spark or interior electrical source.

Ensure your chosen mounting solution securely anchors the battery to the chassis to withstand high G-forces, and that any non-sealed alternatives (if utilized against recommendations) are isolated in a dedicated, externally vented enclosure.

1.3 Approved Battery Recommendations

The following units have been vetted for compatibility and performance with this kit:

Application	Battery Type	Recommended Model	Mounting Enclosure Style
Street / OEM+	AGM	Yuasa YBX9027 or Bosch S5A05	Standard heavy-duty plastic box (e.g., Durite)
Hybrid / Track	Lightweight AGM	Odyssey PC680 or Odyssey PC950	Bespoke aluminum/steel mounting cradle
Dedicated Race	Ultra-Lightweight Lithium	Deadweight Industries Touge 200	Bespoke lightweight mounting cradle

1.4 Enclosure & Mounting Architecture

Depending on your chosen battery type, the mounting strategy will differ significantly:

- **Standard Size AGM Batteries:** A high-quality, non-conductive composite or heavy-duty plastic battery box—such as the Durite plastic enclosure featured in our installation photography—is highly recommended. Do not use an uninsulated raw aluminum box directly against the steel chassis floor, as contact between dissimilar metals will cause galvanic corrosion.
- **Compact Performance & Lithium Batteries:** Unlike standard batteries that fit into generic plastic boxes, the Odyssey PC680/PC950 and Deadweight Industries Touge 200 typically utilize compact, model-specific mounting cradles available from various motorsport suppliers. These cradles securely clamp the smaller footprint of the battery and feature unique baseplate configurations.

1.5 Securing Your Mounting Solution

Because mounting hardware varies by enclosure type, adapt your installation method accordingly:

- **For Plastic Enclosures (Standard AGM):** Secure the box through the chassis floor using four M8 (Grade 8.8 minimum) bolts, matching washers, and locking nuts.
- **For Bespoke Cradles (Odyssey / Touge 200):** Follow the hardware specifications provided by the cradle manufacturer. Due to the smaller footprint and high-stress points of motorsport cradles, ensure load-spreading washers or reinforcement backing plates are used beneath the chassis floor where necessary.
- **Weatherproofing:** For all options, apply a generous bead of automotive-grade silicone sealant to the underside of the chassis floor around all hardware and washers to prevent moisture ingress and future corrosion.

1.6 Battery Installed and Secured

With the battery safely and securely mounted to the vehicle chassis, you are now ready to begin the installation of the BlackAngelDevelopments Battery Relocation Kit.

This manual assumes the installer possesses a foundational level of mechanical proficiency and a baseline understanding of automotive electrical systems. As such, basic procedures (such as removing standard interior trim panels or using standard hand tools) will not be covered in exhaustive detail.

Section 2: Engine Compartment Disassembly & Conversion

✂ **CAUTION:** Ensure the vehicle's ignition is completely off and keys are removed from the ignition switch before commencing any electrical work.

2.1 Battery and Enclosure Removal

Step 1: **Disconnect the Battery**

Disconnect the negative (–) battery terminal first, followed by the positive (+) terminal.

Step 2: **Modify the Positive Cable**

Using high-quality cable shears or side-cutters, cut the factory positive terminal clamp off as close to the terminal casing as possible. It is critical to retain maximum length on the heavy-gauge starter/alternator cable. *(Note: The secondary, thinner factory cable will be removed entirely in a later step).* (Refer to Figure 2.1)



Figure 2.1

Step 3: **Extract the Battery**

Remove the factory battery from the vehicle and store it safely upright in a well-ventilated area.

Step 4: **Remove the Battery Tray**

Extract the plastic factory battery enclosure. If the lower mounting hardware is seized, the four M6 base bolts may need to be carefully drilled out.

Step 5: **Disconnect Ground Cabling**

Unbolt the factory engine-to-battery ground strap using a 10mm socket. Hold the bracket securely to avoid twisting or distorting it. If the hardware is stubborn, a small impact wrench is recommended. (See Figure 2.2).

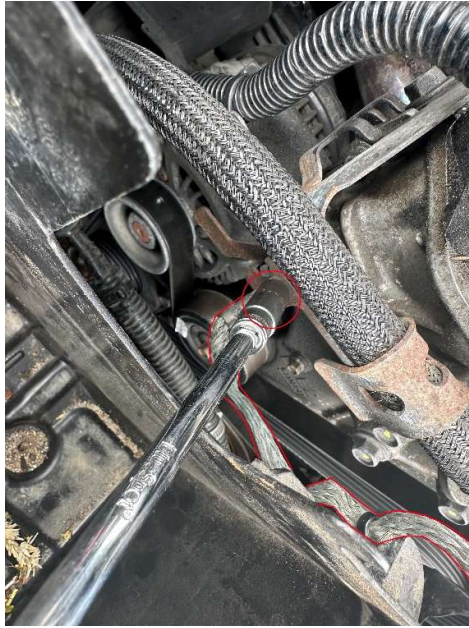


Figure 2.2

Step 6: Final Tray Removal

Unclip the main power cabling from the lower routing channel of the battery box. Remove the battery box and the factory battery tie-down bracket completely from the vehicle; these components are no longer required.

Step 7: Chassis Ground Discard

Unbolt the remaining factory ground cable from the M6 chassis grounding point located beneath the battery tray area. Discard this factory ground cable.

2.2 Upgraded Ground Strap Installation

To maintain electrical continuity, the grounding architecture is revised into a low-resistance path routing from the chassis to the power steering bracket and engine.

Step 1: Chassis Attachment

Thread the new supplied heavy-duty grounding strap into the M6 chassis thread on the front cross-member where the factory ground cable was previously removed.

Step 2: Engine Attachment

Route the opposing end of the strap to the steel power steering bracket located on the front of the engine block.

Step 3: Torque Specification

Secure both ends using the supplied socket-head cap bolts. Snug the hardware down firmly, but do not overtighten or strip the threads.

2.3 Fuse Box Modification & Starter Cable Harnessing

Step 1: Access the Fuse Box

Remove the lid of the primary engine bay fuse box.

Step 2: Disconnect Factory Cable

Locate the main power stud (Refer to Figure 2.3), remove the retaining nut, and lift the factory cable off the stud. Temporarily thread the nut back onto the stud to prevent loss.

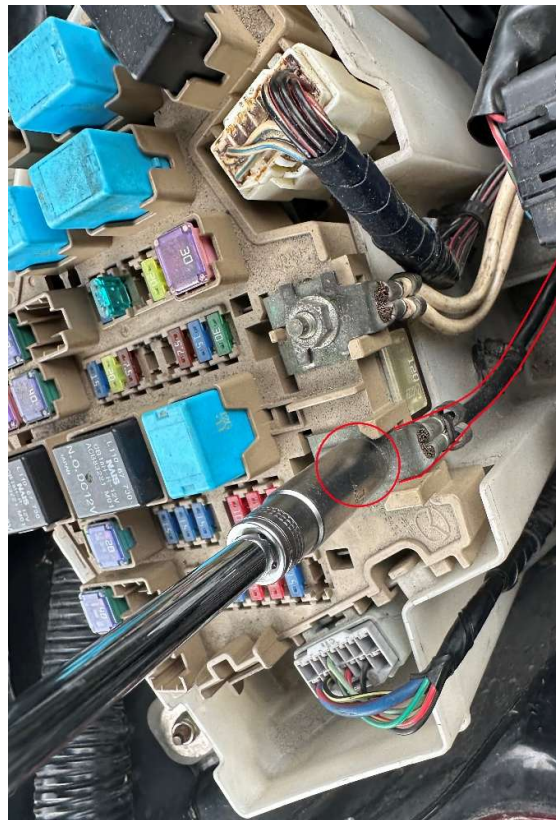


Figure 2.3

Step 3: Unclip the Cable

Use a plastic trim pry tool to release the cable retaining clip from the side of the fuse box housing.

Step 4: Isolate and Discard

Strip back the factory conduit and harness tape from the two bundled cables. Completely remove and discard the secondary factory fuse box power cable.

Step 5: Protect Starter Cable

Slide the newly provided high-temperature conduit over the remaining heavy-gauge starter-motor cable.

Step 6: **Seal the Harness**

Wrap the end of the conduit closest to the factory ECU location with automotive wiring tape. Secure the tape using the included small cable ties to prevent unravelling and block engine bay debris from entering the sleeve. Snipping the cable tie tails completely flush is recommended.

Step 7: **Cable Routing**

Route the newly protected starter-motor cable toward the firewall, carefully forming a clean bend near the ECU.

Step 8: **Secure Routing**

Using the larger heavy-duty cable ties provided, secure the new conduit assembly cleanly along the factory engine wiring loom as it passes underneath the throttle body and follows the passenger-side chassis leg toward the firewall. Ensure the cable is clear of all moving components and extreme heat sources. (See Figure 2.4).

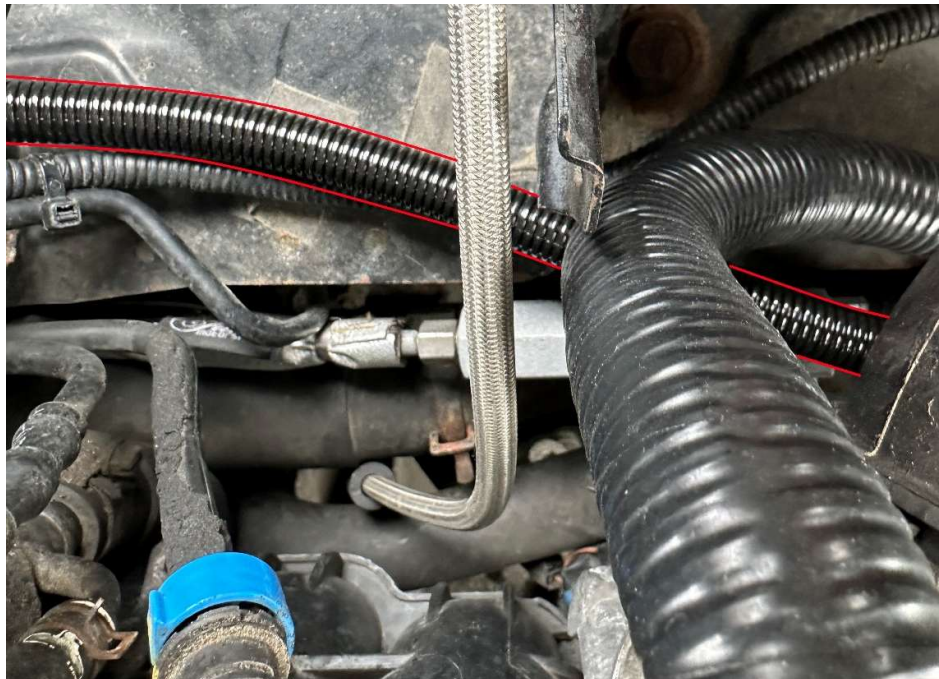


Figure 2.4

Step 9: **Orient and Mark the Lug**

Route the starter-motor cable against the firewall. Position the supplied 25-8 crimp-lug completely flat against the firewall and use a permanent marker to note its exact

orientation (Refer to Figure 2.4). This ensures the cable aligns perfectly with the junction box without twisting once bolted down.



Figure 2.4

Step 10: Prepare the Cable

Remove the pre-slit insulation from the cable end and slide the supplied adhesive-lined heat-shrink tubing onto the cable. Insert the exposed copper wire fully into the crimp-lug barrel, ensuring the lug maintains the orientation marked in the previous step.

Step 11: Perform the Initial Crimp

Install the 25mm² dies into the provided hex-crimper. Insert the crimp-lug into the tool, ensuring it stays in its marked position, and cycle the crimper to compress the barrel.

Step 12: Perform the Final Crimp

Remove the 25mm² dies and install the next size down (16mm²). Place the crimper back over the exact same position as the first crimp and cycle the tool a second time to complete the dual-stage termination.

Step 13: Seal the Terminal

Slide the heat-shrink tubing up over the crimp-lug barrel. Use a heat gun or hair dryer to shrink the tubing until the internal adhesive begins to ooze slightly from the edges, confirming a complete weatherproof seal. Allow the terminal to cool completely before handling. Wrap electrical tape over the conduit interface and secure it with the supplied cable ties.

⚠ WARNING: Do not use a lighter or any open flame to shrink the tubing. Doing so will scorch the material and poses a severe safety hazard inside the engine compartment.

2.4 Drilling and Mounting the Junction Box

Step 1: **Position and Mark**

Place the freshly crimped starter-motor cable onto the middle M8 stud of the junction box. Hold the junction box completely level against the firewall and use a permanent marker to mark the drilling location through the junction box mounting hole.

Step 2: **Drill the Mounting Hole**

Remove the junction box and use a drill with a 6.5mm drill bit to drill the marked hole through the firewall. This specific size provides a small amount of clearance for final adjustment.

Step 3: **Deburr the Hole**

Carefully lift the plastic cowl to clear the workspace. Use a deburring tool and a needle file to completely remove all sharp metal burrs from both sides of the newly drilled hole.

Step 4: **Clean the Swarf**

Use a vacuum cleaner to thoroughly clean up all remaining metal shavings (swarf) from the area. Removing this debris immediately is crucial to prevent rust from forming on the vehicle's bodywork.

Step 5: **Apply Rust Protection**

Coat the exposed, bare metal edges of the hole to seal them against corrosion. Utilizing an automotive primer touch-up pen is highly recommended for this step. Allow the paint to dry completely before proceeding.

Step 6: **Mount the Junction Box**

Align the junction box with the prepped hole and secure it firmly to the firewall using the supplied mounting hardware. Tighten the hardware securely to finalize the installation.

2.5 Installing the New Fuse Box Cable

Step 1: **Connect to the Fuse Box Stud**

Place the right-angle crimped end of the pre-cut cable onto the primary fuse box stud (Refer to Figure X.X).

Step 2: **Route and Secure the Cable**

Route the new cable and conduit assembly along the passenger-side firewall, following the path indicated in Refer to Figure 2.6. Secure the assembly cleanly to the factory wiring harness using the provided cable ties.

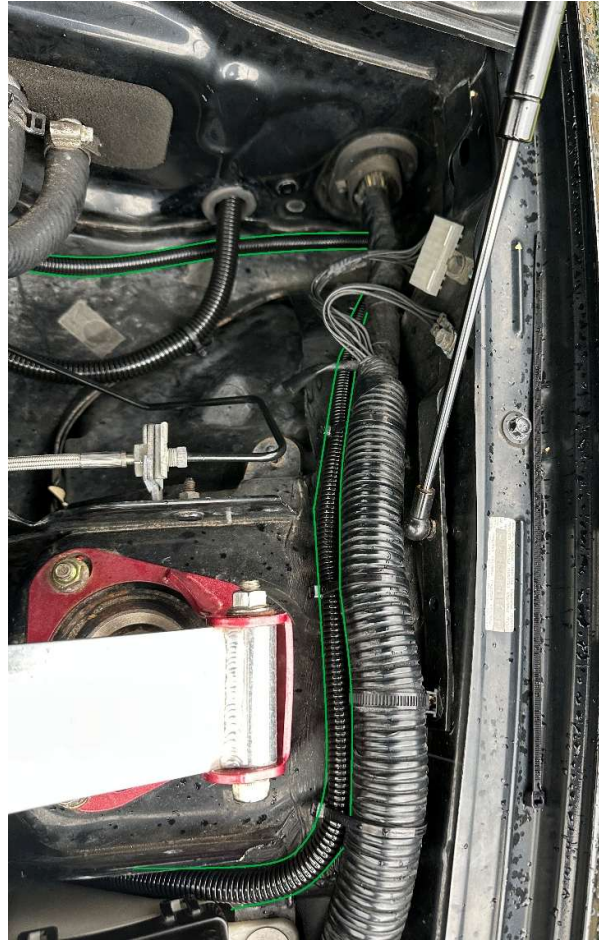


Figure 2.6

Step 3: Install the Inline Fuse Holder & Adjust Clamp

Mount the short, pre-manufactured inline fuse holder piece onto the right M8 stud of the junction box. Using needle-nose pliers, carefully rotate the factory coolant-hose clamp away from the fuse holder, turning it toward the passenger-side fender to maximize clearance.

Step 4: Mark and Crimp the Terminal

Bring the loose end of the cable up to the bottom terminal of the inline fuse holder. Following the same method used previously, slide the heat-shrink tubing onto the cable, position the supplied 16-5 crimp-lug, and mark its exact orientation with a permanent marker. Crimp the lug using the correct dies, then shrink the tubing with a heat gun until the internal adhesive seals the wire.

Step 5: Connect to the Fuse Holder

Attach the freshly crimped cable end to the inline fuse holder terminal and tighten the retaining hardware. Use care not to over-tighten, which could damage the fuse holder housing.

Step 6: **Protect and Seal the Connections**

Thoroughly coat the exposed terminal connections with dielectric grease before installing the protective cover. Snap the cover into place, secure it with two small cable ties to ensure it cannot vibrate loose, and snip the cable tie tails completely flush.

Step 7: **Weatherproof Additional Terminals**

While you have the dielectric grease on hand, apply a liberal coat onto both M6 studs on the main fuse box, and pack the backsides of the connectors with grease to prevent moisture ingress. *(Note: Once the main power cable is connected to the junction box in a later step, you will apply the remaining dielectric grease to the inside of the junction box housing as well).*

Section 3: Mounting the Power Distribution Block

Step 1: **Clear the Workspace**

Remove all trunk/boot interior plastics and carpeting to fully expose the metal mounting surface.

Step 2: **Position and Mark**

Using the reference dimensions provided in Refer to Figure X.X, position the power distribution block (PDB) so it sits completely straight and aligned. Use a permanent marker to mark the mounting hole locations onto the metal surface.

Step 3: **Select Mounting Method**

Choose your preferred installation method based on your available tools:

- **Option A (Riv-nuts):** Drill out the marked holes to the appropriate size to accept the provided M6 stainless steel riv-nuts (requires a specialized riv-nut tool).
- **Option B (Self-Tappers):** Use the alternative self-tapping screws included in the kit, which do not require a riv-nut tool.

Step 4: **Secure the Block**

Mount the PDB firmly into place using your chosen hardware configuration. If you opted for the self-tapping screws, drive them in carefully and ensure you do not over-tighten them, which could strip the sheet metal.

Section 4: Routing the Power Cable Through the Interior

Step 1: **Remove the Fuel Filler Neck Shield**

Unbolt and remove the factory fuel filler neck shield. Set it aside safely, as it will be modified and reinstalled in a later section.

Step 2: **Begin Interior Cable Routing**

Route the bare end of the main power cable through the interior cabin path as illustrated in Refer to Figures 4.1, 4.2, 4.3, 4.4.



Figure 4.1



Figure 4.2

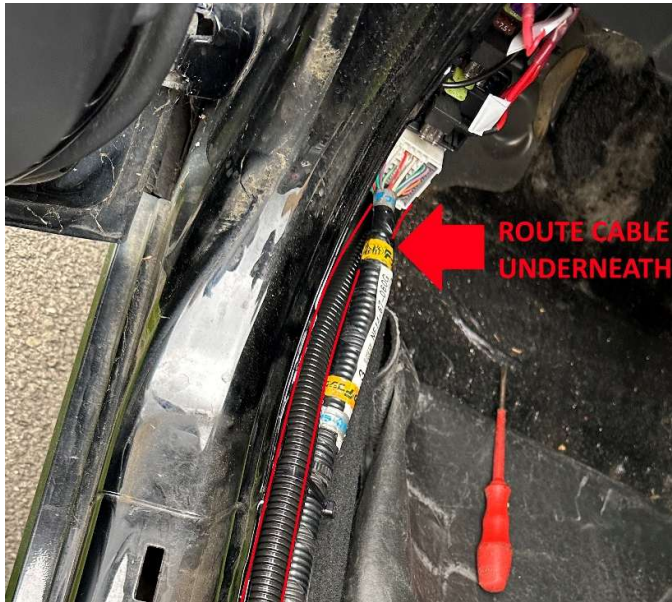


Figure 4.3

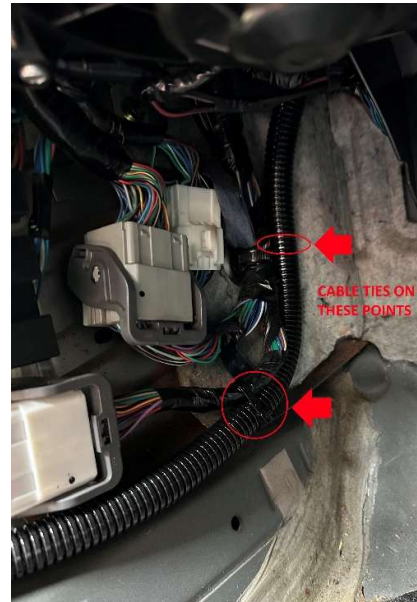


Figure 4.4

Step 3: Connect to the Power Distribution Block

Attach the pre-crimped end of the cable onto the load-side M8 stud of the Power Distribution Block's (PDB) Megaval fuse. Tighten the retaining nut securely.

Step 4: Disassemble Passenger-Side Trim

To fully expose the routing path, pull up the passenger-side carpet and remove the footrest, door-sill cover, and the interior fuse box cover.

Step 5: Manage Cable Slack

Pull the power cable through toward the front of the car, temporarily leaving the remaining slack or coiled length sitting in the passenger footwell area.

Step 6: Secure the Interior Cable Run

Working your way forward, secure the main power cable tightly along the highlighted factory wiring harness bundle using the provided cable ties. Ensure it is tied cleanly so the interior trim and carpet can reinstall flush over it.

Section 5: Firewall Drilling & Engine Bay Pass-Through

⚠ CRITICAL WARNING: A major factory wiring harness is located directly behind the dashboard area where you will be drilling. You must exercise extreme caution throughout this procedure. Proceed slowly and mindfully to avoid causing catastrophic damage to the vehicle's factory electrical system.

Step 1: **Mark the Drill Location**

Using the reference photo (Refer to Figure 5.1), precisely mark the target position for the firewall pass-through hole.



Figure 5.1

Step 2: **Drill the Pilot Hole**

Using a right-angle drill or a right-angle adapter, carefully drill a 5mm pilot hole at your marked location. Hold the drill steady and ensure the bit does not plunge deeply through the metal upon breakthrough.

Step 3: **Hole-Saw Cutout**

Mount the supplied 32mm hole saw to your drill. Begin cutting the clearance hole, applying very light pressure—especially as the saw begins to break through the sheet metal. Let the tool do the work to prevent it from punching violently through the firewall and making contact with the factory cables behind it.

Step 4: **Deburr the Edges Completely**

This is a mission-critical step that requires roughly 10–15 minutes to execute properly. Use a deburring tool and a needle file to clean 100% of the sharp metal burrs from both the interior and exterior faces of the hole. Smooth edges are vital to ensure long-term cable protection.

Step 5: **Apply Rust Protection and Fit the Grommet**

Coat the exposed, bare steel edge of the hole with protective touch-up paint or primer to seal it against corrosion. Allow the paint to dry for approximately 10 minutes, then

push the supplied 32mm rubber grommet into the hole, ensuring it is fully and evenly seated around the entire circumference.

Step 6: **Feed the Draw-Wire**

From the engine bay side, push the included draw-wire through the rubber grommet, routing it carefully over the top of the interior wiring bundle behind the dashboard until it drops down near the interior fuse box location. *(Note: This step is significantly easier to accomplish with two people—one feeding from the engine bay and one catching it in the footwell).*

Step 7: **Pull the Power Cable Through**

Use electrical tape to securely bind the bare end of your main power cable to the interior end of the draw-wire. From the engine compartment, slowly and smoothly pull the draw-wire back through the firewall, tracking the power cable along with it. Pull gently to avoid creating excessive friction or heat against the factory wiring bundle.

Step 8: **Secure the Interior Run and Set Slack**

Install the remaining cable ties to anchor the power cable cleanly underneath and behind the interior fuse box wiring. Before finishing, ensure you leave a small amount of cable slack on the cabin side of the firewall, forming it into a gentle "question-mark" shape. This structural loop ensures the cable does not pull directly downward on the rubber grommet or dislodge it over time.

Step 9: **Connect to the Junction Box**

Route the freshly pulled power cable to the engine bay junction box, place it onto the designated terminal stud, and tighten the hardware down securely. Anchor the cable with one final cable tie at the location highlighted in (Refer to Figure 5.2). The main power cable installation is now complete.



Figure 5.2

Section 6: Making Battery Leads

Step 1: Identify and Plan the Leads

Identify the two supplied battery leads, which each come with one factory-terminated and heat-shrunk end. The lead with **red heat-shrink** is your positive power cable. Because this leg is entirely unfused, it must be cut down to be as short as humanly possible to the Power Distribution Block (PDB). The lead with **black heat-shrink** is your negative (ground) lead.

Step 2: Prepare the Expandable Braid

Because individual battery setups vary, you will custom-terminate the open ends of these cables. Use sharp scissors to trim the provided expandable mesh braid to length.

Stretch the braid until it sits completely taut over the cable; this braid is vital for providing mechanical protection against long-term abrasion.

Step 3: **Prep and Mark the Lug**

Slide the corresponding color heat-shrink tubing onto the braided cable. Strip back the cable insulation to expose the bare copper wire. Insert the wire into the crimp-lug and use the permanent marker method established earlier to note the exact orientation of the lug flat against its terminal connection to prevent the cable from twisting once bolted down.

Step 4: **Execute the Heavy-Duty Double Crimp**

Place the assembly into your hex-crimper to perform a secure, dual-stage compression. For these high-amperage leads, install the **50mm²** dies into the tool first and cycle the crimper. Next, swap the dies to the **35mm²** size, realign the tool over the exact same compression marks, and cycle the crimper a second time to complete the termination.

Step 5: **Seal the Terminal**

Slide your heat-shrink tubing up so that it completely covers the raw end of the expandable braid and the base of the crimp-lug barrel. Use a heat gun to shrink the tubing until the internal adhesive melts and oozes slightly from the edges, sealing the connection against moisture. Let it cool completely.

Step 6: **Prep the Chassis Ground Spot**

Locate the factory grounding point at the fuel filler neck bracket (Refer to Figure X.X). Unbolt the bracket and use a permanent marker to trace directly around its mounting foot onto the vehicle body. Slide the bracket out of the way, then use a utility knife or sandpaper to scrape the paint away, exposing bare metal *strictly* within your marked outline.

Step 7: **Clean and Mount the Ground Lead**

Thoroughly clean the newly exposed bare metal surface with brake cleaner or isopropyl alcohol to remove any residual paint dust or oils. Reposition the fuel filler neck bracket over the spot, place your newly completed battery-to-chassis ground lead terminal directly over the mounting foot, and secure the entire stack tightly using the supplied hardware.

Section 7: Modifying Parts & Final Assembly

Step 1: **Modify the Fuel Filler Neck Shield**

Mark the modification lines on the fuel filler neck shield (using the reference in Figure 7.1). Replicate the cut accurately using tin-snips or an angle grinder, then drill four M6 mounting holes using the same spacing (shown in the Figure 7.2).



Figure 7.1



Figure 7.2

Step 2: **Deburr and Paint the Shield**

Thoroughly deburr all cut edges and newly drilled holes until they are perfectly smooth to the touch. Coat the modified shield with paint to prevent future rust—an automotive spray primer works perfectly for quick coverage. Allow it to dry for roughly 10 minutes.

Step 3: **Install the Grommet Strip**

Firmly press the supplied grommet strip onto the newly cut edge of the shield, ensuring it seats completely. Secure the strip tightly using the provided cable ties, then snip the excess tails completely flush. Reinstall the shield into the vehicle (as per Figure 7.1).

Step 4: **Modify and Fit the Door-Sill Cover**

Take the factory door-sill cover and flip it over to expose the underside. Using side-cutters or a power-file, shave down the plastic spike tabs until the surface is completely flat and flush underneath. Reinstall the modified door-sill cover into the vehicle.

Step 5: **Finalize the Power Distribution Block**

Insert the provided 200A Megaval fuse into its designated slot inside the Power Distribution Block (PDB). Do a complete mechanical check of the block, ensuring that every single fastener inside the PDB is torqued down tightly. Once verified, snap the primary protective cover into place.

Step 6: **Perform a Pre-Start Inspection**

Before attempting to start the vehicle, perform a final, careful walk-through of the entire system. Double-check that every electrical connection and fastener you touched during this installation is tight and secure. If in any doubt, re-verify all fastener connections before proceeding.

Step 7: **Reassemble and Test**

Reinstall all remaining factory interior carpets, footrests, and trunk/boot plastic trim pieces. Once the interior is fully assembled and you are completely confident in your electrical connections, you are ready to crank the engine over and test the system. Job done!