

# Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

## 1997 JEEP Wrangler OEM Service and Repair Workshop Manual

[Go to manual page](#)

\*Governing Metal Thickness (GMT) = The minimum weld nugget for two thickness welds shall be based on the thinner of the two sheets being welded. The minimum weld nugget diameter for three thickness welds shall be based on the middle gauge of the three panels being welded (not necessarily the middle panel).

\*\*Minimum nugget diameter should be measured with a vernier caliper. If the weld is not round, measure the major and minor diameter and average.

### **Equipment Limitations**

- Each brand/model is limited to material capacity that can be welded.
- The facility power supply will impact equipment performance.

### **Access Limitations**

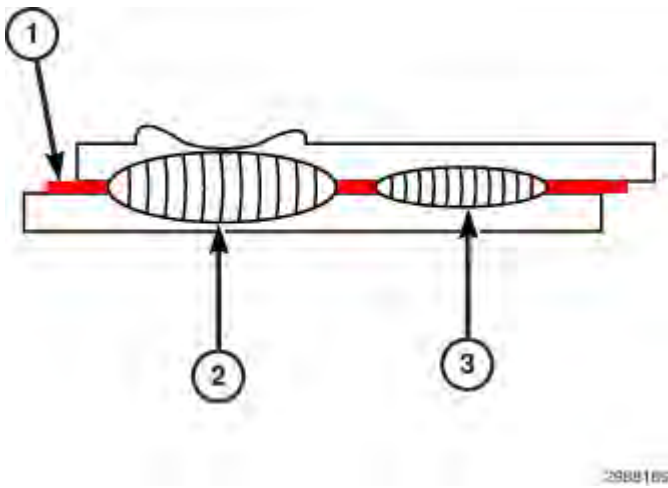
- Due to the existing structure of the vehicle being repaired, each weld must be evaluated for feasibility. Due to power limitations of the equipment, tongs that are long and deep enough for certain welds may not be available, and the weld will need to be made by another method.

### **CAUTION**

All NVH foam must be removed from the repair area of the vehicle, as material is flammable.

### **Preparation**

- Prior to making repairs with STRSW, weld coupons must be created for testing. The test joint must be an exact duplicate of the original joint, including layering and adhesive application. The testing is required to ensure the repair restores the vehicle to its originally produced condition using the minimum weld nugget requirement chart.
- To correctly identify the material being welded or tested, the technician must possess an accurate material thickness gauge.
- No "improvements" to the vehicle design are allowed as this could have a negative impact on the vehicle as a whole. The repair should mirror what was used on the vehicle at the assembly plant.
- Note, the weld is affected by more than just the thickness or number of panels being welded, but also material coatings. Zinc based anti-corrosion coatings (i.e., galvannealing, galvanizing), sealers, adhesives, and E-coat will affect welder performance.
- When preparing an E-coated panel for STRSW the E-coat must be removed from both of the mating flanges within 25 mm. (1 in.) of any flange. Corrosion protection is required anytime you remove E-coat. A scuffing disc should be used to remove the E-coat without damaging other sheet metal coatings.
- With advancements in technology some STRSW welders now have computer controlled programs. These technologically advanced welders are capable of measuring the thickness and resistance of the panels being welded including multiple tiers and types of metal. The computer program is able to process the information to provide the proper spot weld consistently.

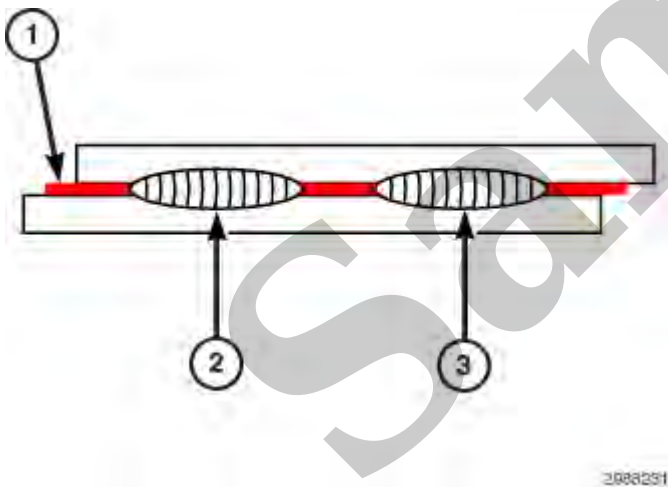


1 - STRUCTURAL ADHESIVE

2 - WELD HAS HEAVY EXPULSION OF METAL AND SURFACE MARKINGS

3 - WELD CORRECT SIZE

Current Level High for Both Welds



1 - STRUCTURAL ADHESIVE

2 - WELD CORRECT SIZE

3 - WELD CORRECT SIZE

Current Level Adjusted to Provide Acceptable Welds

## 12-Volt Battery Connect

### 12-VOLT BATTERY CONNECT

#### WARNING

On vehicles equipped with the high voltage system, disconnecting the 12-volt battery negative cable alone will not power down the 12-volt system. You must perform the 12-volt Power Down procedure before proceeding. Failure to follow these instructions may result in possible serious or fatal injury.

The high voltage battery on this vehicle is used to charge the 12-volt battery through the Integrated Dual Charging Module (IDCM). Therefore, disconnecting the 12-volt cables may not completely power down the 12-volt system. The high voltage battery should be powered down also to prevent the possibility of the high voltage system generating voltage into the low voltage system. The high voltage battery power up procedure includes connecting the 12v battery and powering up of the 12 volt system. Perform the HIGH VOLTAGE POWER UP PROCEDURE to connect and power up the 12 volt system (Refer to 31 - Collision Information/Standard Procedures - PHEV).

1. Visually verify that no charging device is plugged in.

#### NOTE

Safety glasses and high voltage safety gloves with leather protectors must be worn for the following steps.

2. **Perform the HIGH VOLTAGE POWER DOWN procedure in accordance with the Collision Information.** (Refer to 31 - Collision Information/Standard Procedures - PHEV) .

#### NOTE

The power down procedure must be performed before any loss of isolation testing of the high voltage cables or components is performed.

3. Remove the HVIL cover from the orange test point connector and connect the High Voltage Test Adapter



into the orange test point connector. There are two test adaptors in the kit. The difference is explained below.

- Test adaptor with blue insulation - This adaptor does not have the HVIL loop in the connector.
- Test adaptor with orange insulation - This adaptor comes with the HVIL loop in the connector.

## High Voltage Power Down

### HIGH VOLTAGE POWER DOWN

#### WARNING

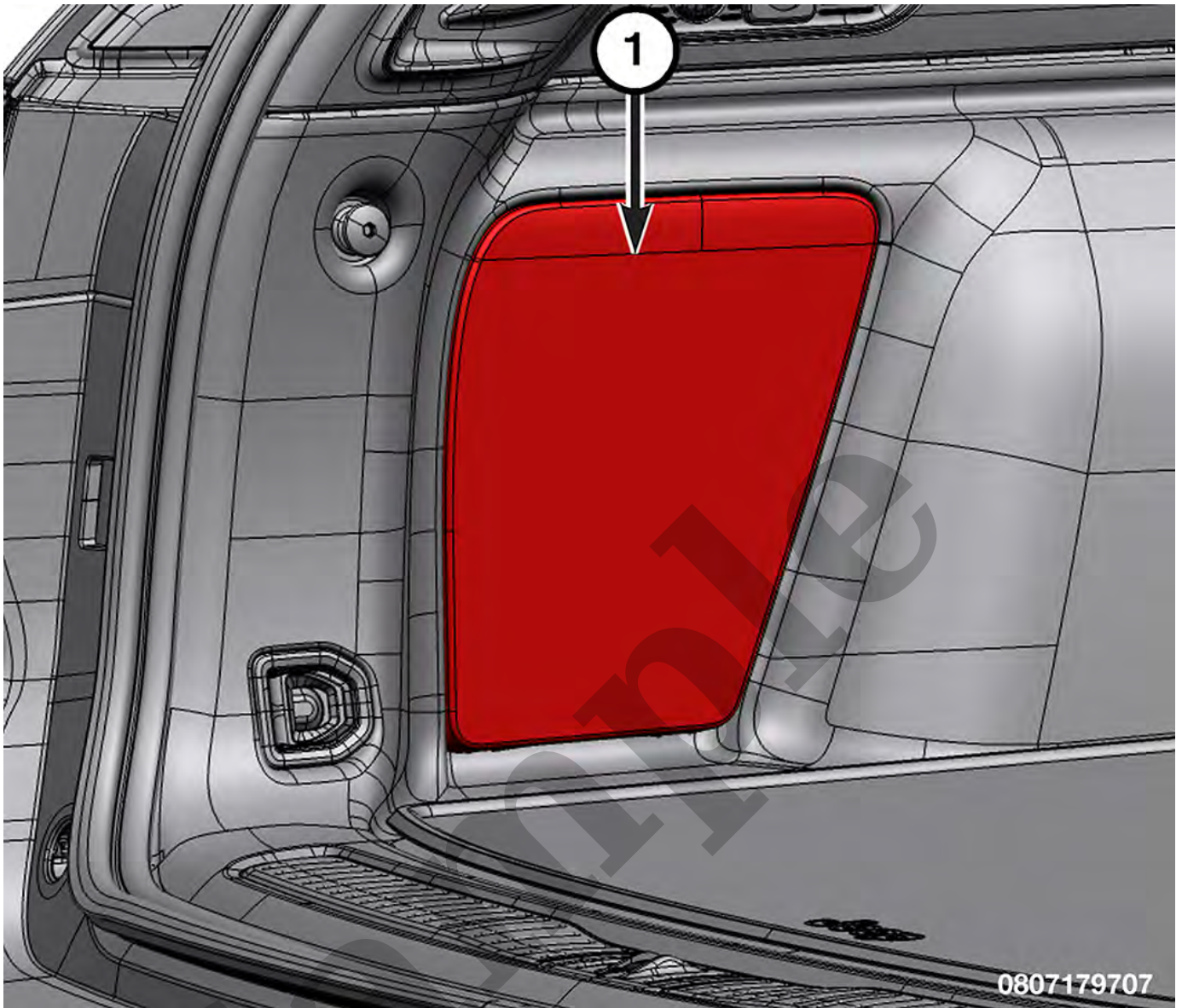
Before performing any diagnostic or service procedure, you must thoroughly read and follow all applicable high voltage safety procedures. You must perform the high voltage power down procedures.

Loss of Isolation (LOI) must be performed before high voltage power up in cases where service has been performed on a high-voltage component or when diagnosing a LOI condition.

Be sure to use the proper safety equipment when working on any high voltage system or component. Failure to do so may result in serious or fatal injury.

Wait a minimum of two minutes after performing the high voltage battery disconnect procedure safety procedures before attempting to access the high voltage system, failure to do so may result in serious or fatal injury.

1. Prepare the work area and familiarize yourself with all HIGH-VOLTAGE SAFETY PROCEDURES related to personal safety and vehicle safety associated with working on a Plug-In Hybrid Electric Vehicle (PHEV) (Refer to 31 - Collision Information/Standard Procedures - PHEV).
2. Inspect all orange high voltage cables, and high voltage components labeled with the high voltage symbol for physical damage. If damage is present, extra caution must be taken to avoid contact with unprotected high voltage. Do not insert probes, tools, objects or fluids into damaged high voltage cables or components.
3. Disconnect any charging equipment. Do not plug in the EVSE Recharge Coupler when working on the vehicle.



1 - Rear PDC Cover

7. To completely power down the 12 volt system, remove the rear access panel to expose the rear PDC.

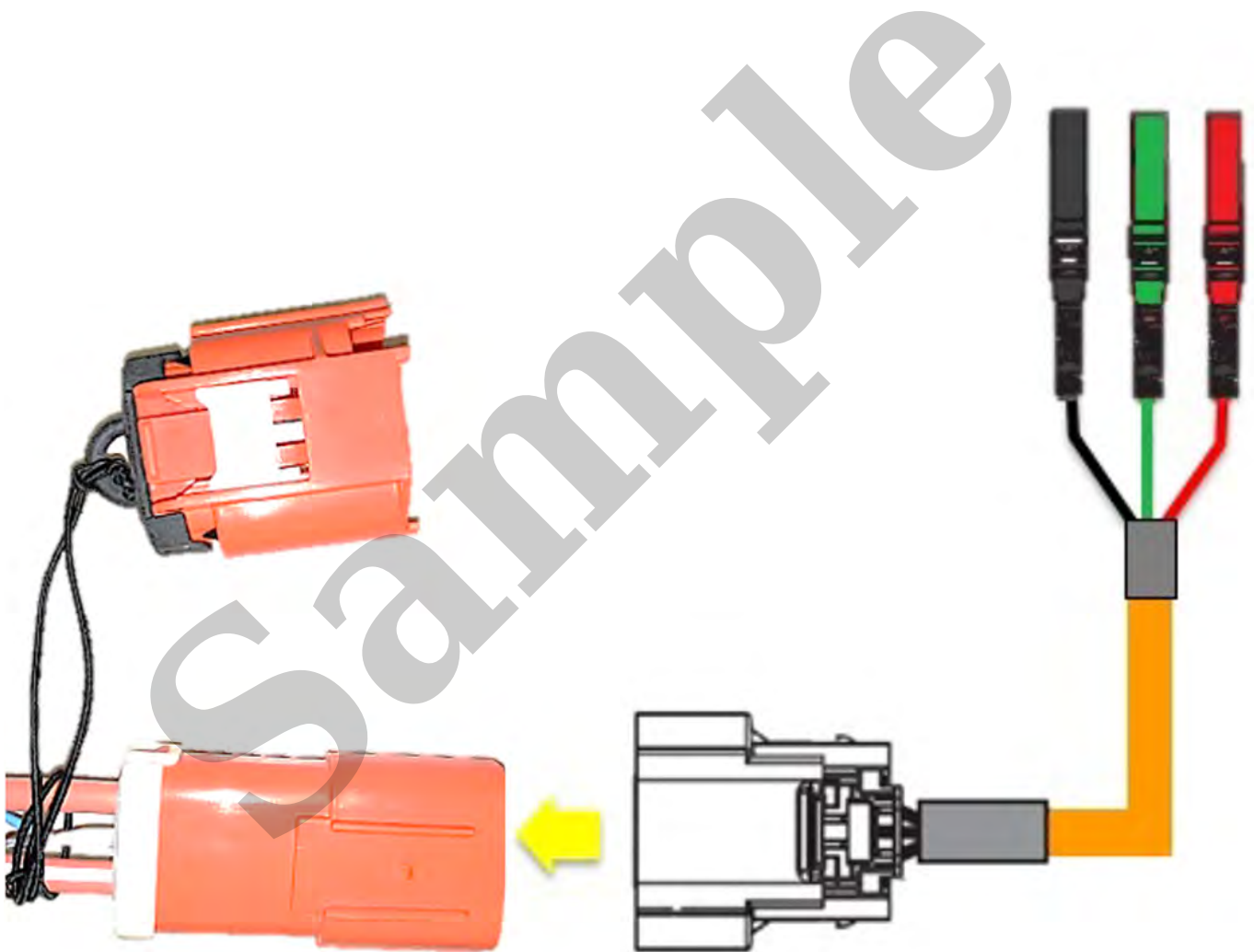






is recommended for PHEV circuit testing. Perform the multi-meter functionality tests per the manufactures directions. Verify the multi-meter is operating correctly by measuring voltage from a known good power source, such as the vehicle's 12-volt battery. If at any point during the procedure, the multi-meter settings are changed, or the probes are repositioned in the meter, verification with a known good power source must be repeated. **Always observe these precautions prior to taking a high voltage measurement:**

- Have known good test leads.
- Set the range to DC volts with no decimal points.
- Read a known good low-voltage source to verify meter.



0804186949

14. Remove the HVIL cover from the orange test point connector and connect the High Voltage Test Adapter

## High Voltage Power Up

### HIGH VOLTAGE POWER UP

1. **The Loss Of Isolation test procedure must be performed** before powering up the high voltage system (Refer to 31 - Collision Information/Standard Procedures - PHEV).
2. Remove the high voltage test adapter from the orange high voltage disconnect test connector.

