

Proposed Guidelines Changes for 2019

- 3.20 – Removed (duplicated in 4.5.4.1)
- 4.5.4.1 – Changed to read, “A modified vehicle is required to have a set of delivery documents completed and a vehicle acceptance document signed by the client and mobility equipment dealer prior to the vehicle being released to the client.”
- 25.3 – Corrected section reference number
- 41 – Added section “Hybrid/Electric Vehicles”
- 41 – “Safety Precautions - Hybrid and Electric vehicle systems are very different from traditional Internal Combustion vehicles and have many variations. Before any accessory is added or service is performed to these systems, an understanding of the vehicle’s power-plant and vehicle OEM service guidance is strongly encouraged. Vehicle OEM or recognized service training classes from SAE or ASE are recommended BEFORE attempting any propulsion or controls modifications. Working with hybrid and electric vehicles may require changes in the normal operation of the Dealer Service/Installation in such things as new dangers that shops had not experienced:”
- 41.1 – Added, “Safety training is a key to safely servicing or modifying the vehicle.”
- 41.2 – Added, “Moving a hybrid vehicle or EV around the shop environment is significantly quieter and much more dangerous to those working in the environment. In comparison the standard IC engine currently makes significant noise, so team members may not hear an EV or hybrid being moved. Electric vehicles are silent when operated, so there’s a risk that people would be unaware of planned or unexpected movements.”
- 41.3 – Added, “Electric vehicles may also move unexpectedly on their own unless the Power Propulsion Key is removed.”
- 41.4 – Added, “The battery location on the vehicle may require new lifting methods for the batteries and may require communicating with the component/vehicle manufacturer.”
- 41.5 – Added “High voltage components and cables are capable of delivering a fatal electric shock. Some Hybrid and electric vehicles have energy storage systems in excess of 650 volts, anything over 150 volts can cause serious injury and or death.”
- 41.6 – Added, “Electric vehicles and hybrid vehicles have uniquely stored electrical energy with the potential to cause explosion or fire. Explosive gases and harmful liquids can be released if batteries are damaged, overcharged or incorrectly modified.”
- 41.7 – Added, “Components can hold a dangerous voltage even when vehicles are “off”. It is critical to find the Power Propulsion Key on the vehicle and remove this before any work is started.”
- 41.8 – Added, “Caution should be exercised for unexpected movement of electric motors or the vehicle itself, due to stored magnetic forces within the vehicle and its systems.”
- 41.9 – Added, “High-voltage batteries can be heavy, bulky and awkward to handle components, several times heavier than conventional batteries, so lifting aids and devices may be required to prevent musculoskeletal disorders.”
- 41.10 – Added, “Hybrid vehicles can start their internal combustion engine automatically when the ignition is on and the vehicle detects that the battery has discharged to a level at which recharging is necessary.”
- 41.11 – Added, “High electric currents in batteries and high-voltage systems in electric vehicles can cause magnetic fields, which can induce eddy currents in the human body. Risks arising from electromagnetic fields are, therefore, potentially dangerous for mechanics and others with active implants such as cardiac pacemakers.”

- 41.12 – Added, “Hybrid and electric vehicles often take advantage of low rolling resistant tires and energy efficient systems that have different operational guidance that installers and service technicians trained on more traditional vehicles may not be familiar with.”
- 41.13 – Added, “A wide variety of charging systems and energy storage systems are involved with little industry standardization. No modification to these systems should be performed unless at the explicit direction of the manufacture who has supplied all needed parts and guidance.”
- 41.14 – Added, “Many hybrids and electric vehicles run all the accessory functions and many secondary controls off of a 12 volt or 24 volt auxiliary power system. Many of these auxiliary systems are sized only for these operations. These are often found in non- traditional locations in the vehicle. The equipment manufacture should supply information if drawing power from these systems is appropriate and the installer should follow all the guidelines. Care must be taken to verify that circuit breaker and or fuse protection to the system are appropriately labeled and to train the end users as to location and operation.”
- 41.15 – Added, “Follow the vehicle and equipment manufacturers explicit installation instructions for the make and model of the vehicle. Due to the large variants in vehicle design, if the manufacturer’s instructions do not cover the vehicle type and model, contact the manufacturer for guidance.”
- 41.17 – Added, “Weight distribution is more critical in a hybrid or electric vehicle due to the unique energy reclamation systems using the brakes. Hybrids and electric vehicles often take advantage of regenerative braking to do most of the stopping, which also replenishes the energy storage system. An out of balance vehicle can affect the handling controls and stability of the vehicle as well as have unintended consequences when “braking”.”
- 41.18 – Added, “Following the Vehicle OEM listed weight distribution guidelines is critical.”
- 41.19 – Added, “Training the end users about weight distribution requirements when carrying their mobility equipment is very important.”
- 41.20 – Added, “Any system that is over 60Vdc up to and including 1500 Volts is considered HIGH VOLTAGE. No modification to a high voltage system should be performed.”
- 41.21 – Added, “48-volt vehicle systems are considered “Mild Hybrids”.”
- 41.22 – Added, “Systems under 40 Volts are considered Low Voltage Systems.”
- 41.23 – Added, “There is no exemption under the 49 CFR Part 595 “Make Inoperative Exemptions” for Federal Motor Vehicle Safety Standard (F/CMVSS) 305, so no installation or service may modify any part of the vehicle safety system specified under F/CMVSS 305.”
- Appendix C – Added, “Electric Vehicle: A vehicle whose power-plant is solely powered by an electrochemical energy storage system(s). There are a wide variety of storage systems and charging systems.”
- Appendix C – Added, “Hybrid Vehicle: A vehicle equipped with two or more energy storage systems, both of which must provide propulsion power either independently or together. Typically, one of these energy storage systems powers an internal combustion power-plant.”