

# Continuing Education for the Fire Fighter



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# *Scene Lighting, Rescue Tools, Vehicle Extrication, and Technical Rescue Module 2*

## *Chapter 10*



# LEARNING OBJECTIVES

Identify the role of a fire department during vehicle extrication.

Explain use of cribbing during vehicle extrication.

Explain the role a Firefighter II will play in technical rescue operations.

Describe safety considerations that must be identified and mitigated during vehicle extrication.

Describe the methods used for gaining access to victims during vehicle extrication.

Describe the various types of technical rescue operations.



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# LEARNING OBJECTIVES

Prevent horizontal movement of a vehicle using wheel chocks.

Stabilize a vehicle using lifting jacks.

Stabilize a vehicle using cribbing.



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# LEARNING OBJECTIVES

Stabilize a vehicle using a system of ropes and webbing.

Remove a windshield in an older model vehicle.

Remove a roof from an upright vehicle.

Displace the dashboard.



Stabilize a side-resting vehicle using a buttress tension system.

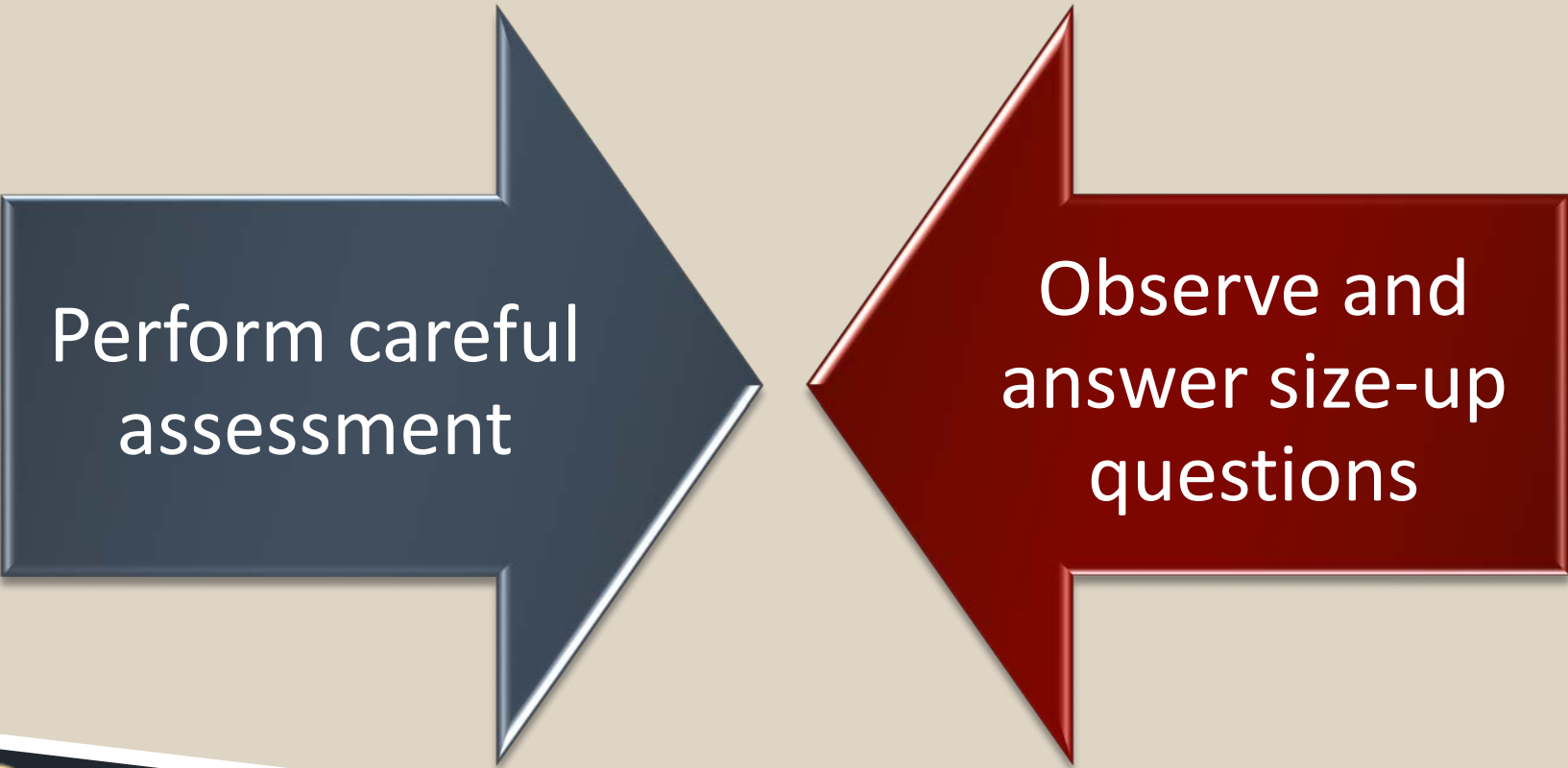
Remove a tempered glass side window.

Remove a roof from a vehicle on its side.



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SCENE SIZE-UP IS THE FIRST STEP IN EXTRICATION AND  
BEGINS AT DISPATCH, CONTINUING THROUGHOUT  
THE INCIDENT.



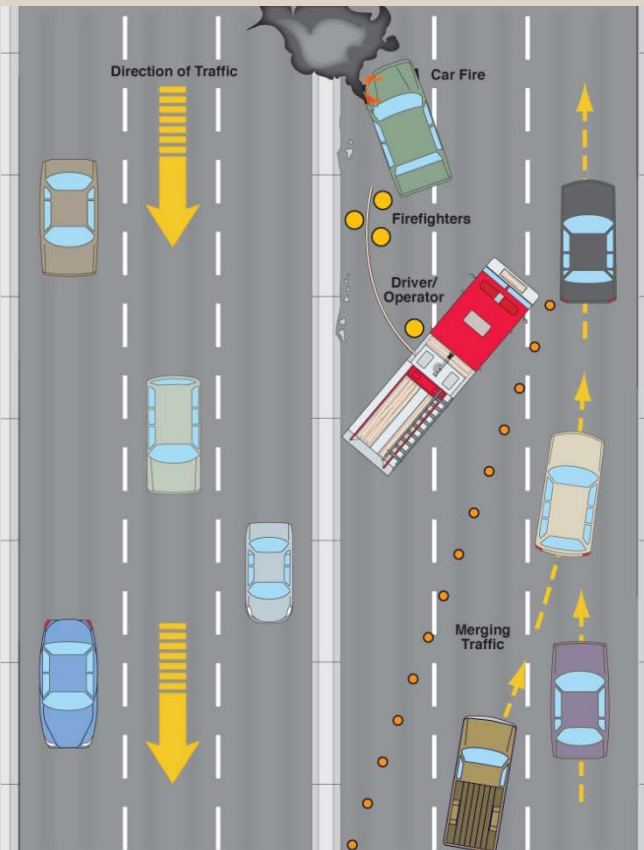
Perform careful  
assessment

Observe and  
answer size-up  
questions



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# CONTROLLING HAZARDS MEANS REDUCING THE RISK OF INJURY BY FOLLOWING PROPER SAFETY PROCEDURES AT AN INCIDENT.



Primary Hazard:  
Traffic



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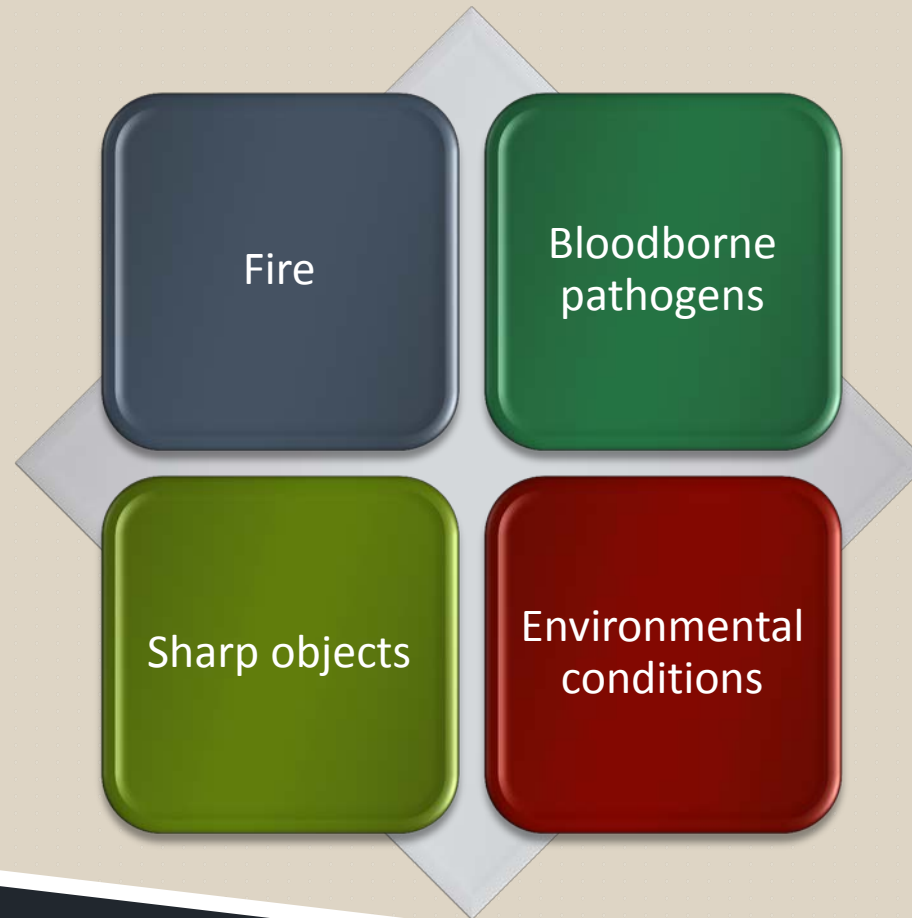
# WARNING

Before you dismount the apparatus, size-up the traffic flow and other scene conditions. Remember that drivers are often distracted by emergency vehicles and flashing lights.





# BE AWARE OF THE TYPES OF HAZARDS FOUND AT VEHICLE EXTRICATION INCIDENTS.



# DETERMINE THE VEHICLE'S FUEL SYSTEM DURING SIZE-UP IN ORDER TO PREPARE FOR POSSIBLE HAZARDS.

Conventional and  
alternative fuels  
ignite easily

Protect against leaks  
and ignition of  
vapors

Minimal protection =  
Firefighter with  
portable extinguisher

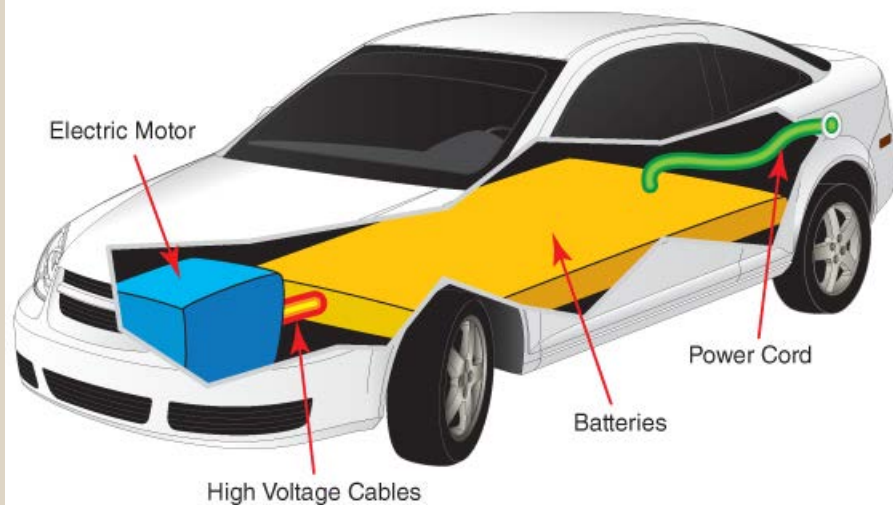
Foam generating  
systems and several  
charged lines may be  
necessary

Follow departmental  
SOPs — At least one  
1½ inch (38 mm)  
charged hoseline

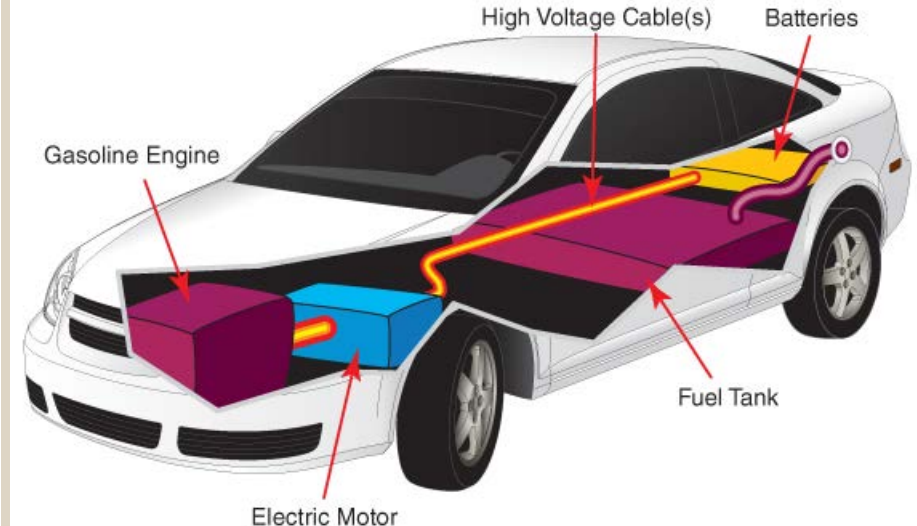


# ELECTRICALLY POWERED VEHICLES ARE CLASSIFIED AS TOTAL ELECTRIC OR HYBRID ELECTRIC.

**Electric Car**

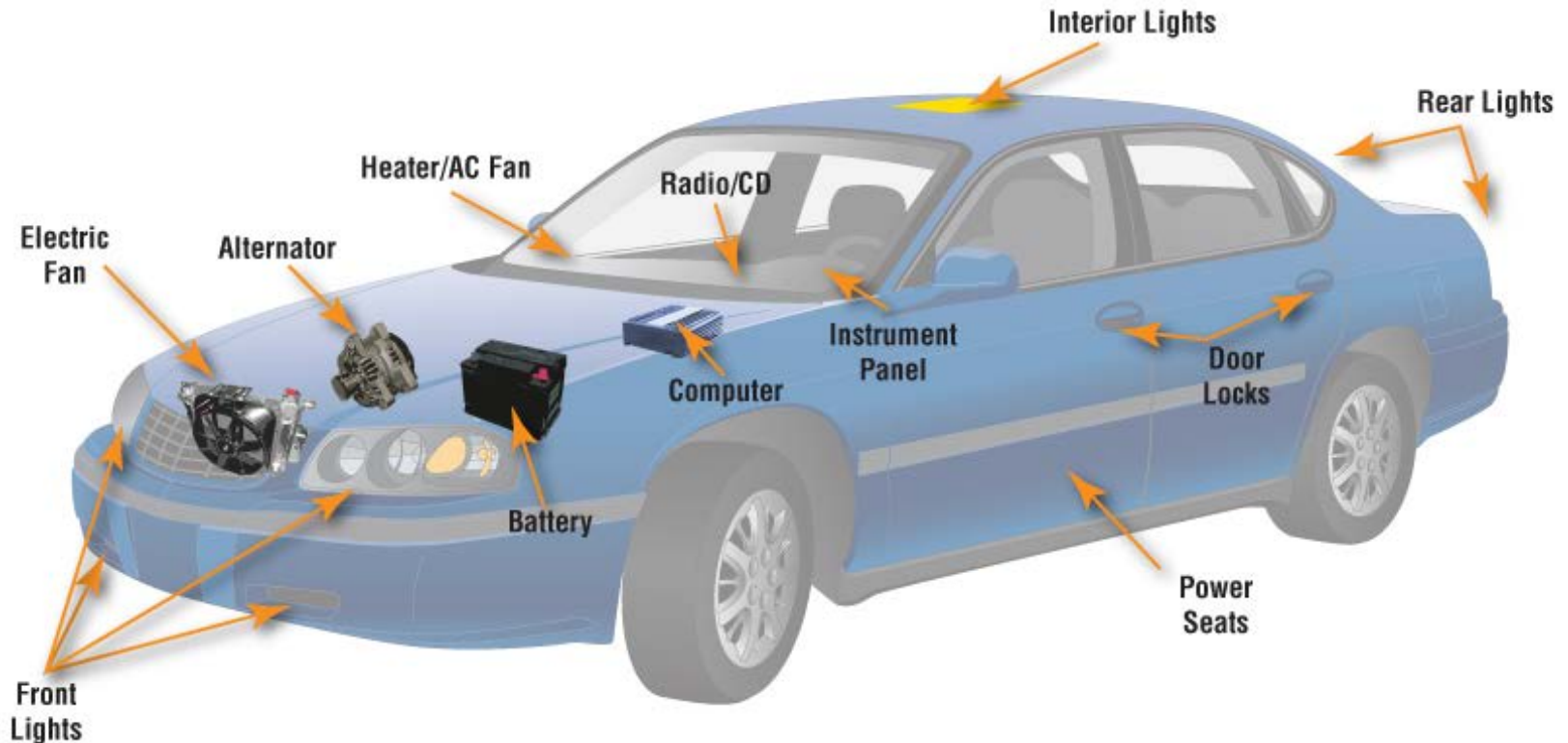


**Hybrid Car**



# VEHICLE ELECTRICAL SYSTEMS IN CONVENTIONAL VEHICLES STORE AND DELIVER ELECTRICITY TO VARIOUS COMPONENTS.

Examples of Electrical System Components

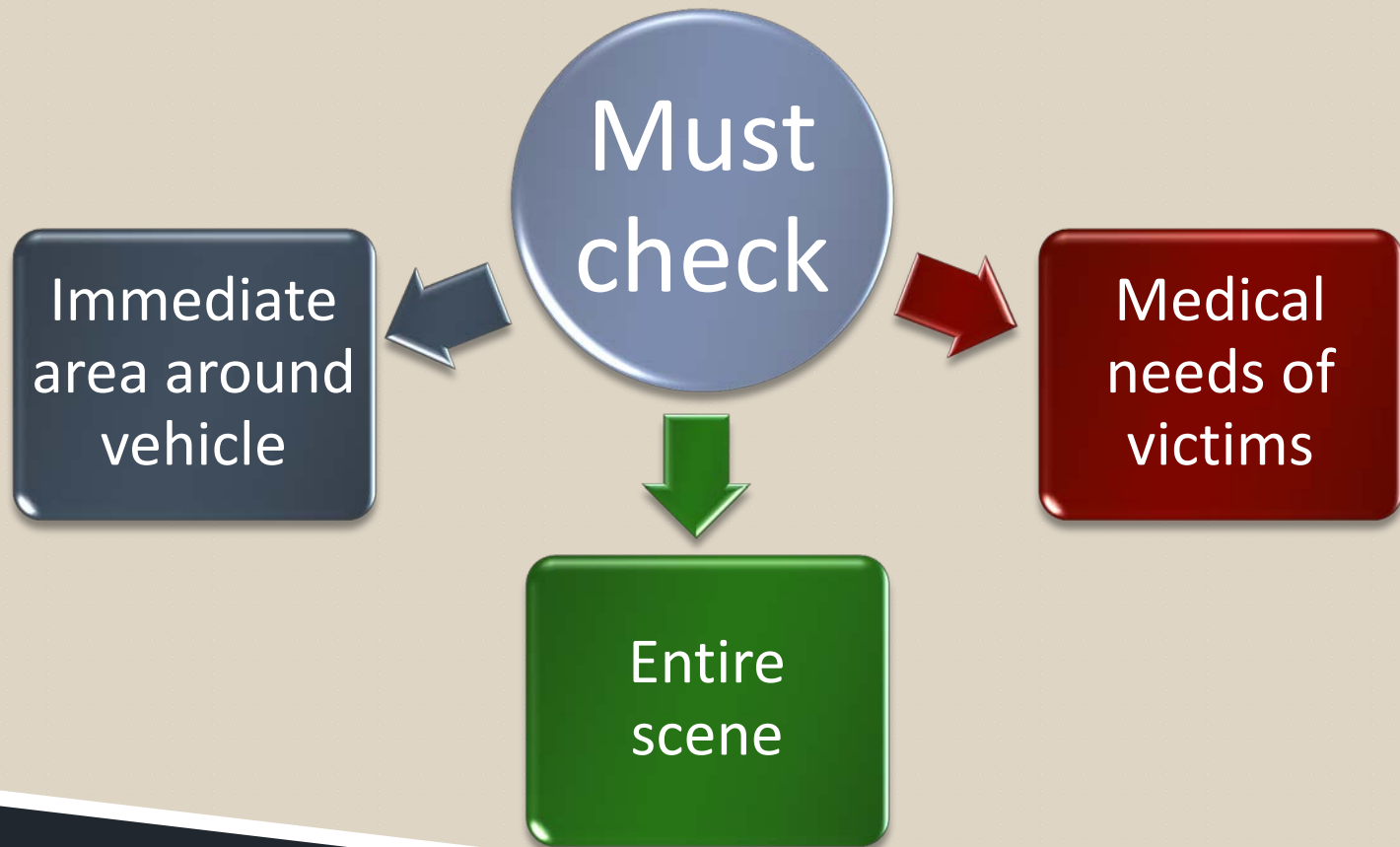


ELECTRIC/HYBRID VEHICLES HAVE DANGEROUSLY  
HIGH VOLTAGE RUNNING THROUGH WIRES AND  
BATTERIES.



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# ASSESSING THE NEED FOR EXTRICATION REQUIRES FIREFIGHTERS TO WORK TOGETHER.



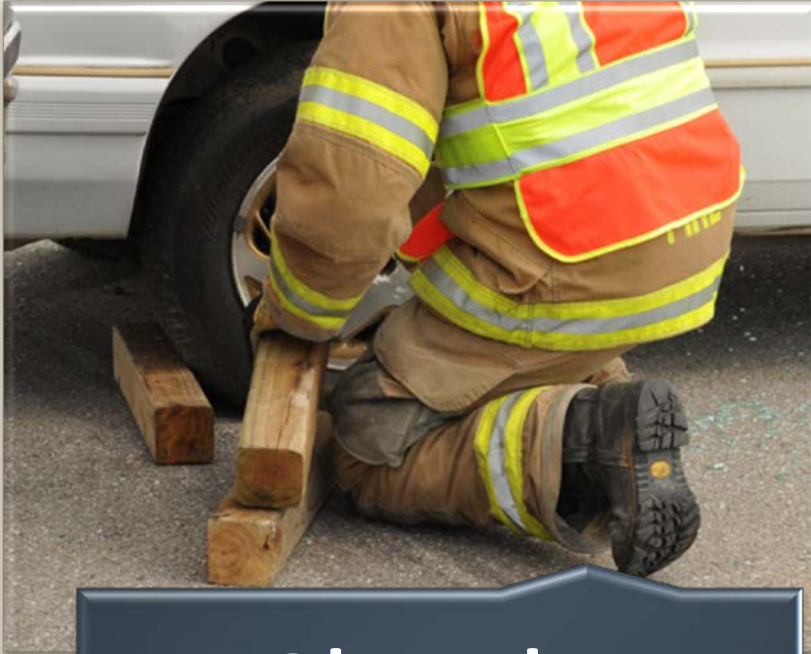


AFTER ASSESSMENT, STABILIZE VEHICLES TO PREVENT  
SUDDEN MOVEMENT AND TO PREVENT INJURY.



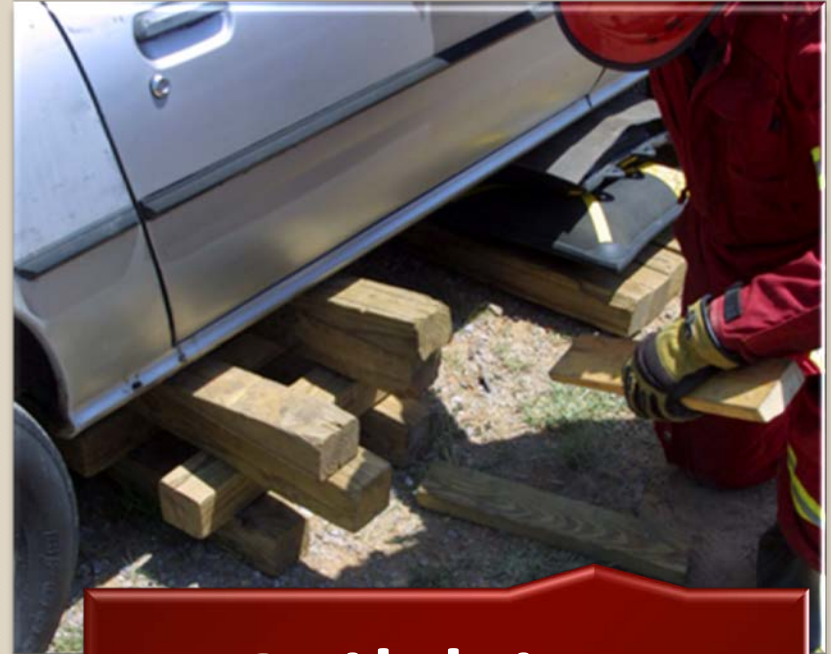
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STABILIZE ALL VEHICLES WITH WHEEL CHOCKS OR CRIBBING IF DEFLATING TIRES IS IMPOSSIBLE OR INSUFFICIENT.



*Courtesy of Jennifer Ayers/Sonrise Photography*

Chocks



Cribbing



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OTHER TYPES OF RESCUE TOOLS CAN ALSO BE USED TO STABILIZE IN PARTICULAR SITUATIONS.

Jacks, pneumatic bags

Struts and buttress tension systems

- Ropes, chains, cables, webbing



# SHUT DOWN ALL ELECTRICAL SYSTEMS TO ELIMINATE POSSIBLE IGNITION SOURCES.

Adjust doors, windows or seats  
before shutting off power

Turn off ignition and remove  
the key if possible

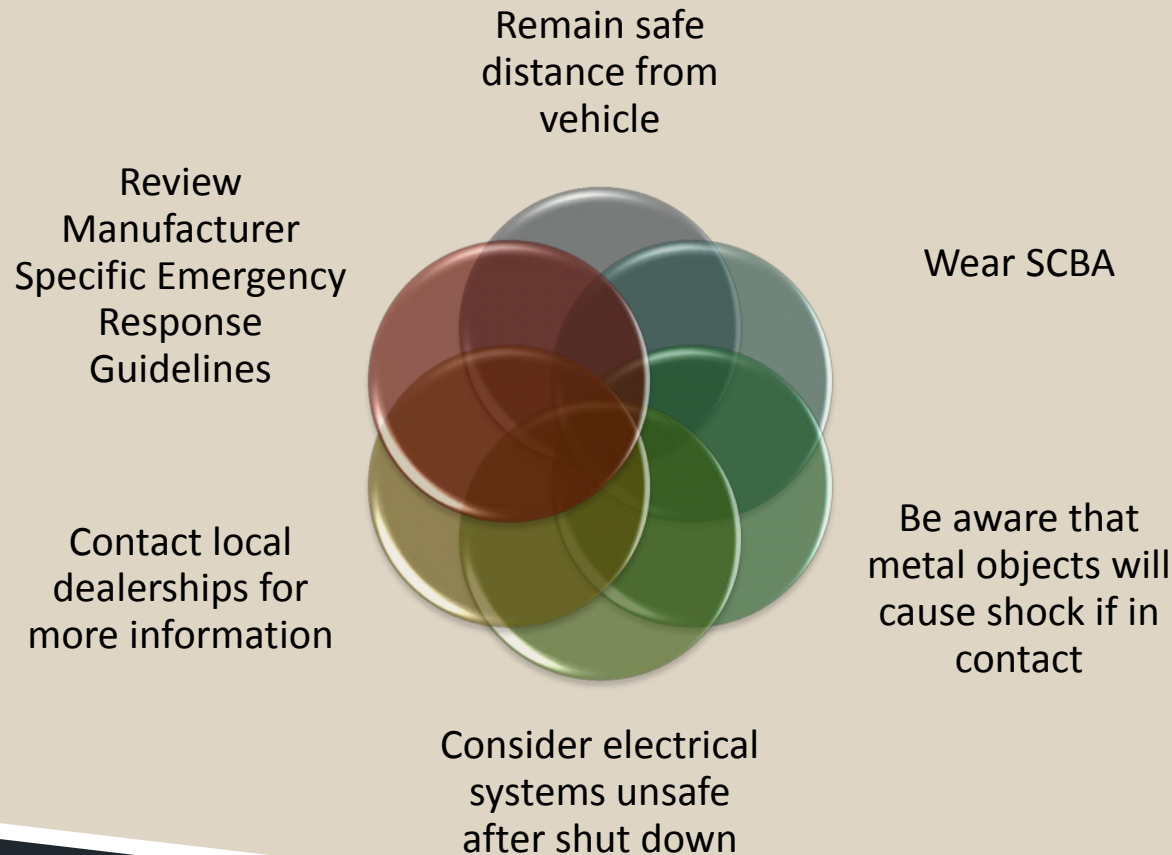
Disconnect negative battery  
cable on nonelectric vehicles



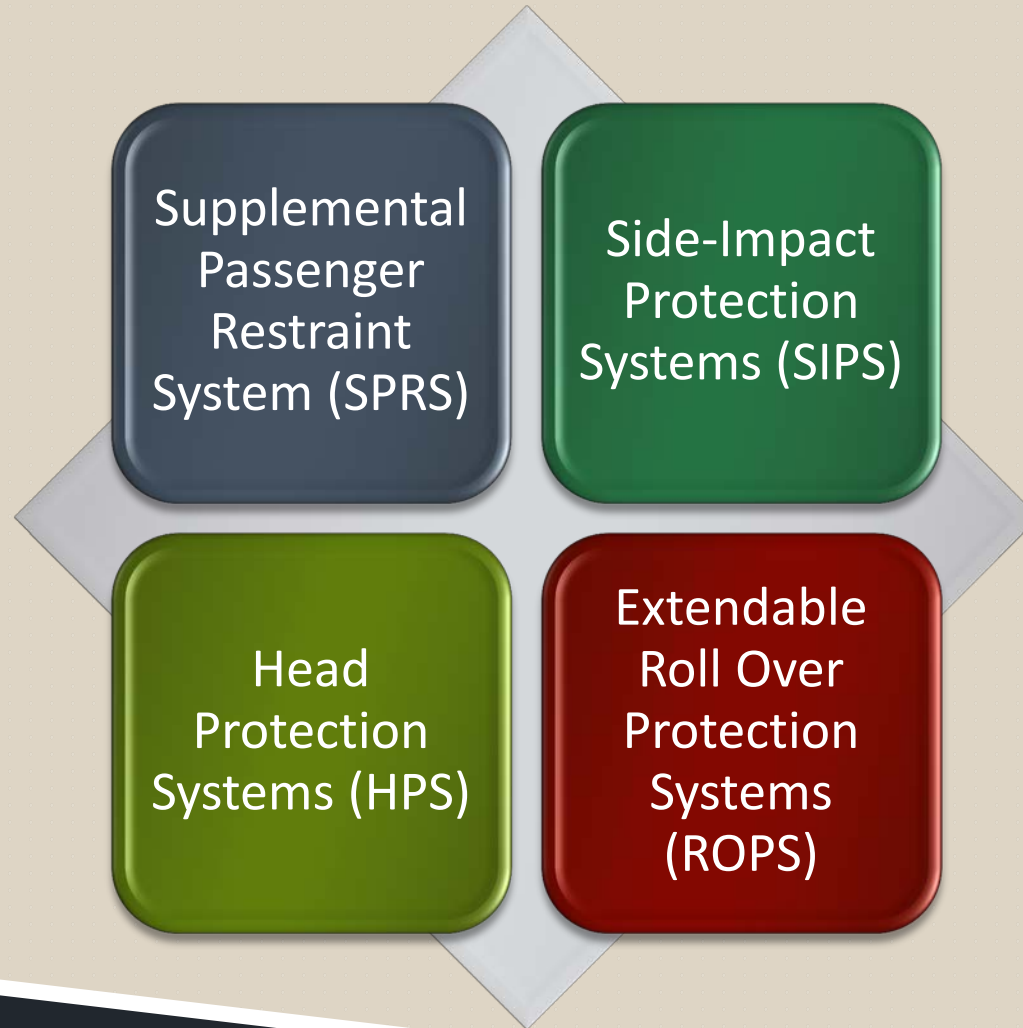
# FOLLOW THESE GENERAL SAFETY GUIDELINES FOR SECURING ELECTRICAL SYSTEMS OF HYBRID AND FULL ELECTRIC VEHICLES.



# FOLLOW THESE GENERAL SAFETY GUIDELINES FOR SECURING ELECTRICAL SYSTEMS OF HYBRID AND FULL ELECTRIC VEHICLES.



# PASSENGER SAFETY SYSTEMS POSE IMMEDIATE DANGER TO BOTH VICTIMS AND RESCUERS.



SEAT BELT PRETENSIONERS ARE PYROTECHNIC AND  
PRESENT AN IGNITION HAZARD IF NOT DISABLED.



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# WARNING

Never cut a cable or touch  
a component with  
yellow/black or orange  
tapes, insulation, or tags.  
Doing so may cause  
electrocution or activate  
undeployed air bags.



# BE AWARE OF OTHER PASSENGER SAFETY SYSTEMS THAT POSE HAZARDS TO FIREFIGHTERS DURING EXTRICATION.

Supplemental passenger restraint systems (SPRS)

Side-impact protection systems (SIPS)

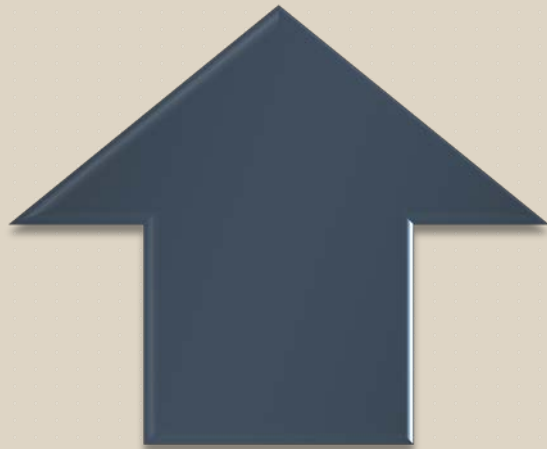
Head protection systems (HPS)

Extendable roll over protection systems (ROPS)





THE BEST METHOD OF GAINING ACCESS TO TRAPPED VICTIMS IS ALWAYS THE SIMPLEST AND FASTEST.



Greater survival  
when victims receive  
treatment quickly



Lengthier methods =  
more suffering and  
danger



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ALWAYS ATTEMPT TO OPEN THE DOOR  
NORMALLY BEFORE ANY OTHER METHOD.



*Courtesy of Alan Braun/Missouri Fire Rescue Training*



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REMOVE VEHICLE WINDOWS TO GAIN ACCESS OR  
REDUCE THE DANGER OF GLASS FRAGMENTS.

Wear full  
PPE

Protect  
vehicle  
occupants  
with  
covering



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SAFETY GLASS IS COMMONLY USED AS A STRUCTURAL COMPONENT AND REQUIRES MORE EFFORT TO REMOVE THAN OTHER GLASS.



*Courtesy of Jennifer Ayers/Sonrise Photography*



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TEMPERED GLASS IS COMMONLY USED IN SIDE AND REAR WINDOWS AND SEPARATES INTO SMALL PIECES UPON IMPACT .



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MOST BROKEN GLASS DROPS STRAIGHT DOWN, BUT SIMPLE MATERIAL CAN ALSO BE USED TO CONTAIN IT.



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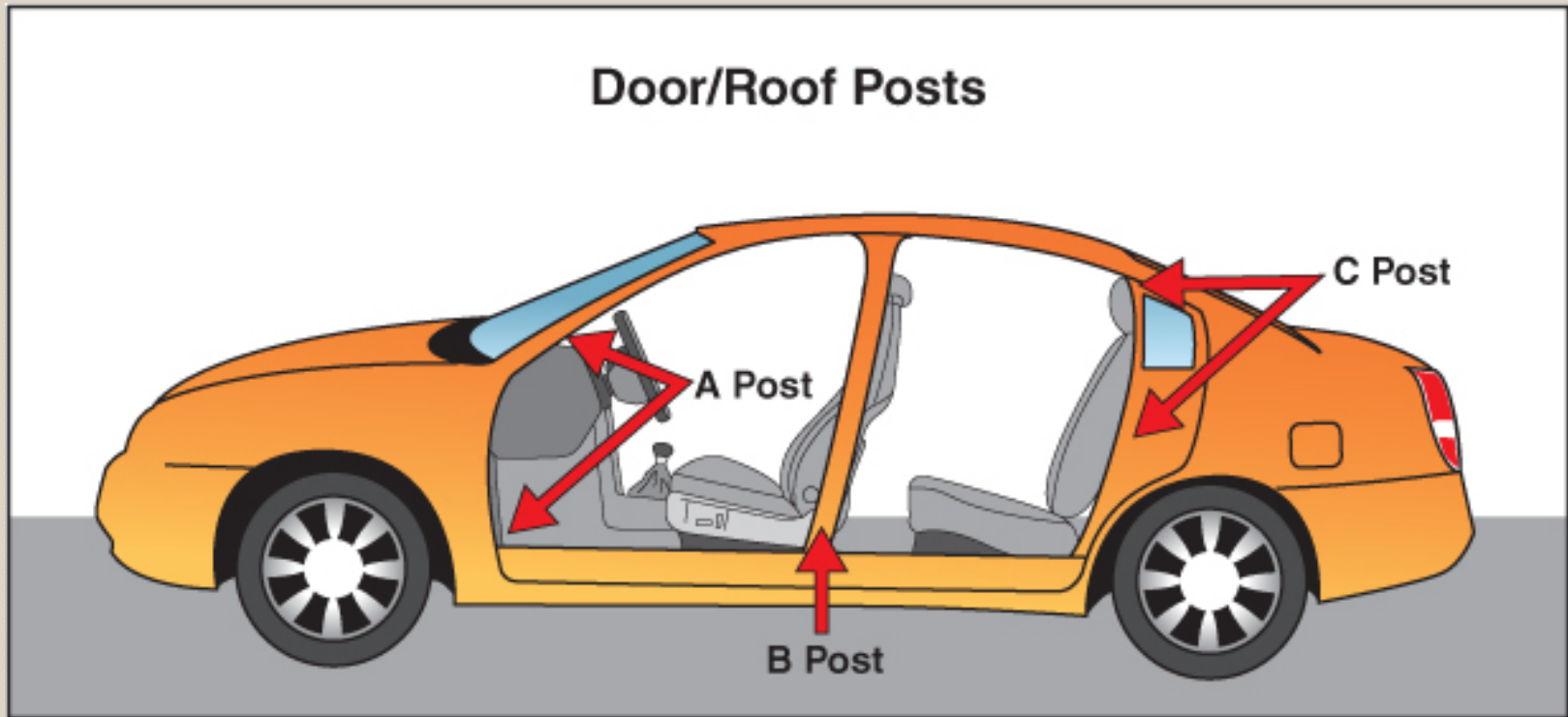
USE A LOCKOUT TOOL, A SPREADER OR  
OTHER TECHNIQUES TO PRY OPEN A DOOR.



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REMOVING THE ROOF ON A UNIBODY VEHICLE CAN SERIOUSLY COMPROMISE STRUCTURAL INTEGRITY.



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CUTTING THROUGH THE ROOF IS AN EFFECTIVE METHOD FOR GAINING ACCESS TO A VEHICLE ON ITS SIDE.



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# VEHICLE COMPONENT CONSTRUCTION, SEAT BELT PRETENSIONERS, AND AIR BAGS PRESENT CHALLENGES FOR CUTTING POSTS.



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# USE THE MOST APPROPRIATE METHOD FOR THE SITUATION WHEN ROLLING OR DISPLACING THE DASHBOARD.



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# SUMMARY

You must also know how to work as part of a team while performing vehicle extrication and assisting technical rescuers.

You must practice the basic duties explained in the chapter until you can accomplish these tasks quickly and effectively.

