

The use of hand tools in vehicle extrication

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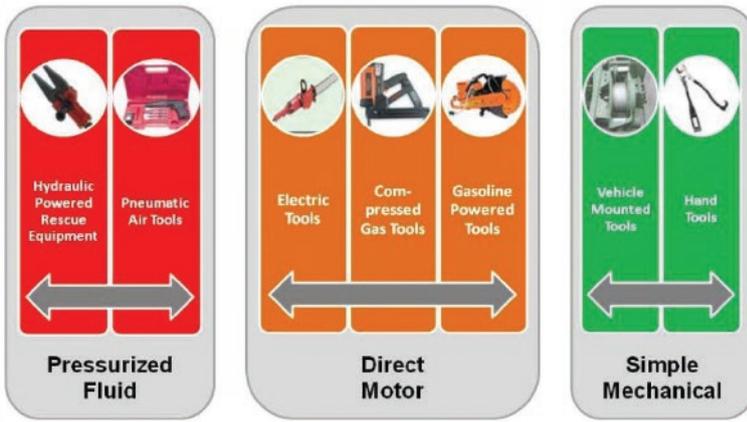
The rescuer must learn the art of extrication using hand tools with heavy emphasis on the first responder jack, reciprocating saws, air chisels and other basic hand tools.

As part of a kitchen table discussion, particularly for departments on a limited budget, responders commonly ask the question, "If you could only have several extrication-related tools, what would they be

and why?" It would be wonderful to have a fully stocked heavy-rescue vehicle at every scene with any tool we could dream of at our disposal but most of the time that's not possible. ▶

Rescue roundup

Tool types and capabilities



► As such, keeping selections simple and mastering those tools allow responders to successfully mitigate most extrication scenes in a timely manner.

Hydraulic tools are prevalent on most vehicle extrication operations. As effective as these tools are, they are not the only tools available. Hand tools have been pushed into the background but still play an important role in vehicle extrication operations.

Sometimes hand tools are more effective than hydraulics. For example, removing the hinge bolts from a passenger car door can be easier and quicker than spreading it with a hydraulic tool. It is also quieter and places less stress on the car; this will aid in patient calmness during the operation.

What we need to consider

Consider EVERY possible application, every type of incident and how each type of tool would impact on how you work on scene. In addition to how the tools perform during a rescue, also consider what different equipment means in terms of testing, training, maintenance and service.

Options for success

it is fantastic that there is such a tremendous range of equipment options available to the modern day rescuer. Having the right tool for the desired application is crucial and, we have said many times, that you must have options to be successful.

Tool types and capabilities

The different tools logically separate into three basic groups according to primary power sources. First are the powered rescue tools that use pressurised fluid including pressurised gas/compressed air, supported by an external pressure pump via hose lines, with the most common liquid fluids being hydraulic or mineral oil.

Second is the wide range of tools that have a self-contained motorised power source such as a gasoline engine, compressed gas or an electric motor. Finally, there are numerous tools that are directly powered by human energy, such as hand tools and tools directly mounted on vehicles, like a winch.

It has been said that we must be able to use hand tools should your hydraulics for some reason give problems on

accident scenes and that must never limit the rescue effort. There is a variety of small hand tools that are very useful during access procedures or where hydraulics is not immediately available. It's also useful in rural areas where there are no rescue vehicles.

There are specific tools needed to quickly and efficiently perform in a vehicle accident situation where a patient is trapped. With this in mind and according to the vehicle extrication techniques manual of Holmatro, patients can be physically trapped due the structure of the vehicle eg dashboard and steering wheel. You need to use equipment to extricate patient.

The second one is when patient is medically trapped; they cannot extricate themselves due to their medical condition such as priority one - red patients. You need to use equipment to extricate the patient and to protect the patient and move him as a unit.

As we all know trauma on our roads is a major killer and vehicle accidents on our roads continue to claim thousands of lives of thousand each year. Just look at the 2016 holiday season death toll statistics. Sometimes a first responder vehicle or team arrives on these scenes only to find they are unable to reach the patients inside the vehicle. Precious minutes of that Golden hour are lost, awaiting the arrival of rescue tools and personnel, especially in rural areas.

If these people are trained to use hand tools and the safety that goes with that, they really can make a difference. We must always remember that it's about a patient and their lives.

Recommendation

We highly recommend hands-on training with ratchet straps, come-along, high lift jacks, bottle jacks, trolley jacks; making a third door out of a two-door vehicle and how to effectively extricate someone from the back seat of a two-door coupe.

Summary

There's no denying that every responder would love to have every tool possible. Having the right tool for the right job certainly makes many tasks easier. However, it also means that responders will have to be proficient with its use.



There is a variety of hand tools that are very useful during extrication where hydraulics is not immediately available

A well-trained responder, keeping selections simple and mastering hand tools allow responders to successfully mitigate most extrication scenes in a timely manner.

The following hand tools can be effective for this purpose and is below:

There's no denying that every responder would love to have every tool possible. Having the right tool for the right job certainly makes many tasks easier. However, it also means that responders will have to be proficient with their use. A well-trained responder who has this set of tools can

adapt to almost any situation and successfully mitigate the entrapment.

Reference

- Essential Extrication Tools Fire Rescue
- Technology and Engineering
- Fire Protection Research Foundation
- Holmatro 

Haligan bar	To gain entry, to create space, to lift
<ul style="list-style-type: none"> • Wedges, • Cribbing • Chocks 	Cribbing is necessary to stabilise the vehicles that require tactics for the benefit of the patient and the safety of responders. Cribbing purpose is to hold the vehicle in position during operations
Bolt cutter	To cut chains ,locks
Other jacks	To lift, to stabilise, to spread in small places
Hi lift jacks	To lift vehicle, to spread doors, Lift roofs and stabilisation, helps with B-post tear at roof to do dash lift and creating space.
Hack saw and 10 spare blades-Lenox 18 teeth	To cut where needed some small body parts specially the new body materials that replace sheet metal
Toolbox with spanners	To disconnect batteries, some vehicles doors, remove seats and any other needs
Window punch	To completing disentanglement tactics, all applicable glass must be managed
Screw drivers 1 to 16 including large flat blade	Can be used to do trimming remove interior trim before cutting or to break piece in vehicles off
Axe	For cutting front laminated glass, to created space.
Utility knife	A sharp blade can be used to expose upholstered areas during operations for example to cut seat cushions. Cutting seat belts, shoes laces etc
Chains	For pulling, lifting, stabilisation
Pliers	Can be used to disconnect the 12-Volt battery system; remove interior trim at all push, pull and cut locations; disassemble vehicle components, etc
Large side cutter	Cut off wires
Hammer	To break something
Mallets	Chocking
Pair of scissors	Cut materials and clothing where necessary
Large monkey wrench	Batteries
Small wrench	Tools such as these can be used to disconnect the 12-Volt battery system at all push, pull and cut locations; disassemble vehicle components
Crow bar	Pry, lift and to create space
Screw jacks	Stabilisation especially if no other stabilisation equipment is available
1 heavy vice grip pliers	To support
1 battery pliers	For battery
1 Roll duct tape	To attach items together especially cutting at gas cylinders of hatch back doors. To cover sharp edges
Pack cable ties	To attach and secure loose pieces as well as gas cylinders at hatch back vehicles doors and many more uses
2 Ratchet straps	To marry to vehicles or stabilised vehicles
Seat belt cutters	Almost any disentanglement tactic requires wires and/ or seatbelts to be severed for the complete removal of components
Lumber/timber	Example: if no struts available lumber can be use as part of stabilisation