

# Hydraulic tools in technical rescue



**Brendon Morris** looks at the ways in which hydraulic tool usage has changed in rescue situations and at the variety of equipment now available

## HYDRAULIC RESCUE TOOL

Technology has come a long way since its early beginnings. Modern hydraulic rescue equipment is designed with high pressure hydraulic technology. These kinds of technologies allow for low volumes which, in turn, results in portable equipment that is of a lighter weight.

While most double-acting hydraulic rescue tools were traditionally designed with motor vehicle extrication rescue in mind, we now also see a wide variety of other uses for this equipment in various technical rescue fields. As manufacturers develop more holistic rescue-orientated products, many areas of technical rescue are beginning to make more use of hydraulic technology. Some of these other fields of technical rescue include: Collapsed structure/urban search and rescue (USAR); indoor rescue operations; and confined space rescue.

If we begin with collapsed structure or USAR-type operations, we see an increasing use of hydraulic tools. Considering the often difficult terrain, the main requirement of this application type is portability. Small portable hand-operated combination (or combi) tools (originally developed with vehicle rescue in mind) or compact, lightweight, battery-operated combi tools that come with easy-to-carry and replaceable spare batteries, have become invaluable pieces of equipment in a USAR equipment cache.

In slightly less difficult circumstances, where the terrain is not so rough, lightweight portable pumps that can power combi tools and more heavy duty equipment – dedicated spreaders, cutters and rams – are a worthwhile alternative. With this type of technology now commonplace, the ability exists to take tools into difficult-to-access locations and use them to cut steel reinforcements in concrete, or to make strategic lifts between rubble. Many of these types of tools were used extensively in the aftermath of the 9/11 attacks, where it was impossible to lug full hydraulic systems onto the top of the enormous rubble pile for this type of work.

With the advent of change-under-flow



*Compact and lightweight, battery-powered extrication tools are much more versatile, owing to their portability*

coupling systems, there is an even greater user-friendliness to these systems. In addition, specialised cutters designed to cut hardened material can now also be used with these systems. This makes the cutting of locks, chains and other types of hardened material much easier.

Another area where hydraulic capacity is extensively used in USAR is for progressive lifting operations, where the lifting operation

**It is essential to remember the standard safety procedures for handling hydraulic rescue equipment**

is achieved through the progressive use of different tools. For instance, consider starting a lift with a hydraulic wedge used to create a lifting bag insertion gap. This type of tool is used in combination with high-pressure pneumatic lifting bags that can take over lifting from the wedge once the insertion

gap has been created. Aluminium lifting jacks that have been adapted from industrial heavy-duty jacks can then take over from the lifting bags. Modern shoring systems with integrated hydraulic struts complete this picture, with their ability to stabilise and, where necessary, lift over larger distances.

## SAFETY

Whether it is used on the top of a rubble pile, in an USAR application, under the water or down in a confined space, it is essential to remember to adopt the standard safety procedures regarding the handling of hydraulic rescue equipment in these types of special situations. We should not forget to use the tools safely, no matter where or by who they are being used. This is fundamental to the effectiveness and successful use of this equipment. CRJ

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