

A cut above the rest



Advances in hydraulic machinery have led to smaller, more compact hand-operated and battery-operated tools – all of which can make a USAR team's life a lot easier

ALL KINDS OF CUTTING OPERATIONS

Are routinely used in Urban Search and Rescue (USAR) work. Whether it's cutting timber during shoring operations, or cutting concrete for breaching through walls and floors, the cutting operations traditionally performed in collapsed structure USAR environments use hydraulic-powered cutting tools.

Hydraulic-power cutting technology has significantly evolved over the past few years. Major innovations in materials and construction systems used by the motor vehicle industry have forced hydraulic rescue tool manufacturers to consider the cutting performance of their tools seriously. In many cases this has led to larger, more powerful, tools. However, at the same time, a more important development in the performance of these cutters has seen the advancement of blade designs, developed for cutting through the types of materials found in modern vehicles.

The cutting requirements surrounding collapsed structure rescue have also benefited from these advances. Smaller, more compact hydraulic cutting tools are required for USAR work. Hydraulic cutting tools are primarily used for cutting concrete reinforcements, or for passing through items such as cars or fridges found within collapsed buildings.

SELF-CONTAINED

Owing to the nature of tunnelling and confined space work commonly seen in USAR, we notice that there is an increased demand for more compact tools. Smaller tools can be easily positioned into narrow openings and allow for precision cutting. There has also been an increased use of self-contained tools. These cutting tools are characterised by not needing to have a cable or hose connecting them to a power pack. This means that they can be used in a variety of situations where it is not possible or practical to have a hose or cable running to the tool.

Generally speaking, there are two types of self-contained tools: hand-operated and battery-operated.

Hand-operated tools have the obvious advantage of not needing any battery changing



management – the tool can be left on the shelf, ready to use without much consideration. In contrast, the obvious advantage of battery tools is that you don't need to physically pump the tools yourself. This is an important consideration, especially when working in hot environments where rescuers can be over-exerted easily. Another more subtle advantage of battery over hand-operated tools, is the fact that they can be used more easily in confined spaces. Battery tools do not need the space required by hand-operated tools for pumping. This means that one can often work more effectively with them when space is limited.

Finally the advent of change-under-flow type couplings (see the article CORE Technology, CRJ 1:4, p39) have also provided for increased rescue-friendly opportunities in USAR-type work. The ability to have one hose extended to the end of a tunnel, with the ability to change between different tools without having to communicate back to the pump, is indeed useful.

This type of technology means rescuers can work more efficiently, changing between tools at will. This technology has made the use of hydraulic cutting, as well as spreading, squeezing and lifting capacity, far more accessible for typical tunnelling operations in USAR.

A compact hydraulic cutter shears through concrete reinforcements. The tool's change-under-flow coupling enables easy tool exchange, without the need to communicate back to the pump



Rescue workers use a battery-operated hydraulic combi-tool in a USAR operation. No connection to an external power source is required

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