

The 30° Revolution: *Inclined* Cutting

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Hydraulic cutters have evolved greatly over the last 40 years, mainly due to the changes in vehicle construction and technology. Cars are stronger and stiffer, and have wider profiles. These changes have been reflected in the way cutters look and feel. What has revolutionized cutter design in the last two years however, is the focus on the user of the tool *in addition* to the construction of the vehicles upon which it will be used.

Vehicle extrication is stressful, both physically and mentally. Any reduction in this burden can only make the process safer, easier and more effective for the patients trapped. Reducing the physical burden can be done in a number of ways. The most obvious, but technically challenging, is the reduction in weight. A lighter tool makes the process easier and reduces physical stress. Closely linked to weight is *ergonomics*, and this is where the greatest change has taken place.

Design focus on user

Extrication does not simply involve using a cutter (or any tool) in a comfortable, waist height position standing perpendicular to the vehicle. And yet, this is how I have witnessed many people assess the weight, balance and ergonomics of a tool. The result of closely studying how a rescuer actually uses a hydraulic tool on a car has been simple but *revolutionary*; incline the blades by 30 degrees. By making the user the focus of the design, rescuers now have something that is not only an evolution in cutting technology but a revolution. Until now the choice of which cutter to purchase has been largely based on theoretical cutting force and blade opening. Now there is another choice for the end user: straight or inclined blades.

So why incline the blades?

Well there are two principle advantages:

- Improved Ergonomics
- Maximized Working Space

Improved ergonomics - when cutting high & low

More often than not, a tool has to be used above waist (or even head) height and conversely there are many applications where the tool has to be used low down. Making relief cuts into the roof or the sill/rocker channel are the most common examples of this. The inclined blades reduce the burden that is associated with such tool use by allowing the control handle to remain in a central position well above waist level (relative to the operator) and still effecting the same cut that a 'straight' cutter would achieve. For the user, this means there is less reaching up high or bending down during extrication.

Maximized working space - enhances patient safety & cutting efficiency

The design and construction of modern vehicles presents stronger, stiffer and wider profiles and this is especially evident in A pillars (low down adjacent to the foot well) and B pillars where it meets the sill/rocker channel. If we take the example of making a relief cut low down on an A pillar (as necessary during the preparations for a dash roll or dash lift) then the inclined blades greatly reduce the effect of any tool movement towards the interior of the vehicle. The same advantage can be gained when cutting low on a B pillar when performing a side removal.

This maximized working space makes the rescue process safer, easier and quicker for both the operator and patient. Safer because the control handle remains at a safe distance from the vehicle and subsequently easier and quicker because the cutter does not have to be repositioned during the cutting process.

In addition, the inclined blades allow more efficient cutting. This is due to the fact that with this tool, the B pillar can be cut by approaching from the side and penetrating it where its profile is narrowest. The 360-degree carrying handle means that the advantage of the inclined blades can be realized in any position and on either side of the vehicle.

Conclusion

Over the years, the development of a rescue tool has been focused predominantly on the vehicles it is designed to be used on. Although this makes perfect sense, a shift of focus has led to a true revolution in cutting technology. The inclined cutter concept massively reduces the physical burden on rescuers, by making the tool more ergonomic and maximizing the limited working space; making the process safer, easier and quicker. In addition, a substantial saving of weight, thanks to intelligent design and construction, has further eased the stress of the rescuer. What seems like a very simple idea - inclining the blades to a 30-degree angle - will have a strong impact on vehicle rescue.