IMPROVING POST-COLLISION RESPONSE AND EMERGENCY CARE IN EUROPE

Case Study: Rescue Sheets and Information for first and second responders (ISO 17840)

ETSC'S REVIVE PROJECT MAPS GOOD PRACTICES IN EMERGENCY MEDICAL SERVICES (EMS) AND FIRE AND RESCUE SERVICES (FRS) ACROSS THE EU28 AND RAISES THE PROFILE OF BOTH EMS AND FRS ON THE NATIONAL AND EUROPEAN POLITICAL AGENDAS.

The REVIVE project aims at improving post-collision response and emergency care provided by EMS and FRS in order to mitigate the consequences of road collisions. It contributes to promoting the need for a coordinated, EU-wide action on tackling serious road traffic injuries.

This case study looks at the concept of Rescue Sheets and Information for first and second responders (ISO 17840).

FACTFILE

- ✓ Rescue Sheets are used to give the fire and rescue services the information they need to efficiently and safely extricate victims from vehicles involved in a collision.
- ✓ They include details on the structure, design and components of a vehicle.
- ✓ This information helps to protect both vehicle occupants, those extricating them and other personnel on the scene.

EXTRICATION FOLLOWING A COLLISION

Following a collision, it may be necessary to extricate people from damaged vehicles. This task is usually carried out by the fire and rescue services which attend the scene of a collision.

Depending on the severity and type of collision, the extrication process can range from simply removing a door, to the complete dismemberment of the vehicle. In the case of the latter, this can take some time. Given the importance of the first hour following a collision in terms of medical care, it is crucial that this extrication time is kept as short as possible.

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The extrication process itself entails a number of risks, including the use of heavy machinery in restrictive spaces, the presence of broken glass and metal and the additional hazards of fuel and live electricity.

Therefore, the extrication process needs to be as efficient, but also as safe as possible, for both those inside the vehicles and those extricating them, as well as others working at the collision site.

The length of the extrication process has always depended on a range of factors such as the type of vehicle involved and the type of collision.[1] The overall safety, or crashworthiness, of vehicles varies widely and can make the difference between a fatal collision and a survivable one.

RESCUE WORKERS NEED UP-TO-DATE INFORMATION

Vehicle safety has continued to improve due to a combination of enhanced vehicle design and better-quality materials. For example, stronger metals are now used to construct the frames of vehicles.

However, an unintended consequence of this has been an increase in the amount of time it can take to extricate people from these vehicles.[2] As the vehicle become tougher and more intricate, the extrication process becomes more complex.

Similarly, as different vehicle types have emerged (i.e. electric/hybrid), the structures and components inside the vehicles have changed, leading to new complications and potential hazards for those carrying out the extrication, and those inside the vehicle.

On top of this, further vehicle modifications, and the sheer amount and variety of vehicles on Europe's roads can make it difficult for emergency services to know the exact format of the vehicle they are working on.

There is no guarantee that fire and rescue services will always be familiar with new vehicles and technologies. They are not always consulted or informed when new technology is introduced and as a result, may not be able to respond appropriately.

Knowledge will also vary across countries and throughout Europe. Approaches to handling road collisions with new features may differ depending on the Member State.

One study found that while first responders were fairly good at identifying a vehicle's manufacturer, they were less likely to correctly identify the model and year of manufacture when on site.[3]

"The extrication process needs to be as efficient, but also as safe, as possible"

[1] Sukegawa, Y., Sekino, M. (June 2011), Analysis of the Rescue Operations of Injured Vehicle Occupants by Fire Fighters, goo.gl/Y1NbLm
[2] Eicher, C., C. (April 2010), The On-Board Rescue Sheet: Helping the rescuers, goo.gl/C9Dqwj
[3] Ibid.

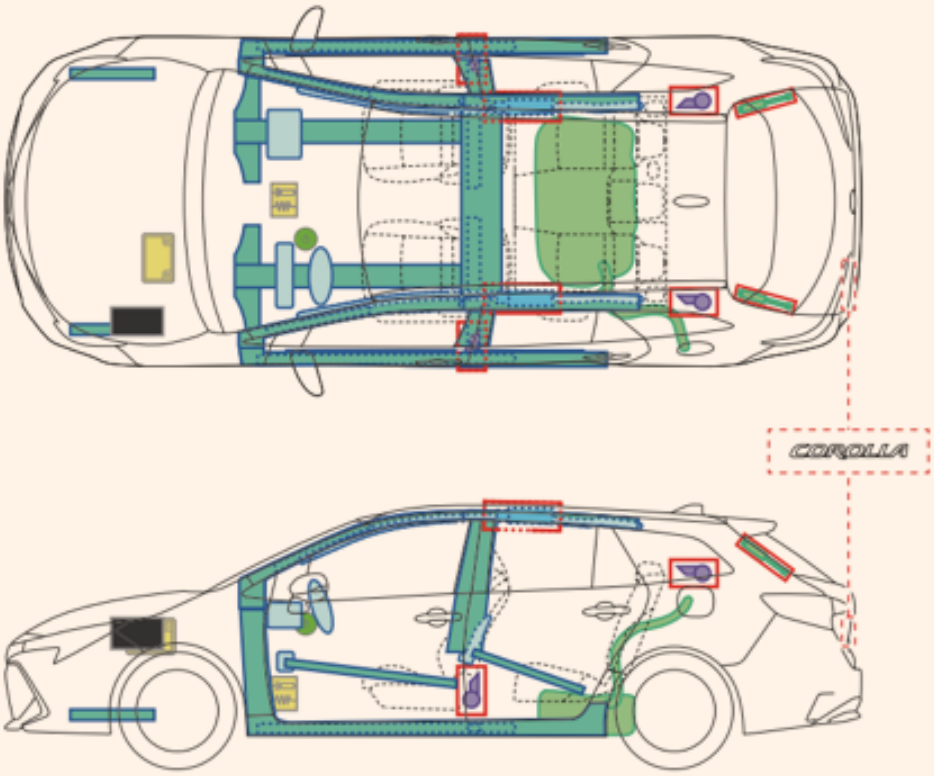
WHAT ARE RESCUE SHEETS?

Rescue sheets are documents which contain information about the structure and design of a vehicle. The fire and rescue services can use them to quickly ascertain how best to carry out an extrication as quickly and as safely as possible.

They typically include information on the location of the fuel tank, batteries, airbags, gas cylinders, control units and other equipment around the vehicle.[4] This helps fire and rescue services to identify suitable cutting points and potential hazards.

Rescue sheets are used primarily by the fire and rescue services which attend the scene of a collision. However, they are also useful for the emergency medical services. Paramedics and emergency doctors involved in responding to a collision need to be familiar with extrication techniques, just as firefighters involved need to understand the effects (both physical and psychological), that their procedures can have on those trapped inside the vehicle.[5]

One test comparison between a team with a rescue sheet, and one without, found that the team with the rescue sheet completed their 'extrication' 30% faster than those without.[6] The information can be displayed pictorially, mapped out onto a plan of the vehicle. [7]



Detail from a rescue sheet identifying vehicle structure and key components[7]

[4] Eicher, C., C. (April 2010), The On-Board Rescue Sheet: Helping the rescuers, goo.gl/C9Dqwj.
[5] Coats, T. J., Davies, G. (2002), Prehospital care for road traffic casualties. BMJ : British Medical Journal. 324(7346), page 1135-8, goo.gl/nCunVP.
[6] ADAC Accident Research, cited in rescuesheet.info http://rescuesheet.info/files/rescue_sheet_FIA_Foundation_EN.pdf
[7] Toyota Corolla TS Kombi Rescue Sheet, https://www.toyota.de/download/cms/dede/RK_COROLLA_210_TS_tcm-17-1581420.pdf

ISO 17840: CREATING UNIFORMITY

The rescue sheets that do exist are usually provided by vehicle manufacturers as the information needs to be different for each brand and each model. Depending on the manufacturer, rescue sheets can be made available online whilst others are placed behind the driver's sun visor of each car. Manufacturers may also provide longer documents (not necessarily to be used at a collision site), with more detailed information about the design of their vehicles and the components used within them.[8]

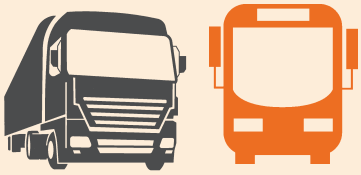
However, there is still no legal requirement for vehicle manufacturers to provide rescue sheets and for a long time there was little guidance on the type of information that should be included.

In 2015, the International Organization for Standardization introduced a new ISO covering information for first and second responders: ISO 17840. The four-part standard sets out how rescue sheets should be designed and what should be included. It covers the most common vehicle types and also includes templates for more detailed vehicle guides and symbols that can be placed on vehicles to identify propulsion types. Although this is a significant step forward, it remains a voluntary standard.

ISO 17840: INFORMATION FOR FIRST AND SECOND RESPONDERS

PART 1
RESCUE SHEET FOR PASSENGER CARS AND LIGHT COMMERCIAL VEHICLES (2015)

The first part focuses on rescue sheets for passenger cars and light commercial vehicles. It defines the content and layout of the rescue sheet, taking into account the fact that it must be easy to use by rescue teams around the world, and can be available in either paper or electronic format.

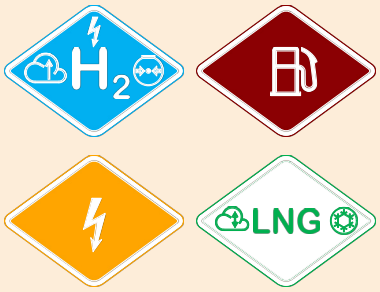


PART 2
RESCUE SHEET FOR BUSES, COACHES AND HEAVY COMMERCIAL VEHICLES (2019)

The second part provides the same information for other, larger vehicle categories such as buses, coaches and heavy commercial vehicles.

PART 3
EMERGENCY RESPONSE GUIDE TEMPLATE (2019)

This part sets out the template for the Emergency Response Guides (ERG). An ERG is a longer document which serves as an extension of the rescue sheets themselves, sharing the same layout and content. It provides more detailed information on a particular vehicle, including in relation to training and development of rescue procedures. The ERG explains the correct action with respect to the vehicle technologies in question and also provides in-depth information related to fire, submersion and leakage of fluids.



PART 4
PROPULSION ENERGY IDENTIFICATION (2018)

This fourth part defines the labels and related colours used for indicating the fuel and/or energy used for the propulsion of a road vehicle, in particular new vehicle technologies and/or power sources such as hybrid systems.

It covers all the vehicle types included in Parts 1 and 2 but does not apply to any fuels being carried as cargo. The usage of these labels includes, but is not limited to, the rescue sheets (ISO 17840-1 and ISO 17840-2) and the emergency response guide (ISO 17840-3).

[8] Toyota Emergency Responder Guide, https://www.toyota-tech.eu/HYBRID/ERG/en/ER27Z0E_1.pdf

ACCESSING THE RESCUE SHEET

Rescue sheets need to be readily accessible in the case of a collision, ideally before the emergency services arrive on the scene. However, despite car manufacturers producing the rescue sheets, it is not always guaranteed that emergency services will be able to access them when they are needed.

In some countries such as Germany and the Netherlands, complete databases with rescue sheets have been developed for the emergency services. In particular, there has been long collaboration in Germany between rescue services and vehicle manufacturers to ensure they are produced in the same way and conform to a standard. However, these systems require regular updating and maintenance and can be expensive to run. Furthermore, not all emergency services are able to pay to have access them.

It is also possible to identify an individual vehicle by using their Vehicle Identification Number (VIN). By connecting this number to the rescue sheet database, emergency services could quickly ascertain the exact type of vehicle they will be dealing with when they arrive at the collision location. However, responders might not know a vehicle's VIN before arrival at the scene.

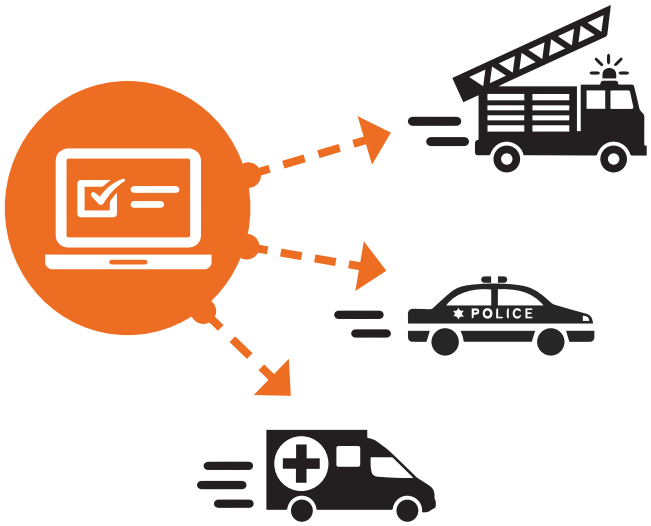
With the introduction of eCall to new cars in 2018 came the ability to transmit the VIN of a vehicle involved in a serious collision, allowing responders to quickly identify the correct rescue sheet. As more cars are fitted with eCall, it will become easier for the emergency services to get advanced knowledge of the vehicle they will be dealing with.

PROMOTING RESCUE INFORMATION AND ISO 17840

The provision and use of rescue sheets is still voluntary throughout the EU. However, their use, alongside the emergency guides and identification symbols set out in ISO 17840 continues to be encouraged by organisations such as the International Association of Fire and Rescue Services (CTIF), the FIA Foundation and the European New Car Assessment Programme (Euro NCAP) and wide range of vehicle manufacturers now provide them.

Euro NCAP now includes 'Tertiary Safety' as part of its assessment and ratings. This is based on a new protocol created in cooperation with CTIF, for assessing and rating new car models that takes rescue, extrication and safety into account.[9]

As part of this protocol Euro NCAP promotes the appropriate availability of ISO 17840 compliant rescue sheets and response guides. Incentives are also given for the implementation of technology that supports rescue activities and helps to prevent any further collisions with oncoming traffic or roadside structures, after the initial impact. They will also work to maintain a readily available database of rescue sheets.



[9] Euro NCAP 2025 Roadmap, p11. https://cdn.euroncap.com/media/30701/euroncap-roadmap-2025-v4-print.pdf

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