
**Road vehicles — End-of-life activation of
on-board pyrotechnic devices —**

**Part 3:
Tool requirements**

*Véhicules routiers — Activation de fin de vie des dispositifs
pyrotechniques embarqués —*

Partie 3: Exigences de l'outil



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
4 Symbols and abbreviated terms	3
5 Conventions	3
6 General requirements and assumptions	4
7 Description of tool use case 1 – deployment test tool (DTT)	4
7.1 General.....	4
7.2 Hardware requirements for deployment test tool (DTT)	5
7.3 General requirements for tests performed with deployment test tool (DTT)	7
8 Description of tool use case 2 – pyrotechnic device deployment tool (PDT)	9
8.1 User interface example of a PDT	9
8.2 Basic design requirements for the PDT	10
8.3 Example sequence for deployment method version 1	11
Bibliography	13

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 26021-3 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 26021 consists of the following parts, under the general title *Road vehicles — End-of-life activation of on-board pyrotechnic devices*:

- *Part 1: General information and use case definitions*
- *Part 2: Communication requirements*
- *Part 3: Tool requirements*
- *Part 4: Additional communication line with bidirectional communication*
- *Part 5: Additional communication line with pulse width modulated signal*

Introduction

Worldwide, nearly all new vehicles are equipped with one or more safety systems. This can include advanced protection systems based on pyrotechnic actuators. All components which contain pyrotechnic substances can be handled in the same way.

Recycling these vehicles demands a new process to ensure that the deactivation of airbags is safe and cost-efficient. Due to the harmonization of the on-board diagnostic (OBD) interface, there is a possibility of using it for on-board deployment, which is based on the same tools and processes.

Representatives of the global automobile industry agreed that automobile manufacturers

- do not support reuse as an appropriate treatment method for pyrotechnic devices,
- believe treatment of pyrotechnic devices is required before shredding, and
- support in-vehicle deployment as the preferred method.

Based on this agreement, the four big associations of automobile manufacturers (ACEA, Alliance, JAMA and KAMA) started to develop a method for the “in-vehicle deployment of pyrotechnic components in cars with the pyrotechnic device deployment tool (PDT)”. The objective is that in the future a dismantler will use only one tool without any accessories to deploy all pyrotechnic devices inside an end-of-life vehicle (ELV) by using an existing interface to the car.

It is necessary to test and to validate the development of the disposal functionality inside the pyrotechnical control unit (PCU).

This document is a preview generated by EVS

Road vehicles — End-of-life activation of on-board pyrotechnic devices —

Part 3: Tool requirements

1 Scope

This part of ISO 26021 specifies the technical requirements to realize tool requirements for end-of-life activation of on-board pyrotechnic devices. It defines a test tool for ISO 26021 disposal functionality as well as the requirement for the final pyrotechnical device deployment tool (PDT). The focus is the definition of the human interface and the interfaces to the vehicle. It also defines general requirements for tests to validate the disposal functionality of the PCU. It specifies two tool use cases.

- Tool use case 1 – deployment test tool (DTT):
 - a development tool used to test and validate the PCU;
 - the target users of this tool are the engineers of the PCU suppliers and the OEMs;
 - the use case defines the human interface, the interfaces to the vehicle (CAN & ACL) and concrete test sequences.
- Tool use case 2 – pyrotechnic device deployment tool (PDT):
 - the final tool that is used to dispose of pyrotechnical devices in vehicles;
 - the target users of this tool are dismantlers;
 - the use case defines the human interface, the interfaces to the vehicle (CAN & ACL), the environmental conditions and the deployment sequences.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14229-1, *Road vehicles — Unified diagnostic services (UDS) — Part 1: Specification and requirements*

ISO 15031-3, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 3: Diagnostic connector and related electrical circuits, specification and use*

ISO 15031-4, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 4: External test equipment*

ISO 26021-1, *Road vehicles — End-of-life activation of on-board pyrotechnic devices — Part 1: General information and use case definitions*

ISO 26021-2:2008, *Road vehicles — End-of-life activation of on-board pyrotechnic devices — Part 2: Communication requirements*

ISO 26021-4:2008, *Road vehicles — End-of-life activation of on-board pyrotechnic devices — Part 4: Additional communication line with bidirectional communication*

ISO 26021-5:2008, *Road vehicles — End-of-life activation of on-board pyrotechnic devices — Part 5: Additional communication line with pulse width modulated signal*

3 Terms and definitions

For the purposes of this document, the definitions given in ISO 14229-1 and the following apply.

3.1

key

data value sent from the external test equipment to the on-board controller in response to the seed for gaining access to the locked services

3.2

pyrotechnic device deployment tool

tool to be plugged into the diagnostic connector in order to communicate via the in-vehicle network with all control units which are able to activate pyrotechnic devices, implementing the communication sequence as defined in ISO 26021-1, ISO 26021-2, ISO 26021-4 and ISO 26021-5, to trigger the PCUs to perform the required deployment sequence

3.3

pyrotechnic control unit

electronic control unit on the vehicle network, which controls the activation of pyrotechnic devices

3.4

safing unit

part of the PCU, for example an electromechanical switch or separate processor, that allows the deployment microprocessor (μ P) to deploy the pyrotechnic devices via the driver stage

3.5

safing

mechanism of which the primary purpose is to prevent an unintended functioning of the PCU processor prior to detection of a crash situation

3.6

ScrappingProgramModule

program module responsible for firing the selected pyrotechnic device loops one by one

3.7

ScrappingProgramModuleLoader

program module loader responsible for converting the scrapping program module to an executable format

3.8

seed

data value sent from the on-board controller to the external test equipment, which is processed by the security algorithm, to produce the key