BRITISH STANDARD

BS EN
13423:2000

Compressed natural gas vehicle operations

The European Standard EN 13423:2000 has the status of a British Standard

ICS 43.060.40

National foreword

This British Standard is the official English language version of EN 13423:2000.

The UK participation in its preparation was entrusted to Technical Committee GSE/40, Gas supply equipment for natural gas vehicles, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 9 and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13423

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English version

Compressed natural gas vehicle operations

Exploitation de véhicules fonctionnant au gaz naturel comprimé

Umgang mit erdgasbetriebenen Fahrzeugen

This European Standard was approved by CEN on 15 September 2000.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 326 "Gas supply for Natural Gas Vehicles (NGV)", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2001, and conflicting national standards shall be withdrawn at the latest by April 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This standard provides guidance on the operation of vehicles that use natural gas as a fuel, and gives recommendations of good practice for users, parking facilities, refuelling stations and workshops appropriate for NGVs, whether or not the gas system is to be worked on.

This standard is mainly directed at:

* Vehicle Park Owner /Operator / User
* NGV Dealer / Owner / User
* Workshop Operators

1 Scope

1.1 This standard gives recommendations for the operation of vehicles fuelled with natural gas and operating at a fuel system pressure not exceeding 20 MPa (200bar) at 15 ^{0}C.

1.2 This standard may be applied to higher system pressures, but due regard should then be given to safety aspects such as, ventilation rates, hazardous area requirements and other aspects associated with those higher pressures.

1.3 It applies to vehicles conforming to ISO/DIS 15501-1 : 2000 and ISO/DIS 15501-2 : 2000 and to refuelling stations conforming to prEN 13638:1999.

1.4 It does not cover operational aspects of vehicles designed to operate on liquefied natural gas (LNG).

2 Normative References

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendments or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

prEN 13638:1999	NGV filling stations
ISO/FDIS 11439:2000	Gas cylinders - High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles
ISO/DIS 15501-1:2000	Road vehicles - Compressed natural gas fuelling systems - Part 1 - Safety requirements
ISO/DIS 15501-2:2000	Road vehicles - Compressed natural gas fuelling systems - Part 2 - Test methods

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

3.1
natural gas vehicle (NGV)

vehicle which operates on natural gas as a fuel

3.2
NGV workshop

workshop that undertakes work on NGV's and is competent to do so and appropriately equipped.

3.3
competent person

person having the ability, appropriate training, knowledge and experience to supervise or carry out work on an NGV in a safe and proper manner.

3.4
revalidator

organisation competent to undertake periodic inspection and testing of compressed natural gas containers

3.5
operative

person working in a NGV workshop

3.6
refuelling station

facility designed to dispense compressed natural gas to an NGV

4 Recommendations for drivers of NGVs

These recommendations are intended to apply to the user of the vehicle, whether he is the owner, operator or dealer responsible for the sale or maintenance of the vehicle

4.1 Parking

Where NGVs are parked in enclosed areas, there should be suitable ventilation to prevent the hazardous accumulation of gas.

4.2 Documents / Information

4.2.1 The owner of the NGV should familiarise himself with documentation provided by the supplier of the vehicle on the safe operation of the NGV which should cover the safety related properties of natural gas.

4.2.2 The owner should keep the operational information up dated with available documentation as supplied. It is recommended that the information be kept in the NGV to ensure it is available when necessary.

4.2.3 The owner should ensure that natural gas notices on the vehicle are kept clear and legible.

4.3 Operation

4.3.1 The owner should ensure that the vehicle is maintained and operated in accordance with the vehicle manufacturer/converter specifications and instruction manual.

4.3.2 The gas containers shall be examined and revalidated at the prescribed intervals as given by the manufacturer/converter in accordance with local regulations.

4.3.3 The owner should ensure that any work on the gas system is only carried out by a competent person.

4.4 Refuelling

4.4.1 Before refuelling, the driver should examine the vehicle and station notices to ensure that the vehicle is compatible with the following Station parameters:-
* Gas quality designation.
* Refuelling nozzle type.
* Filling pressure (at 15^{o}C).

4.4.2 The refuelling equipment should only be used for filling gas containers and gas fuel systems which meet the designed operating temperature and pressure of the refuelling facility.

4.5 Accidents

Following an accident involving damage to the vehicle, the integrity of the gas system should be checked by a competent person.

4.6 Vehicle disposal - scrapping

4.6.1 The owner should ensure that the gas system is vented by a competent person before the vehicle is disposed of.

4.6.2 The owner should inform the vehicle disposal agency if gas containers are still present.

4.7 Vehicle disposal - resale

When the vehicle is sold as an NGV, the relevant NGV documents, in particular the gas container validation certificate, should be transferred with the vehicle. (If the natural gas equipment is removed before transfer this does not apply)

4.8 Special considerations

When the NGV is to be transported by road, rail or ferry, or a tunnel is to be used, the driver should check whether there are any specific restrictions. He should advise those responsible for transporting the NGV of all the fuels on board the vehicle.

5 Workshop operations

5.1 Safety

5.1.1 A written procedure should be provided to cover NGV operations, safety, and emergencies.

5.1.2 Precautions should be taken to prevent the uncontrolled release of gas when work is being undertaken on a vehicle.

5.1.3 Adequate ventilation should be provided to prevent the hazardous accumulation of any released gas. Ventilation at high level should be adequate to prevent the accumulation of gas in roof spaces.

5.2 Competence of operatives

Persons involved with natural gas vehicle systems should be appropriately trained including a basic knowledge of natural gas. It is recommended that training be as follows:

- Operatives working in the vicinity of NGVs. Should be informed of the presence of NGVs and the precautions to be taken.

- Operatives working on NGVs but not on the gas systems. Should be aware of the differences between gas and liquid fuelled vehicles, and be able to recognise the natural gas system components.

- Operatives and their supervisors servicing and maintaining gas systems. Should be competent to repair, maintain and commission NGVs.

- Operatives installing gas systems. Should be competent to install all aspects of the equipment.

5.3 Gas system work

5.3.1 It is essential that where there is a suspected gas leak on a vehicle, no potential source of ignition should exist within 3 metres of the vehicle unless the gas containers on the vehicle have been isolated.

Operatives working on any part of the gas system should ensure that the container(s) are isolated; unless required for that operation; and there is no potential source of ignition within 1 metre of that part of the gas system.

5.3.2 Any gas system components replaced on the vehicle should be to the original specification and ensure compliance with ISO/DIS 15501-1:2000 and ISO/DIS 15501-2:2000

5.3.3 After any work on the gas-carrying components and pipework, it is essential that the system be inspected for gas leaks using an appropriate gas detection method covering the range of operating pressures, ensuring all components are checked.

5.3.4 Depressurisation of the gas containers should be carried out by recovering the gas.

If recovery is not feasible, the venting of the gas containers should be to the open air. Gas may only be vented at high level and away from any potential sources of ignition.

Depressurisation of the gas components and pipework (gas containers isolated) may involve the release of a minimal amount of gas and requires adequate ventilation.

5.4 Non gas system work

Non-gas system work should not affect the integrity of the gas system. Operatives should seek the advice of a competent person before undertaking repair work.

5.5 Container exchange procedures

5.5.1 When a gas container is removed from the vehicle, it may only be replaced with a container designed and manufactured to a standard suitable for NGV use. The replacement container should be installed in a manner that ensures conformity with ISO/DIS 15501-1:2000 and ISO/DIS 15501-2:2000

5.5.2 It is essential that the competent person undertaking the installation updates the appropriate vehicle documents and/or vehicle data plates with the new container details.

5.6 Container disposal

Containers which have been damaged or which have been removed from vehicles being scrapped should be returned to an approved revalidator in accordance with ISO/FDIS 11439:2000

5.7 Special operations

5.7.1 Where hot work (such as baking the vehicle in a paint-curing oven) is involved, the workshop should observe all the relevant procedures and precautions including those of the vehicle supplier/converter.

5.7.2 Where a vehicle has been involved in an accident the gas containers may have been damaged. These should be inspected and tested by a revalidator

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