SVENSK STANDARD
SS-ISO 15500-13:2019

Fastställd/Approved: 2019-10-11
Utgåva/Edition: 2
Språk/Language: engelska/English
ICS: 43.060.40

SWEDISH STANDARDS INSTITUTE

Vägfordon – Komponenter till bränslesystem för komprimerad naturgas – Del 13: Övertrycksanordning (ISO 15500-13:2012, IDT)

Road vehicles – Compressed natural gas (CNG) fuel system components – Part 13: Pressure relief device (ISO 15500-13:2012, IDT)

Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka
Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

Ta del av det färdiga arbetet
Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standard-paket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete
Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.

Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence
As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work
We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception
With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00

Den internationella standarden ISO 15500-13:2012 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 15500-13:2012.

Denna standard ersätter SS-ISO 15500-13, utgåva 1

The International Standard ISO 15500-13:2012 has the status of a Swedish Standard. This document contains the official English version of ISO 15500-13:2012.

This standard supersedes the SS-ISO 15500-13, edition 1

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Motorer i bilar, SIS/TK 220.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

Contents

Page

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 15500-13 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 25, *Vehicles using gaseous fuels*.

This second edition cancels and replaces the first edition (ISO 15500-13:2001), which has been technically revised.

ISO 15500 consists of the following parts, under the general title *Road vehicles — Compressed natural gas (CNG) fuel system components:*

— *Part 1: General requirements and definitions*

— *Part 2: Performance and general test methods*

— *Part 3: Check valve*

— *Part 4: Manual valve*

— *Part 5: Manual cylinder valve*

— *Part 6: Automatic valve*

— *Part 7: Gas injector*

— *Part 8: Pressure indicator*

— *Part 9: Pressure regulator*

— *Part 10: Gas-flow adjuster*

— *Part 11: Gas/air mixer*

— *Part 12: Pressure relief valve (PRV)*

— *Part 13: Pressure relief device (PRD)*

— *Part 14: Excess flow valve*

— *Part 15: Gas-tight housing and ventilation hose*

— *Part 16: Rigid fuel line in stainless steel*

— *Part 17: Flexible fuel line*

— *Part 18: Filter*

— *Part 19: Fittings*

— *Part 20: Rigid fuel line in material other than stainless steel*

Introduction

For the purposes of this part of ISO 15500, all fuel system components in contact with natural gas have been considered suitable for natural gas as defined in ISO 15403. However, it is recognized that miscellaneous components not specifically covered herein can be examined to meet the criteria of this part of ISO 15500 and tested according to the appropriate functional tests.

All references to pressure in this part of ISO 15500 are considered to be gauge pressures unless otherwise specified.

This part of ISO 15500 is based on a service pressure for natural gas used as fuel of 20 MPa [200 bar] settled at 15 °C. Other service pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example, a 25 MPa (250 bar) service pressure system will require pressures to be multiplied by 1,25.

Road vehicles — Compressed natural gas (CNG) fuel system components — Part 13: Pressure relief device (PRD)

1 Scope

This part of ISO 15500 specifies tests and requirements for the pressure relief device (PRD), a compressed natural gas (CNG) fuel system component intended for use on the types of motor vehicles defined in ISO 3833.

This part of ISO 15500 is applicable to vehicles (mono-fuel, bi-fuel or dual-fuel applications) using natural gas in accordance with ISO 15403.

It is not applicable to the following:

a) liquefied natural gas (LNG) fuel system components located upstream of, and including, the vaporizer;

b) fuel containers;

c) stationary gas engines;

d) container-mounting hardware;

e) electronic fuel management;

f) refuelling receptacles.

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 15500-1, *Road vehicles — Compressed natural gas (CNG) fuel system components — Part 1: General requirements and definitions*

ISO 15500-2, *Road vehicles — Compressed natural gas (CNG) fuel system components — Part 2: Performance and general test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15500-1 and the following apply.

3.1
activation pressure
rupture pressure
pressure, as specified by the pressure relief device (PRD) manufacturer, at which a PRD is designed to activate to permit the discharge of the cylinder

3.2
activation temperature
temperature, as specified by the pressure relief device (PRD) manufacturer, at which a PRD is designed to activate to permit the discharge of the cylinder

3.3
fusible material
metal, alloy, or other material capable of being melted where the melting is integral to the function of the pressure relief device (PRD)

3.4
parallel-combination relief device
pressure relief device (PRD) activated by high temperature or pressure acting separately

Note 1 to entry: This device may be integrated into one device that has independent pressure-activated and thermally-activated parts. It may also be formed by two independent devices (one pressure-activated and one thermally-activated) that act independently. Each part of the device shall not interfere with the operation/activation of the other part. The device shall be able to vent the content of the cylinder through any one of the parts of the PRD independently. The device shall be able to vent the content of the cylinder if the pressure- and thermally-activated parts open simultaneously

3.5
pressure-activated relief device
pressure relief device (PRD) activated by pressure

3.6
burst disc
rupture disc
operating part of a pressure-activated pressure relief device (PRD) which, when installed in the device, is designed to burst at a predetermined pressure to permit discharge of the cylinder

3.7
series-combination relief device
pressure relief device (PRD) activated by a combination of high temperature and pressure acting together

3.8
thermally-activated relief device
pressure relief device (PRD) activated by high temperature

3.9
yield temperature
temperature at which the fusible material becomes sufficiently soft to activate the device and to permit discharge of the cylinder

Note 1 to entry: There are several possible scenarios for a vehicle involved in a fire. The PRD is intended to reduce the risk of cylinder rupture under most of these scenarios while keeping a low risk of accidental activation. Experience shows that the best solution depends on the type of cylinder the PRD is mounted on.

Note 2 to entry: The suggested configuration for PRDs is parallel-combination or thermal relief device for every type of cylinder. Series PRDs may only be used in type 1 steel cylinders.

4 Marking

If the PRD is a stand-alone component, marking shall provide sufficient information to allow the following to be traced:

a) the manufacturer's or agent's name, trademark or symbol;

b) the fusible material yield temperature or PRD activation temperature (see Annex A), and the rupture disc pressure rating or activation pressure, as appropriate;

c) the type of relief device (thermally-activated, series-combination, parallel-combination, etc.).

If there is a possibility that the PRD could be installed with the flow in the wrong direction, the PRD shall be marked with an arrow to show the direction of flow.

NOTE This information can be provided by a suitable identification code on at least one part of the component when it consists of more than one part.

5 Construction and assembly

The PRD shall comply with the applicable provisions of ISO 15500-1 and ISO 15500-2, and with the tests specified in Clause 6 of this part of ISO 15500.

6 Tests

6.1 Applicability

The tests required to be carried out are indicated in Table 1.

Table 1 — Applicable tests

Test	Applicable	Test procedure as required by ISO 15500-2	Specific test requirements of this part of ISO 15500
Hydrostatic strength	X	X	X (see 6.2)
Leakage	X	X	X (see 6.3)
Excess torque resistance	X	X	
Bending moment	X[a]	X	X (see 6.4)
Continued operation	X	X	X (see 6.5)
Corrosion resistance	X	X	
Oxygen ageing	X	X	
Electrical over-voltages	X	X	
Non-metallic material immersion	X	X	
Vibration resistance	X	X	
Brass material compatibility	X	X	
Accelerated life	X	X	X (see 6.6)
Benchtop activation	X	X	X (see 6.7)
Thermal cycling	X	X	X (see 6.8)
Condensate-corrosion resistance	X	X	X (see 6.9)
Flow capacity	X	X	X (see 6.10)

[a] This test is to confirm proper design and construction of stand-alone, externally-threaded PRD designs and is not required if the PRD is internally imbedded in the valve body.

6.2 Hydrostatic strength

6.2.1 Housing

The manufacturer shall either physically test the housing or prove its strength by calculation.