AS/NZS 1425:2013

Australian/New Zealand Standard™

LP Gas fuel systems for vehicle engines

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-046, Gas Fuel Systems for Vehicle Engines. It was approved on behalf of the Council of Standards Australia on 10 September 2013 and on behalf of the Council of Standards New Zealand on 26 August 2013.
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The following are represented on Committee ME-046:

Australian Automobile Association
Australian Industrial Truck Association
Automotive Alternative Fuels Registration Board
Department for Transport, Energy and Infrastructure, SA
Department of Natural Resources and Mines, QLD
Department of the Premier and Cabinet, SA
EnergySafety WA
Federal Chamber of Automotive Industries
Gas Association of New Zealand
Gas Energy Australia
International Association for Natural Gas Vehicles
Motor Traders' Association of New South Wales
New Zealand Transport Agency
NSW Fair Trading
Roads and Maritime Services NSW
TAFE NSW
Victoria Police
Victorian Automobile Chamber of Commerce

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Australian/New Zealand Standard™

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-046, Gas Fuel Systems for Vehicle Engines, to supersede AS/NZS 1425:2007.

The objective of this Standard is to provide designers, manufacturers, installers and regulatory authorities with technical requirements for LP Gas fuel systems for vehicle engines so as to provide functional, safe installations.

The first edition of this Standard, published in Australia in 1973, was derived in the main from NFPA 58. A revision in 1979 introduced compartments and sub-compartments to control random leakage, required external filing points, and upgraded the strength of mountings, amongst other things. The first amendment in October 1980 introduced automatic fill limiters, and the second in 1981 virtually eliminated the hydrostatic-relief valve.

The 1982 edition was generally a consolidation, in which editorial presentation was improved and a number of adjustments of detail occurred, the most significant of which was that attempts to make the excess-flow valve more sensitive were abandoned in the face of experience with inadvertent shut-off of fuel to the engine. Amendment 1 of May 1984 corrected and clarified minor detail. Amendment 2 of December 1985, besides further polishing detail, upgraded a number of requirements related to the security of a container and its fittings in a collision.

Amendment 3 of July 1987 permitted safety valves to discharge into a sub-compartment or compartment. This represented a major reversal of the previous policy of insistence on piping such discharges to exit vertically outside the vehicle.

The 1989 edition of the Standard incorporated changes to the requirements for fixed liquid level gauges, sizing of ventilation ducts and their construction materials, heat shielding and the referencing of AS 3509—1988, *LP gas fuel vessels for automotive use*.

The 1999 edition was a Joint Standards Australia/Standards New Zealand edition and the layout and content of sections were restructured to facilitate easy referencing with the grouping of all material on a subject in the one location.

The 2003 edition introduced clauses related to the installation of fuel injection systems, the decommissioning of redundant LP Gas fuel systems, medium pressure hose up to 450 kPa and an Appendix relating to exhaust emission testing. It also incorporated descriptive procedures for providing assurance of compliance with exhaust emission standards. Requirements were incorporated for certified kits to meet exhaust emission standards. Appendix D was introduced to outline requirements for testing vehicles, manufactured to comply with ADR 79/00, ADR 79/01, ADR 80/00 and ADR 80/01.

The 2007 edition of the Standard incorporated changes to requirements for valve materials and testing procedures and simplified emission testing requirements.

The 2013 edition (this edition) introduces clauses related to the protection against container ‘hot bursting’ in a vehicle fire situation. The committee commissioned an extensive testing program which identified containers in certain vehicle installations that required protection against possible ‘hot bursting’. However, the committee also identified that the testing program would need to be ongoing to further test container ‘hot bursting’ when fitted to vehicles with plastic floor pans, utility tray tops and underslung vehicle installations. Any identified opportunities for further improvement of the Standard would become subject to further amendments.

Also included is an appendix which details real fire test procedures for testing container ‘hot bursting’ in specific vehicle installations where the Standard does not address that specific type of installation.

Further minor changes were also made in Appendix D to exhaust emission standards which now include vehicles manufactured to comply with ADR 80/02 and ADR 80/03. Also included are interim arrangements for vehicles manufactured to comply with ADR 79/03. These exhaust emission limits will be further reviewed and be subject to future amendments as required.

Also reviewed for the 2013 edition were the requirements for heavy truck exhaust emissions standards when LP Gas is introduced into the engine combustion cycle. The Committee’s position is, that unless a relevant and accepted in-service test procedure is developed and produces repeatable results, the relevant ADR legislative requirements will apply. The committee is also of the view that an in-service exhaust emission test may be incorporated into future amendments when available and supported by regulators in Australia.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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1.1 SCOPE AND APPLICATION

1.1.1 Scope

This Standard specifies requirements for liquefied petroleum gas (LP Gas) fuel systems for engines mounted on motor vehicles, either for the propulsion of the vehicles or for driving some auxiliary function, for example a mixer or a pump. It provides requirements for the design and construction of component parts and for their installation in vehicles, and for tests, commissioning and periodic inspection.

This Standard does not apply to LP Gas usage such as the gas supply system for appliances in caravans, mobile homes, forklifts, floor sweepers, polishers, tow tractors, elevating work platforms and industrial engines (refer to AS 4983), or for the propulsion of marine craft (refer to AS 4732).

This Standard does not address the requirements that may apply to structural modifications carried out on the vehicle. Prior to the commencement of such work, guidance should be sought from a local Transport Authority, vehicle manufacturer or a professional engineer experienced in automotive disciplines.

1.1.2 Application

This Standard shall be read as defining the minimum requirements of acceptability.

The relevant authority having jurisdiction may determine the extent of application of this Standard.

1.2 REFERENCED DOCUMENTS

A list of the Standards referred to in this Standard is given in Appendix A.

1.3 NEW DESIGNS AND INNOVATIONS

Any alternative materials, equipment, designs, method of assembly or procedures, which do not comply with the specific requirements of this Standard, or are not mentioned in it, but which give equivalent results to those specified, may be acceptable. Under such conditions the regulatory authority can give advice on the procedure for approval.

1.4 DEFINITIONS

For the purpose of this Standard, the following definitions apply.

1.4.1 Approved, approval

Approved by or approval of the regulatory authority.

1.4.2 Authority

The authority having regulatory powers to control the design, manufacture and installation of equipment described in this Standard in the country, State or Territory in which the vehicle is registered.