AS 19880.3:2020

Australian STANDARD®

Gaseous hydrogen — Fuelling stations

Part 3: Valves (ISO 19880-3:2018, MOD)

STANDARDS Australia

AS 19880.3:2020

This Australian Standard® was prepared by ME-093, Hydrogen Technologies. It was approved on behalf of the Council of Standards Australia on 20 May 2020.

This Standard was published on 29 May 2020.

The following are represented on Committee ME-093:

Association of Accredited Certification Bodies
Australasian Fire and Emergency Service Authorities Council
Australia New Zealand Industrial Gas Association
Australian Energy Market Operator
Australian Gas Association
Australian Hydrogen Council
Australian Industry Group
Australian Pipelines and Gas Association
Chemistry Australia
CSIRO
Department of Infrastructure, Regional Development and Cities
Energy Networks Australia
Engineers Australia
Future Fuels Cooperative Research Centre
Gas Appliance Manufacturers Association of Australia
Gas Energy Australia
Gas Technical Regulators Committee
Institute of Chemical Engineers
Institute of Electrical Inspectors
National Energy Resources Australia
University of Adelaide

This Standard was issued in draft form for comment as DR AS 19880.3:2020.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:
www.standards.org.au

ISBN 978 1 76072 859 5

Gaseous hydrogen — Fuelling stations

Part 3: Valves (ISO 19880-3:2018, MOD)

First published as AS 19880.3:2020.

Preface

This Standard was prepared by the Standards Australia Committee ME-093, Hydrogen Technologies.

The objective of this document is to provide the requirements and test methods for the safety performance of high pressure gas valves that are used in gaseous hydrogen stations of up to the H70 designation.

This document covers the following gas valves:

(a) Check valve.

(b) Excess flow valve.

(c) Flow control valve.

(d) Hose breakaway device.

(e) Manual valve.

(f) Pressure safety valve.

(g) Shut-off valve.

This document is an adoption with national modifications, and has been reproduced from ISO 19880-3:2018, *Gaseous hydrogen — Fuelling stations — Part 3: Valves*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to ISO 19880-3:2018for the application of this document in Australia.

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

Contents

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 197, *Hydrogen technologies*.

A list of all parts in the ISO 19880 series can be found on the ISO website.

Introduction

Over the course of several years, international efforts have been initiated for the development of regulations, codes and standards that are required for the introduction of hydrogen energy systems. Hydrogen has unique properties and therefore presents unique safety concerns.

One of the many hydrogen energy applications is the automobile sector for which commercialization begun recently. For the success of this application, however, hydrogen infrastructure for fuelling vehicles is as essential as the hydrogen vehicles themselves. Thus, the development of safety standards for fuelling stations and components is of paramount importance.

This document provides safety performance requirements and test methods for valves to be used in gaseous hydrogen environment. Valves are critical to the safety of hydrogen fuelling stations, because they control the flow of gaseous hydrogen, shut it down in an emergency and, at the same time, may become a potential source of hydrogen release or leakage.

This document will facilitate the development of hydrogen infrastructure that is needed to pave a way for the widespread deployment of hydrogen-fuelled vehicles. Benefits to be gained by the implementation of this document include: the establishment of a certain level of safety performance for valves, a safety-critical component; the streamlining of the design and construction processes for fuelling stations by providing standardized components; and the promotion of public acceptance of hydrogen stations through the transparency of the international standardization processes.

This document is based on the Canadian Standards Association references CSA HGV3.1-2013, ANSI/CSA HGV 4.4-2013, ANSI/CSA HGV 4.6-2013 and ANSI/CSA HGV 4.7-2013.

This document is not intended to exclude any specific technologies that meet the performance requirements herein.

This document is to be applied in conjunction with other International Standards relevant to hydrogen fuelling stations and components.

NOTES

Australian Standard®

Gaseous hydrogen — Fuelling stations

Part 3: Valves (ISO 19880-3:2018, MOD)

1 Scope

This document provides the requirements and test methods for the safety performance of high pressure gas valves that are used in gaseous hydrogen stations of up to the H70 designation.

This document covers the following gas valves:

— check valve;

— excess flow valve;

— flow control valve;

— hose breakaway device;

— manual valve;

— pressure safety valve;

— shut-off valve.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60079-0, *Explosive atmospheres — Part 0: Equipment — General requirements*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
allowable temperature range
minimum and maximum temperatures for which the manufacturer has designed the equipment (or any part to which the term is referred) when handling the specified fluid at the specified pressure

3.2
component pressure rating
maximum allowable pressure at which it is permissible to operate a component as specified by the manufacturer at a specified temperature

Note 1 to entry: Further guidance on dispenser pressure terminology is found in ISO 19880-1.