



Valves for compressed gas cylinders

Part 2: Outlet connections (threaded) and stem (inlet) threads



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 - Australia New Zealand Industrial Gas Association
 - Australian Chamber of Commerce and Industry
 - Engineers Australia
 - Fire Protection Association of Australia
 - Gas Energy Australia
 - Gas Technical Regulators Committee
 - Materials Australia
 - National Association of Testing Authorities Australia
 - SafeWork New South Wales
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-

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Australian Standard®

Valves for compressed gas cylinders

Part 2: Outlet connections (threaded) and stem (inlet) threads

Originated as part of AS B240—1966.
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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders to supersede AS 2473.2—2007, *Valves for compressed gas cylinders, Part 2: Outlet connections (threaded) and stem (inlet) threads*.

This Standard incorporates Amendment No. 1 (October 2020). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

A1 | If a Standard is referenced in legislation, the legislative instrument or regulation specifies when the Standard or Amendment comes into effect. Regulatory Authorities have indicated 6 months, following the date of publication, as an appropriate transition period for this amendment.

The changes in this amendment introduce a Type 27 outlet to replace the Type 21 (POL) outlet for cylinders less than 25 L water capacity as new cylinders are introduced or existing cylinders are retested. The Type 27 outlet includes additional safety features including a right-hand thread, no gas flow possible until a mating fitting is connected and a thermal fuse which shuts off the gas flow in a fire.

This Standard follows from a decision to expand AS 2473—1996 into a suite of Standards for valves for compressed gas cylinders based as much as possible on ISO Standards. AS 2473 comprises three parts as follows:

Part 1: Specifications, type testing, and manufacturing tests and inspections.

Part 2: Outlet connections (threaded) and stem (inlet) threads (this Standard).

Part 3: Outlet connections for medical gases (including pin-indexed yoke connections).

This Part specifies the system of threaded outlet connections for non-medical gases. It also includes specifications for valve stem threads. In the absence of a universally recognized threaded outlet system, this system has been continuously developed in Australia since the original release of AS B240—1966 by selective adoption and modification of specifications from ISO and overseas national standards. It therefore represents a unique solution.

This revision of Part 2 of the Standard continues the long term program of moving towards a system of valve outlet connections with greater differentiation of gas types and maximum filling pressures. The following is a summary of the main changes in this revision:

- (a) Guidance for the integrity and leak tightness of outlet connections, including the possible use of O-ring and soft sealing tips, was revised to be based on general principles applicable to all the gases in the scope of the standard. Detail specification should be made from Australian and ISO material standards and standards applying to assembled equipment. This guidance is now provided in a main clause of the Standard and a Note to Figure 2.6 replacing Appendices B and C in the previous edition.
- (b) The description and references applying to outlet connections Type 50 and Type 60 were clarified to indicate the Australian valves adopted in the absence of a full specification in the originating ISO Standard.
- (c) Minimum body port lengths for the outlets were given or increased for several externally threaded outlet connections to avoid potential interference with the nipple tightening nut.
- (d) Application details for the main legacy Australian stem (inlet) thread in the Standard were clarified to allow its use in valves designed for inherent protection according to AS 2473.1—2006.

(e) General detail error correction.

The program for conversion of relevant cylinders from the existing threaded outlet connections to the pin-indexed yoke connections of AS 2473.3 is now complete, and outlet connections for medical gases are only specified in that part of AS 2473.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

Statements expressed in mandatory terms in notes to Figures are deemed to be requirements of this Standard.

NOTE THAT FULL COMPLIANCE WITH THIS STANDARD MIGHT NOT NECESSARILY FULFIL ALL LEGAL OBLIGATIONS.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	5
1.2 REFERENCED DOCUMENTS.....	5
1.3 DEFINITIONS.....	6
SECTION 2 OUTLET CONNECTIONS (THREADED)	
2.1 VALVE OUTLET CONNECTIONS	7
2.2 GAS PRESSURE AND MATERIAL COMPATIBILITY	7
2.3 OUTLET CONNECTION MARKING	8
SECTION 3 VALVE STEM (INLET) THREADS.....	48
APPENDIX A RECOMMENDED GAUGES FOR CYLINDER NECK AND VALVE STEM THREADS	54

STANDARDS AUSTRALIA

Australian Standard

Valves for compressed gas cylinders

Part 2: Outlet connections (threaded) and stem (inlet) threads

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies cylinder valve outlet connections (threaded). These connections are intended to be used with a nominated range of gases and within defined cylinder filling pressure ranges in order to minimize the possibility of hazardous misconnections and the use of downstream equipment at incorrect pressures.

Dimensional details of the outlet connecting parts are included so that each connection, designated by its type number, is fully defined and complete.

The Standard also specifies some stem (inlet) and cylinder neck threads suitable to connect cylinder valves with cylinders, as well as gauging systems to ensure the accuracy of these threads.

Although the main purpose in standardizing cylinder valve outlet connections is to prevent interconnection with incompatible gases or cylinder pressures, relying only on the valve outlet connection to prevent such interconnections is neither possible nor advisable. The primary means for identifying the contents of compressed gas cylinders is the cylinder markings, including labels.

WARNING: THE CYLINDER VALVE OUTLET CONNECTION IS NOT THE ONLY SAFEGUARD AGAINST ACCIDENTAL MISUSE. THE GAS CYLINDER MARKINGS SHOULD BE CHECKED BEFORE EVERY USE.

NOTES:

- 1 Specifications of the outlet connections for medical gases applications are given in AS 2473.3.
- 2 Specifications for outlet connections for use with SCUBA and SCBA applications are not given at this time. ISO 12209 Parts 1 to 3 specifies one such system.

1.2 REFERENCED DOCUMENTS

AS

1722	Pipe threads of Whitworth form
1722.1	Part 1: Sealing pipe threads (metric units)
1722.2	Part 2: Fastening pipe threads
2030	Gas cylinders
2030.1	Part 1: General requirements
2473	Valves for compressed gas cylinders
2473.1	Part 1: Specifications, type testing, and manufacturing tests and inspections
2473.3	Part 3: Outlet connections for medical gases (including pin-indexed yoke connections)
4484	Gas cylinders for industrial, scientific, medical and refrigerant use—Labelling and colour coding

ISO	
5145	Cylinder valve outlets for gases and gas mixtures—Selection and dimensioning
9539	Gas welding equipment—Materials for equipment used in gas welding, cutting and allied processes
11114	Gas cylinders—Compatibility of cylinder and valve materials with gas contents (series)
11363	Gas cylinders—17E and 25E taper threads for connection of valves to gas cylinders
11363-1	Part 1: Specifications
11363-2	Part 2: Inspection gauges
12209	Gas cylinders—Outlet connections for gas cylinder valves for compressed breathable air
12209-1	Part 1: Yoke type connections
12209-2	Part 2: Threaded connections
12209-3	Part 3: Adaptor for 230 bar valves
BS	
341	Transportable gas container valves
341-1	Specification for industrial valves for working pressures up to and including 300 bar
CGA	
V-1	Standard for compressed gas cylinder valve outlet and inlet connections
ANSI/ASME	
B1.20.1	Pipe threads, general purpose, inch

1.3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 2030.1 apply.

SECTION 2 OUTLET CONNECTIONS (THREADED)

2.1 VALVE OUTLET CONNECTIONS

The outlet connections specified in this Standard are listed in Table 2.1, and assigned to nominated gases in Table 2.2. The standard valve outlet connections are for use within the pressure range up to 20 000 kPa, based on the pressure conditions of the gas as specified in AS 2030.1. The pressure range applying to the valve outlet connection is intended to protect downstream equipment like pressure regulators from over-pressurized conditions (see Clause 2.2).

In addition, outlet connections for certain compressed gases are specified for use at settled pressures in the range between 20 001 and 31 500 kPa, and between 31 501 and 42 500 kPa.

For oxygen, additionally an outlet connection is specified for use between 20 001 and 25 000 kPa, and one for use at settled pressures between 25 001 and 31 500 kPa.

For liquefied petroleum gases the standard and limited outlet connections (Types 21, 26 and 41), apply up to 3450 kPa. For non-toxic, non-flammable refrigerant gases, the standard connection (Type 34) applies up to 5600 kPa.

Where the gas is not listed in Table 2.2, or is a gas mixture, the valve outlet connection shall be that given in Table 2.3 for the appropriate classification of gas or gas mixture, and for a pressure range up to 20 000 kPa.

A1 | The dimensions of the connections shall be according to Figures 2.1 to 2.29, ensuring the functional interchangeability of all the components of the connection. The leak tightness and integrity of each connection shall conform to Clause 2.2.

NOTES:

- 1 Following long standing practice from the first editions of AS 2473, the external thread in outlet connections is modified by reduction of major, minor and pitch diameters by 0.10 to 0.15 mm to provide for ease of assembly in service. However, the tolerance band for the major diameter should be decreased to maintain thread engagement at minimum material conditions. This practice is similar to that in CGA V-1.
- 2 The outlet connections in this Standard are known by their Type number (e.g. Type 10). This designation or its abbreviation (e.g. T10) should be used where outlet connection identification is required on product, for example on connection nuts (see Clause 2.3) or on cylinder valves (see AS 2473.1).
- 3 Thread designations in Tables 2.1 to 2.3 are from various origins, and care is necessary in their interpretation. In the designation 0.825-14 NGO-LH-EXT, the value 0.825 refers to the major diameter and 14, to the threads per inch. In the designation G5/8 RH INT, G5/8 is a nominal size and comes from AS 1722.2 and RH (or LH) and EXT or (INT) have been added in this Standard to indicate whether right or left hand threads are specified and whether the thread in the valve is internal or external.

2.2 GAS PRESSURE AND MATERIAL COMPATIBILITY

Only regulators, manifolds and ancillary equipment with inlet connections compatible with the valve outlet connections in this standard, rated for the appropriate pressure, compatibility with the relevant gas, and intended application shall be connected to or installed downstream of the valve outlet connection.

Each outlet connection provides for screw threads that do not seal, but only hold a nipple against a seat in the valve outlet or against a washer.

For the purpose of this standard, nipples modified to incorporate O-rings or soft tips, and handwheels to permit hand tight connections, shall be considered in compliance if the non-interchangeability specified in the Scope and all other requirements in this Standard are maintained.

The leak tightness requirements for the inlet connections of assembled equipment intended to be connected to the valve outlets of this Standard shall be those applying to such equipment and its intended application.

All materials used in outlet connections shall be suitable for use with the chemical and physical properties (including pressure) of the intended gases, and of a strength and durability under repeated use, to ensure an adequate service life of the connection. Material specifications are not covered by this Standard.

Guidelines for the selection of compatible materials are given in the ISO 11114 series and ISO 9539. Standards applying to assembled equipment intended to be connected to the valve outlets of this Standard may provide additional requirements.

NOTE: Examples of relevant standards for assembled equipment are AS 4267 and AS 4621 for pressure regulators, AS 4289 and AS 5034 for reticulation manifold systems, AS 1869 for LP Gas hose assemblies. Cylinder valves are covered in AS 2473.1.

2.3 OUTLET CONNECTION MARKING

Outlet connections shall be marked as follows:

- (a) The nut shall carry the outlet connection type number (e.g. Type 10) or its abbreviation (e.g. T10).
- (b) Left-hand threads shall be identified by notches at the junctions of the flats of the nut.

TABLE 2.1
LISTING OF OUTLET CONNECTIONS

Connection Type No.	Description	Maximum pressure	
		kPa	bar
10	G5/8 RH INT	20 000	200
11	G5/8 RH INT (extended nut)	25 000	250
16	1.103-14NGO RH EXT	31 500	315
17	W21.80-14 RH EXT (square nose nipple)	20 000	200
20	G5/8 LH INT	20 000	200
21	0.885-14 NGO LH INT	3450	34.5
22	1.045-14 NGO LH INT	31 500	315
23	1.125-14 NGO LH INT	42 500	425
24	G1/4 LH EXT	20 000	200
25	W21.80-14 LH EXT (spherical nipple)	20 000	200
26	0.903-14 NGO-LH-EXT	3450	34.5
27	1.312-5 ACME-2G-RH-EXT and 0.885-14 UNS-LH-INT (MOD)	3450	34.5
30	0.860-14 BSW RH EXT	20 000	200
31	G5/8 RH EXT	20 000	200
32	G1/2 RH EXT	20 000	200
33	G1/4 RH EXT	20 000	200
34	G3/4 RH EXT	5 600	56
40	G5/8 LH EXT	20 000	200
41	G3/8 LH EXT (bullnose nipple)	3450	34.5
42	G1/2 LH EXT	20 000	200
43	0.825-14 NGO LH EXT	20 000	200
44	G3/8 RH EXT	20 000	200
45	G3/8 LH EXT (square nose nipple)	20 000	200
50	W24x2 RH	20 000	200
51	1.045-14 NGO RH INT	31 500	315
52	1.030-14 NGO LH EXT	42 500	425
60	W27x2 RH	20 000	200
61	0.825-14 NGO RH EXT	31 500	315
62	1.125-14 NGO RH INT	42 500	425
N/S	1/4-18 NPT INT	20 000	200

A1

TABLE 2.2
LISTING OF GASES AND THEIR ASSIGNED OUTLET CONNECTIONS

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Acetylene, dissolved	1001	N/A	20	G5/8 LH INT	25	W21.80-14-LH (Note 2)	Std
Air	1002	Up to 20 000 kPa (200 bar)	60	W27 x2 RH	33	G1/4 RH EXT	Std
		Up to 31 500 kPa (315 bar)	61	0.825-14 NGO RH EXT			
		Up to 42 500 kPa (425 bar)	62	1.125-14 NGO RH INT			
Ammonia (anhydrous) (R-717)	1005		32	G1/2 RH EXT			Std
Argon	1006	Up to 20 000 kPa (200 bar)	10	G5/8 RH INT			Std
		Up to 31 500 kPa (315 bar)	51	1.045-14 NGO RH INT			
		Up to 42 500 kPa (425 bar)	52	1.030-14 NGO LH EXT			
Arsine	2188			No connection assigned			
Boron trichloride	1741			No connection assigned			
Boron trifluoride	1008		43	0.825-14 NGO LH EXT			9.5 mm
Bromine chloride	2901			No connection assigned			
Bromine pentafluoride	1745			No connection assigned			
Bromine trifluoride	1746			No connection assigned			
Bromochlorodi-fluoromethane/Nitrogen		Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Bromotrifluoro-ethylene	2419			No connection assigned			
Bromotrifluoro-methane (R-13B1)	1009	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Butadiene	1010	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Butane	1011	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Butylene	1012	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Carbon dioxide	1013		30	0.860 14 BSW RH EXT			Std
Carbon monoxide	1016		20	G5/8 LH INT			Std
Carbonyl fluoride	2417			No connection assigned			
Carbonyl sulphide	2204			No connection assigned			
Chlorine	1017	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			9.5 mm
Chlorine pentafluoride	2548			No connection assigned			
Chlorine trifluoride	1749			No connection assigned			
Chlorodifluoro-bromomethane (R-12B1)	1974	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Chloro-difluoroethane (R-142b)	2517	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Chlorodifluoro-methane (R-22)	1018	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Chloropenta-fluoroethane (R-115)	1020	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Chloro-tetrafluoro-ethane (R-124)	1021	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Chloro-trifluoroethane (R-133a)	1983	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Chlorotrifluoroethylene - see Trifluoro-chloroethylene							
Chlorotrifluoro-methane (R-13)	1022	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
CNG (for automotive use, see also NGV)			—	1/4-18 NPT (Note 4)			Std
Coal gas	1023		20	G5/8 LH INT			Std
Cyanogen	1026		40	G5/8 LH EXT			9.5 mm
Cyanogen chloride, stabilized	1589		43	0.825-14 NGO LH EXT			9.5 mm
Cyclobutane	2601			No connection assigned			Std
Deuterium	1957			G5/8 LH INT			9.5 mm
Diborane	1911			0.825-14 NGO LH EXT			9.5 mm
Dibromodifluoromethane (R-12B2)		Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std
Dichlorodifluoro-methane (R-12)	1028	Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std
Dichlorodifluoromethane and difluoroethane ~74% azeotropic (R-500)	2602	Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std
Dichlorodifluoromethane/dichlorofluoromethane		Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std
Dichlorofluoro-methane (R-21)	1029	Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Dichlorosilane	2189			No connection assigned			
Dichlorotetrafluoroethane (R-114)	1958	Up to 5 600 kPa (56 bar)		G3/4 RH EXT			Std
Difluoroethane (R-152a)	1030	Up to 5 600 kPa (56 bar)		G3/4 RH EXT			9.5 mm
Difluoroethylene (1,1) (R-1132a)	1959			G5/8 LH EXT			Std
Difluoromethane (R-32)	3252			No connection assigned			Std
Dimethyl ether	1033			G5/8 LH INT			Std
Dimethylamine, anhydrous	1032			G5/8 LH EXT			Std
Dimethyl-propane	2044			No connection assigned			Std
Ethane (R-170)	1035			G5/8 LH INT			Std
Ethyl chloride	1037		40	G5/8 LH EXT			Std
Ethyl fluoride (R-161)	2453			No connection assigned			
Ethyl methyl ether	1039		20	G5/8 LH INT			Std
Ethylacetylene, stabilized	2452			No connection assigned			
Ethylamine	1036		42	G1/2 LH EXT			Std
Ethylene	1962		20	G5/8 LH INT			Std
Ethylene oxide	1040		40	G5/8 LH EXT			Std
Ethylene oxide <12.5% and dichlorodifluoro-methane	3070			No connection assigned			9.5 mm
Ethylene oxide/dichlorodifluoromethane			20	G1/2 LH EXT			9.5 mm

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Fluorine	1045		43	No connection assigned (Note 5)			9.5 mm
Fluorodichloromethane see dichlorofluoromethane			34	No connection assigned			Std
Germane	2192		34	No connection assigned			Std
Helium	1046	Up to 20 000 kPa (200 bar)	34	G5/8 RH INT			Std
		Up to 31 500 kPa (315 bar)	34	1.045-14 NGO RH INT			
		Up to 42 500 kPa (425 bar)	34	1.030-14 NGO LH EXT			
Heptafluoro-propane (R-227)	3296			No connection assigned			
Hexafluoro-acetone	2420		34	No connection assigned			
Hexafluoroethane (R-116)	2193		34	No connection assigned			
Hexafluoro-propylene (R-1216)	1858		40	G1/2 RH EXT			Std
Hydrogen	1049	Up to 20 000 kPa (200 bar)		G5/8 LH INT			Std
		Up to 31 500 kPa (315 bar)	20	1.045-14 NGO LH INT			
		Up to 42 500 kPa (425 bar)	40	1.125-14 NGO LH INT			
Hydrogen bromide anhydrous	1048			0.825-14 NGO LH EXT			Std
Hydrogen chloride, anhydrous	1050		20	0.825-14 NGO LH EXT			Std
Hydrogen cyanide (stabilized)	1051		40	G5/8 LH EXT			9.5 mm
Hydrogen fluoride, anhydrous	1052		31	G5/8 RH EXT			9.5 mm
Hydrogen iodide, anhydrous	2197			No connection assigned			
Hydrogen selenide, anhydrous	2202			No connection assigned			
Hydrogen sulphide	1053		43	0.825-14 NGO LH EXT			9.5 mm

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Iodine pentafluoride	2495			No connection assigned			Std
Isobutane	1969	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Isobutylene	1055	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Krypton	1056	Up to 20 000 kPa (200 bar)	50	W24x2 RH			Std
		Up to 31 500 kPa (315 bar)	51	1.045-14 NGO RH INT			
		Up to 42 500 kPa (425 bar)	52	1.030-14 NGO LH EXT			
LPG (see Note 6)	1075	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
			26	0.903-14 NGO LH EXT (liquid withdrawal only)			
			27	1.312-5 ACME-2G-RH-EXT 0.885-14 NGO LH INT (Notes 9 and 10)			

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Methane	1971	Up to 20 000 kPa (200 bar)	20	G5/8 LH INT			Std
		Up to 31 500 kPa (315 bar)	22	1.045-14 NGO LH INT			
		Up to 42 500 kPa (425 bar)	23	1.125-14 NGO LH INT			
Methyl bromide	1062		31	G5/8 RH EXT			9.5 mm
Methyl chloride (R-40)	1063		40	G5/8 LH EXT			9.5 mm
Methyl fluoride (R-41)	2454			No connection assigned			
Methyl mercaptan	1064		43	0.825-14 NGO LH EXT			9.5 mm
Methyl nitrite	2455			No connection assigned			Std
Methylacetylene and propadiene stabilized	1060			No connection assigned			Std
Methylamine, anhydrous	1061		42	G1/2 LH EXT			9.5 mm
Methylchloro-silane	2534			No connection assigned			Std
Natural gas with high methane	1971			No connection assigned			Std
Neon	1065	Up to 20 000 kPa (200 bar)	50	W24x2 RH			Std
		Up to 31 500 kPa (315 bar)	51	1.045-14 NGO RH INT			
		Up to 42 500 kPa (425 bar)	52	1.030-14 NGO LH EXT			
NGV (natural gas for vehicles)			—	1/4-18 NPT (Note 4)			Std
Nitric oxide	1660		—	No connection assigned (Note 7)			9.5 mm
Nitrogen	1066	Up to 20 000 kPa (200 bar)	50	W24x2 RH			Std
		Up to 31 500 kPa (315 bar)	51	1.045-14 NGO RH INT			
		Up to 42 500 kPa (425 bar)	52	1.030-14 NGO LH EXT			

(continued)

TABLE 2.2 (continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Nitrogen dioxide (dinitrogen tetroxide)	1067		32	G1/2 RH EXT			9.5 mm
Nitrogen peroxide (see nitrogen dioxide)				No connection assigned			
Nitrogen trifluoride	2451			No connection assigned			
Nitrogen trioxide	2421			No connection assigned			
Nitrosyl chloride	1069		32	G1/2 RH EXT			9.5 mm
Nitrous oxide	1070		30	0.860 14 BSW RH EXT			Std
Octafluoro-2-butene (R-1318)	2422			No connection assigned			Std
Octafluorocyclo-butane (RC138)	1976	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Octafluoro-propane (R-218)	2424			No connection assigned			Std
Oxygen	1072	Up to 20 000 kPa (200 bar)	10	G5/8 RH INT (extended nut)	17	W21.80-14 RH (Note 2)	Std
		Up to 25 000 kPa (250 bar)	11	G5/8 RH INT (extended nut)			
		Up to 31 500 kPa (315 bar)	16	1.103-14 NGO RH EXT			
Oxygen difluoride	2190			No connection assigned			
Pentafluoro-ethane (R-125)	3220	Up to 5600 kPa (56 bar)	34	G3/4 RH EXT			Std
Perchloryl fluoride	3083			No connection assigned			
Perfluoro (ethyl vinyl ether)	3154			No connection assigned			
Perfluoro (methyl vinyl ether)	3153			No connection assigned			
Phosgene	1076		31	G5/8 RH EXT			9.5 mm
Phosphine	2199			No connection assigned			Std

(continued)

Gas			Valve outlet connection				
Name	UN number	Connection pressure range, 20 000 kPa max unless otherwise specified (see Clause 2.1)	Standard (Note 8)		Alternative		Spindle (Note 1)
			Type No.	Thread (nominal)	Type No.	Thread (nominal)	
Phosphorous pentafluoride	2198			No connection assigned			Std
Propadiene, stabilized	2200			No connection assigned			Std
Propane, commercial (see LPG)							
Propane	1978	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
			27	1.312-5 ACME-2G-RH-EXT 0.885-14 NGO LH INT (Notes 9 and 10)			
Propylene	1077	Up to 3 450 kPa (34.5 bar)	20	G5/8 LH INT	41	G3/8 LH EXT (bullnose nipple) (Note 3)	Std
			21	0.885-14 NGO LH INT (Note 9)			
Refrigerant gas (R-401c)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-402A)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-404a)	3338	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-406A)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-407a)	3338	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-407b)	3339	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-407c)	3340	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-408A)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-409A)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-410A)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std
Refrigerant gas (R-507)	3163	Up to 5 600 kPa (56 bar)	34	G3/4 RH EXT			Std

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