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Valve outlets for gas cylinders — List of provisions which are either standardized or in use

Sorties de robinets des bouteilles à gaz — Inventaire des dispositions normalisées ou utilisées

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.

The main task of ISO technical committees is to prepare International Standards. In exceptional circumstances a technical committee may propose the publication of a technical report of one of the following types :

— type 1, when the necessary support within the technical committee cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development requiring wider exposure;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical reports are accepted for publication directly by ISO Council. Technical reports types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical reports type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 7470 was prepared by Technical Committee ISO/TC 58, *Gas cylinders.*

The reasons which led to the decision to publish this document in the form of a technical report type 3 are explained in the Introduction.

This second edition cancels and replaces the first edition (ISO/TR 7470 : 1981), of which it constitutes a technical revision. The following alterations have been made: the outlets used in Finland and Japan have been inserted and those used in the Netherlands and Italy have been completed; some outlet threads used in Australia have been given new designations; the names of some gases have been altered to conform with the nomenclature of the International Union of Pure and Applied Chemistry (IUPAC) (the former names are given in parentheses).

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Descriptors: gas cylinders, gas valves, screw threads, dimension.

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0 Introduction

This document, which is for information purposes, was drawn up by Sub-committee 2, *Cylinder fittings,* of Technical Committee ISO/TC 58, *Gas cylinders,* and approved by the latter. In view of the usefulness of the information which it contains, the ISO Council has decided to publish it as a reference document.

1 Scope and field of application

This Technical Report lists the gas cylinder valve outlets in use within the countries of ISO member bodies. Its purpose is to prevent further proliferation.

It is recommended that before allocating a valve outlet to a particular gas service, member bodies should consult tables 2 to 5 and select, if possible, that outlet associated with the gas which has been adopted by the greatest number of countries.

This Technical Report only provides details of the thread type and size. For a more complete description of a particular valve outlet, reference should be made to the corresponding national standard.

2 Abbreviations

The abbreviations used in the fourth column of table 1 designate the national standards produced by the following ISO member bodies:

National standard designation:	ISO member body
ANSI:	American National Standards Institute (ANSI)
AS:	Standards Association of Australia (SAA)
BS:	British Standards Institution (BSI)
CS:	Standards Council of Canada (SCC)
DIN:	Deutscher Institut für Normung (DIN)
NEN:	Nederlandse Normalisatie-Instituut (NNI)
NF:	Association française de normalisation (AFNOR)
SFS:	Suomen Standardisoimisliitto (SFS)
SMS:	Standardiseringskommissionen i Sverige (SIS)
UNI:	Ente Nazionale Italiano di Unificazione (UNI)

3 Codes

The following codes[1] have been used in drawing up tables 2 to 5.

AT:	Austria
AU:	Australia
CA:	Canada
CN:	China
CS:	Czechoslovakia
DE:	Germany, Federal Republic of
DK:	Denmark
FI:	Finland
FR:	France
GB:	United Kingdom
HU:	Hungary
IE:	Ireland
IL:	Israel
IN:	India
IT:	Italy
JP:	Japan

1) Taken from ISO 3166, *Codes for the representation of names of countries.*

NL: Netherlands
NO: Norway
NZ: New Zealand
PL: Poland
SE: Sweden
SU: Union of Soviet Socialist Republics
US: United States
ZA: South Africa, Republic of

Table 1 — Nominal dimensions, designations, and references in national standards

The following table indicates, where possible, one of the national standards in which the valve outlets are defined.

Nominal diameter	Pitch	Designation [1]	National standards
mm	mm		
9,73	0,94	1/8''-27NGT-RH-I	ANSI B57.1-1977, CS B96-1977
13,16	1,337	GB 1/4/8 RH-E	AS 2473-1981
13,16	1,338	1/4'' BSP.F 19-RH-E	BS 341
16,66	1,337	GB 3/8/10 LH-E	AS 2473-1981
16,66	1,338	3/8'' BSP.F 19-LH-E	DIN 477
16,66	1,338	3/8'' BSP.F 19-RH-E	BS 341, SMS 2238, DIN 477, SFS 2296
16,66	1,338	3/8'' BSP.F 19-LH-E	BS 341
16,66	1,411	3/8''-18NGT-RH-I	ANSI B57.1-1977, CS B96-1977
17,46	1,27	11/16''-BSW20-RH-E	BS 341
18	1,5	SI-RH-E	
18,92	1,814	.745''-14NGO-LH-E	ANSI B57.1-1977, CS B96-1977
19	1,5	M19 × 1,5 LH-E	DIN 477, NEN 3268
20	1,814	20 mm-W 14-LH-E	UNI 4 405
20,96	1,814	.825''-14NGO-LH-E	ANSI B57.1-1977, CS B96-1977
20,96	1,814	.825''-14NGO-RH-E	ANSI B57.1-1977, CS B96-1977
20,96	1,814	GB 1/2/15 RH-E GB 1/2/15 LH-E	AS 2473-1981
20,96	1,814	1/2'' BSP.F 14-LH-E	BS 341
20,96	1,814	1/2'' BSP.F 14-RH-E	BS 341
21,7	1,814	SI-LH-E	NF E 29-650
21,7	1,814	SI-RH-E	NF E 29-650
21,8	1,814	0,860''-BSW 14-LH-E	DIN 477, SMS 2238, NEN 3268, SFS 2293
21,8	1,814	0,860''-BSW 14-RH-I	UNI 4 409, AS 2473-1981
21,8	1,814	0.860-BSW 14-RH-E	BS 341, UNI 4 406, SMS 2238, NEN 3268, DIN 477, SFS 2294
21,8	1,814	SI-RH-I	
22	1,814	22W14-RH-E 22W14-LH-E	JIS B 8246
22,48	1,814	0.885''-14NGO-LH-I	ANSI B57.1-1977, CS B96-1977, AS 2473-1981 SMS 2238
22,5	1,814	22,5W14-LH-I	JIS B 8246
22,91	1,814	WITH-LH-I	NF E 29-650
22,91	1,814	SI-RH-I	NF E 29-650
22,91	1,814	G 5/8/16 RH-I GB 5/8/16 RH-E G 5/8/16 LH-I GB 5/8/16 LH-E	AS 2473-1981
22,92	1,814	5/8'' BSP.F 14-LH-E	BS 341
22,92	1,814	5/8'' BSP.F 14-RH-E	BS 341, SMS 2238, DIN 477, SFS 2297
22,92	1,814	5/8'' BSP.F 14-LH-I	BS 341
22,92	1,814	5/8'' BSP.F 14-RH-I	BS 341, SMS 2238, NEN 3268, SFS 2321
22,94	1,814	.903''-14NGO-RH-E	ANSI B57.1-1977, CS B96-1977, DIN 477
23	1,814	23W14-RH-I	JIS B 8246
24	2	WITH-RH-E [2]	NF E 29-650
24,32	1,814	24,32 mm-W 14-RH-E	DIN 477, SMS 2238, NEN 3268, SFS 2295
24,51	1,814	.965''-14NGO-RH-I	ANSI B57.1-1977, CS B96-1977, AS 2473-1981
24,51	1,814	.965''-14NGO-LH-I	ANSI B57.1-1977, CS B96-1977
24,51	1,814	0,965''-W 14-RH-I	UNI 4412

Table 1 — Nominal dimensions, designations, and references in national standards (*concluded*)

Nominal diameter mm	Pitch mm	Designation 1)	National standards
25,4	3,175	1"-BSW 8-LH-E	DIN 477, SMS 2238, NEN 3268, SFS 2298
25,4	3,175	1"-BSW 8-RH-E	DIN 477, UNI 4 408, NF E 29-650, NEN 3268, SFS 2299
26	1,5	SI-RH-I	NF E 29-650
26	1,814	{ 26W14-RH-E 26W14-LH-E	JIS B 8246
26,16	1,814	1.030"-14NGO-LH-E	{ ANSI B57.1-1977, CB B96-1977 SMS 2238
26,16	1,814	1.030"-14NGO-RH-E	ANSI B57.1-1977, CS B96-1977
26,44	1,814	GB 3/4/20 RH-E	
26,44	1,814	3/4" BSP.F 14-RH-E	AS 2473-1981, NEN 3268, DIN 477
26,44	1,814	3/4" BSP.F 14-RH-I	BS 341, SMS 2238, DIN 477, SFS 2322
26,6		RH-E	
27	2	WITH-RH-E 2)	NF E 29-650
28,57	1,814	1.125"-14 UNS-2A-RH-E	ANSI B57.1-1977, CS B96-1977
28,57	1,814	1.125"-14 UNS-2A-LH-E	ANSI B57.1-1977, CS B96-1977
28,806	1,814	RH-E	NEN 3268
30	1,75	SI-RH-E	NF E 29-650
30	1,814	30 mm-W 14-LH-E	UNI 4407
30	1,814	30 mm-W 14-RH-E	UNI 4410
30	2	WITH-RH-E 2)	NF E 29-650
Clamp			NF E 29-650, UNI 4411, UNI 5959-1967

1) The abbreviations used in the designation of screw threads differ from one national standard to another. A uniform system of abbreviations as shown below has been adopted in this document for ease of reading. The abbreviations are not necessarily identical to those in the relevant national standards.

LH = left hand
RH = right hand
E = external
I = internal

2) Double-recess type, in accordance with ISO 5145, *Cylinder valve outlets for gases and gas mixture — Selection and dimensioning.* (At present at the stage of draft.)

Table 2 — Valve outlets

Gas		Screw thread																	
		External																	
		Left hand													Right hand				
Name (former name)	Chemical formula	16,66 1,338 3/8BSP F19	20 1,814 20W 14	20,96 1,814 0,825 14NGO	21,8 1,814 0,860 BSW14	21,8* 1,814 SI	22 1,814 22 W14	22,91 1,814 GB 5/8/16	22,92 1,814 5/8BSP F14	25,4 3,175 1BSW 8	26 1,814 26 W14	26,16 1,814 1,030 14NGO	27 2 WITH	28,57 1,814 1,125 14UNS	30 1,814 30W 14	13,16 1,337 GB 1/4/8	13,16 1,338 1/4BSP F19	16,66 1,338 3/8BSP F19	18 1,50 SI
Dinitrogen trioxide (nitrogen trioxide)	N_2O_3												FR	CA, US					
Fluorine	F_2											CA, FR, SE, US, ZA	FR						
Nitrogen monoxide (nitric oxide)	NO												FR	CA, US, ZA				AT	
Nitrogen dioxide	NO_2 or N_2O_4												FR	CA, US					
Chlorine trifluoride	ClF_3										JP	CA, US	FR						
Hydrogen cyanide	HCN		IT	AU				AU		AT, DE, FI, NL, SE				CA, US					
Chloromethane (methyl chloride)	CH_3Cl		IT		AT, CN, DE, FI, HU, NO, PL, SE	FR		AU	AU, GB, IN, ZA	NL									
Cyanogene	$(CN)_2$				CN	FR		AU		NL				CA, US					
Diborane	B_2H_6			AU, CA, US		FR	JP			NL									
Coal gas	—		IT		AT, CN, DK, NL, PL, SE	FR	JP	AU		NL									
Methanethiol (methyl mercaptan)	CH_3SH		IT	AU	AT, CS, DE, HU, PL	FR	JP			NL				CA, US					
Carbon monoxide	CO		IT	CA, US	CS, DK, HU, NO, PL	FR	JP			AT, CN, DE, FI, NL, SE									
Ethylene oxide	C_2H_4O		IT	NZ	AT, CS, DE, FI, HU, PL, SE	FR		AU	GB, IN	NL									
Carbonyl sulfide	COS			CA, US, ZA		FR	JP			NL									
Hydrogen sulfide	H_2S	GB	IT	AU, CA, US, ZA	PL	FR				AT, CN, DE, FI, NL, SE									
Phosphine	PH_3			CA, US, ZA		FR				NL									
Hydrogen selenide	SeH_2			CA, US		FR				NL									
Ammonia	NH_3														IT				
Bromomethane (methyl bromide)	CH_3Br			CA, US													GB		
Hydrogen bromide	HBr			AU, CA, US, ZA									FR						
Hydrogen fluoride	HF			CA, US									FR						
Hydrogen iodide	HI												FR						
Nitrogen trifluoride	NF_3												FR						
Ozone	O_3												FR						
Boron tribromide	BBr_3												FR						
Chlorine	Cl_2																		
Phosgene	$COCl_2$												FR	CA, US		AU			
Cyanogene chloride	CICN													CA, US					
Hydrogen chloride	HCl			AU, CA, US, ZA									FR						

for toxic gases

Screw thread																			
External														Internal					
Right hand														Left hand			Right hand		
20,96 1,814	20,96 1,814	21,8 1,814	21,8* 1,814	22 1,814	22,91 1,814	22,92 1,814	25,4 3,175	26 1,814	26 3	26,16 1,814	26,44 1,814	26,44 1,814	28,57 1,814	22,48 1,814	22,91 1,814	22,92 1,814	9,73 0,940	16,66 1,411	21,8* 1,814	26 1,50
GB 1/2/15	1/2BSP F14	0,860 BSW14	SI	22 W14	GB 5/8/16	5/8BSP F14	1BSW 8	26 W14	SI	1,030 14NGO	GB 3/4/20	3/4BSP F14	1,125 14UNS	0,885 14NGO	G 5/8/16	5/8BSP F14	1/8 27NGT	3/8 18NGT	SI	SI
							CN, NL	JP												FR
	SU	DE					AT, CS, DE, FI, HU, NL, PL	JP												
		AU		JP			NL													FR
AU		IT, DE					AT, CN, DE, FI, HU, NL, SE	JP						ZA						FR
						GB, IN	NL					CN								
								JP						CA, US						
							CS, PL	JP												
							CS, PL													
																AU, GB, IN, ZA				
						NO														
															AU	GB, IN				
												CN		CA, US		NZ, ZA				
AU	GB, IN, SU, ZA	AT, CN, DE, DK, FI, HL, HU, IL, PL, SE	FR	JP			NL					CS	CA, US					CA, US, ZA		
AU	IT, NL, PL	DE, FR				AT, DE, HU	CN, DE, FI, NL, SE	JP												
		CN, DE					AT, DE, FI, HU, IT, NL, SE	JP												
		DE			AU	IN	AT, CN, DE, FI, HU, IT, NL, SE	JP												
	SU	DE				GB, IN	AT, CS, DE, DK, FI, FR, HU, IT, NL, NO, PL, SE	JP	FR	CA, US	AU	CN								
	SU	CN, DE, IT				AU, GB, IN	AT, CS, DE, DK, FI, HU, NL, NO, PL, SE	JP												
		CN, DE					AT, DE, FI, FR, HU, SE	JP												
		DE				IN	AT, CN, CS, DE, DK, FI, HU, IT, NL, PL, SE	JP												

Table 2 — Valve outlets

Gas		Screw thread																	
		External																	
		Left hand														Right hand			
Name (former name)	Chemical formula	16,66 1,338	20 1,814	20,96 1,814	21,8 1,814	21,8* 1,814	22 1,814	22,91 1,814	22,92 1,814	25,4 3,175	26 1,814	26,16 1,814	27 2	28,57 1,814	30 1,814	13,16 1,337	13,16 1,338	16,66 1,338	18 1,50
		3/8BSP F19	20W 14	0,825 14NGO	0,860 BSW14	SI	22 W14	GB 5/8/16	5/8BSP F14	1BSW 8	26 W14	1,030 14NGO	WITH	1,125 14UNS	30W 14	GB 1/4/8	1/4BSP F19	3/8BSP F19	SI
Nitrosyl chloride	NOCl			CA, US, ZA															
Sulfur dioxide	SO_2												FR						
Hexafluoro-propene	$F_3C-CF=CF_2$																		
Silicon tetrafluoride	SiF_4			CA, US			JP												
Boron trifluoride (boron fluoride)	BF_3			CA, US			JP						FR						

* 21,8 (21,7)

for toxic gases (*concluded*)

Screw thread																				
External															Internal					
Right hand															Left hand			Right hand		
20,96 1,814	20,96 1,814	21,8 1,814	21,8* 1,814	22 1,814	22,91 1,814	22,92 1,814	25,4 3,175	26 1,814	26 3	26,16 1,814	26,44 1,814	26,44 1,814	28,57 1,814	22,48 1,814	22,91 1,814	22,92 1,814	9,73 0,940	16,66 1,411	21,8* 1,814	26 1,50
GB 1/2/15	1/2BSP F14	0,860 BSW14	SI	22 W14	GB 5/8/16	5/8BSP F14	1BSW 8	26 W14	SI	1,030 14NGO	GB 3/4/20	3/4BSP F14	1,125 14UNS	0,885 14NGO	G 5/8/16	5/8BSP F14	1/8 27NGT	3/8 18NGT	SI	SI
AU							CS, HU, NL, NO, PL	JP												
AU	GB, IN, SU	CN, HU, IT				AT, CS, DE, DK, FI, NO, PL, SE	NL	JP		CA, US								ZA		
AU							CS, NL, PL	JP		CA, US		CN								
					AU		NL													
							AT, CN, CS, DE, FI, HU, IT, NL, NO, PL, SE													