INTERNATIONAL STANDARD

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AMENDMENT 1
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Series 1 freight containers — Interface connections for tank containers

AMENDMENT 1: Sections 3 and 4

Conteneurs de la série 1 — Interfaces des équipements pour conteneurs-citernes

AMENDEMENT 1: Sections 3 et 4

Reference number
ISO 9669 : 1990/Amd.1 : 1992 (E)

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.

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.

Amendment 1 to International Standard ISO 9669 : 1990 was prepared by Technical Committee ISO/TC 104, *Freight containers,* Sub-Committee SC 2, *Specific purpose containers*.

Annex A of this amendment is for information only.

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Series 1 freight containers — Interface connections for tank containers

AMENDMENT 1: Sections 3 and 4

After section 2, add the following sections and annex.

Section 3: Man-hole openings and man-hole lids for tank containers of type codes 70 to 76 and 85 to 88

3.1 General

This section specifies certain dimensions and characteristics of man-hole openings and man-hole lids, primarily to ensure that tank containers are equipped with openings of sufficient size to allow complete internal inspection and cleaning, and to provide ease of filling and easy passage of persons in an emergency. In addition, the dimensions and characteristics specified also simplify emergency maintenance and parts replacement by providing compatibility between manufacturing sources.

The dimensions and characteristics specified are applicable to tank containers complying with the requirements of ISO 1496-3, intended to contain liquids or pressurized dry bulk, with a specified test pressure not exceeding 600 kPa[1], i.e. tank containers of type codes 70 to 76 and 85 to 88.

Except where otherwise stated, the requirements of this International Standard are minima. Tank containers to be used for the carriage of dangerous goods may be subject to additional international and national requirements as applied by competent authorities.

3.2 Dimensions and characteristics

3.2.1 General

The dimensions specified in this section relate particularly to the man-hole access opening into the tank. However, the use of the dimensions specified for hinge pins and sealing ring cross-sections should be considered when designing other tank openings closed by lids, for example cleaning apertures above the cargo level.

Care should be taken to ensure stability of the man-hole lid in the open position.

3.2.2 Pressure requirements

Man-hole openings and man-hole lids shall be constructed to a recognized pressure vessel code.

3.2.3 Opening diameter

The internal diameter of the man-hole opening shall be 500 mm ± 1 mm (A on figure 2). Maximum out-of-roundness shall not exceed 5 mm.

1) 100 kPa = 1 bar

3.2.4 Man-hole lid sealing ring

3.2.4.1 The man-hole lid sealing ring shall be positively retained in the man-hole lid, not in the neckring (see figure 2).

3.2.4.2 The nominal internal diameter of the man-hole lid sealing ring shall be 490 mm (B on figure 2).

3.2.4.3 The nominal cross-section of the man-hole lid sealing ring shall be 16 mm wide by 10 mm deep or 16 mm square.

3.2.4.4 The man-hole lid hinge shall be slotted to allow the use of 16 mm wide by 10 mm deep or 16 mm square sealing rings.

3.2.5 Swing bolts

3.2.5.1 There shall be six swing bolts, equally spaced around the man-hole circumference (see figure 2).

3.2.5.2 Swing bolt hinge pins shall be located on a 285 mm radius circle at their centre (C on figure 2).

3.2.5.3 Swing bolt hinge pins shall be 19 mm in diameter (D on figure 2).

3.2.5.4 Swing bolt threads (see figure 2, dimension E) are not specified in this International Standard. However, to ensure compatibility, it is recommended that the swing bolt thread should be ISO general purpose metric screw thread M20 (see ISO 261[1]).

3.2.6 Slots for swing bolts

Slots for swing bolts shall have a nominal width of 22 mm (F on figure 2), with provision to prevent the swing bolt from slipping out of the slot as it is tightened.

3.3 Marking

Man-hole lids shall be permanently marked with their design maximum allowable working pressure and test pressure.

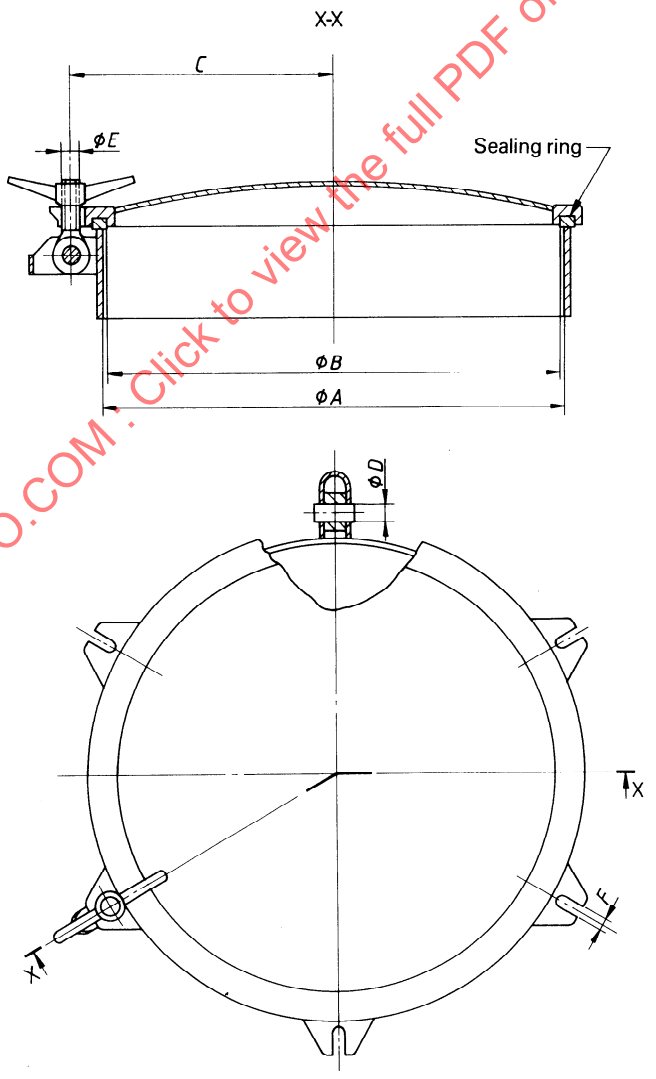


Figure 2 — Man-hole and man-hole lid dimensions

Section 4: Inlet and outlet connection screw threads for tank containers of type codes 70 to 76 and 85 to 88

4.1 General

This section specifies a range of screw threads for threaded interface connections for tank containers complying with ISO 1496-3, of type codes 70 to 76 and 85 to 88, i.e. tank containers for liquids and pressurized dry bulk with a specified test pressure not exceeding 600 kPa.

The threaded interface connections for which the screw threads are applicable are the final connections used to interface with external loading/discharge equipment, external heating and cooling sources, and air and inert gas pressure supplies.

The screw threads specified conform to ISO 228-1[2] and, for the external threads, to tolerance class A.

4.2 Symbols

The following symbols are used in 4.4, figure 3 and table 2.

A Tighter class of tolerance of external pipe threads where pressure-tight joints are not made on the threads

d Basic major diameter of the external thread

d_1 $= d - 1{,}280\,654\,P$; basic minor diameter of the external thread

d_2 $= d - 0{,}640\,327\,P$; basic pitch diameter of the external thread

D $= d$; basic major diameter of the internal thread

D_1 $= D - 1{,}280\,654\,P = d_1$; basic minor diameter of the internal thread

D_2 $= D - 0{,}640\,327\,P = d_2$; basic pitch diameter of the internal thread

G Pipe thread where pressure-tight joints are not made on the threads

h Height of the thread profile with rounded crests and roots

H Height of the triangle of the thread profile

P Pitch

r Radius of rounded crests and roots

T Truncated form of thread

T_d Tolerance on the major diameter of the external thread

T_{d2} Tolerance on the pitch diameter of the external thread

T_{D1} Tolerance on the minor diameter of the internal thread

T_{D2} Tolerance on the pitch diameter of the internal thread

4.3 Dimensions

The dimensions of the screw threads shall be as given in table 2 and as illustrated in figure 3.

The crests of external threads shall be truncated to the limits of tolerance on the major diameter as given in table 2.

4.4 Designation

For the purposes of this International Standard a simplified designation is used rather than the full designation in accordance with ISO 228-1.

EXAMPLE

For the purposes of this International Standard, the designation

G 1/2 T

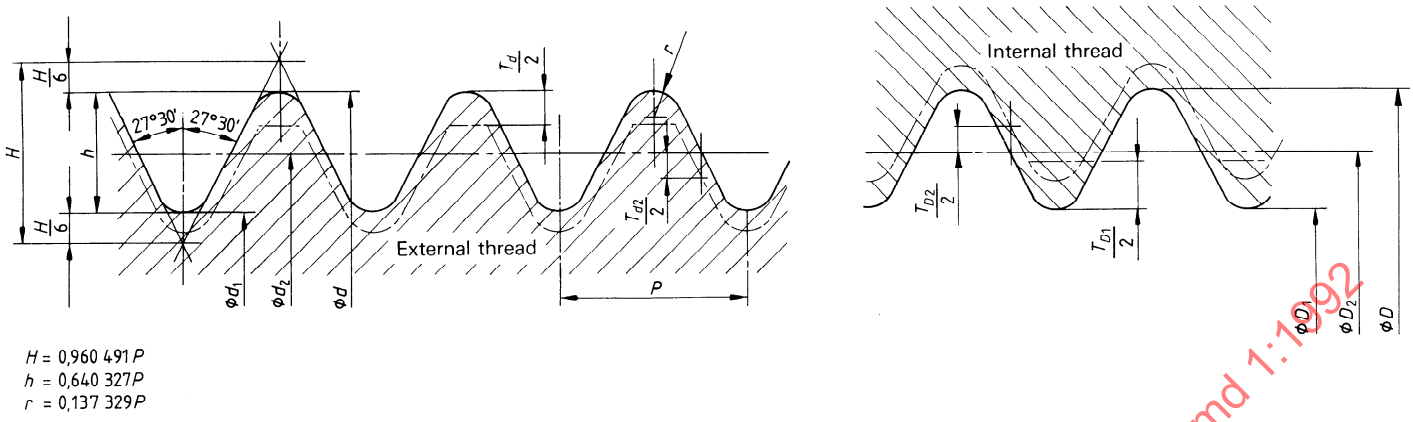
indicates a 1/2 thread in accordance with ISO 228-1, with the external thread truncated.

The full designation in accordance with ISO 228-1 is

Internal thread: **Pipe thread ISO 228-1 - G 1/2**

External thread: **Pipe thread ISO 228-1 - G 1/2 A**

NOTE — ISO 228-1 contains no symbol to indicate a truncated thread.



$H = 0{,}960\,491\,P$
$h = 0{,}640\,327\,P$
$r = 0{,}137\,329\,P$

Figure 3 — Thread profile and tolerance zones

Table 2 — Thread dimensions

Designation of thread	Number of threads in 25,4 mm (1 in)	Pitch P mm (in)	Basic diameters: Major $d = D$ mm (in)	Basic diameters: Pitch $d_2 = D_2$ mm (in)	Basic diameters: Minor $d_1 = D_1$ mm (in)	Permissible tolerances on pitch diameter: Internal thread T_{D2} Lower deviation	Permissible tolerances on pitch diameter: Internal thread T_{D2} Upper deviation mm (in)	Permissible tolerances on pitch diameter: External thread T_{d2} Lower deviation mm (in)	Permissible tolerances on pitch diameter: External thread T_{d2} Upper deviation	Tolerance on the minor diameter: Internal thread T_{D1} Lower deviation	Tolerance on the minor diameter: Internal thread T_{D1} Upper deviation mm (in)	Tolerance on the major diameter: External thread T_d Lower deviation mm (in)	Tolerance on the major diameter: External thread T_d Upper deviation
G 1/4 T	19	1,337 (0,052 6)	13,157 (0,578)	12,301 (0,484 3)	11,445 (0,450 6)	0	+ 0,125 (0,004 9)	− 0,125 (0,004 9)	0	0	+ 0,445 (0,017 5)	− 0,25 (0,01)	0
G 3/8 T			16,662 (0,656)	15,806 (0,622 3)	14,95 (0,588 6)								
G 1/2 T	14	1,814 (0,071 4)	20,955 (0,825)	19,793 (0,779 3)	18,631 (0,733 6)	0	+ 0,142 (0,005 6)	− 0,142 (0,005 6)	0	0	+ 0,541 (0,021 3)	− 0,284 (0,011)	0
G 3/4 T			26,441 (1,041)	25,279 (0,995 3)	24,117 (0,949 6)								
G 1 T	11	2,309 (0,909)	33,249 (1,309)	31,77 (1,250 8)	30,291 (1,192 6)	0	+ 0,18 (0,007 1)	− 0,18 (0,007 1)	0	0	+ 0,64 (0,025 2)	− 0,36 (0,014)	0
G 1 1/2 T			47,803 (1,882)	46,324 (1,823 8)	44,845 (1,765 6)								
G 2 T			59,614 (2,347)	58,135 (2,288 8)	56,656 (2,230 6)								
G 2 1/2 T			75,184 (2,96)	73,705 (2,901 8)	72,226 (2,843 6)	0	+ 0,217 (0,008 5)	− 0,217 (0,008 5)	0	0	+ 0,64 (0,025 2)	0,434 (0,017)	0
G 3 T			87,884 (3,46)	86,405 (3,401 8)	84,926 (3,343 6)								
G 4 T			113,03 (4,45)	111,551 (4,391 8)	110,072 (4,333 6)								
G 5 T			138,43 (5,45)	136,951 (5,301 8)	135,472 (5,333 6)								
G 6 T			163,83 (6,45)	162,351 (6,391 8)	160,872 (6,333 6)								

NOTE — Dimensions are given in imperial measurements for information only.