



CD/K/046-4:2009
ICS 23.040.40

EAST AFRICAN STANDARD

Copper and copper alloys — Plumbing fittings — Part 4: Fittings combining other end connections with capillary or compression ends

EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

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Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

BS EN 1254-4:1998, *Copper and copper alloys — Plumbing fittings — Fittings combining other end connections with capillary or compression ends*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

Draft for comments only — Not to be cited as East African Standard

BRITISH STANDARD

**BS EN
1254-4:1998**

*Incorporating
Amendment No. 1*

Copper and copper alloys — Plumbing fittings —

**Part 4: Fittings combining other end
connections with capillary or
compression ends**

The European Standard EN 1254-4:1998 has the status of a
British Standard

ICS 23.040.40

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National foreword

This British Standard is the English language version of EN 1254-4:1998 including Corrigendum August 1999.

The UK participation in its preparation was entrusted by Technical Committee NFE/34, Copper and copper alloys, to Subcommittee NFE/34/3, Copper and copper alloy fittings for tube and pipe, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 10, an inside back cover and a back cover.

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This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on 15 June 1998

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Amendments issued since publication

Amd. No.	Date	Comments
10750	November 1999	Correction to Figure 5

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1254-4

January 1998

ICS 23.040.40

incorporating Corrigendum August 1999

Descriptors: Copper tubes, plastics tubes, copper, copper alloys, pipe fittings, screwed connections, flanged unions, joining, dimensions, dimensional tolerances

English version

Copper and copper alloys — Plumbing fittings — Part 4: Fittings combining other end connections with capillary or compression ends

Cuivre et alliages de cuivre — Raccords —
Partie 4: Raccords combinant des assemblages par
capillarité ou par compression à d'autres types
d'assemblage

Kupfer und Kupferlegierungen — Fittings —
Teil 4: Fittings zum Verbinden anderer
Ausführungen von Rohrenden mit
Kapillarlötverbindungen oder Klemmverbindungen

This European Standard was approved by CEN on 24 November 1997.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Ref. No. EN 1254-4:1998 E

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 133, Copper and copper alloys, the Secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 8, Copper and copper alloy fittings, to prepare the following standard:

EN 1254-4, *Copper and copper alloys — Plumbing fittings — Part 4: Fittings combining other end connections with capillary or compression ends.*

This standard is one of five parts for copper and copper alloy fittings for joining copper tubes or plastics pipes. The other four parts of the standard are:

EN 1254-1, *Copper and copper alloys — Plumbing fittings — Part 1: Fittings with ends for capillary soldering or capillary brazing to copper tubes.*

EN 1254-2, *Copper and copper alloys — Plumbing fittings — Part 2: Fittings with compression ends for use with copper tubes.*

EN 1254-3, *Copper and copper alloys — Plumbing fittings — Part 3: Fittings with compression ends for use with plastics pipes.*

EN 1254-5, *Copper and copper alloys — Plumbing fittings — Part 5: Fittings with short ends for capillary brazing to copper tubes.*

It is recommended that fittings manufactured to this standard are certified as conforming to the requirements of this standard, based on third party testing and continuing surveillance, which should be coupled with an assessment of a supplier's quality system against the appropriate standard, i.e. EN ISO 9001 or EN ISO 9002.

In respect of potential adverse effects on the quality of water intended for human consumption caused by the product covered by this standard:

- 1) this standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

The attention of the user of this standard is drawn to the fact that national or local regulations or practices might restrict the choice of dimensions and threads in the application of products conforming to this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies materials, assembly dimensions and tolerances and test requirements for fittings of copper and copper alloys with or without plating or coating. Maximum permissible temperatures and pressures are also established. This part of EN 1254 specifies connection end dimensions for fittings combining capillary and/or compression ends with other types of connecting ends.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1254-1, *Copper and copper alloys — Plumbing fittings — Part 1: Fittings with ends for capillary soldering or capillary brazing to copper tubes.*

EN 1254-2, *Copper and copper alloys — Plumbing fittings — Part 2: Fittings with compression ends for use with copper tubes.*

EN 1254-3, *Copper and copper alloys — Plumbing fittings — Part 3: Fittings with compression ends for use with plastics pipes.*

EN 1254-5, *Copper and copper alloys — Plumbing fittings — Part 5: Fittings with short ends for capillary brazing to copper tubes.*

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 7-2, *Pipe threads where pressure-tight joints are made on the threads — Part 2: Verification by means of limit gauges.*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges.*

NOTE Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1

plumbing fitting

device used in a tube system for the purpose of connecting the tubes either to each other or to a component part of a system

3.2

capillary end

end in which the joint is made by the flow of solder or brazing alloy by capillary action into the annular space

3.3

compression end

end in which the joint is made by the compression of a ring or sleeve on the outside wall of the tube

3.4

screwed union connector

coupling which enables disconnection without disturbance of other pipe sections

NOTE 1 Screwed union connectors can be sphere to cone, cone to cone, cone to radius or flat face with a sealing member.

NOTE 2 Component parts of screwed union connectors from different manufacturers should not be regarded as interchangeable.

3.5

nominal diameter

nominal diameter of the fitting end expressed as the nominal outside diameter of the connecting tube

4 Requirements

4.1 Materials and tests

The relevant requirements specified in EN 1254-1, EN 1254-2, EN 1254-3 and EN 1254-5 apply to the complete fitting.

4.2 Screwed union connections

Screwed union joints, when assembled in accordance with the manufacturer's instructions, shall be capable of meeting the appropriate pressure test requirements for the respective end connections to relevant tube or pipe material and shall be capable of disconnection and reconnection, when the joint shall again be capable of meeting the pressure test requirements.

4.3 Thread dimensions

Internal parallel threads shall be in accordance with Table 2 or Table 3 of this part of this standard.

External taper threads shall be in accordance with Table 4 or Table 5 of this part of this standard.

External parallel threads shall be in accordance with Table 6 of this part of this standard.

Thread details not specified in this part of this standard shall conform to ISO 7 or ISO 228.

NOTE Alternative thread lengths or gauging systems should be agreed between the manufacturer and the purchaser.

4.4 Tightening systems

Shapes for transmitting tightening torques are required on nuts and straight bodies.

4.5 Minimum wall thickness

The minimum wall thickness at threaded portions of fittings shall be in accordance with Table 1.

4.6 Minimum bore for unequal-ended fittings

Minimum bores quoted in this part of the standard shall not restrict other outlets.

4.7 Minimum outside diameter of sealing face

If a sealing face is provided on the fitting then the minimum outside diameter of the face shall be in accordance with dimension *C* given in Table 6.

4.8 Flange-type fittings

Loose flanges and fasteners on flange-type fittings may be of ferrous materials unless otherwise specified.

NOTE Ferrous flanges and fasteners should be protected against corrosion in accordance with the customer's specification.

Table 1 — Minimum wall thickness

Thread designation	Minimum wall thickness of fitting <i>N</i>	
	Wrought coppers and copper alloys mm	Cast coppers and copper alloys mm
1/8	1,0	1,0
1/4	1,0	1,0
3/8	1,1	1,1
1/2	1,2	1,2
3/4	1,4	1,5
1	1,5	1,8
1 1/4	1,6	1,8
1 1/2	1,8	2,0
2	1,9	2,3
2 1/2	2,0	2,4
3	2,3	2,6
4	2,8	2,9

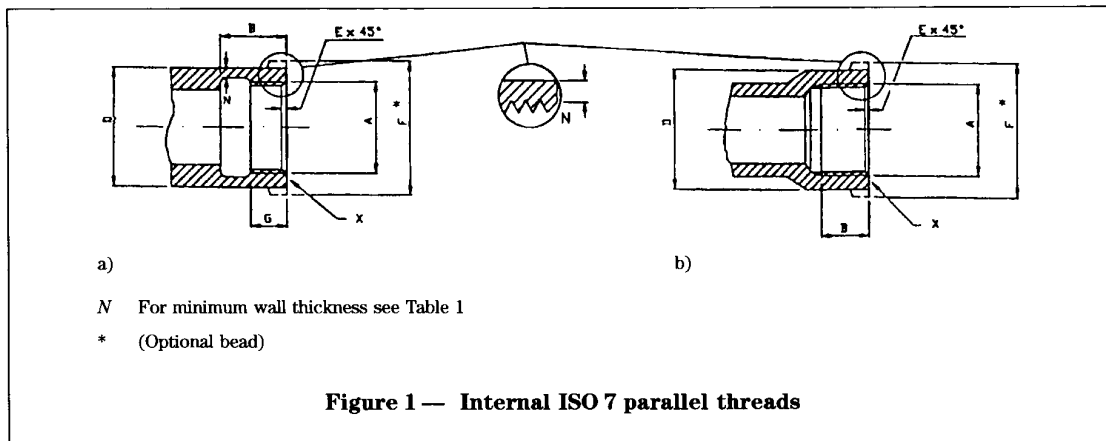


Figure 1 — Internal ISO 7 parallel threads

Table 2 — Internal ISO 7 parallel threads

Dimensions in millimetres

A Thread designation	B min.	D		E ¹⁾ max.	F ²⁾ (Optional bead) min.	G min.
		Wrought coppers and copper alloys min.	Cast coppers and copper alloys min.			
Rp 1/8	7,4	11,6	11,8	0,9	14,3	4,5
Rp 1/4	11,0	15,2	15,4	1,3	18,2	7,0
Rp 3/8	11,4	19,1	19,1	1,3	22,0	7,0
Rp 1/2	15,0	23,8	23,8	1,8	26,7	9,0
Rp 3/4	16,3	29,3	29,7	1,8	33,5	10,0
Rp 1	19,1	36,3	36,9	2,3	40,9	11,5
Rp 1 1/4	21,4	45,6	46,2	2,3	49,0	13,5
Rp 1 1/2	21,4	51,4	52,0	2,3	56,6	13,5
Rp 2	25,7	63,7	64,3	2,3	69,4	17,0
Rp 2 1/2	30,2	80,4	80,8	2,3	86,2	18,5
Rp 3	33,3	93,5	94,0	2,3	98,0	21,0
Rp 4	39,3	120,0	121,0	2,3	120,0	26,0

¹⁾ At the option of the manufacturer, as an alternative to chamfer E, the first thread may be removed.
²⁾ If required for a sealing face, face X to be smoothly machined at right angles to the thread axis.
 NOTE Refer to ISO 7 for thread details not listed in this table.

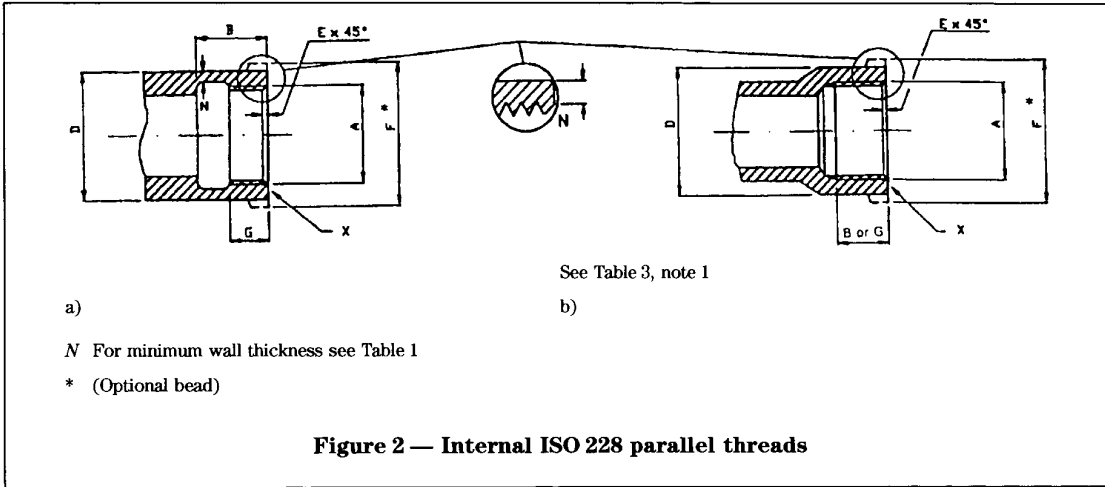


Table 3 — Internal ISO 228 parallel threads

Dimensions in millimetres

A Thread designation	B min.	D		E ¹⁾ max.	F ²⁾ (Optional bead)		G min.
		Wrought coppers and copper alloys min.	Cast coppers and copper alloys min.		min.	min.	
G ¼	5,6	11,6	11,8	0,9	14,3	4,5	
G ¼	8,0	15,2	15,4	1,3	18,2	7,0	
G ¾	8,5	19,1	19,1	1,3	22,0	7,0	
G ½	10,5	23,8	23,8	1,8	26,7	9,0	
G ¾	12,0	29,3	29,7	1,8	33,5	10,0	
G 1	13,5	36,3	36,9	2,3	40,9	11,5	
G 1¼	15,5	45,6	46,2	2,3	49,0	13,5	
G 1½	15,5	51,4	52,0	2,3	56,6	13,5	
G 2	19,0	63,7	64,3	2,3	69,4	17,0	
G 2½	20,0	80,4	80,8	2,3	86,2	18,5	
G 3	21,0	93,5	94,0	2,3	98,0	20,0	
G 4	23,0	120,0	121,0	2,3	120,0	22,0	

¹⁾ At the option of the manufacturer, as an alternative to chamfer E, the first thread may be removed.

²⁾ If required for a sealing face, face X to be smoothly machined at right angles to the thread axis.

NOTE 1 Fittings without undercut:

- for class 1 dimension B applies [see figure 2 b)]; designation or identification to be agreed between the purchaser and the manufacturer;
- for class 2 dimension G applies [see figure 2 b)]; designation or identification to be agreed between the purchaser and the manufacturer.

NOTE 2 Refer to ISO 228 for thread details not listed in this table.

NOTE 3 It is not recommended to use this thread in connection with external taper threads to ISO 7 because satisfactory performance cannot be guaranteed.

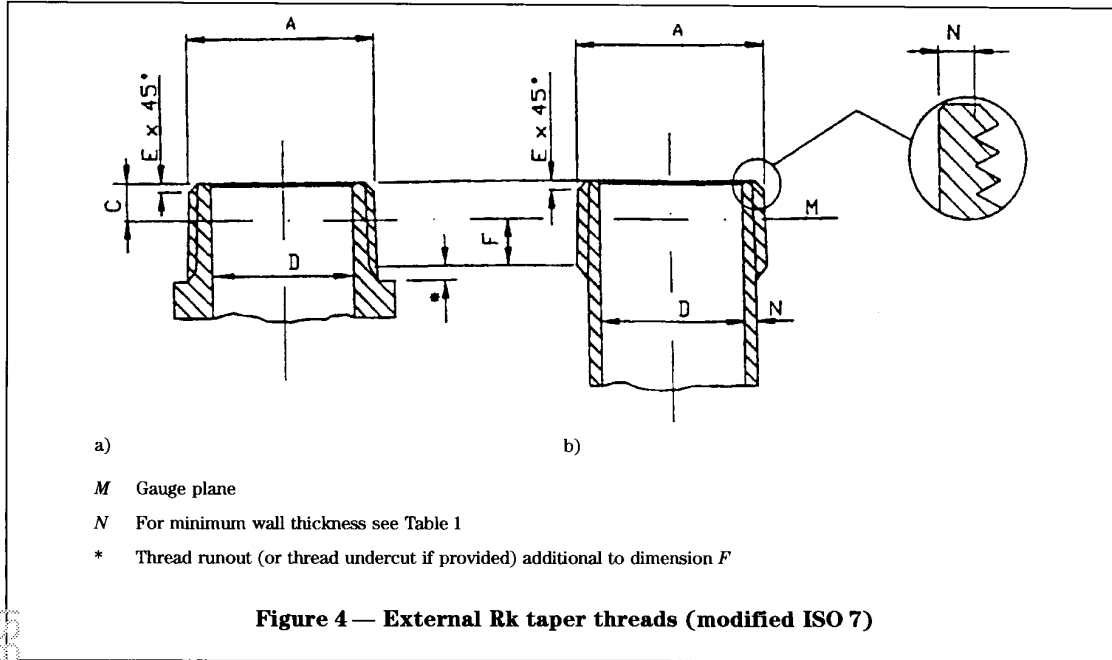


Figure 4 — External Rk taper threads (modified ISO 7)

Table 5 — External Rk taper threads (modified ISO 7)

Dimensions in millimetres

A Thread designation	F min.	C Gauge length		D min.	E max.
		min.	max.		
Rk ¼	1,5	2,6	4,5	4	0,6
Rk ¼	2,3	4,0	6,6	6	0,9
Rk ⅜	2,3	4,0	6,6	9	0,9
Rk ½	3,2	4,2	8,5	10	1,2
Rk ¾	3,2	5,4	9,5	18	1,2
Rk 1	4,0	5,6	10,5	23	1,5
Rk 1¼	4,0	6,9	12,0	29	1,5
Rk 1½	4,0	8,0	12,6	36	1,5
Rk 2	5,2	9,0	13,6	47	1,5
Rk 2½	5,8	9,3	16,3	55	1,5
Rk 3	5,8	11,0	17,0	59	1,5
Rk 4	6,9	14,7	21,0	76	1,5

NOTE Refer to ISO 7 for thread details not listed in this table.

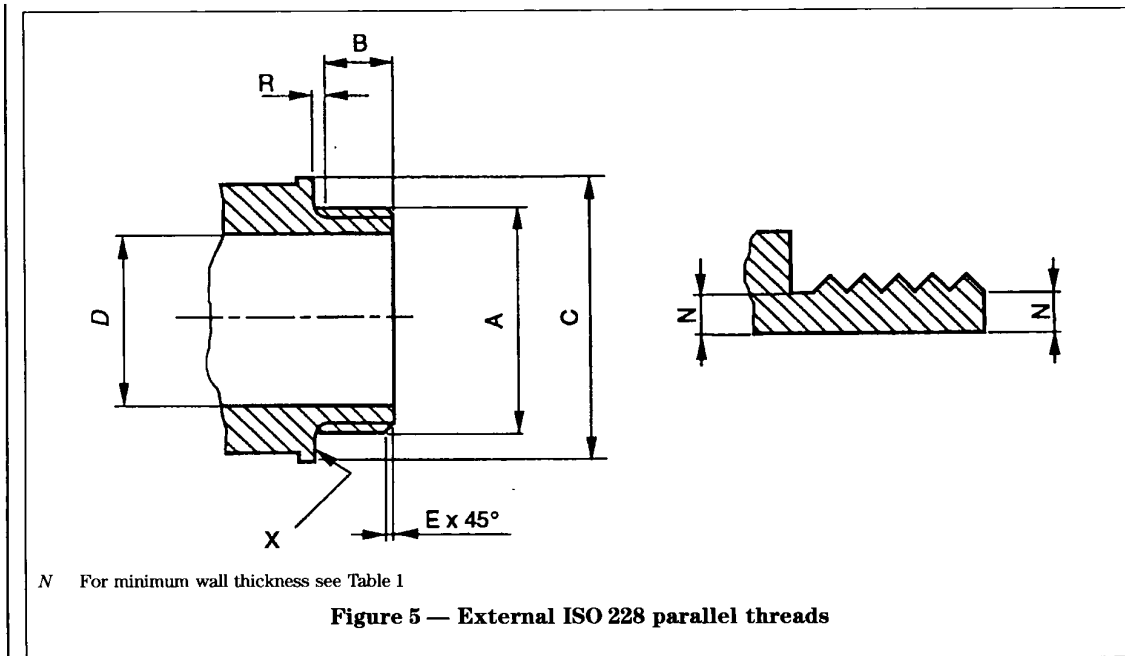


Table 6 — External ISO 228 parallel threads

Dimensions in millimetres

A Thread designation	B ¹⁾		C ²⁾ min.	D Wrought or cast coppers and copper alloys min.	E max.	R Runout or undercut	
	min.	max.				min.	max.
G ½ B	4,5	6,5	11,6	4	0,9	0,9	1,8
G ¼ B	6,0	7,5	15,2	6	1,3	1,3	2,6
G ⅜ B	7,0	9,0	19,1	9	1,3	1,3	2,6
G ½ B	7,0	8,5	23,8	10	1,8	1,8	3,6
G ¾ B	8,5	10,0	29,3	18	1,8	1,8	3,6
G 1 B	9,5	11,0	36,3	23	2,3	2,3	4,6
G 1¼ B	11,0	12,5	45,6	29	2,3	2,3	4,6
G 1½ B	12,5	14,0	51,4	36	2,3	2,3	4,6
G 2 B	14,0	15,5	63,7	47	2,3	2,3	4,6
G 2½ B	15,5	17,5	80,4	55	2,3	2,3	4,6
G 3 B	17,5	19,5	93,7	60	2,3	2,3	4,6
G 4 B	19,5	21,5	119,6	75	2,3	2,3	4,6

¹⁾ Maximum length may be exceeded for special applications.
²⁾ If required for a sealing face, face X to be smoothly machined at right angles to the thread axis and with minimum diameter C across the face.
 NOTE Refer to ISO 228 for thread details not listed in this table.

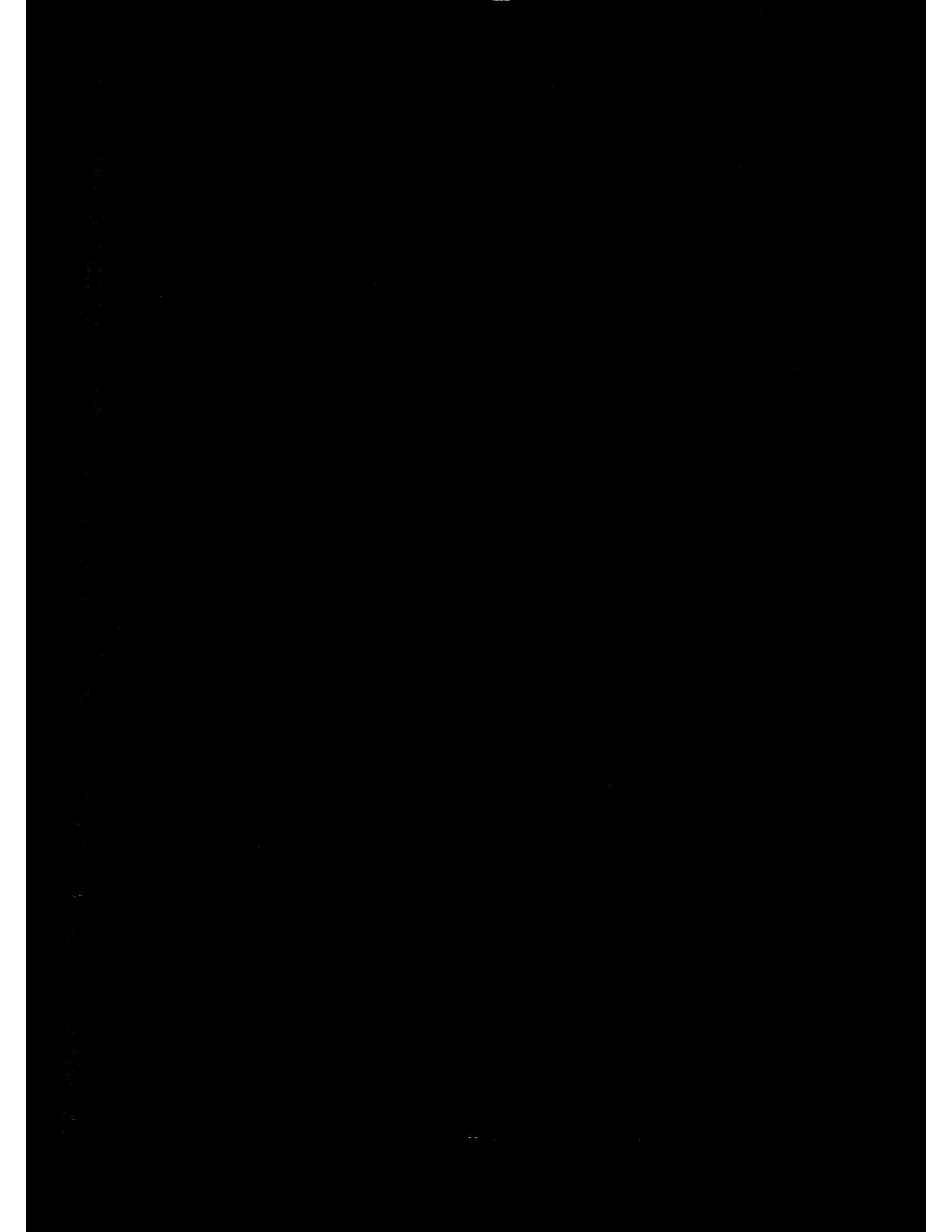
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Annex A (informative)

Bibliography

EN ISO 9001, *Quality systems — Model for quality assurance in design/development, production, installation and servicing.*
(ISO 9001:1994)

EN ISO 9002, *Quality systems — Model for quality assurance in production, installation and servicing.*
(ISO 9002:1994)



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