INTERNATIONAL STANDARD

ISO 1179-2

Third edition
2022-11

Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing —

Part 2: Heavy-duty (S series) and light-duty (L series) stud ends with elastomeric sealing (type E)

Raccordements pour applications générales et transmissions hydrauliques et pneumatiques — Orifices et éléments mâles à filetage ISO 228-1 à joint en élastomère ou étanchéité métal sur métal —

Partie 2: Éléments mâles de séries légère (série L) et lourde (série S) avec joint en élastomère (type E)

Reference number
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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 4, *Connectors and similar products and components,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 459, *ECISS - European Committee for Iron and Steel Standardization,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 1179-2:2013), which has been technically revised.

The main changes are as follows:

— Clause 4, Interchangeability warning, concerning the hazards of intermixing of stud ends with various port types, has been added;

— material requirements for elastomeric seal have been added;

— test methods, test report and re-use of components have been replaced with the equivalent requirements of ISO 19879;

— Figures 1 and 2 have been redrawn;

— the tables have been renumbered to the order in which they are cited in the text (Table 2 to Table 1, Table 4 to Table 2, Table 3 remains the same, Table 5 to Table 4, Table 1 to Table 5);

— Annex A and the references to the annex have been deleted;

A list of all parts in the ISO 1179 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within a circuit. In general applications, a fluid can be conveyed under pressure. Components are connected through their threaded ports by fluid conductor connectors to tubes and pipes or to hose fittings and hoses.

For threaded ports and stud ends specified in new designs in hydraulic fluid power applications, the ISO 6149 series should be used because these International Standards specify ports and stud ends with metric threads and O-ring sealing, and because the use of only one system is preferred. It is further recommended that threaded ports and stud ends in accordance with the ISO 1179 series, ISO 9974 series and ISO 11926 series should not be used for new designs in hydraulic fluid power applications (these International Standards are maintained because they specify ports and stud ends that are currently used in hydraulic systems worldwide).

For threaded ports and stud ends specified in new designs in pneumatic fluid power applications, ISO 16030 should be used, except where products are to interface with ISO 7-1 threads, because the use of only one system is preferred. It is further recommended that threaded ports and stud ends in accordance with the ISO 1179 series should not be used for new designs in pneumatic fluid power applications (these International Standards are maintained because they specify ports and stud ends that are currently used in pneumatic systems worldwide).

Significant testing over more than 35 years of use has confirmed the performance requirements of connection ends made from carbon steel. The stud end connections specified in this document, ISO 1179-3 and ISO 1179-4 apply to connectors detailed in ISO 8434-1, ISO 8434-2 and ISO 8434-6.

Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing —

Part 2: Heavy-duty (S series) and light-duty (L series) stud ends with elastomeric sealing (type E)

1 Scope

This document specifies the dimensions, performance requirements and test procedures for heavy-duty (S series) and light-duty (L series) stud ends with threads, and the elastomeric sealing (type E) that is used with them as defined in ISO 228-1.

Heavy-duty (S series) stud ends with type E sealing in accordance with this document can be used at working pressures up to 63 MPa (630 bar). Light-duty (L series) stud ends with type E sealing in accordance with this document can be used at working pressures up to 25 MPa (250 bar). The permissible working pressure depends upon size, materials, design, working conditions, application, etc.

This document is applicable to connectors detailed in ISO 8434-1, ISO 8434-2 and ISO 8434-6.

NOTE The Introduction gives recommendations for ports and stud ends to be used for new designs in hydraulic and pneumatic fluid power applications.

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.

ISO 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

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

ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

ISO 286-2, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 9974-2, *Connections for general use and fluid power — Ports and stud ends with ISO 261 threads with elastomeric or metal-to-metal sealing — Part 2: Stud ends with elastomeric sealing (type E)*

ISO 19879, *Metallic tube connections for fluid power and general use — Test methods for hydraulic fluid power connections*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 apply.

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

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

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

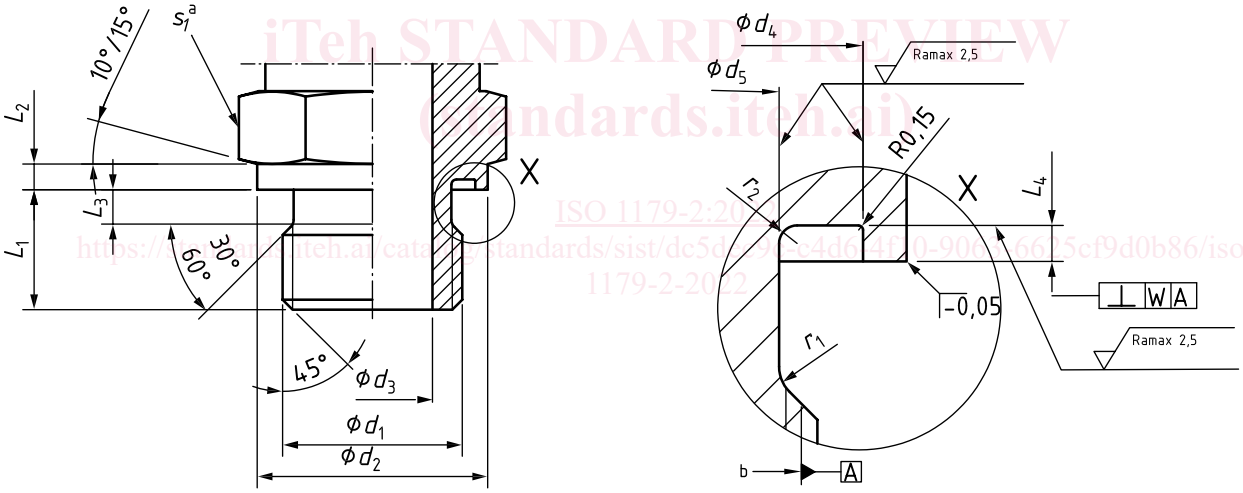
4 Interchangeability warning

WARNING — The use of stud ends conforming to this document with ports conforming to the relevant parts of the ISO 6149 series, ISO 9974 series and ISO 11926 series can lead to a hazardous situation.

5 Dimensions

Heavy-duty (S series) and light-duty (L series) stud ends shall conform to the dimensions given in Figure 1 and Table 1. Hexagonal tolerances across flats shall be a maximum of h12 in accordance with ISO 286-1 and ISO 286-2.

Dimensions in millimetres/Surface roughness values in micrometres



[a] Dimension across the flats.

[b] Thread pitch diameter.

Figure 1 — Heavy-duty (S series) and light-duty (L series) stud end with elastomeric sealing (type E)

Table 1 — Dimensions for heavy-duty (S series) and light-duty (L series) stud end with elastomeric sealing (type E)

Dimensions in millimetres

Thread d_1[a]	d_2 0 −0,2	Inside diameter[b] d_3 L series	tol.[c]	S series	tol.[c]	d_4 +0,1 0	d_5 0 −0,2	L_1 ±0,2	L_2 min.	L_3 +0,3 0	L_4 +0,1 0	r_1 ±0,2	r_2 ±0,1	s_1 hex	W
G 1/8 A	13,9	4	±0,1	—	—	12	8,3	8	1,5	2	0,7	1	0,5	14	0,1
G 1/4 A	18,9	6	±0,1	5	±0,1	16,6	11,2	12	2	3	1,2	1,2	0,5	19	0,1
G 3/8 A	21,9	9	±0,2	8	±0,2	19	14,7	12	2,5	3	1,2	1,2	0,6	22	0,1
G 1/2 A	26,9	14	±0,2	12	±0,2	24	18,4	14	3	4	1,2	1,2	0,6	27	0,1
G 3/4 A	31,9	18	±0,2	16	±0,2	29,3	23,8	16	3	4	1,2	1,2	0,6	32	0,2
G 1 A	39,9	23	±0,2	20	±0,2	36	29,6	18	3	5	1,6	1,6	0,8	41	0,2
G 1 1/4 A	49,9	30	±0,2	25	±0,2	46	38,6	20	3	5	1,6	1,6	0,8	50	0,2
G 1 1/2 A	54,9	36	±0,3	32	±0,3	51	44,5	22	3	5	1,6	1,6	0,8	55	0,2
G 2 A	74,9	—	±0,3	40	±0,3	66,9	56,4	24	3,5	5	3,4	1,6	0,8	75	0,2

[a] Size and dimensions in accordance with ISO 228-1.

[b] Inside diameters smaller than those given in this table can be applied in accordance with other specifications.

[c] tol. = tolerance.

6 Elastomeric seals

Elastomeric seals for use with both heavy-duty (S series) and light-duty (L series) stud ends shall conform to the dimensions given in Figure 2 and Table 2. The seals shall be made of NBR (nitrile) with a hardness of (90 ± 5) IRHD measured in accordance with ISO 48-2, when used with petroleum base hydraulic fluids at the pressure given in Table 3. In those cases where the pressure and temperature and/or the hydraulic fluid used in the system differ from those specified in this document, the connector manufacturer shall be consulted to ensure that an appropriate seal material is selected.

Figure 3 shows the correct assembly of the stud end and elastomeric seal.

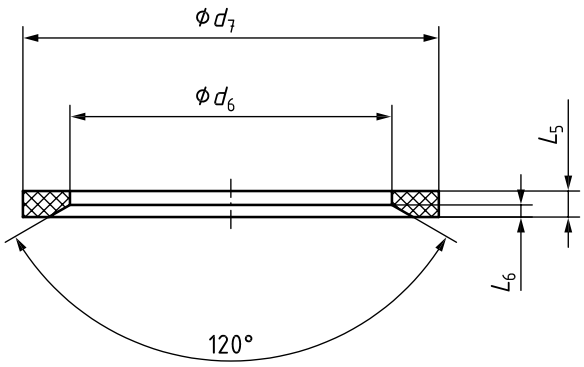


Figure 2 — Elastomeric seal for use with ISO 1179-2 heavy-duty (S series) and light-duty (L series) stud ends

Table 2 — Dimensions of elastomeric seals for use with ISO 1179-2 heavy-duty (S series) and light-duty (L series) stud ends

Dimensions in millimetres

Thread size	d_6		d_7		L_5	L_6
	nominal	tolerance	nominal	tolerance	±0,1	+0,2 0
G 1/8 A[a]	8,4	±0,2	11,9	±0,2	1,0	0,5
G 1/4 A[b]	11,6		16,5		1,5	0,8
G 3/8 A	14,7		18,9		1,5	0,8
G 1/2 A	18,5		23,9		1,5	0,8
G 3/4 A[c]	23,9		29,2		1,5	0,8
G 1 A[d]	29,7	±0,3	35,7	±0,3	2	1,0
G 1 1/4 A[e]	38,8		45,8		2	1,0
G 1 1/2 A[f]	44,7		50,7		2	1,0
G 2 A	56,5		66,5		4	2,0

[a] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M10 × 1.

[b] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M14 × 1,5.

[c] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M26 × 1,5.

[d] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M33 × 2.

[e] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M42 × 2.

[f] Dimensions given for reference only; see ISO 9974-2, elastomeric seal for size M48 × 2.

Table 3 — Pressures for ISO 1179-2 heavy-duty (S series) and light-duty (L series) stud ends with elastomeric sealing (type E)

Series	Thread size	Working pressure		Test pressures[a]			
				Burst		Impulse[b]	
		MPa	(bar)	MPa	(bar)	MPa	(bar)
L	G 1/8 A	25	(250)	100	(1 000)	33,2	(332)
	G 1/4 A	25	(250)	100	(1 000)	33,2	(332)
	G 3/8 A	25	(250)	100	(1 000)	33,2	(332)
	G 1/2 A	25	(250)	100	(1 000)	33,2	(332)
	G 3/4 A	16	(160)	64	(640)	21,3	(213)
	G 1 A	10	(100)	40	(400)	13,3	(133)
	G 1 1/4 A	10	(100)	40	(400)	13,3	(133)
	G 1 1/2 A	10	(100)	40	(400)	13,3	(133)
S	G 1/4 A	63	(630)	252	(2 520)	83,8	(838)
	G 3/8 A	63	(630)	252	(2 520)	83,8	(838)
	G 1/2 A	40	(400)	160	(1 600)	53,2	(532)
	G 3/4 A	40	(400)	160	(1 600)	53,2	(532)
	G 1 A	40	(400)	160	(1 600)	53,2	(532)
	G 1 1/4 A	25	(250)	100	(1 000)	33,2	(332)
	G 1 1/2 A	25	(250)	100	(1 000)	33,2	(332)
	G 2 A[c]	25	(250)	100	(1 000)	33,2	(332)

[a] These pressures were established using connectors made of carbon steel and tested in accordance with ISO 19879.

[b] Cyclic endurance test pressure.

[c] The size G 2 A stud end is used in hydraulic fluid power, mainly in accumulators.