INTERNATIONAL STANDARD

ISO 12151-3

Third edition
2021-10

Connections for hydraulic fluid power and general use — Hose fittings —

Part 3: Hose fittings with ISO 6162-1 or ISO 6162-2 flange ends

Raccordements pour transmissions hydrauliques et applications générales — Raccords de flexible —

Partie 3: Raccords de flexible avec brides conformes à l'ISO 6162-1 ou à l'ISO 6162-2

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*.

This third edition cancels and replaces the second edition (ISO 12151-3:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

— designation and pressure information have been updated to align with ISO 6162-1 and ISO 6162-2 (~~Clause 5~~);

— 90° elbow long has been added to ~~Table 1~~;

— hose fittings sizes 64 × 64 and 76 × 76 have been added to ~~Tables 2 – 8~~.

A list of all parts in the ISO 12151 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~~.

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Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. In general applications, the fluid can be conveyed under pressure.

Components are connected through their ports by stud ends on fluid conductor connectors to tubes/pipes or to hose fittings and hoses.

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Connections for hydraulic fluid power and general use — Hose fittings —

Part 3:

Hose fittings with ISO 6162-1 or ISO 6162-2 flange ends

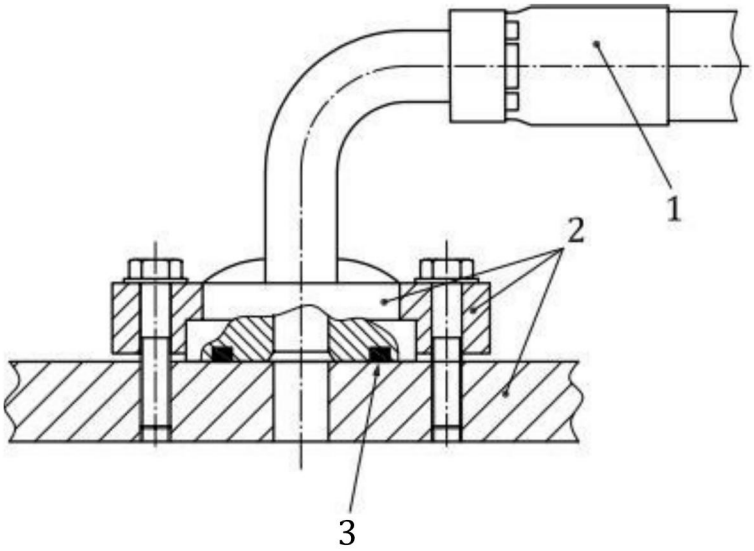
1 Scope

This document specifies the general and dimensional requirements for the design and performance of flange hose fittings, made of carbon steel, for nominal hose inside diameters of 12,5 mm to 76 mm inclusive, in accordance with ISO 4397, for use with ports and clamps in accordance with ISO 6162-1 and ISO 6162-2.

Note 1 Materials other than carbon steel can be supplied as agreed between the manufacturer and user.

Note 2 For hose fittings used in hydraulic and pneumatic braking systems on road vehicles (as defined in the scope of ISO/TC 22/SC 2, *Road vehicles*), see ISO 4038, ISO 4039-1 and ISO 4039-2.

These hose fittings (see ~~Figure 1~~ for a typical example) are for use in hydraulic fluid power systems with a hose that meets the requirements of the respective hose standards and in general applications with suitable hoses.



Key

1 hose fitting
2 port, flanged head and clamps, as per ISO 6162-1 or ISO 6162-2
3 O-ring seal

Figure 1 — Typical example of hose fitting connection with ISO 6162-1 or ISO 6162-2 flange end

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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 1302, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ISO 4397, *Fluid power connectors and associated components — Nominal outside diameters of tubes and nominal hose sizes*

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

ISO 6162-1, *Hydraulic fluid power — Flange connections with split or one-piece flange clamps and metric or inch screws — Part 1: Flange connectors, ports and mounting surfaces for use at pressures of 3,5 MPa (35 bar) to 35 MPa (350 bar), DN 13 to DN 127*

ISO 6162-2, *Hydraulic fluid power — Flange connections with split or one-piece flange clamps and metric or inch screws — Part 2: Flange connectors, ports and mounting surfaces for use at a pressure of 42 MPa (420 bar), DN 13 to DN 76*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

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 Performance requirements

4.1 Hose assemblies shall meet the performance requirements specified in the appropriate hose specification without leakage or failure.

4.2 The working pressure of the hose assembly shall be the lower of the pressures given for its flange style (pressure series) and size in ISO 6162-1 or ISO 6162-2, and in the relevant hose specification.

4.3 The hose-fitting connection end (flange) shall meet the performance requirements specified in ISO 6162-1 or ISO 6162-2.

5 Designation of hose fittings

5.1 Hose fittings shall be designated by an alphanumeric code to facilitate ordering. They shall be designated by the words “Hose fitting”, followed by a space, followed by “ISO 12151-3”, followed by a spaced hyphen, then the shape symbol (see ~~5.2~~), followed by another spaced hyphen, the style letter L for 3,5 MPa to 35 MPa (35 bar to 350 bar) flanges or the style letter S for 42 MPa (420 bar) flanges in accordance with ISO 6162-1 or ISO 6162-2, followed by the flange size from ISO 6162-1 or ISO 6162-2, a multiplication symbol (×) and the hose size (nominal hose inside diameter in accordance with ISO 4397).

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EXAMPLE A 45° elbow hose fitting, with a medium drop length (E45M) with a 42 MPa (420 bar) flanged head (S) 32 mm nominal flange size and 31,5 nominal ID hose, is designated as follows:

Hose fitting ISO 12151-3 - E45M - S32 × 31,5

5.2 The letter symbols as given in ~~Table 1~~ shall be used.

Table 1 — Letter symbols used in the designation of hose fittings

Connection end type		**Symbol**
Style	3,5 MPa to 35 MPa (35 bar to 350 bar)	L
	42 MPa (420 bar)	S
Shape	Straight	S
	45° elbow, short	E45S
	45° elbow, medium	E45M
	90° elbow, short	ES
	90° elbow, medium	EM
	90° elbow, long	EL
Deprecated fitting angles	22,5° elbow, medium	E22M
	30° elbow, short	E30S
	30° elbow, medium	E30M
	60° elbow, short	E60S
	60° elbow, medium	E60M
	67,5° elbow, short	E67S
	67,5° elbow, medium	E67M

6 Design

6.1 Hose fitting dimensions shown in ~~Figures 2~~ to ~~8~~ shall conform to those given in ~~Tables 2~~ to ~~8~~ and to the relevant dimensions in ISO 6162-1 or ISO 6162-2.

6.2 Angular tolerances on axes of ends of elbows shall be ±3° for all sizes.

6.3 Details of contour shall be as chosen by the manufacturer, provided that the dimensions given in ~~Tables 2~~ to ~~8~~ are maintained.

7 Manufacture

7.1 Construction

Hose fittings may be made by forging or cold forming, machined from bar stock or manufactured from multiple components.

7.2 Work execution

Work execution shall conform to the best commercial practice to produce high-quality hose fittings. Hose fittings shall be free from visual contaminants, all hanging burrs, loose scale and slivers that can be dislodged in use, and any other defects that can affect the functioning of the parts. All machined

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surfaces shall have a surface roughness value of ISO 1302-MRR *Ramax* 6,3 µm, except where otherwise specified.

7.3 Finish

The external surface and threads of all carbon steel parts shall be plated or coated with a suitable material that passes a 72 h neutral salt spray test in accordance with ISO 9227, unless otherwise agreed upon by the manufacturer and the user. Any appearance of red rust during the salt spray test on any area, except those noted below, shall be considered a failure:

— all internal fluid passages;

— edges, such as hex points, serrations and crests of threads, where there can be mechanical deformation of the plating or coating typical of mass-produced parts or shipping effects;

— areas where there is mechanical deformation of the plating or coating caused by crimping, flaring, bending and other post-plate metal forming operations;

— areas where the parts are suspended or affixed in the test chamber where condensate can accumulate.

Internal fluid passages shall be protected from corrosion during storage and shipping.

Parts manufactured in accordance with this document shall not be cadmium plated. Hexavalent chromate coatings are not preferred because of environmental concerns. Changes in plating can affect assembly torques and require requalification, when applicable.

7.4 Fitting protection

By a method agreed between the supplier and purchaser, the face of the flange hose fittings shall be protected by the manufacturer from nicks and scratches that can be detrimental to the functioning of the hose fitting. Passages shall be securely covered to prevent the entrance of dirt or other contaminants. Covers that contribute to contamination shall not be used.

8 Procurement information

The following minimum information should be supplied by the purchaser when making an inquiry or placing an order:

— description of hose fitting using designation in accordance with ~~Clause 5~~;

— material of hose fitting if other than carbon steel;

— hose type and size;

— fluid being conveyed;

— working pressure;

— working temperature (ambient and of the fluid).

9 Marking

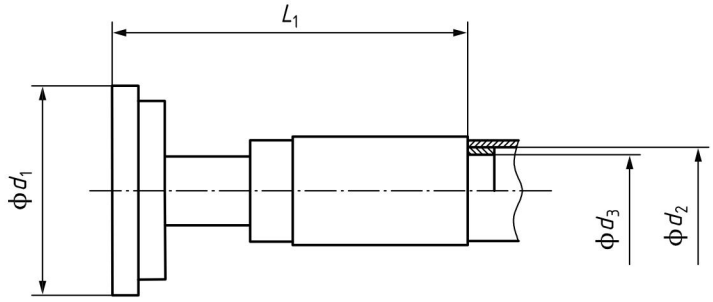
Hose fittings shall be permanently marked with the manufacturer's name or trademark.

10 Identification statement (reference to this document)

It is strongly recommended to manufacturers who have chosen to conform to this document that the following statement be used in test reports, catalogues and sales literature:

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"Flange hose fittings conform to ISO 12151-3, *Connections for hydraulic fluid power and general use — Hose fittings — Part 3: Hose fittings with ISO 6162-1 or ISO 6162-2 flange ends*."



NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

Figure 2 — Straight flange hose fittings (S)

Table 2 — Dimensions of straight flange hose fittings (S)

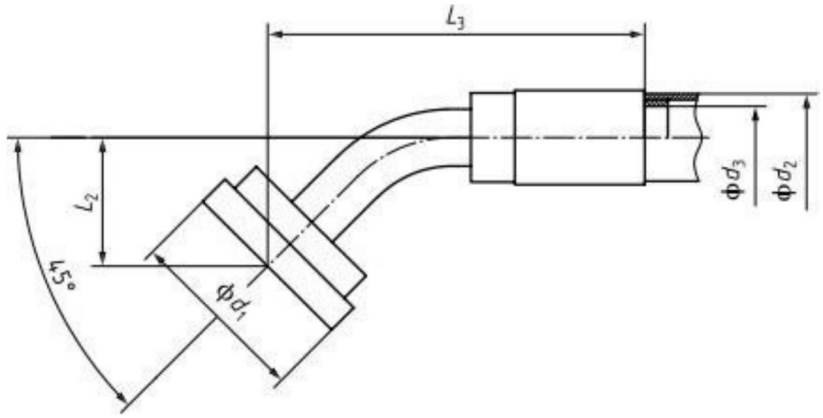
Dimensions in millimetres

Hose fitting size	$d_1 \pm 0{,}25$		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	L_1 [b] max.
	S-L	S-S				
13 × 12,5	30,2	31,8	13	12,5	8	100
19 × 12,5	38,1	41,3	19	12,5	8	120
19 × 19	38,1	41,3	19	19	14	140
25 × 19	44,45	47,6	25	19	14	150
25 × 25	44,45	47,6	25	25	19	150
32 × 25	50,8	54	32	25	19	163
32 × 31,5	50,8	54	32	31,5	25	175
38 × 31,5	60,35	63,5	38	31,5	25	182
38 × 38	60,35	63,5	38	38	31	200
51 × 38	71,4	79,4	51	38	31	220
51 × 51	71,4	79,4	51	51	42	240
64 × 64	84,10	—	64	64	50	270
76 × 76	101,6	—	76	76	63	300

[a] Minimum diameter at any point through the hose fitting prior to assembly to the hose. The diameter after assembly shall not be less than $0{,}9d_3$. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_1 is measured after assembly.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

Figure 3 — 45° elbow flange hose fittings (E45)

Table 3 — Dimensions of 45° elbow flange hose fittings (E45)

Dimensions in millimetres

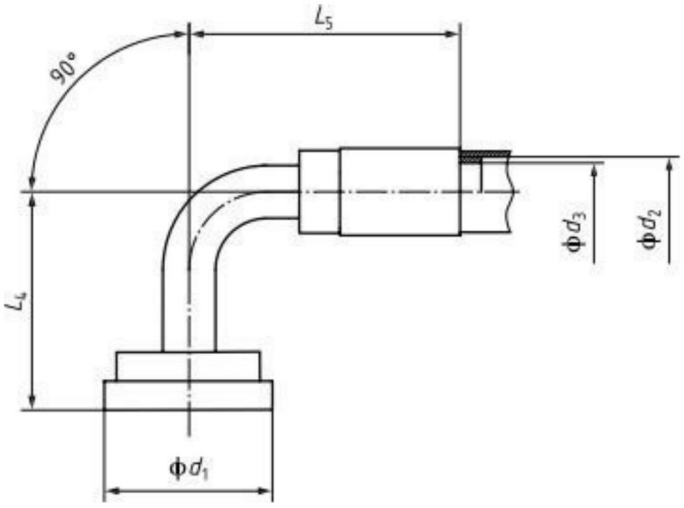
Hose fitting size	d_1 ± 0,25		Nominal flange size	Nominal hose inside diameter d_2	d_3 [a] min.	L_2 ± 3		L_3 [b] max.
	E45S-L E45M-L	E45S-S E45M-S				E45S-L [c] E45S-S [c]	E45M-L E45M-S	
13 × 12,5	30,2	31,8	13	12,5	8	—	19	105
19 × 12,5	38,1	41,3	19	12,5	8	—	26	125
19 × 19	38,1	41,3	19	19	14	—	26	145
25 × 19	44,45	47,6	25	19	14	—	32	175
25 × 25	44,45	47,6	25	25	19	28 [c]	32	175
32 × 25	50,8	54	32	25	19	32 [c]	38	188
32 × 31,5	50,8	54	32	31,5	25	32 [c]	38	200
38 × 31,5	60,35	63,5	38	31,5	25	38 [c]	44	222
38 × 38	60,35	63,5	38	38	31	38 [c]	44	240
51 × 38	71,4	79,4	51	38	31	52 [c]	56	270
51 × 51	71,4	79,4	51	51	42	52 [c]	56	290
64 × 64	84,1	—	64	64	50	47	—	320
76 × 76	101,6	—	76	76	63	53	—	360

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than 0,9d_3. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_3 is measured after assembly.

[c] If short-drop (E45S-L and E45S-S) hose fittings can not be manufactured by preferred methods with ratings suitable for use with high-pressure spiral-wire hose, which is typically used at working pressures of 28 MPa (280 bar), 21 MPa (210 bar), 17,5 MPa (175 bar) or 14 MPa (140 bar) and higher in hose sizes 25, 31,5, 38 and 51, respectively. Use preferred medium-drop (E45M-L or E45M-S) hose fittings or consult manufacturer for availability.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

Figure 4 — 90° elbow flange hose fittings (E)

Table 4 — Dimensions of 90° elbow flange hose fittings (E)

Dimensions in millimetres

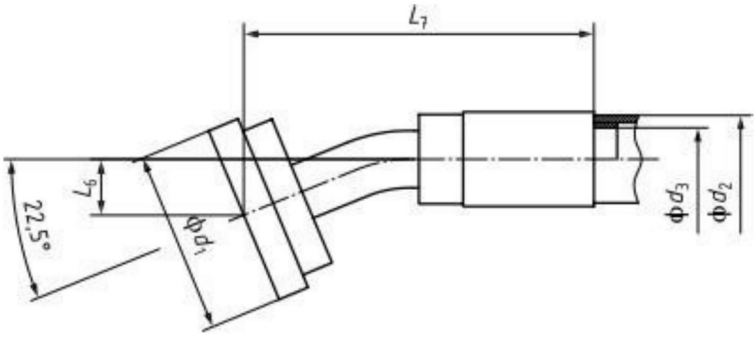
Hose fitting size	d_1 ± 0,25		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	L_4 ± 3			L_5 [b] max.
	ES-L EM-L EL-L	ES-S EM-S EL-S				ES-L [c] ES-S [c]	EM-L EM-S	EL-L EL-S	
13 × 12,5	30,2	31,8	13	12,5	8	—	40	100	100
19 × 12,5	38,1	41,3	19	12,5	8	—	58	135	120
19 × 19	38,1	41,3	19	19	14	—	58	135	140
25 × 19	44,45	47,6	25	19	14	—	70	155	170
25 × 25	44,45	47,6	25	25	19	61	70	155	170
32 × 25	50,8	54	32	25	19	68 [c]	90	190	188
32 × 31,5	50,8	54	32	31,5	25	68 [c]	90	190	200
38 × 31,5	60,35	63,5	38	31,5	25	81 [c]	104	220	212
38 × 38	60,35	63,5	38	38	31	81 [c]	104	220	230
51 × 38	71,4	79,4	51	38	31	120 [c]	138	275	260
51 × 51	71,4	79,4	51	51	42	120 [c]	138	275	280
64 × 64	84,1	—	64	64	50	111	—	—	320
76 × 76	101,6	—	76	76	63	131	—	—	360

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than 0,9d_3. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_5 is measured after assembly.

[c] If short-drop (ES-L and ES-S) hose fittings in flange sizes 32 and larger can not be manufactured by preferred methods with ratings suitable for use with high-pressure spiral-wire hose, which is typically used at working pressures of 28 MPa (280 bar), 21 MPa (210 bar), 17,5 MPa (175 bar) or 14 MPa (140 bar) and higher in hose sizes 25, 31,5, 38 and 51, respectively. Use preferred medium-drop (EM-L or EM-S) hose fittings or consult manufacturer for availability.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

NOTE 3 This hose fitting angle is not preferred.

Figure 5 — 22,5° elbow flange hose fittings (E22)

Table 5 — Dimensions of 22,5° elbow flange hose fittings (E22)

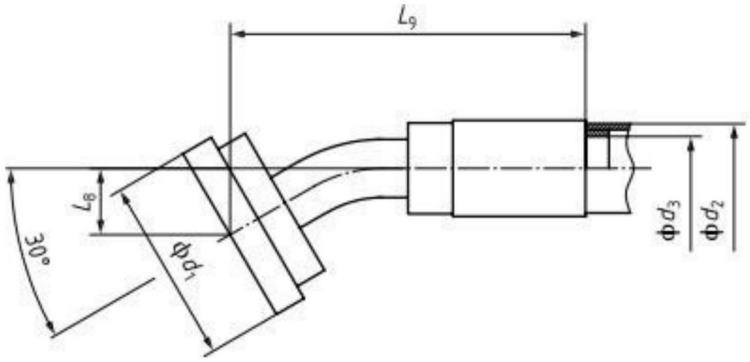
Dimensions in millimetres

Hose fitting size	d_1 ± 0,25		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	L_6 ± 3	L_7 [b] max.
	E22M-L	E22M-S				E22M-L E22M-S	
13 × 12,5	30,2	31,8	13	12,5	8	9	105
19 × 12,5	38,1	41,3	19	12,5	8	11	115
19 × 19	38,1	41,3	19	19	14	11	135
25 × 19	44,45	47,6	25	19	14	14	170
25 × 25	44,45	47,6	25	25	19	14	170
32 × 25	50,8	54	32	25	19	15	193
32 × 31,5	50,8	54	32	31,5	25	15	205
38 × 31,5	60,35	63,5	38	31,5	25	18	232
38 × 38	60,35	63,5	38	38	31	18	250
51 × 38	71,4	79,4	51	38	31	22	285
51 × 51	71,4	79,4	51	51	42	22	305
64 × 64	84,1	—	64	64	50	16	360
76 × 76	101,6	—	76	76	63	18	400

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than 0,9d_3. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_7 is measured after assembly.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

NOTE 3 This hose fitting angle is not preferred.

Figure 6 — 30° elbow flange hose fittings (E30)

Table 6 — Dimensions of 30° elbow flange hose fittings (E30)

Dimensions in millimetres

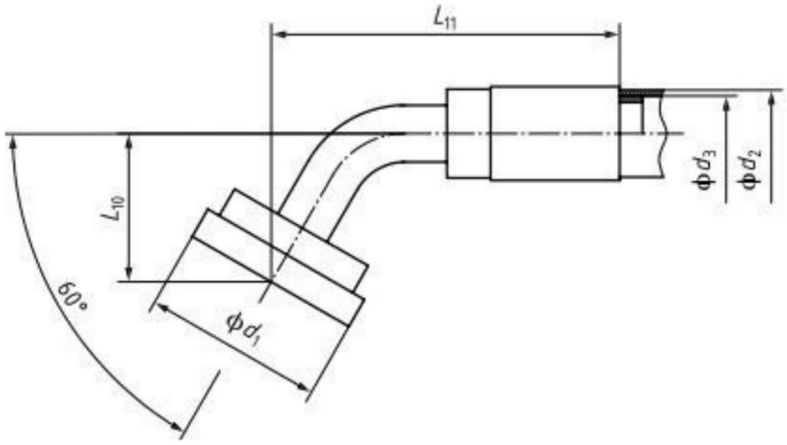
Hose fitting size	$d_1 \pm 0{,}25$		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	$L_8 \pm 3$		L_9 [b] max.
	E30S-L E30M-L	E30S-S E30M-S				E30S-L [c] E30S-S [c]	E30M-L E30M-S	
13 × 12,5	30,2	31,8	13	12,5	8	—	12	105
19 × 12,5	38,1	41,3	19	12,5	8	—	16	125
19 × 19	38,1	41,3	19	19	14	—	16	145
25 × 19	44,45	47,6	25	19	14	—	19	170
25 × 25	44,45	47,6	25	25	19	—	19	170
32 × 25	50,8	54	32	25	19	—	22	188
32 × 31,5	50,8	54	32	31,5	25	20 [c]	22	200
38 × 31,5	60,35	63,5	38	31,5	25	—	30	227
38 × 38	60,35	63,5	38	38	31	25 [c]	30	245
51 × 38	71,4	79,4	51	38	31	—	32	280
51 × 51	71,4	79,4	51	51	42	—	32	300
64 x 64	84,1	—	64	64	50	25	—	340
76 x 76	101,6	—	76	76	63	30	—	380

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than $0{,}9d_3$. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_9 is measured after assembly.

[c] If short-drop (E30S-L and E30S-S) hose fittings can not be manufactured by preferred methods with ratings suitable for use with high pressure spiral wire hose, which is typically used at working pressures of 21 MPa (210 bar) or 17,5 MPa (175 bar) and higher in hose sizes 31,5 and 38, respectively. Use preferred medium-drop (E30M-L or E30M-S) hose fittings or consult manufacturer for availability.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

NOTE 3 This hose fitting angle is not preferred.

Figure 7 — 60° elbow flange hose fittings (E60)

Table 7 — Dimensions of 60° elbow flange hose fittings (E60)

Dimensions in millimetres

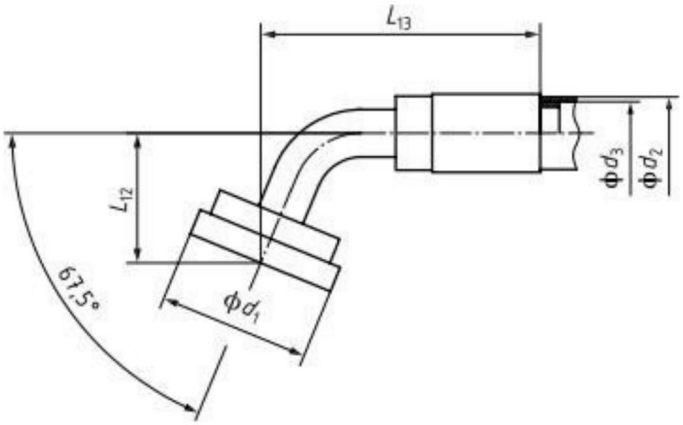
Hose fitting size	$d_1 \pm 0{,}25$		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	$L_{10} \pm 3$		L_{11} [b] max.
	E60S-L E60M-L	E60S-S E60M-S				E60S-L [c] E60S-S [c]	E60M-L E60M-S	
13 × 12,5	30,2	31,8	13	12,5	8	—	27	110
19 × 12,5	38,1	41,3	19	12,5	8	—	37	125
19 × 19	38,1	41,3	19	19	14	—	37	145
25 × 19	44,45	47,6	25	19	14	—	44	180
25 × 25	44,45	47,6	25	25	19	—	44	180
32 × 25	50,8	54	32	25	19	45 [c]	55	218
32 × 31,5	50,8	54	32	31,5	25	45 [c]	55	230
38 × 31,5	60,35	63,5	38	31,5	25	53 [c]	64	262
38 × 38	60,35	63,5	38	38	31	53 [c]	64	280
51 × 38	71,4	79,4	51	38	31	75 [c]	83	290
51 × 51	71,4	79,4	51	51	42	75 [c]	83	310
64 × 64	84,1	—	64	64	50	67	—	360
76 × 76	101,6	—	76	76	63	80	—	400

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than $0{,}9d_3$. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_{11} is measured after assembly.

[c] If short-drop (E60S-L and E60S-S) hose fittings can not be manufactured by preferred methods with ratings suitable for use with high pressure spiral wire hose, which is typically used at working pressures of 28 MPa (280 bar), 21 MPa (210 bar), 17,5 MPa (175 bar) or 14 MPa (140 bar) and higher in hose sizes 25, 31,5, 38 and 51, respectively. Use preferred medium-drop (E60M-L or E60M-S) hose fittings or consult manufacturer for availability.

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NOTE 1 Connection details and O-rings in accordance with ISO 6162-1 or ISO 6162-2.

NOTE 2 Method of attachment of hose fitting to hose is optional.

NOTE 3 This hose fitting angle is not preferred.

Figure 8 — 67,5° elbow flange hose fittings (E67)

Table 8 — Dimensions of 67,5° elbow flange hose fittings (E67)

Dimensions in millimetres

Hose fitting size	$d_1 \pm 0{,}25$		**Nominal flange size**	**Nominal hose inside diameter** d_2	d_3 [a] min.	$L_{12} \pm 3$		L_{13} [b] max.
	E67S-L E67M-L	E67S-S E67M-S				E67S-L [c] E67S-S [c]	E67M-L E67M-S	
13 × 12,5	30,2	31,8	13	12,5	8	—	30	105
19 × 12,5	38,1	41,3	19	12,5	8	—	42	125
19 × 19	38,1	41,3	19	19	14	—	42	145
25 × 19	44,45	47,6	25	19	14	—	51	175
25 × 25	44,45	47,6	25	25	19	—	51	175
32 × 25	50,8	54	32	25	19	51 [c]	64	208
32 × 31,5	50,8	54	32	31,5	25	51 [c]	64	220
38 × 31,5	60,35	63,5	38	31,5	25	61 [c]	74	242
38 × 38	60,35	63,5	38	38	31	61 [c]	74	260
51 × 38	71,4	79,4	51	38	31	85 [c]	97	280
51 × 51	71,4	79,4	51	51	42	85 [c]	97	300
64 × 64	84,1	—	64	64	50	80	—	340
76 × 76	101,6	—	76	76	63	95	—	380

[a] Minimum diameter at any point through the hose fitting prior to bending and/or assembly to the hose. The diameter after bending and/or assembly shall not be less than $0{,}9d_3$. For hoses with an inside diameter of 38 or 51 and some high pressure applications a reduced diameter d_3 can be used.

[b] Dimension L_{13} is measured after assembly.

[c] If short-drop (E67S-L and E67S-S) hose fittings can not be manufactured by preferred methods with ratings suitable for use with high pressure spiral wire hose, which is typically used at working pressures of 28 MPa (280 bar), 21 MPa (210 bar), 17,5 MPa (175 bar) or 14 MPa (140 bar) and higher in hose sizes 25, 31,5, 38 and 51, respectively. Use preferred medium-drop (E67M-L or E67M-S) hose fittings or consult manufacturer for availability.

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