

BUREAU OF INDIAN STANDARDS
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Doc No.: PGD 36 (18401)
February 2022

Draft Indian Standard

**Male Stud Elbow Body for Oil - Hydraulic
Couplings — Specification
Part 2 Made from Bar Stock**

(First Revision of IS 9412 Part 2)

ICS 23.100.40

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Last date for receipt of comment
10 April 2022

Fluid Power Systems Sectional Committee, PGD 36

FOREWORD

(Formal clauses will be added later)

This standard covers elbow bodies made from bar stock only. The elbow bodies made from forgings are covered in IS 9412 (Part 1) Male Stud Elbow Body for Oil-Hydraulic Couplings — Specification Part 1 Made from Forgings.

Hydraulic fittings come in a wide range of types and applications. They are used to connect the hydraulic hose to components like hydraulic cylinders, pipes, tubes, or different types of hydraulic hoses in hydraulic systems. The different types of hydraulic fittings allow the fluid to flow, change its direction, divert, or mix. They are designed for high pressure applications and are leak proof and have high torque resistance. These fittings are widely used in hydraulic-powered applications including plumbing, robotics, assembly lines, and heavy equipment.

This standard was first published in 1980 taking assistance from the following standards:

DIN 3904 : 1965	Non soldered taper bush type pipe unions, elbow used as an adapter with parallel thread on screwed-in end for use with union nut.
BS 4368	Specification for carbon and stainless steel compression couplings for tubes: Part 1:1972 Heavy series (metric), and Part 3: 1974 Light series (metric).

The first revision has been taken up to keep pace with the latest technological developments and international practices. In this revision, following major changes have been made:

- a) Table 1 has been revised,
- b) Clause on surface protection has been revised and
- c) Clause on material has been revised.

BUREAU OF INDIAN STANDARDS

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Doc No.: PGD 36 (18401)

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For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised).'

BUREAU OF INDIAN STANDARDS
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1 SCOPE

This standard specifies the dimensions, material and other requirements for male stud elbow body made from bar stock with parallel pipe threads for use in oil-hydraulic systems.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1367 (Part 11) : 2020/ ISO 4042: 2018	Technical Supply Conditions for Threaded Steel Fasteners Part 11 Electroplated Coating Systems
2062: 2011	Hot Rolled Medium and High Tensile Structural Steel — Specification
2643: 2005	Pipe Threads Where Pressure — Tight Joints are not Made on the Threads — Dimensions, Tolerances and Designation.
8805: 2002	General Requirements for Ferrule Type Couplings Used in Oil — Hydraulic Systems.
9411: 1980	Elbow Coupling Assemblies for Oil-Hydraulic Systems
14962 (Part 1) : 2018	ISO General Purpose Metric Screw Threads — Tolerances Part 1 Principles and Basic Data

3 DIMENSIONS

The dimensions of male stud elbow body shall be as given in Table 1.

4 MATERIAL

Male stud elbow bodies shall be manufactured with steel of grade E 250, conforming to IS 2062 or any other steel as agreed to between the user and the manufacturer.

5 SURFACE PROTECTION

Male stud elbow bodies shall be zinc plated as per IS 1367 Part 11, unless otherwise agreed to between the user and manufacturer.

6 GENERAL REQUIREMENTS

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

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Doc No.: PGD 36 (18401)

February 2022

6.1 These elbow bodies are intended for assembly in accordance with Type B of IS 9411. For details not covered in this standard, reference shall be made to IS 8805.

6.2 Surface Roughness

All the machined surfaces of male stud elbow bodies shall have a surface roughness value $R_a \leq 2.5$ micrometers.

7 DESIGNATION

A male stud elbow body of light series L, for outside diameter of tube 22 mm and conforming to this standard shall be designated as:

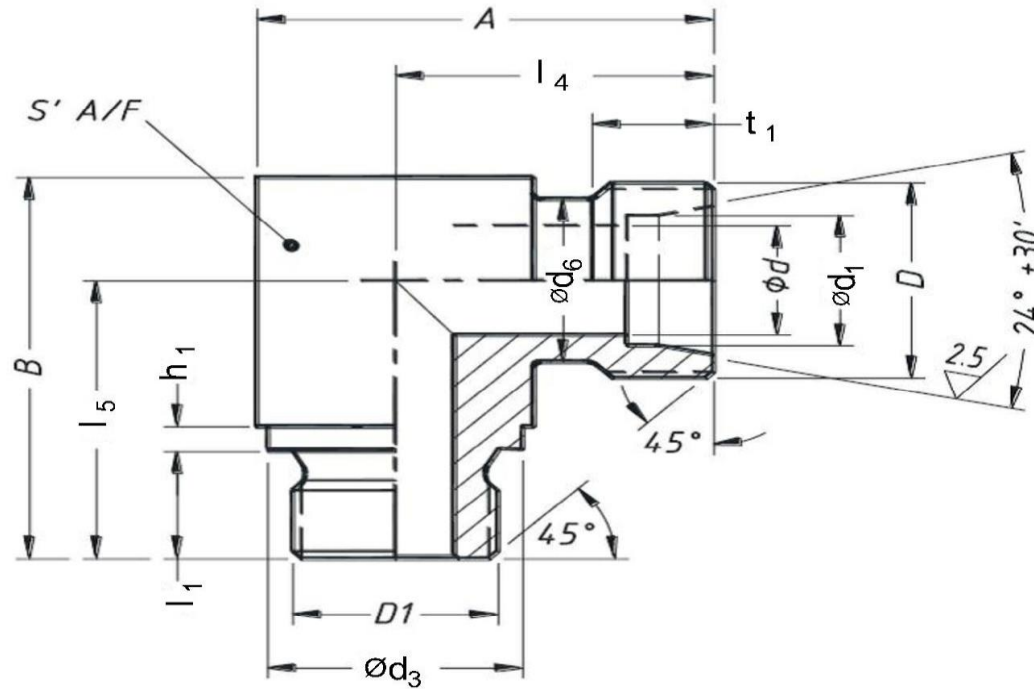
Stud Elbow Body L22 IS 9412 (Part 2)

BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

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Table 1 Dimensions for Male Stud Elbow Body
(Clause 3)
All dimensions are in millimeters



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February 2022

Series	Nom. Pr. (MPa)	Outside Dia of tube	D ₁ ¹⁾	D ²⁾	d	d ₁ B11	d ₃ -0.4	d ₆ h13	t ₁ ±0.2	l ₁ ±0.2	l ₄ ±0.3	l ₅ ±0.3	h ₁	A +0.5	B +0.5	S' A/F ³⁾
Light L	16	22	G 3/4	M30 x 2.0	18	22	32	27	12.0	16	35	42	3	51.0	57.0	32
	10	28	G 1	M36 x 2.0	23	28	39	33	12.5	18	38	48	3	57.5	66.0	41
		35	G 1/4	M45 x 2.0	30	35	49	42	12.5	20	45	54	3	70.0	77.5	50
		42	G 1 1/2	M52 x 2.0	36	42	55	49	14.0	22	51	61	3	78.5	88.0	55
Heavy S	40	20	G 3/4	M30 x 2.0	16	20	32	27	13.0	16	37	42	3	53.0	57.0	32
		25	G 1	M36 x 2.0	20	25	39	33	15.0	18	42	48	3	62.0	66.0	41
	25	30	G1 1/4	M42 x 2.0	25	30	49	39	16.0	20	49	54	3	74.0	76.0	50
		38	G 1 1/2	M52 x 2.0	32	38	55	49	19.0	22	57	61	3	85.0	88.0	55

¹⁾ Threads shall conform to class A of IS 2643.

²⁾ Threads shall conform to class 6g of 14962 (Part 1).

³⁾ For sizes up to and including 24 mm, tolerances shall be $_{-0.8}^0$ mm, and for sizes larger than 24 mm, tolerance shall be $_{-1}^0$ mm.

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NOTE — Stud end details shown in the figure conforming to Type A of IS 8805. Type B may be used if required, in which case the designation shall be, for example:

Stud Elbow Body L22 IS 9412 (Part 2) - B

8 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark