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Pliers and nippers — Engineer's and “Lineman's” pliers — Dimensions and test values

*Pinces et tenailles — Pinces universelles et pinces «Lineman's» —
Dimensions et valeurs d'essai*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 5746 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This third edition cancels and replaces the second edition (ISO 5746:1988) which has been technically revised.

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Pliers and nippers — Engineer's and “Lineman's” pliers — Dimensions and test values

1 Scope

This International Standard specifies the principal dimensions of engineer's and Lineman's pliers and the test values for the pliers in order to verify their aptitude to function in conformity with ISO 5744. General technical requirements are given in ISO 5743.

The engineer's and Lineman's pliers illustrated in this International Standard are examples only and are not intended to affect the manufacturer's design.

2 Normative references

The following referenced documents are indispensable for the application 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 5743, *Pliers and nippers — General technical requirements*

ISO 5744:2004, *Pliers and nippers — Methods of test*

3 Dimensions and test values

3.1 Engineer's pliers

The main dimensions of engineer's pliers are shown in Figure 1 and given in Table 1.

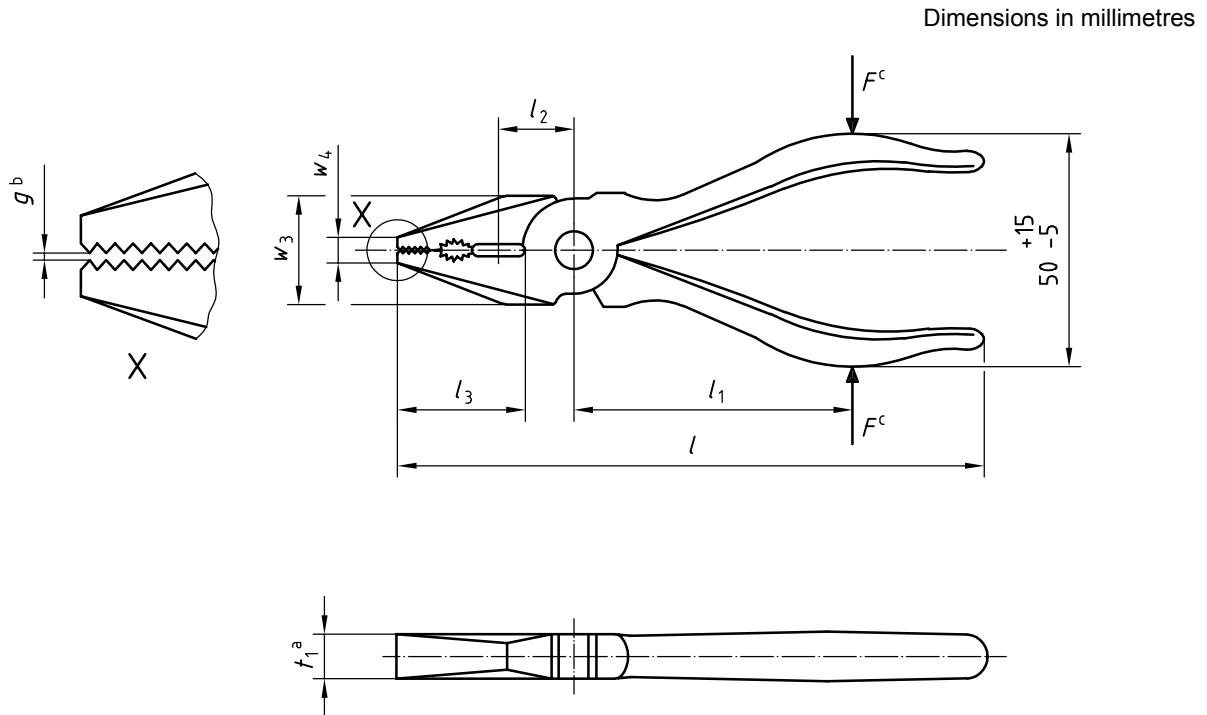
Engineer's pliers can be made with or without a joint cutter, at the manufacturer's discretion.

Engineer's pliers shall be tested in accordance with ISO 5744.

After the load test, the permanent set s shall not exceed the value given in Table 2. If distance l_1 is not suitable for the load test, the formula given in ISO 5744:2004, 4.2 shall be used.

The cutting force, F_1 , and the diameter, d , of the test wire shall not exceed the values given in Table 2.

Pliers having a lever ratio differing from the values given in Table 2 shall be checked for compliance using the formula given in ISO 5744:2004, 5.3.2.



- a The jaws may be tapered to the point over the length l_3 .
- b Measured with pliers closed.
- c F = Load applied in load test or F_1 force applied in cutting test.

Figure 1 — Engineer's pliers

Table 1 — Engineer's pliers, main dimensions

Dimensions in millimetres

l	l_3	w_3 max.	w_4 max.	t_1 max.	g max.
140 ± 8	30 ± 4	23	5,6	10	0,3
160 ± 9	32 ± 5	25	6,3	11,2	0,4
180 ± 10	36 ± 6	28	7,1	12,5	0,4
200 ± 11	40 ± 8	32	8	14	0,5
220 ± 12	45 ± 10	35	9	16	0,5
250 ± 14	45 ± 12	40	10	20	0,6

Table 2 — Engineer's pliers, load and force application, test values

Nominal length			Cutting test		Torsion test ^b		Load test	
			Diameter of medium hard test wire	Maximum cutting force	Torque	Maximum twist	Load	Maximum permanent set
l mm	l_1 mm	l_2 mm	d^a mm	$F_{1\max}$ N	T N·m	α_{\max}	F N	s_{\max}^c mm
140	70	14	1,6	580	15	15°	1 000	1
160	80	16	1,6	580	15	15°	1 120	1
180	90	18	1,6	580	15	15°	1 260	1
200	100	20	1,6	580	20	20°	1 400	1
220	110	22	1,6	580	20	20°	1 400	1
250	125	25	1,6	580	20	20°	1 400	1

a Data for medium hard test wire are given in ISO 5744.

b The test shall be carried out in accordance with the torsion test for flat nose pliers given in ISO 5744.

c $s = w_1 - w_2$ (see ISO 5744).

3.2 Lineman's pliers

The main dimensions of engineer's pliers are shown in Figure 2 and given in Table 3.

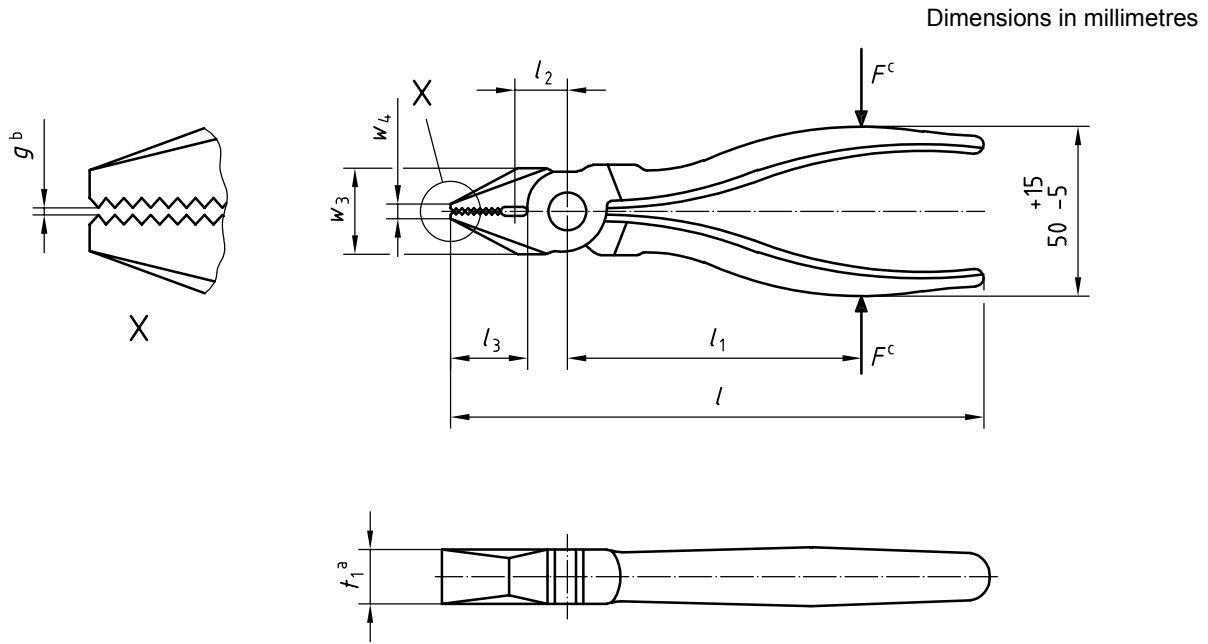
Lineman's pliers can be made with or without a joint cutter, at manufacturer's discretion.

Lineman's pliers shall be tested in accordance with ISO 5744.

After the load test, the permanent set s shall not exceed the value given in Table 4. If distance l_1 is not suitable for the load test, the formula given in ISO 5744:2004, 4.2 shall be used.

The cutting force, F_1 , and the diameter, d , of the test wire shall not exceed the values given in Table 4.

Pliers having a lever ratio differing from the values given in Table 4 shall be checked for compliance using the formula given in ISO 5744:2004, 5.3.2.



- a The jaws may be tapered to the point over the length l_3 .
- b Measured with pliers closed.
- c F = Load applied in Load test or F_1 force applied in cutting test.

Figure 2 — Lineman's pliers

Table 3 — Lineman's pliers, main dimensions

Dimensions in millimetres

l	l_3	w_3 max.	w_4 max.	l_1 max.	g max.
165 ± 14	32 ± 7	27	9	17	1,1
190 ± 14	33 ± 7	30	9	17	1,1
215 ± 14	38 ± 8	38	10	20	1,3
250 ± 14	40 ± 8	38	10	20	1,3

Table 4 — Lineman's pliers, load and force application, test values

Nominal length	l	l_1	l_2	Cutting test		Torsion test ^b		Load test	
				Diameter of medium hard test wire d^a	Maximum cutting force $F_{1\max}$	Torque T	Maximum twist α_{\max}	Load F	Maximum permanent set s_{\max}^c
	mm	mm	mm	mm	N	N·m	°	N	mm
	165	90	16	1,6	580	15	15°	1 120	1
	190	100	18	1,6	580	15	15°	1 260	1
	215	120	20	1,6	580	20	15°	1 400	1
	250	140	22	1,6	580	20	15°	1 400	1

^a Data for medium hard test wire are given in ISO 5744.

^b The test shall be carried out in accordance with the torsion test for flat nose pliers given in ISO 5744.

^c $s = w_1 - w_2$ (see ISO 5744).

4 Designation

EXAMPLE 1 Engineer's pliers, number 303 in accordance with ISO 5742, with a nominal length, l , of 160 mm are designated as follows:

Engineer's pliers 303 - ISO 5746 - 160

EXAMPLE 2 "Lineman's" pliers, number 304 in accordance with ISO 5742, with a nominal length, l , of 190 mm are designated as follows:

"Lineman's" pliers 304 - ISO 5746 - 190

5 Marking

Marking shall be in accordance with ISO 5743.

Bibliography

- [1] ISO 5742, *Pliers and nippers — Nomenclature*

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