INTERNATIONAL STANDARD

ISO 5745

Third edition
2004-09-15

Pliers and nippers — Pliers for gripping and manipulating — Dimensions and test values

Pinces et tenailles — Pinces de serrage et de manipulation — Dimensions et valeurs d'essai

Reference number
ISO 5745:2004(E)

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Published in Switzerland

Contents

Page

Foreword iv
1 Scope 1
2 Normative references 1
3 Dimensions and test values 1
4 Designation 8
5 Marking 9
Bibliography 10

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 5745 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 5745:1988) which has been technically revised.

Pliers and nippers — Pliers for gripping and manipulating — Dimensions and test values

1 Scope

This International Standard specifies the principal dimensions of pliers for gripping and manipulating 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 pliers for gripping and manipulating 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

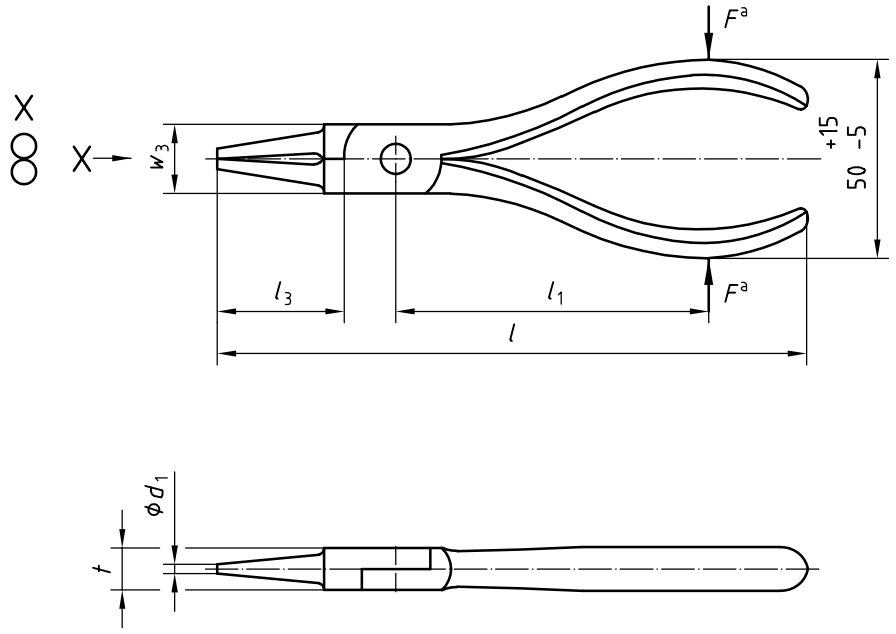
3.1 Round nose pliers for gripping and manipulating

The principal dimensions for round nose pliers for gripping and manipulating are shown in Figure 1 and given in Table 1.

Round nose 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.

Dimensions in millimetres



a F = Load applied in load test.

Figure 1 — Round nose pliers for gripping and manipulating

Table 1 — Round nose pliers for gripping and manipulating, principal dimensions

Dimensions in millimetres

Length of nose	l	l_3	d_1 max.	w_3 max.	t max.
Short nose	125 ± 6,3	25_{-5}^{0}	2	16	9
	140 ± 8	$32_{-6,3}^{0}$	2,8	18	10
	160 ± 8	40_{-8}^{0}	3,2	20	11
Long nose	140 ± 7	40 ± 4	2,8	17	9
	160 ± 8	50 ± 5	3,2	19	10
	180 ± 9	63 ± 6,3	3,6	20	11

Table 2 — Round nose pliers for gripping and manipulating, torsion and load test values

Length of nose	Nominal length l mm	l_1 mm	Torsion test: Torque T N · m	Torsion test: Maximum twist α_{max}	Load test: Load F N	Load test: Maximum permanent set s_{max} [a] mm
Short nose	125	63	0,5	20°	630	1
	140	71	1,0		710	
	160	80	1,25		800	
Long nose	140	63	0,25	25°	630	
	160	71	0,5		710	
	180	80	1,0		800	

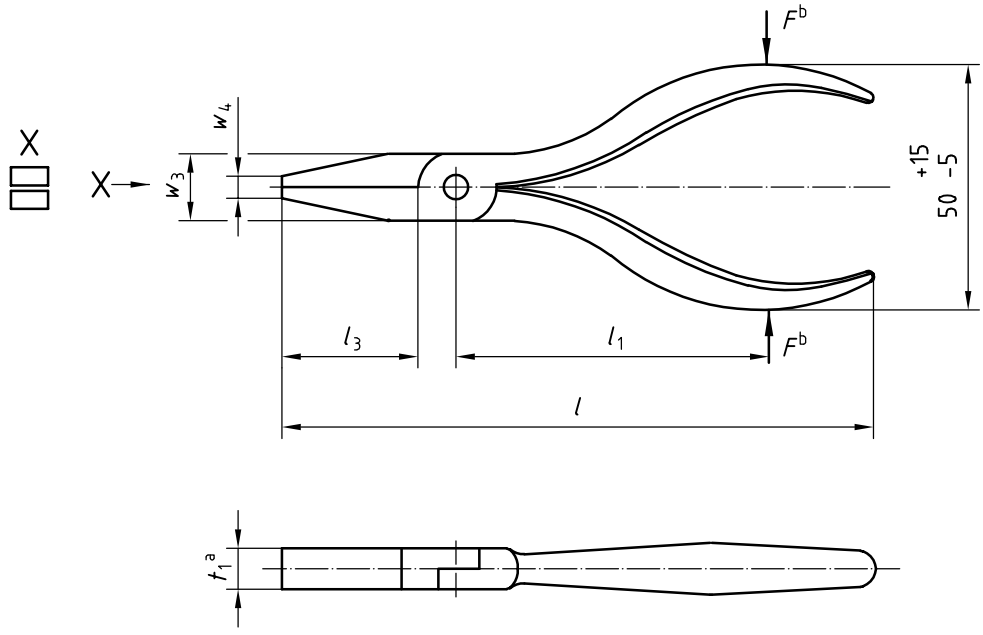
[a] $s = w_1 - w_2$ (see ISO 5744).

3.2 Flat nose pliers for gripping and manipulating

The principal dimensions of flat nose pliers for gripping and manipulating are shown in Figure 2 and given in Table 3.

Flat nose pliers shall be tested in accordance with ISO 5744.

Dimensions in millimetres



[a] The head may be tapered over the length l_3.

[b] F = Load applied in load test.

Figure 2 — Flat nose pliers for gripping and manipulating

Table 3 — Flat nose pliers for gripping and manipulating, principal dimensions

Dimensions in millimetres

Length of nose	l	l_3	w_3 max.	w_4 max.	t_1 max.
Short nose	125 ± 6	25_{-5}^{0}	16	3,2	9
	140 ± 7	$32_{-6,3}^{0}$	18	4	10
	160 ± 8	40_{-8}^{0}	20	5	11
Long nose	140 ± 7	40 ± 4	16	3,2	9
	160 ± 8	50 ± 5	18	4	10
	180 ± 9	$63 \pm 6,3$	20	5	11

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.

Table 4 — Flat nose pliers for gripping and manipulating, torsion and load test values

Length of nose	Nominal length		Torsion test		Load test	
			Torque	Maximum twist	Load	Maximum permanent set
	l mm	l_1 mm	T N·m	α_{max}	F N	s_{max}[a] mm
Short nose	125	63	4	20°	630	1
	140	71	5	20°	710	1
	160	80	6	20°	800	1
Long nose	140	63	—	—	630	1
	160	71	—	—	710	1
	180	80	—	—	800	1

[a] $s = w_1 - w_2$ (see ISO 5744).

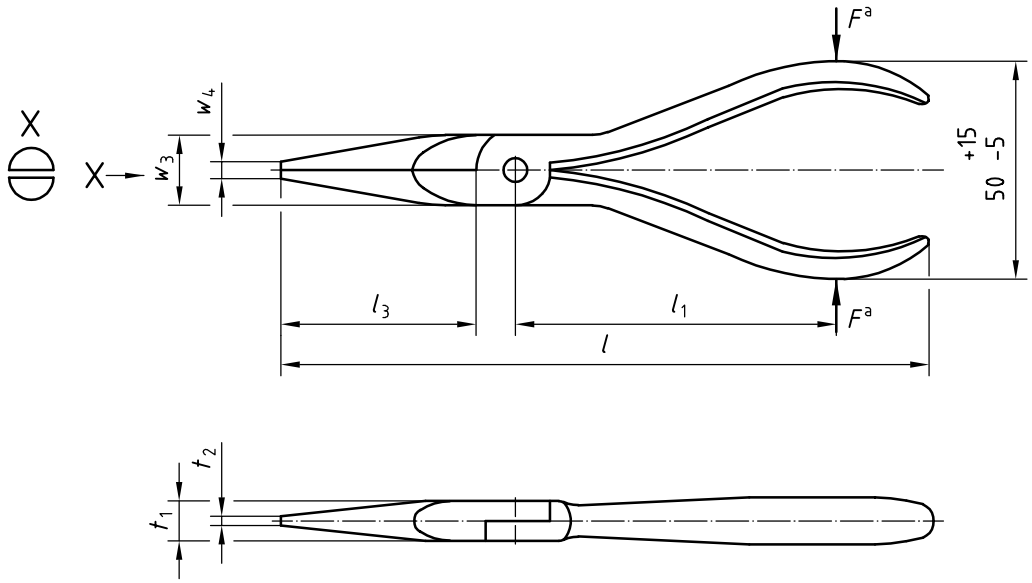
3.3 Snipe nose pliers for gripping and manipulating

The principal dimensions for snipe nose pliers for gripping and manipulating are shown in Figure 3 and given in Table 5.

Snipe nose 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 6. If distance l_1 is not suitable for the load test, the formula given in ISO 5744:2004, 4.2 shall be used.

Dimensions in millimetres



a F = Load applied in load test.

Figure 3 — Snipe nose pliers for gripping and manipulating

Table 5 — Snipe nose pliers for gripping and manipulating, principal dimensions

Dimensions in millimetres

l	l_3	w_3 max.	w_4 max.	t_1 max.	t_2 max.
140 ± 7	40 ± 5	16	2,5	9	2
160 ± 8	53 ± 6,3	19	3,2	10	2,5
180 ± 10	60 ± 8	20	5	11	3
200 ± 10	80 ± 10	22	5	12	4
280 ± 14	80 ± 14	22	5	12	4

Table 6 — Snipe nose pliers for gripping and manipulating, load test values

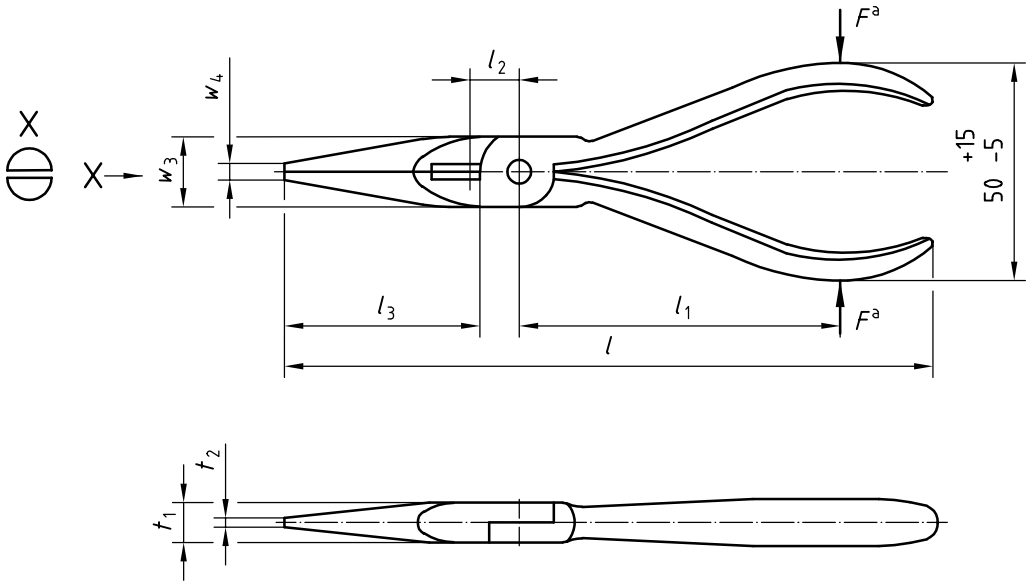
Nominal length		**Load test**	
		Load	**Maximum permanent set**
l	l_1	F	s_{max} [a]
mm	mm	N	mm
140	63	630	1
160	71	710	1
180	80	800	1
200	90	900	1
280	140	630	1

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

3.4 Snipe nose pliers with side cutter for medium hard wire

The principal dimensions for snipe nose pliers for gripping and manipulating are shown in Figure 4 and given in Table 7.

Dimensions in millimetres



a F = Load applied in load test or F_1 force applied in cutting test.

Figure 4 — Snipe nose pliers with side cutter for medium hard wire

Table 7 — Snipe nose pliers with side cutter for medium hard wire, principal dimensions

Dimensions in millimetres

l	l_3	w_3 max.	w_4 max.	t_1 max.	t_2 max.
140 ± 7	40 ± 5	16	2,5	9	2
160 ± 8	53 ± 6,3	19	3,2	10	2,5
180 ± 10	60 ± 8	20	5	11	3
200 ± 10	80 ± 10	22	5	12	4

Snipe nose 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 8. 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 8.

Pliers having a lever ratio differing from the values given in Table 8 shall be checked for compliance using the formula given in ISO 5744:2004, 5.3.2.

Table 8 — Snipe nose pliers with side cutter for medium hard wire, dimensions for load and force application, test values

Nominal length			Cutting test		Load test	
			Diameter of medium hard test wire	Maximum cutting force	Load	Maximum permanent set
l	l_1	l_2	d [a]	$F_{1,\,max}$	F	s_{max} [b]
mm	mm	mm	mm	N	N	mm
140	63	12,5	1,6	570	630	1
160	71	14	1,6	570	710	1
180	80	16	1,6	570	800	1
200	90	18	1,6	570	900	1

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

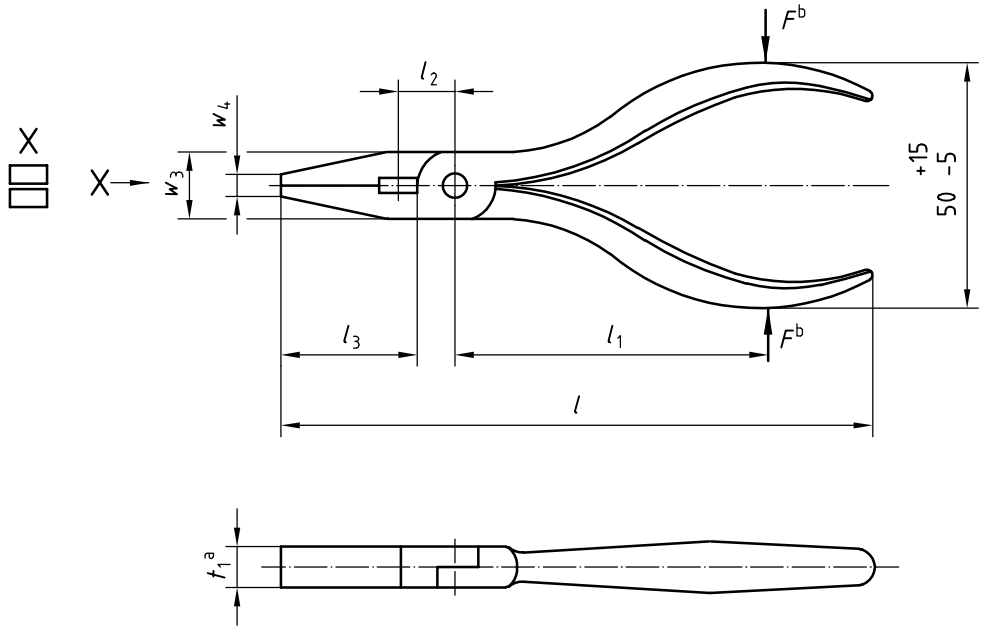
[b] $s = w_1 - w_2$ (see ISO 5744).

3.5 Flat nose pliers with side cutter for medium hard wire

The principal dimensions for flat nose pliers for gripping and manipulating are shown in Figure 5 and given in Table 9.

Flat nose pliers shall be tested in accordance with ISO 5744.

Dimensions in millimetres



[a] The head may be tapered over length l_3.

[b] $F =$ Load applied in load test or F_1 force applied in cutting test.

Figure 5 — Flat nose pliers with side cutter for medium hard wire

Table 9 — Flat nose pliers with side cutter for medium hard wire, principal dimensions

Dimensions in millimetres

l	l_3	w_3 max.	w_4 max.	t_1 max.
140 ± 7	40 ± 5	16	2,5	9
160 ± 8	53 ± 6,3	19	3,2	10
200 ± 10	80 ± 10	22	5	11

After the load test, the permanent set s shall not exceed the value given in Table 10. If distance l_1 is not suitable for the load test, the formula given in ISO 5744:2004, 4.2 shall be used.

Pliers having a lever ratio differing form the values given in Table 10 shall be checked for compliance using the formula given in ISO 5744:2004, 5.3.2.

Table 10 — Flat nose pliers with side cutter for medium hard wire, dimensions for load and force application, test values

Nominal length			Cutting test		Load test	
			Diameter of medium hard test wire	Maximum cutting force	Load	Maximum permanent set
l mm	l_1 mm	l_2 mm	d [a] mm	$F_{1,\,max}$ N	F N	s_{max} [b] mm
140	63	12,5	1,6	570	630	1
160	71	14	1,6	570	710	1
200	90	18	1,6	570	900	1

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

[b] $s = w_1 - w_2$ (see ISO 5744).

4 Designation

EXAMPLE 1 Round nose pliers, number 203 in accordance with ISO 5742, with a nominal length, l, of 140 mm and short nose (S) are designated as follows:

Round nose pliers 203 - ISO 5745 - 140 - S

EXAMPLE 2 Flat nose pliers, number 201 in accordance with ISO 5742, with a nominal length, l, of 160 mm and long nose (L) are designated as follows:

Flat nose pliers 201 - ISO 5745 - 160 - L

EXAMPLE 3 Snipe nose pliers, number 202 in accordance with ISO 5742, with a nominal length, l, of 180 mm are designated as follows:

Snipe nose pliers 202 - ISO 5745 - 180

EXAMPLE 4 Snipe nose pliers, number 202 in accordance with ISO 5742, with a nominal length, *l*, of 160 mm and with side cutter (C) are designated as follows:

Snipe nose pliers 202 - ISO 5745 - 160 - C

EXAMPLE 5 Flat nose pliers, number 201 in accordance with ISO 5742, with a nominal length, *l*, of 140 mm and with side cutter (C) are designated as follows:

Flat nose pliers 201 - ISO 5745 - 140 - C

5 Marking

Marking shall be in accordance with ISO 5743.

Bibliography

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

ICS 25.140.30

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