INTERNATIONAL STANDARD

**ISO
5749**

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Pliers and nippers — Diagonal cutting nippers — Dimensions and test values

Pinces et tenailles — Pinces coupantes diagonale — Dimensions et valeurs d'essai

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5749 was prepared by Technical Committee ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 5749 : 1982) and ISO 5749 : 1982/Add.1 : 1984. A new subclause 3.3 has been added.

Pliers and nippers — Diagonal cutting nippers — Dimensions and test values

1 Scope

This International Standard specifies the principal dimensions of diagonal cutting nippers and the test values for the nippers in order to verify their aptitude to function in conformity with ISO 5744. General technical requirements are given in ISO 5743.

The diagonal cutting nippers illustrated in this International Standard are examples only and are not intended to affect the manufacturers' design.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5743 : 1982, *Pliers and nippers — General technical requirements.*

ISO 5744 : 1988, *Pliers and nippers — Methods of test.*

3 Dimensions and test values
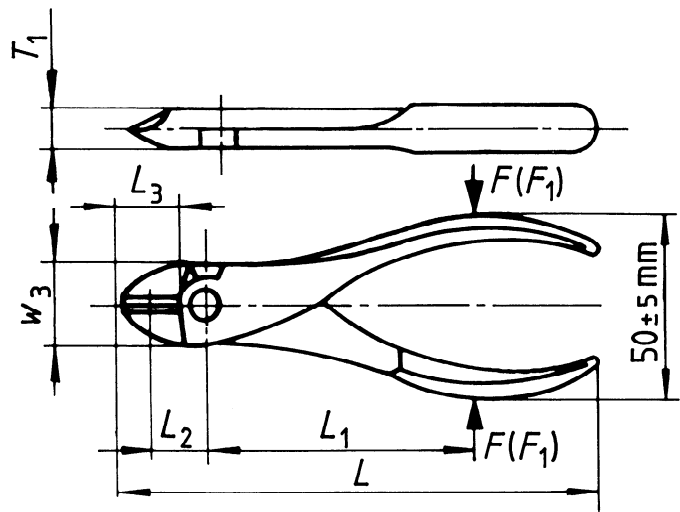
3.1 Diagonal cutting nippers for hard wire

Figure 1

Table 1

Dimensions in millimetres

L	L_3 max.	w_3 max.	T_1 max.
125 ± 6	18	22	10
140 ± 7	20	25	11
160 ± 8	22	28	12
180 ± 9	25	32	14
200 ± 10	28	36	16

The cutting nippers 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 the distance L_1 is not suitable for the load test, the following formula may be applied :

$$F' = \frac{F \times L_1}{L_1'}$$

where

F' is the load which is not given in table 2;

F is the load given in table 2;

L_1 is the distance from the centre of the joint rivet to the point of application of the load given in table 2;

L_1' is the measured distance from the centre of the joint rivet to the point of application of the load.

The cutting force F_1 and the diameter D of the test wire shall not exceed the values given in table 2.

Table 2

	Cutting test			Load test	
L	L_1	L_2	Diameter of hard test wire $D^{1)}$	Maximum cutting force $F_{1, max}$	Load F	Maximum permanent set $s_{max}^{2)}$
mm	mm	mm	mm	N	N	mm
125	80	10	1,25	500	800	0,5
140	90	11	1,4	575	900	0,5
160	100	12,5	1,6	700	1 000	1
180	112	14	1,8	850	1 120	1
200	125	16	2	1 020	1 250	1

1) Data for hard test wire are given in ISO 5744.

2) $s = w_1 - w_2$ (See ISO 5744.)

Nippers having a lever ratio differing from the values given in table 2 may be checked for compliance using the following formula :

$$F_1' = \frac{F_2 \times 2 \times L_2'}{L_1'}$$

where

F_1' is the maximum cutting force which is not given in table 2;

F_2 is the cutting force of hard test wire (see ISO 5744);

2 is the correction factor for hard test wire;

L_1' is the measured distance from the centre of the joint rivet to the point of application of the load;

L_2' is the measured distance from the centre of the joint rivet to the location of the test wire.
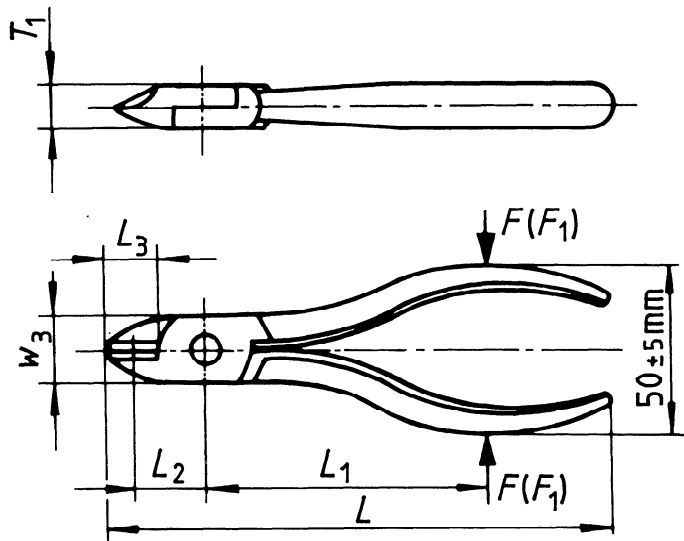
3.2 Diagonal cutting nippers for medium hard wire

Figure 2

Table 3

Dimensions in millimetres

L	L_3 max.	w_3 max.	T_1 max.
125 ± 6	18	22	10
140 ± 7	20	25	11
160 ± 8	22	28	12

Table 4

			Cutting test		Load test	
L	L_1	L_2	Diameter of medium hard test wire D[1]	Maximum cutting force $F_{1,\ max}$	Load F	Maximum permanent set s_{max}[2]
mm	mm	mm	mm	N	N	mm
125	80	12,5	1,6	450	800	0,5
140	90	14	1,6	450	900	1
160	100	16	1,6	460	1 000	1

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

2) $s = w_1 - w_2$ (See ISO 5744.)

The cutting nippers 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 the distance L_1 is not suitable for the load test, the following formula may be applied :

$$F' = \frac{F \times L_1}{L_1'}$$

where

F' is the load which is not given in table 4;

F is the load given in table 4;

L_1 is the distance from the centre of the joint rivet to the point of application of the load given in table 4;

L_1' is the measured distance from the centre of the joint rivet to the point of application of the load.

The cutting force F_1 and the diameter D of the test wire shall not exceed the values given in table 4.

Nippers having a lever ratio differing from the values given in table 4 may be checked for compliance using the following formula :

$$F_1' = \frac{F_2 \times 1,6 \times L_2'}{L_1'}$$

where

F_1' is the maximum cutting force which is not given in table 4;

F_2 is the cutting force of medium hard test wire (see ISO 5744);

1,6 is the correction factor for medium hard test wire;

L_1' is the measured distance from the centre of the joint rivet to the point of application of the load;

L_2' is the measured distance from the centre of the joint rivet to the location of the test wire.

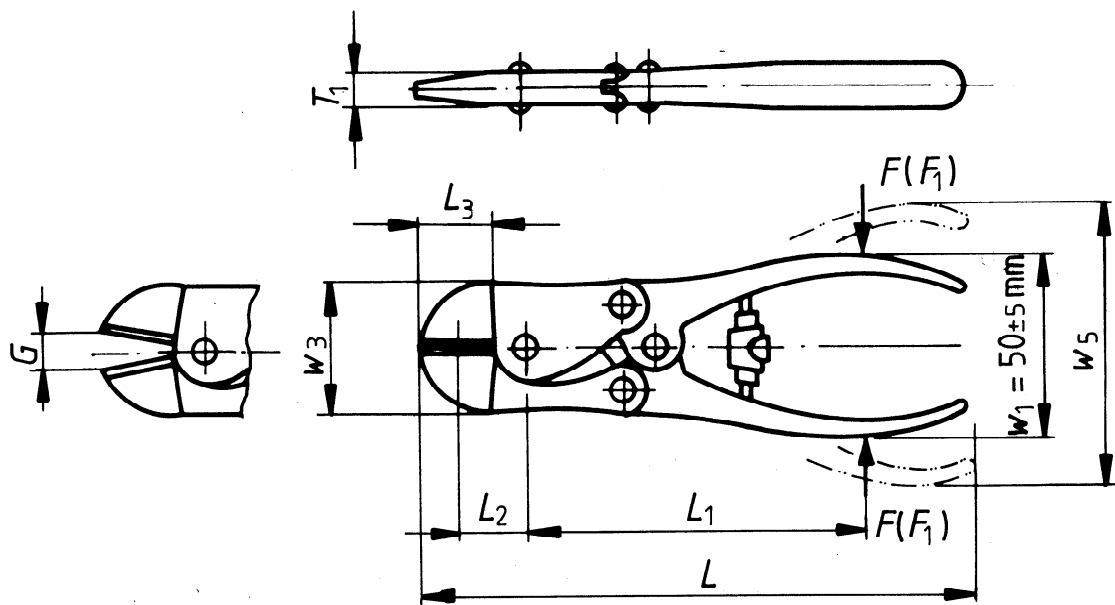## 3.3 Toggle lever assisted side cutting nippers for hard wire

Figure 3

Table 5

Dimensions in millimetres

L	L_3 max.	w_3 max.	G min.	T_1 max.
200 ± 10	25	45	5	18
224 ± 11	28	48	6	18

The cutting nippers 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 the distance L_1 is not suitable for the load test, the following formula may be applied :

$$F' = \frac{F \times L_1}{L_1'}$$

where

F' is the load which is not given in table 6;

F is the load given in table 6;

L_1 is the distance from the centre of the joint rivet to the point of application of the load given in table 6;

L_1' is the measured distance from the centre of the joint rivet to the point of application of the load.

The cutting force F_1 and the diameter D of the test wire shall not exceed the values given in table 6.

Table 6

L	L_1	L_2	Lever ratio[1]	Cutting test		Load test	
				Diameter of hard test wire D[2]	Maximum cutting force $F_{1,\max}$	Load F	Maximum permanent set $s_{\max}$[3]
mm	mm	mm		mm	N	N	mm
200	140	18	14,5	2,5	690	840	1
224	160	20	16,5	2,5	790	950	1

1) The lever ratio is equal to $\dfrac{w_5 - w_1}{G}$

2) Data for hard test wire are given in ISO 5744.

3) $s = w_1 - w_2$ (See ISO 5744.)

Nippers having a lever ratio differing from the values given in table 6 may be checked for compliance using the following formula :

$$F_1' = \frac{F_2 \times 2 \times G}{w_5 - w_1}$$

where

F_1' is the maximum cutting force which is not given in table 6;

F_2 is the cutting force of hard test wire (see ISO 5744);

2 is the correction factor for hard test wire;

G is the measured opening of the jaws;

w_1 is the measured width of the handles at the closed position;

w_5 is the measured width of the handles at the open position.

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Descriptors : tools, cutting tools, hand tools, pliers, specifications, dimensions.