# INTERNATIONAL STANDARD

ISO
5749
Second edition
1988-10-15

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*



Reference number
ISO 5749 : 1988 (E)

## 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

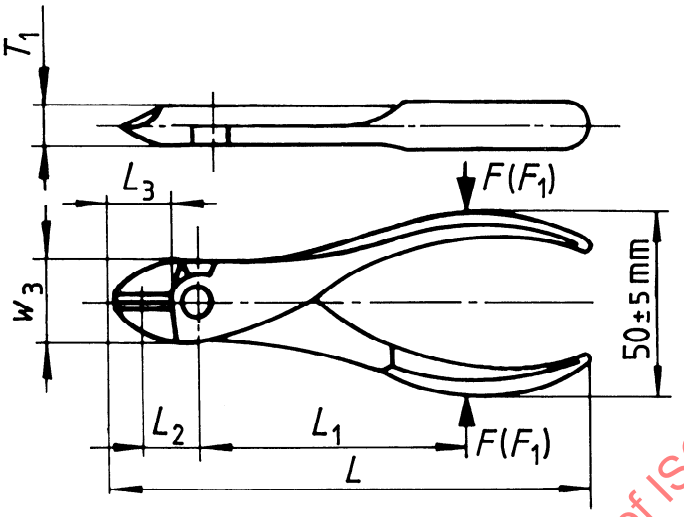


**Figure 1**

**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**

| $L$ | $L_1$ | $L_2$ | Cutting test | | Load test | |
|---|---|---|---|---|---|---|
| | | | 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

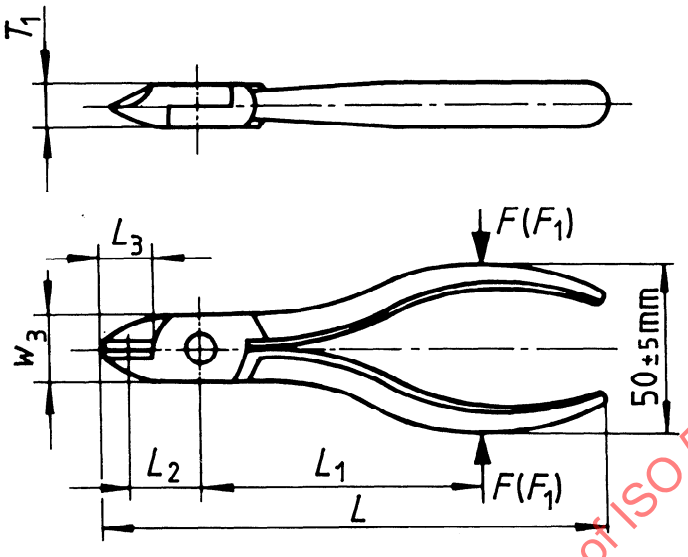


**Figure 2**

**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 |

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.

**Table 4**

| $L$ | $L_1$ | $L_2$ | Cutting test: Diameter of medium hard test wire $D$ [1] | Cutting test: Maximum cutting force $F_{1,\,max}$ | Load test: Load $F$ | Load test: 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.)

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

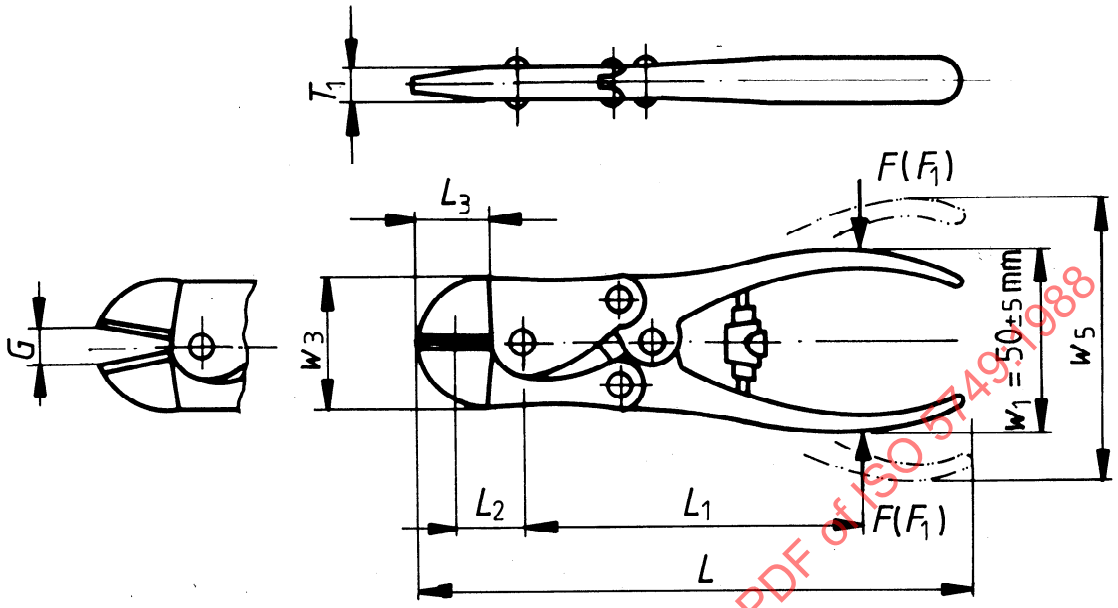


**Figure 3**

**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 $\frac{w_5 - w_1}{G}$

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.