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Heavy duty cutting nippers

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by the Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS B 4635 : 1998** is replaced with this Standard.

This revision has been prepared based on **ISO 5743 : 1988** *Pliers and nippers—General technical requirements*, **ISO 5744 : 1988** *Pliers and nippers—Methods of test* and **ISO 5749 : 1988** *Pliers and nippers—Diagonal cutting nippers—Dimensions and test values* for the purpose of conforming to the said International Standards.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Heavy duty cutting nippers

Introduction This Japanese Industrial Standard has been made based on **ISO 5743** *Pliers and nippers—General technical requirements*, **ISO 5744** *Pliers and nippers—Methods of test* and **ISO 5749** *Pliers and nippers—Diagonal cutting nippers—Dimensions and test values* published in 1988 as the second edition adopting the corresponding matters (nippers), and modifying the structure editorially in such a way that, for the shape and dimensions, the conventional **JIS** specifications are written together with **ISO** by reason that, when taking a present state of trade market into account, the cutting test and deformation test which are carried out by cutting soft and hard wires at the same time are unsuitable for the actual situation.

The portions with sidelines or underlines with dots in this Standard are the description resulted from the modification of the original International Standard. The list of the modification with explanation is given in Annex 2 (informative).

1 Scope This Standard specifies the heavy duty cutting nippers used mainly for cutting copper wires and iron wires (hereafter referred to as “nippers”).

This Standard applies neither to insulated tools for hot-line work nor to anti-static tools. Plastic coating or plastic sleeves are intended for gripping comfort only.

Remarks : The International Standards corresponding to this Standard are as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 5743 : 1988 *Pliers and nippers—General technical requirements* (MOD)

ISO 5744 : 1988 *Pliers and nippers—Methods of test* (MOD)

ISO 5749 : 1988 *Pliers and nippers—Diagonal cutting nippers—Dimensions and test values* (MOD)

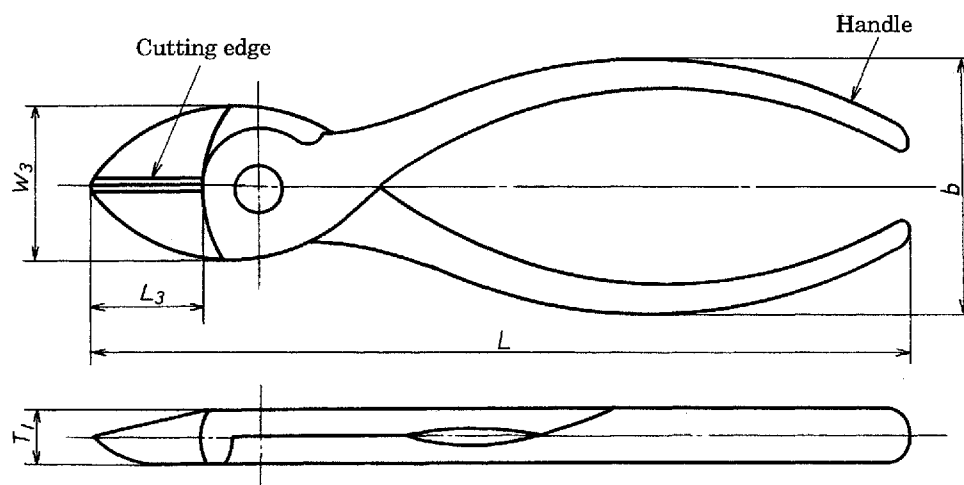
2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provision of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS G 3532 *Low carbon steel wires*

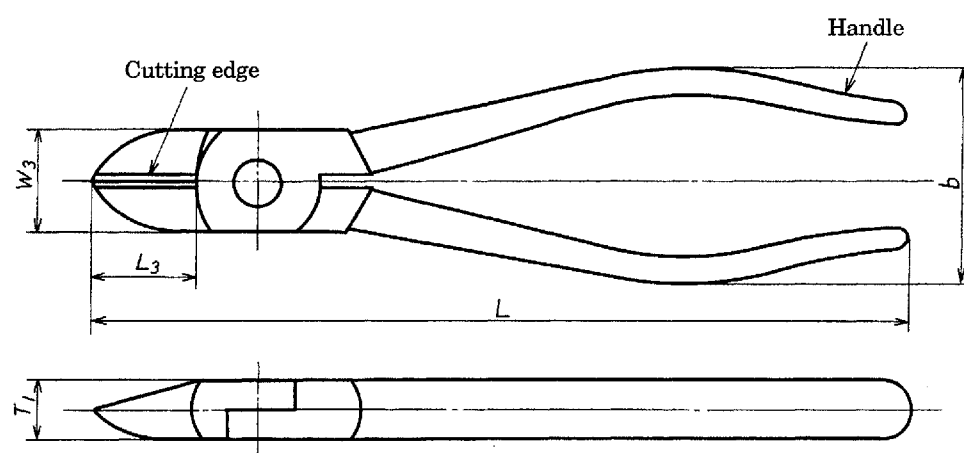
JIS H 3260 *Copper and copper alloy wires*

JIS H 3270 *Copper beryllium alloy, Phosphor bronze and nickel silver rods, bars and wires*

3 Shape and dimensions The shapes of nippers shall be as shown in Fig. 1. However, they are examples and do not affect the manufacturer's design. The dimension of nippers shall be as given in Table 1 and Table 2.



a) Type J-1 and type I-1



b) Type J-2 and type I-2

Fig. 1 Shape (example)

Table 1 Dimensions of type J

Unit : mm

Type	Nominal size	L	L_3 (max.)	W_3 (max.)	T_1 (max.)	b
Type J-1	180	180 ± 9	27	32	14	50 ± 5
Type J-2	130	130 ± 7	22	18	11	50 ± 5
	160	160 ± 8	24	23	13	50 ± 5

Table 2 Dimensions of type I

Unit : mm

Type	Nominal size	L	L_3 (max.)	W_3 (max.)	T_1 (max.)	b
Type I-1	125	125 ± 6	18	22	10	50 ± 5
	140	140 ± 7	20	25	11	50 ± 5
	160	160 ± 8	22	28	12	50 ± 5
	180	180 ± 9	25	32	14	50 ± 5
	200	200 ± 10	28	36	16	50 ± 5
Type I-2	125	125 ± 6	18	22	10	50 ± 5
	140	140 ± 7	20	25	11	50 ± 5
	160	160 ± 8	22	28	12	50 ± 5

4 Quality

4.1 Appearance and finish The nippers shall be of the appearance free from cracks, flaws, rust and other burrs detrimental to use and be given protective surface treatment of excellent grade finish.

An appropriate method of protective surface treatment is selected at manufacturer's discretion.

The handles shall be shaped to afford a comfortable grip and shall prevent accidental pinching of the hands.

4.2 Function

4.2.1 Joint The joint shall be so constructed as to allow free movement from closed position to open position and shall be free from excessive side movement in any position that could impair the function of the nippers.

4.2.2 Cutting performance The cutting performance of nippers shall be as follows:

- a) **J-type nippers** When tested in accordance with 5.1.1 (method A), the nipper shall be capable of cutting the test steel wire⁽¹⁾ applying a load given in Table 3 at the most.

Note ⁽¹⁾ The test steel wire shall be SWN-N in JIS G 3532.

Table 3 Cutting test value (type J)

Nominal size	Load applied to the nipped point on test wire N
130	1 960
160	2 450
180	2 940

- b) **I-type nippers** When tested in accordance with 5.1.2 (method B) the cutting force F_1 and the diameter of test wire D shall not exceed the values given in Table 4 or Table 5.

The dimensional elements relating to the cutting test and deformation test of the nippers are as shown in Fig. 2.

Table 4 Cutting test value (type I-1)

Unit : mm

Nominal size	L_1	L_2	Cutting test	
			Diameter of hard test wire $D^{(2)}$	Maximum cutting force $F_{1,max}$ (N)
125	80	10	1.25	500
140	90	11	1.4	575
160	100	12.5	1.6	700
180	112	14	1.8	850
200	125	16	2	1 020

Note (2) Data for hard test wire given in Annex 1 Table 2.

Table 5 Cutting test value (type I-2)

Unit : mm

Nominal size	L_1	L_2	Cutting test	
			Diameter of medium hard test wire $D^{(3)}$	Maximum cutting force $F_{1,max}$ (N)
125	80	12.5	1.6	450
140	90	14	1.6	450
160	100	16	1.6	460

Note (3) Data for medium hard test wire given in Annex 1 Table 1.

If the wire cutting test cannot conveniently be carried out at the points defined by L_1 and L_2 given in Table 4 or 5, then more suitable positions may be chosen defined by L_1' and L_2' .

In this case the cutting force F_1' shall be calculated using the formula

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

where, F_2 : the cutting force of test wire [hard test wire (see Annex 1 Table 2), medium hard test wire (see Annex 1 Table 1)]